Show one application split into two web-services and another that is combined with functionality of an existing web-service.

Legacy Systems Transformed Into Web-services Accessed Through a Portal
Solution Framework

- External Address Validation Processing
- SORs
  - SOR 1
  - SOR 2
  - SOR 3
  - SOR 4
  - SOR 5
  - SOR 6
  - SOR 7
  - SOR 8
- Repository
- Indicator Extraction Service
  (could be segmented by day of week, month, system, etc.)
- Latency Check Service
- Channels
  - Ch 1
  - Ch 2
  - Ch 3
  - Ch 4
  - Ch 5
  - Ch 6
  - Ch 7
  - Ch 8
- Customer Contact
- Update Addresses

Concise Notes on Software Engineering

- Published in 1979
- 93 pages including appendices & references
- Out of print
- $1.99 at half.com

- Principles of Information Hiding (p. 32-33)
  - Conceal complex data structures whenever possible
  - Allow only selected service modules to know about the concealed data structures
  - Bind together modules that know about concealed data structures
  - Package such modules along with the data itself

by Tom DeMarco

A Yourdon Press Monograph
Necessary Conditions for SOA Success

- Governance
  - Understanding organizations strengths, weaknesses, capabilities, limitations
  - Understanding SOA strengths, weaknesses, capabilities, limitations
- Integration
  - Understanding organizational integration challenges and priorities
- Stewardship
  - Determine who and where, the organizational implementation responsibility will lie
- Development
  - Ensuring staff has requisite knowledge, skills, and abilities
- Support
  - Being experienced enough to manage resulting metadata

Metadata Defined …

- Metadata …
- Isn't
- Is not a noun
- Is more of a verb
- Describes a **use** of data - not a **type** of data
- Describes the use of some attributes of data to understand or manage the data from a different (usually higher) level of abstraction
Avoiding Unnecessary Work Using Business Rule Metadata

BR1) Zero, one, or more EMPLOYEES can be associated with one PERSON.

BR2) Zero, one, or more EMPLOYEES can be associated with one JOB CLASS.

BR3) Zero, one, or more EMPLOYEES can be associated with one POSITION.

BR4) One or more POSITIONS can be associated with one JOB CLASS.

Metadata?

--- RLR ---
RP/HQ16/HQ15K5MV68/9713/4553728 3FEB05/15087 2YDSRP
1. AIKEN/PETER
2. AF259 K 19FEB 6 HELCD6 HK1 0705 2 0735 0094 51/2
3. AF 028 K 19FEB 6 CD61AD HK1 0930 2F 1030 1305 51/A/E
4. AF 027 K 31MAR 4 IADCD8 HK1 2010 2110 1135+1 51/A/E*
5. AF498 K 01APR 6 CDGCHL HK1 1155 2D 1225 1625 51/A/
6. SSR NSSW AF HK1 IADCD6/45A,K/P1/S4
7. SSR TKNA AF HK1 05711184608721/S2
8. SSR TKNA AF HK1 05711184608721/S3
9. SSR TKNA AF HK1 05711184608721/S4
10. SSR TKNA AF HK1 05711184608721/S5
11. OSI AF CTCH SAT804 883 7594 H
12. OSI AF CTCB SAT804 382 5957 B
13. OSI YY /ISSUED BY TRAVELocity 888 709 5983
14. OSI YY /4553728-4 TRAVELocity
15. OSI YY /11603 CROSSWINDS WAY STE 125
16. OSI YY /SAN ANTONIO TX 78233
17. OSI AF CTCT SAT888 709 5983 A
18. OSI AF CTCP SAT800 944 0005 FAX A
19. OSI AF CTCP SAT210 521 5871 INTL
20. OSI AF CTCP SAT210 258 2034 INTL FAX
21. OSI YY TK 1118460872
XML Examples - Which is Which?

XML Example Document #1

<?XML version="1.0"?>
<DOCUMENT>
  <CUSTOMER>
    <NAME>
      <LASTNAME>Edwards</LASTNAME>
      <FIRSTNAME>Britta</FIRSTNAME>
    </NAME>
    <DATE>April 17, 1998</DATE>
    <ORDERS>
      <ITEM>
        <PRODUCT>Cucumber</PRODUCT>
        <NUMBER>5</NUMBER>
        <PRICE>1.25</PRICE>
      </ITEM>
      <ITEM>
        <PRODUCT>Lettuce</PRODUCT>
        <NUMBER>2</NUMBER>
        <PRICE>.98</PRICE>
      </ITEM>
    </ORDERS>
  </CUSTOMER>
</DOCUMENT>

XML Example Document #2

<?XML version="1.0"?>
<SCHEDULE>
  <AIRLINE>NorthWest</AIRLINE>
  <FLIGHT>
    <NUMBER>449</NUMBER>
    <STATUS>Cancelled</STATUS>
  </FLIGHT>
  <FLIGHT>
    <NUMBER>640</NUMBER>
    <STATUS depart="0100">Delayed</STATUS>
  </FLIGHT>
  <AIRLINE>TWA</AIRLINE>
  <FLIGHT>
    <NUMBER>1010</NUMBER>
    <STATUS gate="17 Gold">On Time</STATUS>
  </FLIGHT>
</SCHEDULE>
SOA & Data & Metadata

Motivation

Key drivers behind SOA include:

• Changing focus from managing systems to managing at least an order of magnitude more services;

• Architecting those services to be flexible and adaptable in order to obtain the desired service reuse; and

• Providing increased guidance over both the architecting/engineering of services and their use by requisite business processes
15,000 want off the U.S. terror watch list

By Mimi Hall, USA TODAY

WASHINGTON — More than 15,000 people have appealed to the government since February 2004 to have their names removed from the terrorist watch list that delayed their travel at U.S. airports and border crossings, the Homeland Security Department says.

TERROR WATCH: List swells to more than 755,000

The complaints have created such a backlog that members of Congress are calling for a speedier appeal system that would help innocent people clear their names so they won’t fall under future suspicion. Among those who have been flagged at checkpoints: toddlers and senior citizens with the same names as suspected terrorists on the watch list.

"To leave individuals in this purgatory is un-American," says Rep. Yvette Clarke, D-N.Y., who says she’ll introduce legislation to try to streamline the process.

The Homeland Security Department says it gets about 2,000 requests a month from people who want to have their names cleared. That number is

• 1,200,000 on list
• 15,000 people appealed to be removed from list
• 2,000 month requesting removal
• TSA promised 30 day review process
• Actual time is 44 days

SCREENING FOR TERRORISM

The number of terror watch-list records increased more than quadrupled over roughly a three-year period:

<table>
<thead>
<tr>
<th>Month</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 2004</td>
<td>168,374</td>
</tr>
<tr>
<td>May 2005</td>
<td>287,952</td>
</tr>
<tr>
<td>June 2006</td>
<td>515,096</td>
</tr>
<tr>
<td>May 2007</td>
<td>754,960</td>
</tr>
</tbody>
</table>

September 21, 2004

U.S.

Flight diverted after Cat Stevens found on watch list

WASHINGTON (AP) — A plane bound for Washington from London was diverted to Maine on Tuesday after passenger Yusuf Islam — formerly known as pop singer Cat Stevens — showed up on a U.S. watch list, federal officials said.

United Airlines Flight 919 had already taken off from London en route to Dulles International Airport when the match was made between the passenger and the watch list, said Nico Melendez, a spokesman for the Transportation Security Administration.

Yusuf Islam, formerly Cat Stevens, addresses those gathered at the annual meeting of the Islamo Society of North America in 2003.
Hmm …

Confusion

Correct Name: Yusuf Islam

TSA No Fly Listing: Youssouf Islam

- Fall 2008 comments:
  - Fewer than 2,500 people on US "no-fly" list
  - 10% those are US citizens
  - 16,000 people on "selectee" list (additional screening)
- Transfer responsibility of comparing names on lists from dozens of airlines to TSA
**Alternate Configurations**

**Current Airlines Maintain Lists**

**Proposed (SOA) Airlines Maintain Lists**

**XML Processors (aka Parsers)**

- **Terms**
  - XML processor
  - XML applications
  - XML vocabularies
  - XML encapsulated
  - XML wrapped

- **XML Parser/Processor**
  - A software module called an XML processor is used to read XML documents and provide access to their content and structure. It is assumed that an XML processor is doing its work on behalf of another module, that needs access to the data parsed by the parser.
Typical System Evolution

Payroll Application (3rd GL)
Payroll Data (database)
Marketing Application (4th GL, query facilities, no reporting, very large)
Marketing Data (external database)
Personnel Application (20 years old, un-normalized data)
Personnel Data (database)
R&D Applications (researcher supported, no documentation)
R & D Data (raw)
Mfg. Data (home grown database)
Mfg. Applications (contractor supported)

Finance Application (3rd GL, batch system, no source)
Finance Data (indexed)

How many interfaces are required to solve this integration problem?

Application 1
Application 2
Application 3
Application 4
Application 5
Application 6

15 Interfaces
(N*(N-1))/2

RBC: 200 applications - 4900 batch interfaces
Integration Solution

Application 1

Application 2

Application 3

Processor

Application 4

Application 5

Application 6

Becomes this …

Payroll Data (database)

Payroll Application (3rd GL)

Finance Data (indexed)

Marketing Data (external database)

Marketing Application (4rd GL, query facilities, no reporting, very large)

Personnel Data (database)

Personnel App. (20 years old, un-normalized data)

Mfg. Data (home grown database)

Mfg. Applications (contractor supported)

R & D Data (raw)

R & D Applications (researcher supported, no documentation)

XML Processor

XML Processor

XML Processor

XML Processor

XML Processor

Finance Application (3rd GL, batch system, no source)
3-Way Scalability

Expand the:

1. Number of data items from each system
   - How many individual data items are tagged?

2. Number of interconnections between the systems and the hub
   - How many systems are connected to the hub?

3. Amount of interconnectability among hub-connected systems
   - How many inter-system data item transformations exist in the rule collection?

Net-Centric
- Relating to or representing the attributes of net-centricity.
- Net-centricity is a robust, globally interconnected network environment (including infrastructure, systems, processes, and people) in which data is shared timely and seamlessly among users, applications, and platforms. Net-centricity enables substantially improved military situational awareness and significantly shortened decision making cycles. Net-Centric capabilities enable network-centric operations and NCW.

SUBJECT: Data Sharing in a Net-Centric Department of Defense
- “It is DoD policy that:
  • Data is an essential enabler of network-centric warfare (NCW) …
  • Data assets shall be made visible by creating and associating metadata …
  • Data assets shall be made accessible by making data available in shared spaces …
  • Data assets shall be made understandable by publishing associated semantic and structural metadata in a federated DoD metadata registry …”
Formalizing The Role of US Army IT Governance/Compliance

Formalizing Governance Responsibilities
Monitization: Legacy System Migration to ERP

- **Challenge**
  - Millions of NSN/SKUs
  - Key and other data stored in clear text/comment fields
  - Original suggestion was manual approach to text extraction
  - Left structuring problem unsolved

- **Solution**
  - Proprietary, improvable text extraction process
  - Converted non-tabular data into tabular data
  - Saved a minimum of $5 million
  - Literally person centuries of work

---

An Iterative Approach to Data Quality Engineering

<table>
<thead>
<tr>
<th>Rev #</th>
<th>Unmatched Items (%) Total</th>
<th>Unmatched Items NSNs</th>
<th>Ignorable Items (%) Total</th>
<th>Ignorable Items Items Matched Per Item Avg Extracted</th>
<th>Items Matched (% Total)</th>
<th>Items Extracted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>329948 31.47%</td>
<td>14034</td>
<td>1.34%</td>
<td>N/A</td>
<td>N/A</td>
<td>264703</td>
</tr>
<tr>
<td>2</td>
<td>222474 21.22%</td>
<td>73069</td>
<td>6.97%</td>
<td>N/A</td>
<td>N/A</td>
<td>286675</td>
</tr>
<tr>
<td>3</td>
<td>216552 20.66%</td>
<td>78520</td>
<td>7.49%</td>
<td>N/A</td>
<td>N/A</td>
<td>287196</td>
</tr>
<tr>
<td>4</td>
<td>340514 32.48%</td>
<td>125708</td>
<td>11.99%</td>
<td>582101 1.1000222 55.53%</td>
<td>640324</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>14</td>
<td>94542  9.02%</td>
<td>237113</td>
<td>22.62%</td>
<td>716668 1.1142914 68.36%</td>
<td>798577</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>94929  9.06%</td>
<td>237118</td>
<td>22.62%</td>
<td>716276 1.1139282 68.33%</td>
<td>797880</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>99890  9.53%</td>
<td>237128</td>
<td>22.62%</td>
<td>711305 1.1153008 67.85%</td>
<td>793319</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>99591  9.50%</td>
<td>237128</td>
<td>22.62%</td>
<td>711604 1.1154392 67.88%</td>
<td>793751</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>78213  7.46%</td>
<td>237130</td>
<td>22.62%</td>
<td>732980 1.2072812 69.92%</td>
<td>884913</td>
<td></td>
</tr>
</tbody>
</table>
### Quantitative Benefits

<table>
<thead>
<tr>
<th>Time needed to review all NSNs once over the life of the project:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NSNs</strong></td>
<td>2,000,000</td>
</tr>
<tr>
<td><strong>Average time to review &amp; cleanse (in minutes)</strong></td>
<td>5</td>
</tr>
<tr>
<td><strong>Total Time (in minutes)</strong></td>
<td>10,000,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time available per resource over a one year period of time:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Work weeks in a year</strong></td>
<td>48</td>
</tr>
<tr>
<td><strong>Work days in a week</strong></td>
<td>5</td>
</tr>
<tr>
<td><strong>Work hours in a day</strong></td>
<td>7.5</td>
</tr>
<tr>
<td><strong>Work minutes in a day</strong></td>
<td>450</td>
</tr>
<tr>
<td><strong>Total Work minutes/year</strong></td>
<td>108,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Person years required to cleanse each NSN once prior to migration:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Minutes needed</strong></td>
<td>10,000,000</td>
</tr>
<tr>
<td><strong>Minutes available person/year</strong></td>
<td>108,000</td>
</tr>
<tr>
<td><strong>Total Person-Years</strong></td>
<td>92.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resource Cost to cleanse NSN’s prior to migration:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Avg Salary for SME year (not including overhead)</strong></td>
<td>$60,000.00</td>
</tr>
<tr>
<td><strong>Projected Years Required to Cleanse/Total DLA Person Year</strong></td>
<td>93</td>
</tr>
<tr>
<td><strong>Total Cost to Cleanse/Total DLA Savings to Cleanse NSN’s</strong></td>
<td>$5.5 million</td>
</tr>
</tbody>
</table>

### Defining Customer Challenges

- **Purchased an A4 on June 15 2007**
- **Had not done business with the dealership prior**
- "*makes them seem sleazy when I get a letter in the mail before I've even made the first payment on the car advertising lower payments than I got*"

---

Dear Audi Owner,

July is summer savings month at West Broad Audi! Very attractive offers on our most popular models make for a great buying opportunity.

So where to begin? Let's start with our current offer on the 2007 Audi A4. The A4 is our most popular model with all the features and equipment that are standard. But what's not standard is our monthly payment: $5999! Compare the A4 to any other sedan and you'll find that the A4 delivers more of everything for less!

No doubt you've seen the Audi Q7 in your travels. A leader in the SUV community, the Q7 offers everything you could want in a SUV. Right now, West Broad Audi has a wonderful program that enables you to drive the Q7 for just $549 a month!

And for those of you that just love the TT, the 2008 TT is here and we have a great payment available on that as well – just $429 a month! You'll be the envy of the neighborhood!

No matter which Audi excites you, we've got impressive savings with dealer cash of up to $5000. See us for more details!

As you know for many months we've been exposing the numerous benefits of the Audi Certified Pre-owned program. We have several excellent vehicles in the program awaiting your 2007 Audi L7, A4s and more. If you've had a service loaner lately, chances are you drove one of these fine vehicles. They represent the best value available in an Audi. Come see us soon to find out more about them.

As always, we value you as an Audi customer and thank you for your continued patronage.

[Signature]

O'Malley

Manager

West Broad Audi
1091 West Broad St.
Richmond, VA 23224
www.westbroadaudi.com
A congratulations letter from another bank

Problems

- Bank did not know it made an error
- Tools alone could not have prevented this error
- Lost confidence in the ability of the bank to manage customer funds

Quality Dimensions

**Figure 9-1**
Refined dimensions of perfect Enterprise Portal data.
Quality Attributes

Data Representation Quality
- as presented to the user
  - Completeness
  - Correctness
  - Timeliness
  - Conciseness
  - Clarity
  - Detail
  - Order
  - Presentation
  - Media
  - Unambiguous

Data Value Quality
- as maintained in the system
  - Completeness
  - Correctness
  - Currency
  - Frequency
  - Time Period
  - Precision
  - Reliability
  - Relevance
  - Scope
  - Granularity

Data Model Quality
- as understood by developers
  - Completeness
  - Correctness
  - Conceptual Correctness
  - Conceptual Completeness
  - Syntactic Correctness
  - Syntactic Completeness

Data Architecture Quality
- as an organizational asset
  - Completeness
  - Correctness
  - Enterprise Model Utility
  - Data Management Quality
  - Data Sharing Ability
  - Data Engineering Quality
  - Data Operation Quality
  - Data Evolvability
  - Data Self Awareness

Traditional Quality Life Cycle

Figure 9-8
Levitin and Redman’s Data Acquisition and Usage Cycles [Levitin and Redman 1993].
Extended data life cycle model with metadata sources and uses

Starting point for new system development

Starting point for existing systems

Metadata Creation
- Define Data Architecture
- Define Data Model Structures

Metadata Refinement
- Correct Structural Defects
- Update Implementation

Metadata Structuring
- Implement Data Model Views
- Populate Data Model Views

Metadata Refinement
- Correct Data Value Defects
- Re-store Data Values

Data Creation
- Create Data
- Verify Data Values

Data Refinement
- Assess Data Values
- Assess Metadata

Data Utilization
- Inspect Data
- Present Data

Data Manipulation
- Manipulate Data
- Update Data

Metadata & Data Storage

Shared data

Corrected data

Updated data

Data Performance

Metadata

Figures & Meanings

Metadata & Data Storage

Data Architecture

Data Performance

Metadata

Figures & Meanings

Metadata & Data Storage

Data Architecture

Data Performance

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Data Architecture
Archeology-based Transformations Solve a Puzzle

- Primary sources of guidance:
  - The edge-pieces are easy to identify
  - Distinct physical piece features exist, such as colors, patterns, pictures, etc.

- Steps for solving:
  - Physically segregate all identified edge pieces (not always present in existing environment.)
  - Create puzzle framework - connecting edge pieces using the puzzle picture
  - Within frame, physically group remaining pieces by distinct physical features
  - Solve a smaller section of the puzzle containing just a portion of the picture that is focused on similar physical features such as a ball or a puppy as images in the picture. This is an effective approach because the
    - Focus is on a common domain—one distinct aspect of the entire picture
    - Because it focuses the analysis on a smaller number of puzzle pieces it is proportionately smaller than attempting to solve the overall puzzle at once.
  - As the components are assembled, combine them to solve the complete puzzle.

Metadata Engineering
### Development process Transformations & Outputs

<table>
<thead>
<tr>
<th>Transformation</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phase I</strong></td>
<td></td>
</tr>
<tr>
<td>Understanding the existing environment</td>
<td>T1 Implementation to model</td>
</tr>
<tr>
<td>(archeology-based transformations)</td>
<td>T2 Filtering Technology Out</td>
</tr>
<tr>
<td></td>
<td>T3 Planning Integration</td>
</tr>
<tr>
<td></td>
<td>T4 Repeatability/Reusability Combining</td>
</tr>
<tr>
<td><strong>Phase II</strong></td>
<td></td>
</tr>
<tr>
<td>Developing the desired architecture</td>
<td>T5 Potential Capabilities Analysis</td>
</tr>
<tr>
<td>(architecture-based transformations)</td>
<td>T6 Gap Analyses</td>
</tr>
<tr>
<td></td>
<td>T7 Solutions Engineering</td>
</tr>
<tr>
<td></td>
<td>T8 CM²-based Component Implementation Engineering</td>
</tr>
</tbody>
</table>

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### Sample components progressing through the transformations

<table>
<thead>
<tr>
<th>Existing Environment</th>
<th>Component Structure Analysis</th>
<th>Pareto Analysis</th>
<th>Phase I: Archeology-based Transformations designed to understand the existing environment</th>
<th>Phase II: Developing the desired architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component 1</td>
<td>Component 2</td>
<td>T1 - Implementation Modeling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Component 3</td>
<td></td>
<td>T2 - Technology Filtering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Component 4</td>
<td></td>
<td>T3 - Planning Integration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Component 5</td>
<td></td>
<td>T4 - Repeatability Reusability Combining</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Component 6</td>
<td></td>
<td>T5 - Potential Capabilities Analyses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Component 7</td>
<td></td>
<td>T6 - Gap Analyses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Component 8</td>
<td></td>
<td>T7 - Solutions Engineering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Component 9</td>
<td></td>
<td>T8 - CM²-based Component Implementation Engineering</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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- Existing Environment: Component structure is unknown
- Component Structure Analysis: Component structure is discovered
- Pareto Analysis: Pareto Subset is Hypothesized
- Unknown collection of components: Component 1
- Component 2
- Component 3
- Component 4
- Component 5
- Component 6
- Component 7
- Component 8
- Component 9
- Component 10
- Component 11
- Component 12
- Component 13
- Component 14
- Component 15
- Component 16
- Component 17
- Component 18
- Component 19
- Component 20
- Component 21
- Component 22
- Component 23
- Component 24
- Component 25
Key Finding: Process Frameworks are not Created Equal

With the exception of CMM and ITIL, use of process-efficiency frameworks does not predict higher on-budget project delivery…

...while the same pattern generally holds true for on-time performance

Sample Perception vs. Fact Chart

Development Guidance  Data Administration  Support Systems  Asset Recovery Capability  Development Training

Verified  Average
Data Management Practices Assessment

Organizations Surveyed

- Results from more than 250 organizations
  - Public Companies
  - State Government Agencies
  - Federal Government
  - International Organizations

- Defined industry standard

- Collaboration with CMU's Software Engineering Institute (SEI)

Attempt to determine data management's "state of the practice"
High Marks for IFC’s Program
Data Mgmt Audit 2006

“These IFC scores represent
the highest aggregate scores in the area of data
stewardship recorded in our
database of hundreds of
assessments that has been
recognized as as a
representative scientific
sample.”

Peter Aiken
Founding Director
Data Blueprint

Dashboard Implementation
Why is our organizational Data Stewardship score so low?

Company XYZ DMPA Overview

<table>
<thead>
<tr>
<th>Overall Score</th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sub Group A1</td>
<td>Sub Group A2</td>
</tr>
<tr>
<td>Data Program Coordination</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Organizational Data Integration</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Data Stewardship</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Data Development</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Data Support Operations</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

What expertise do we have in Data Program Coordination?
After more than a decade ...

Question: How many software practices (surveyed) are above level 1 on the CMM?
Answer: By far most organizations (95%) surveyed are producing software using informal processes.

Question: How many organizations have demonstrated at least some proficiency according to the DM3? (i.e., scored above level 1)
Answer: One in ten organizations has scored above level 1 in the DM3 according to our surveys.

The challenge ahead

The chart represents the average scores presented on the previous slide - interesting that none have apparently reached level-3.
SOA DM Maturity Requirements

Data Program Coordination
Organizational Data Integration
Data Stewardship
Data Development
Data Support Operations

• Conclusion - more ground to cover than has been attained to date

Web Oriented Architecture

Simpler Than SOA
Stymied by the complexity of SOAs, some IT departments are taking the Web-oriented architecture route

Smart Web App Development
Web-oriented architectures are easier to implement and offer a similar flexibility to SOA
Supporting SOA: Metadata and Governance in Action

- Advantageous data management practices include governance
  - As a necessary part of information architecture-based metadata management
  - Incorporating SOA capabilities strengthens this requirement
- Governance options represent a range of possibilities
  - Metadata management is a primary output of governance
  - Effective governance is based on the application of automation
- Governance requirements can be expressed in terms of practice maturity
  - Represents an opportunity to achieve sustained competitive advantage
  - Whether implementing advanced technologies such as SOA or focusing on business performance
- Understanding that the interaction of metadata and governance will evolve over time is key to effective application
Motivation

Attendees will understand the:

- Theory, design, and motivation behind SOA;
- Key elements of data governance required in order to manage the required metadata; and
- Hard and soft skill sets that are mandated in order to achieve success
Data Governance References

• Websites

The Data Administration Newsletter (TDAN)–http://www.TDAN.com


EIM Insight, published by The Enterprise Information Management Institute–http://eiminstitute.org

SearchDataManagement.com white paper library–

• http://go.techtarget.com/r/3762877/5626178


IT Governance Books


IT Governance Institute. Control Objectives for Information and related Technology (COBIT). www.isaca.org/cobit


