Plan for the Next Two Weeks

- Getting familiar with some pattern libraries and reference models from different regions of the "Model Matrix"
- Reinforcing the distinction between conceptual models and physical ones
- Start thinking about a course project
Plan for Today's Class

Component Business Architectures
The Federal Enterprise Architecture
The "Buy Side" and "Sell Side"
SCOR

Big Questions about Business Organization

How do business models or business architectures affect an enterprise's physical organization and technology?

How does organizational architecture shape business architecture?

Is any organizational architecture more natural than another? How is a "company of 1" organized? Is there a natural size to an organization or enterprise?
Abstract Notions of Business Architecture and Organization

We've already discussed some abstract conceptions of "what businesses do"

- Gautschi & Betancourt modeled all businesses using three basic activities of production, distribution, and consumption
- Apte & Mason modeled businesses using three dimensions of symbolic, interpersonal, and physical intensity

An emerging approach is to model businesses as collections of functional components or services

"Component" Business Models

An emerging conceptual pattern of business organization "factors" what businesses do into modularized or specialized functions

"What components do" is defined in abstract, technology-independent terms so we don't have to care about the computer, operating system, or software application that performs the function

This level of abstraction reduces integration and communication costs between components and is the essence of service orientation

An emphasis on business model / business process / information exchange patterns facilities component reuse / reassembly into new combinations: virtual enterprises, composite services, etc.
Buzzwords About Componentized Businesses

- Core competencies
- Key performance indicators
- Best practices
- Re-engineering
- "Plug and Play"
- Outsourcing

Component Business Map
CBM -- Rental Car Operations

Rental Car Process Model (Generic)
Rental Car Process Model -- India

The "Componentized" Bank
"Componentized" Bank Value Chains

The Federal Enterprise Architecture

The US Government consists of a bewildering number of departments, agencies, programs, and other organizational entities that do not "interoperate" well because of legacy technology, processes, policies, and politics.

The FEA BRM is an ambitious attempt to improve how the US Government "does business" by taking a cross-agency perspective on products, services, and processes.

By identifying and reducing redundant capabilities, activities, and infrastructure, the government hopes to improve its delivery of products and services to its "customers" and more tightly link decisions about budgets and initiatives to measurable benefits.
The Federal Government -- "As-Is"

The Federal Government -- "To-Be"
"Reference Model"

A reference model is a special kind of model -- based on a small number of unifying concepts and may be used as a basis for education and explaining standards to a non-specialist.

Typically a hierarchical and abstract framework for understanding significant relationships among the entities of some environment, and for the development of consistent standards or specifications supporting that environment.

A reference model is not directly tied to any standards, technologies or other concrete implementation details, but it does seek to provide a common semantics that can be used unambiguously across and between different implementations.

It is generally NOT specific enough to build anything with.

**FEA Reference Models**

![Diagram](image)

- **Performance Reference Model (PRM)**
  - Inputs, outputs, and outcomes
  - Uniquely tailored performance indicators
- **Business Reference Model (BRM)**
  - Lines of Business (functions and sub-functions)
  - Agencies, customers, partners
- **Service Component Reference Model (SRM)**
  - Service domains, service types
  - Business and service components
- **Data Reference Model (DRM)**
  - Business-focused data standardization
  - Cross-agency information exchanges
- **Technical Reference Model (TRM)**
  - Service component interfaces, interoperability
  - Technologies, recommendations
"Disaster Management" LOB

Disaster Monitoring and Prediction
Disaster Preparedness/Planning
Disaster Repair and Restore
Emergency Response

FEA BRM Applied to "Controlling the Border"
FEA Performance RM

Asks the question: what is the connection between our technology and business architecture and our results?

Provides "metamodels" for being explicit about the cause-and-effect relationships between inputs, outputs, and outcomes

Makes it easier to see how govt programs are performing -- compare costs and accountability for IT investments

FEA PRM "Metamodel" for Customer Results

Figure 7: Customer Results Measurement Area
FEA PRM "Metamodel" for Technology Initiatives

Figure 9: Technology Measurement Area

FEA Service Component Reference Model

The SRM is a hierarchical directory of "service components"

Each agency or organization needs to map or identify its services and capabilities into this common framework/ontology

This should facilitate the reuse of the functions provided by different agencies or organizations because they will recognize that they have (or need to have) the same capabilities
FEA SRM for "Customer Services" Domain

Figure 16: Customer Services Domain

- (701) Customer Relationship Management
  - 510: Call Center Management
  - 511: Customer Analytics
  - 512: Sales and Marketing
  - 513: Product Management
  - 514: Brand Management
  - 515: Customer / Account Management
  - 516: Contact and Profile Management
  - 517: Partner Relationship Management
  - 518: Customer Feedback
  - 519: Surveys

- (702) Customer Preferences
  - 520: Personalization
  - 521: Subscriptions
  - 522: Alerts and Notifications

- (703) Customer Initiated Assistance
  - 523: Online Help
  - 524: Online Tutorials
  - 525: Self-Service
  - 526: Reservations / Registration
  - 527: Multi-Lingual Support
  - 528: Assistance Request
  - 529: Scheduling

BRM Analogy in Education

Acronymology in Patterns of Business Organization

- B2B or "Business to Business"
- B2C or "Business to Consumer"
- EAI or "Enterprise Application Integration" – "B2me" or "B2E"
- "Collaboration" / "User-to-User" / C2C / P2P

Patterns in Enterprise "Eco-systems"

- "Buy Side" Patterns
- "Sell Side" Patterns
- Patterns "in the Middle"
What Businesses Do on the "Buy Side" of the Value Chain

Deal with suppliers (the businesses they buy from)

*Procurement*

is the most common business pattern; one buyer buys something from one seller

- *Direct vs Indirect Procurement*

Sourcing and Supplier Management – selecting suppliers, measuring and optimizing how they perform

---

The Simplest Procurement Pattern

![procurement diagram](image-url)
**Indirect Procurement**

Things your buy that don't go into your products but are needed to run your business; often treated as "overhead"

Large number of low-value transactions

Conducted on ad hoc schedule by employees not trained in purchasing

---

**Direct Procurement**

Things you buy that go into the things you make

Smaller number of large value transactions

Much more complex business processes than for indirect procurement

Supplier selection decisions – "Sourcing" – are rarely made only on price, and often long-term contracts

Conducted on regular schedule by procurement specialists
Benefits of Automating Procurement

- Reduced cycle time in purchasing and fulfillment
- Reduced inventory
- Reduced administrative costs
- Elimination of maverick purchasing
- MORE STRATEGIC BENEFITS SUCH AS ...

What Businesses Do on the "Sell Side" of the Value Chain

Deal with customers (the businesses or individuals they sell to)

- Order Management and Fulfillment – offering product catalogs, taking orders, filling them as promised
- Channel Management – working with distributors, retailers, other partners
- Customer Relationship Management – marketing, sales, customer service, field support
What Businesses Do For Themselves

Dealing with themselves – internal or enterprise functions

- Design and Engineering – figuring out how to make their stuff, increasingly by collaborating with people who make the materials and components
- Manufacturing – actually making the stuff, increasingly by collaborating with people who are "downstream" toward the customer ("channel assembly")
- Human Resources, Finance, MIS – assembling and taking care of the people who do everything else
- Information Systems – designing, deploying, supporting computing and communications infrastructure

What Businesses Do that Spans the Value Chain

Activities that involve both the sell-side and the buy-side

- The Supply Chain connects the Buy Side to the Sell Side, but the emphasis is more often on the Buy Side
- Likewise, the Demand Chain is just the view of the information flowing up the Supply Chain in the opposite direction
- Logistics – moving the stuff around on the way into and out of the company and keeping track of how much there is of it and where it is while in transit
The Supply Chain

A supply chain is an aggregated and end-to-end view of the buy-side and sell-side relationships of an enterprise.

A supply chain is the network of facilities and distribution capabilities an enterprise uses to:

- "Source" (or "procure") raw materials (chemicals, ores, grains, ...) or components
- Transform the materials or assemble the components into products
- Deliver the products to customers (indirectly through distributors or stores or directly to the purchaser)

Supply Chain - Conceptual Model

[Diagram showing the supply chain concept with tiers and connections between materials, enterprise, distributors, retailers, and customers.]
Supply Chain Operations Reference Model (SCOR)

The Supply Chain Council was established in 1996 to develop a standard process reference model for communicating supply-chain management practices across companies called SCOR that:

- provides a common supply-chain framework with standard terminology
- defines common metrics with associated benchmarks and best practices
- serves as a common model for evaluating, positioning, and implementing supply-chain application software

Put another way, SCOR is designed to provide discipline and advice to a firm trying to answer questions about its supply chain design.
The SCOR Model

Five essential supply chain processes (Plan, Source, Make, Deliver, Return)

Different supply chain models for different industries and partner configurations can be created from the same standard process vocabulary

SCOR Model Decomposition
SCOR "Sourced Stocked Product"

What We Learn From SCOR

Note that my "generic supply chain" is a structural view that doesn't show the planning and return processes, so the reference model has already added to our understanding of supply chains.

- Every firm in a supply chain has the same problems to solve.
- Every process is a customer of the previous one and a supplier to the next.
- The model also distinguishes three patterns for "making" things: make-to-stock, make-to-order, engineer-to-order.
Readings for 25 February

Chapter 4 of Document Engineering, pages 119-127


MIT Process Handbook

RosettaNet PIP Directory