Case Study

Enterprise Architecture and Rapid Business Transformation in Healthcare

July 20th, 2009

Dorin Andreescu
Refaat Shulaiba
Agenda

1. Introductions
2. The Challenge and the Opportunity
3. Rapid Business Transformation
4. EA Framework, the Line of Thought and Action
5. Midwest Health Plan – As Is
6. Midwest Health Plan – Possible and Feasible
7. Lessons Learned
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Principal
General Project Management
Systems and Solutions (GPMSS)

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CIO
Midwest Health Plan (MHP)
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Challenges

- The Health Care industry is facing historical changes to implement reform
- Businesses have to keep their competitive advantage
- Transformation driven by regulations and improvement needs are hard to implement
- Business and IT complexity reduce business agility in implementing change
Health Care Reform

- Provisions to make Health Care coverage more affordable for Americans who lost their jobs.
- Expanding Health Care Coverage for children and uninsured
- Computerizing America’s health records in five years
- Developing and disseminating information on effective medical interventions
- Investing in prevention and wellness
## Top 10 Business and Technology Priorities in 2009

<table>
<thead>
<tr>
<th>Business Priorities</th>
<th>Ranking</th>
<th>Technology Priorities</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business process improvement</td>
<td>1</td>
<td>Business intelligence</td>
<td>1</td>
</tr>
<tr>
<td>Reducing enterprise costs</td>
<td>2</td>
<td>Enterprise applications (ERP, CRM and others)</td>
<td>2</td>
</tr>
<tr>
<td>Improving enterprise workforce effectiveness</td>
<td>3</td>
<td>Servers and storage technologies (virtualization)</td>
<td>3</td>
</tr>
<tr>
<td>Retaining and attracting new customers</td>
<td>4</td>
<td>Legacy application modernization</td>
<td>4</td>
</tr>
<tr>
<td>Increasing the use of information/analytics</td>
<td>5</td>
<td>Collaboration technologies</td>
<td>5</td>
</tr>
<tr>
<td>Creating new products or services (innovation)</td>
<td>6</td>
<td>Networking, voice and data communications</td>
<td></td>
</tr>
<tr>
<td>Targeting customers and markets more effectively</td>
<td>7</td>
<td>Technical infrastructure</td>
<td>7</td>
</tr>
<tr>
<td>Managing change initiatives</td>
<td>8</td>
<td>Security technologies</td>
<td>8</td>
</tr>
<tr>
<td>Expanding current customer relationships</td>
<td>9</td>
<td>Service-oriented applications and architecture</td>
<td>9</td>
</tr>
<tr>
<td>Expanding into new markets and geographies</td>
<td>10</td>
<td>Document management</td>
<td>10</td>
</tr>
</tbody>
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Source: Gartner EXP (January 2009)
Opportunity

Leverage the existing Body of Knowledge about Enterprise Architecture – TOGAF 9.0 to design, implement and maintain an environment capable of:

- Rapid Business Transformations
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Rapid Business Transformation Solutions – Guiding Principles

• Concise, Comprehensive and Unambiguous Definition of the Business and IT Domains
• Specialize Operational, Tactical and/or Strategic transformations
• Coherent criteria for evaluating the performance improvement and value creation
\[
\text{EntPerf} = \sum_{i=1}^{N} \sum_{j=1}^{M} \text{RELV}_i \times \text{PI}_j
\]

Baldridge (1000 points):
Leadership – 120; Strategic Planning 85; Customer Focus 85;
Measurement, Analysis, KM 90; Workforce Focus 85;
Process Management 85; Results 450
SDLC Models and Transformations

Real to Digital Transformations

Digital Domain
- Entity
- Component
- Structured Data
- Unstructured Data

Business Domain

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Reference</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Business Reality described by Business Needs (User Requirements, Business Rules ...)</td>
<td>7</td>
<td>Communication and Collaboration Diagrams</td>
</tr>
<tr>
<td>1</td>
<td>Business Process Diagrams</td>
<td>8</td>
<td>Class Diagrams</td>
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<tr>
<td>2</td>
<td>Textual Analysis</td>
<td>9</td>
<td>State Machine Diagrams</td>
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<tr>
<td>3</td>
<td>Requirements Diagrams</td>
<td>10</td>
<td>Entity Relationship Diagrams</td>
</tr>
<tr>
<td>4</td>
<td>Use Case Diagrams</td>
<td>11</td>
<td>Software Components (VB, C++, C#, Java, Linq, Python, PHP, Ada, Perl, Ruby ...)</td>
</tr>
<tr>
<td>5</td>
<td>Sequence Diagrams</td>
<td>12</td>
<td>Database (SQL)</td>
</tr>
<tr>
<td>6</td>
<td>Activity Diagrams</td>
<td></td>
<td></td>
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Concise, Comprehensive and Unambiguous Body of Knowledge
ISO/IEC Standards –
15288, 12207, 42010, 15504, 27474

- 15288 – System Life Cycle Processes
- 12207 – Software Life Cycle Processes
- 42010 – Practice for Architectural Description
- 15504 – Process Assessment
- 24744 – Metamodel for Development Methodologies
COBIT – Control Framework for IT Governance

- Guidelines for maintaining a coherent process and IT leadership in implementing organization’s strategies and objectives
- Best practices to correlate the business and IT resources
- Provides insight about defining control objectives to measure business performance and to prevent undesired events
Baldrige National Quality Program
Health Care Criteria for Performance Excellence

- Visionary leadership
- Patient-focused excellence
- Organizational and personal learning
- Valuing workforce members and partners
- Agility
- Focus on the future
- Managing for innovation
- Management by fact
- Societal responsibility and community health
- Focus on results and creating value
- Systems perspective
The Role of Core Values and Concepts

The Health Care Criteria build on Core Values and Concepts...

which are embedded in systematic processes ...
(Criteria Categories 1–6)

yielding performance results.
(Criteria Category 7)

Business Transformation: Evolutionary/Continuous or Revolutionary/Discrete in Heterogeneous Environments

Process Maturity Levels

CMMI: 1. Initial; 2. Repeatable; 3. Defined; 4. Managed; 5. Optimizing

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Maturity Levels (ML), Decision Systems (DS) Measures (M) and Metrics Sets
(Opaque Box Technique)

CMMI: 1. Initial; 2. Repeatable; 3. Defined; 4. Managed; 5. Optimizing

ML5

Metrics Set 5 = Quantification of (M1, ..., MN5)

ML4

Metrics Set 4 = Quantification of (M1, ..., MN4)

ML3

Metrics Set 3 = Quantification of (M1, ..., MN3)

ML2

Metrics Set 2 = Quantification of (M1, ..., MN2)

ML1

Metrics Set 1 = Quantification of (M1, ..., MN1)

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Business Modeling and Enterprise Architecture

System Structure

System = t (delimited real universe)

System = f(Systemₙ)
System₁ = f(System₁₁,₁₂)
System₁₁,₁₂ = f(System₁₁₁,₁₂₁,₁₃)

Nth break down level System = f(f(f...f(System₁₁...₁ₙ)))

2. Prescriptive Model
   / Business, Technology and Data Architecture

3. Predictive Model
   / Business, Technology, Data and Application Architecture

4. Quantitatively Optimized Model
   / EA and Performance Measuring System

5. Intelligent Model
   / Business Driven Rapid Transformations

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The Approach

- Use both

“Divide and Conquer”
“Unify and Conquer”

Methodologies.

-Tailor TOGAF

according to MHP business imperatives
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MHP Overview

- Midwest Health Plan (MHP) is a Health Maintenance Organization (HMO) based in Dearborn Michigan
- MHP is accredited by the National Committee for Quality Assurance (NCQA)
- MHP provides health care services for Medicare, Medicaid and other Third Party Administration (TPA) products in Michigan
Midwest Health Plan

Initiate

Validate Membership

Process Services

Terminate/Transfer

Member

- Request Membership
  - Medicaid
  - ABW - Wayne
  - ABW - Macomb
  - Macomb Plan B
  - Health Choice
  - Medicare Advantage

- Notify Membership and PCP

- Process Membership

- Credentialing

- Notify Provider

Capitation Process

Admission/Referral Process

Submit Claim Process

Process Claim

- Benefits
- Adjudication rules

Charge and Pay Services

- (capitation, co-pay, deductible, COB, EOB, Checks...)

Request Termination

Communicate Members, Providers, Payers/Employers

Provider

- Request Membership

- Notify Provider

Premium Payer Employer

- Request Membership

- Notify Membership

MHP

- Record Information

MHP IWS

- Record Information

Aggregates and Synthesizes Historical Data about: Members, Providers, Claims, Services, Payments

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Member Lifecycle Processes: Medicare Advantage

- **Initiate**: Request Membership → Validate Membership → Assign Provider

- **Enroll**: Communicate Outsourced Provider → Communicate In-sourced Provider

- **Receive Benefits**: Communicate Member, Re-assess Membership

- **Withdraw**: Terminate Membership

**Customer Service**: Assist Member
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The Open Group Architecture Framework (TOGAF)

- Architecture Development Method (ADM)
- Architecture Content Framework
  - Deliverable
  - Artifact
  - Building Block
- Enterprise Continuum
- TOGAF Reference Model
- Architecture Capability Framework
Artifacts describe building blocks

Building Block: Customer Services Representative

Deliverables contain Artifacts

Artifacts describe building blocks

Deliverable: Architecture Definition Document

Artifact: Process Flow Diagram

Artifact: Use-Case Diagram

Artifacts describe building blocks

Building Block: Baseline Call Handling Process

Building Block: Target Call Handling Process
Midwest Health Plan

Member
- Request Membership
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Provider
- Request Membership
- Notify Membership

MHP

Premium Payer
- Request Information

MHP IWS
- Record Information

Aggregates and Synthesizes Historical Data about: Members, Providers, Claims, Services, Payments

Capitation Process
- Admission/Referral Process
- Submit Claim Process
- Process Claim
  - Benefits
  - Adjudication rules
- Charge and Pay Services
  - (capitation, co-pay, deductible, EOB, etc.)

Process Termination
- Request Transfer
- Process Termination/Transfer
- Communicate Members, Providers, Payees/Employers

Initiate
Validate Membership
Process Services
Terminate/Transfer
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Concise, Comprehensive, and Unambiguous Unified Model
TOGAF EA as Business Transformation Accelerator and Manager of Enterprise Complexity

Possible - Business Domain

Possible - Business Architecture

Possible - Application Architecture

Possible - Technology Architecture

Possible - Enterprise Think and Act Reference Model

Possible - Unified Enterprise Repository

Possible - OLAP

Possible - OLAM

Possible - AdHoc/Customized Reporting

Possible - Unified Dimensional Model

Possible - Unified User Interface

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Lessons Learned

• Involve business and IT stakeholders, early in the rapid business transformation program
• Use a Concise, Comprehensive and Unambiguous Methodology
• Take advantage of accelerating technologies as Virtualization
• Use both “Divide and Conquer” and “Unify and Conquer” techniques
• Continuously renew the leadership buy-in
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Thank You!