CIS/MIT 8090 Intro

Setting the stage for the semester
Cognitive Map of 8090

IS Architectures as Strategy
Books: Weill, Ross & Robertson, "Enterprise Architecture as Strategy" & Fenix Theuerkorn "Lightweight Enterprise Architectures"

Level of Analysis
EA – Organizational
IS Architectural – Mid-Range
Work Systems / SOA – Low range

Work Systems Models
S. Alter, "Work System Method"

IS architectural components and development
Mid-Range Modeling

ERP as instantiation of Architectures

Architectural Modeling options
<table>
<thead>
<tr>
<th>Skill</th>
<th>Definition</th>
<th>Examples in this Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract Reasoning</td>
<td>The ability to make and manipulate models</td>
<td>Compare and Contrast Reasoning, CodeRed exercises</td>
</tr>
<tr>
<td>Systems Thinking</td>
<td>Model system components and show how component’s inputs and outputs relate to one another</td>
<td>EA Modeling and Worksystems</td>
</tr>
<tr>
<td>Collaboration</td>
<td>Develop ideas and plans with others and provide and receive critical feedback</td>
<td>Group exercises, team led discussions</td>
</tr>
<tr>
<td>Ability to Experiment</td>
<td>Create and test promising new alternatives, consistent with available resources</td>
<td>SAP Netweaver, Codered exercises</td>
</tr>
</tbody>
</table>
Porter Value Chain Vs. EA Value Chain

EA effects Support Activities as well as Primary Activities
Who Should Care About EA?

- According to Gartner Study: Most managers in an Enterprise should..
Why architectures and what is an EA?

The composition of EAs:
- designing EA
- evaluating EA’s

Mid-level architectures: Connecting EAs to mid- to-Low level architectures
- Work system method
- UML and other approaches

Integrating EA throughout organizations
- SAP NetWeaver

EA evolution & governance
Traditional Approach to Systems Implementation

Strategic Initiative | Lag | Solution Design | Lag | Data

Applications
Infrastructure

New Idea

The Result of Traditional System Implementation Approaches

Corporate Data

Data
Applications
Technology Platforms

Corporate Networks & Infrastructure Services
The systems landscape we'd like to have

Data Warehouse

Middleware

Core Processes

Data
Applications
Technology Platforms

Corporate Networks & Infrastructure Services
### There Are Four Operating Models

or Organizing Logics

<table>
<thead>
<tr>
<th>Business Process Integration</th>
<th>Business Process Standardization</th>
</tr>
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<tbody>
<tr>
<td><strong>High</strong></td>
<td><strong>Low</strong></td>
</tr>
<tr>
<td><strong>Coordination</strong></td>
<td></td>
</tr>
<tr>
<td>- Unique business units with a need to know each other’s transactions</td>
<td></td>
</tr>
<tr>
<td>- Examples: Merrill Lynch GPC, PepsiAmericas, MetLife</td>
<td></td>
</tr>
<tr>
<td>- Key IT capability: access to shared data, through standard technology interfaces</td>
<td></td>
</tr>
<tr>
<td><strong>Unification</strong></td>
<td></td>
</tr>
<tr>
<td>- Single business with global process standards and global data access</td>
<td></td>
</tr>
<tr>
<td>- Examples: Southwest Airlines, Dow Chemical, UPS Package Delivery</td>
<td></td>
</tr>
<tr>
<td>- Key IT capability: enterprise systems reinforcing standard processes and providing global data access</td>
<td></td>
</tr>
<tr>
<td><strong>Diversification</strong></td>
<td></td>
</tr>
<tr>
<td>- Independent business units with different customers and expertise</td>
<td></td>
</tr>
<tr>
<td>- Examples: Johnson &amp; Johnson, GE, ING</td>
<td></td>
</tr>
<tr>
<td>- Key IT capability: provide economies of scale without limiting independence</td>
<td></td>
</tr>
<tr>
<td><strong>Replication</strong></td>
<td></td>
</tr>
<tr>
<td>- Independent but similar business units</td>
<td></td>
</tr>
<tr>
<td>- Examples: Marriott, CEMEX, ING DIRECT</td>
<td></td>
</tr>
<tr>
<td>- Key IT capability: provide standard infrastructure and application components for global efficiencies</td>
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## Different Standardization Requirements of the Four Operating Models

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<td>High</td>
<td>Low</td>
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<tr>
<td>Coordination</td>
<td>Diversification</td>
</tr>
<tr>
<td>- Customer and product data</td>
<td>- Shared services</td>
</tr>
<tr>
<td>- Shared services</td>
<td>- Infrastructure technology</td>
</tr>
<tr>
<td>- Infrastructure, portal, and middleware technology</td>
<td></td>
</tr>
<tr>
<td>Unification</td>
<td>Replication</td>
</tr>
<tr>
<td>- Operational and decision making processes</td>
<td>- Operational processes</td>
</tr>
<tr>
<td>- Customer and product data</td>
<td>- Shared services</td>
</tr>
<tr>
<td>- Shared services</td>
<td>- Infrastructure technology and application systems</td>
</tr>
<tr>
<td>- Infrastructure technology</td>
<td></td>
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</table>

Companies gradually mature enterprise architecture and build out their platforms.

<table>
<thead>
<tr>
<th>Business Silos</th>
<th>Standardized Technology</th>
<th>Optimized Core</th>
<th>Business Modularity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</table>

- Locally Optimal Business Solutions
- Enterprise-Wide Technology Standards
- Standardized Enterprise Processes/Data
- Standard Interfaces and Business Componentization

Business Agility

<table>
<thead>
<tr>
<th>% of Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
</tr>
<tr>
<td>46%</td>
</tr>
<tr>
<td>27%</td>
</tr>
<tr>
<td>2%</td>
</tr>
</tbody>
</table>


Percentage of firms in each stage is updated based on a 2007 survey of 1508 IT executives.
Architecture maturity increases global agility.

IT spending changes as architecture matures.

IT budgets are based on a 2007 survey of 1508 IT executives. Business silos budget is the baseline. Budgets for other stages are represented as a percentage of the baseline budget.
Firms learn by building management competencies.

**Architecture Planning and Design**
- Senior executive oversight
- Enterprise architecture guiding principles
- Enterprise architecture graphic
- Process owners
- Full-time enterprise architecture team

**Project Management**
- Project methodology
- Post-implementation assessment
- IT program managers
- Business leadership of project teams

**IT Funding**
- Business cases
- Centralized funding of enterprise apps
- Infrastructure renewal process
- IT Steering Committee

**Standards Management**
- Architects on project teams
- Technology research & adoption process
- Architecture exception process
- Formal compliance process
- Centralized standards team

Management practices within each practice set are statistically significantly correlated with each other. All four competencies are significantly correlated with architecture benefits.
Getting from ‘as-is’ to ideal state

**Operating Model**
- Defines integration and standardization requirements

**Enterprise Architecture**
- Updates and evolves architecture

**Engagement Model**
- Defines core capabilities

**Foundation for Execution**
- Core Business processes
- IT infrastructure

Strategic Initiative
- Establishes priorities

Learning and exploitation
Getting from ‘as-is’ to ideal state

Operating Model
- Defines integration and standardization requirements

Enterprise Architecture
- Establishes priorities
- Updates and evolves architecture

Engagement Model
- Defines core capabilities

Foundation for Execution
- Core Business processes
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What is Missing?
Getting from ‘as-is’ to ideal state

**Operating Model**
- Defines integration and standardization requirements

**Foundation for Execution**
- Core Business processes
- IT infrastructure

**Engagement Model**

**Enterprise Architecture**
- Establishes priorities
- Updates and evolves architecture

**Strategic Initiative**
- Defines core capabilities
- Limits strategic initiatives

Q: What is Missing?

A: Models of the Work Systems support.
Alter’s Work System Framework

THE WORK SYSTEM METHOD
Connecting People, Processes, and IT for Business Results

Steven Alter
Figure 2.1. The Work System Framework™
Figure 2.2: Work system snapshot for a loan approval system for loans to new clients

<table>
<thead>
<tr>
<th>Customers</th>
<th>Products &amp; Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Loan applicant</td>
<td>• Loan application</td>
</tr>
<tr>
<td>• Loan officer</td>
<td>• Loan write-up</td>
</tr>
<tr>
<td>• Bank’s Risk Management Department and top</td>
<td>• Approval or denial of the loan</td>
</tr>
<tr>
<td>management</td>
<td>application</td>
</tr>
<tr>
<td>• Federal Deposit Insurance Corporation (FDIC)</td>
<td>• Explanation of the decision</td>
</tr>
<tr>
<td>(a secondary customer)</td>
<td>• Loan documents</td>
</tr>
</tbody>
</table>

**Work Practices (Major Activities or Processes)**

- Loan officer identifies businesses that might need a commercial loan.
- Loan officer and client discuss the client’s financing needs and discuss possible terms of the proposed loan.
- Loan officer helps client compile a loan application including financial history and projections.
- Loan officer and senior credit officer meet to verify that the loan application has no glaring flaws.
- Credit analyst prepares a “loan write-up” summarizing the applicant’s financial history, providing projections explaining sources of funds for loan payments, and discussing market conditions and applicant’s reputation. Each loan is ranked for riskiness based on history and projections. Real estate loans all require an appraisal by a licensed appraiser. (This task is outsourced to an appraisal company.)
- Loan officer presents the loan write-up to a senior credit officer or loan committee.
- Senior credit officers approve or deny loans of less than $400,000; a loan committee or executive loan committee approves larger loans.
- Loan officers may appeal a loan denial or an approval with extremely stringent loan covenants. Depending on the size of the loan, the appeal may go to a committee of senior credit officers, or to a loan committee other than the one that made the original decision.
- Loan officer informs loan applicant of the decision.
- Loan administration clerk produces loan documents for an approved loan that the client accepts.

<table>
<thead>
<tr>
<th>Participants</th>
<th>Information</th>
<th>Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Loan officer</td>
<td>• Applicant’s financial statements for last three years</td>
<td>• Spreadsheet for consolidating information</td>
</tr>
<tr>
<td>• Loan applicant</td>
<td>• Applicant’s financial and market projections</td>
<td>• Loan evaluation model</td>
</tr>
<tr>
<td>• Credit analyst</td>
<td>• Loan application</td>
<td>• MS Word template</td>
</tr>
<tr>
<td>• Senior credit officer</td>
<td>• Loan write-up</td>
<td>• Internet</td>
</tr>
<tr>
<td>• Loan committee and executive</td>
<td>• Explanation of decision</td>
<td>• Telephones</td>
</tr>
<tr>
<td>loan committee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Loan administration clerk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Real estate appraiser</td>
<td></td>
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Work systems are NOT Information Systems

Figure 4.1: Different types of overlap between work systems and related information systems
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