Plan for Today's Class

- SCOR and "traditional" supply chain patterns
- "Modes of exchange" patterns in supply chains
- Information supply chains and STP
- Patterns "in the middle"
- Pattern resources for scavenger hunt - MIT, RosettaNet
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
Design Goals for Supply Chains

Especially for direct goods that are inputs to manufacturing processes, the things that businesses buy need to get to specified places at specified times in specified quantities according to manufacturing plans and sales forecasts.

- The right stuff in the right amount at the right time in the right place

Get as close to zero inventory THAT YOU OWN without ever losing a sale or having to shut down the assembly line.

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.
Where Process Reference Models Come From

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
Indirect vs Direct Sales?

When a firm manufacturers products and sells them through distributors and resellers this is the INDIRECT sales pattern.

Some products are almost always sold through indirect channels.

In a DIRECT sales strategy a firm sells its product directly to the companies or consumers who buy them without any middlemen or resellers.

Sometimes this "directness" is a fundamental part of the value proposition for timeliness (morning newspaper) or freshness (Farmer's Market).

But for other products there may be a choice of a direct vs indirect sales strategy.
Direct Sales

Channel (In)visibility
The Build to Order Pattern

Contrasts with "build to stock" pattern; textbook example is Dell Computer

BTO is simple in concept, but complex in execution, requiring competencies in product design, process engineering, and supply chain management

Requires more modular design to enable configurability and concurrent assembly of sub-components

Often used in conjunction with "just-in-time" pattern whose goal is minimizing inventory by having suppliers deliver their raw materials or components to a manufacturing location "just in time" for them to be used

Building to order instead of forecast means a lot less inventory so the rapid obsolescence of components is less harmful

BTO + "Demand Chain Management"

Dell doesn't just take orders, but actively shapes them by customizing its "recommended" offerings to buyers based on inventory, opportunity for higher margin, qualification of buyer, other factors

Final assembly takes place only after customer places order
Attacking Supply Chain Problems

Supply chain problems primarily result from poor visibility and lack of collaboration.

The visibility problem can be attacked by the use of technologies and strategies that speed information flow across the chain or that allow more information to be shared in controlled ways.

Dell's efficient use of inventory information to shape its offerings shows how improved visibility can add value.

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.
Modes of Exchange

Withholding or controlling the flow of information has long been a source of competitive advantage; why do some firms share information while others won't?

The Mode of Exchange is "the set of standard procedures, common practices, communication patterns, and norms governing routine behavior in the value chain relationship between a supplier and its customer"

This is a much broader definition of what's exchanged that simply "exchange of money" which is what many economists focus on.

The mode of exchange also governs the extent of exchange of information and know-how, the development or non-development of trust, and norms of reciprocity or fairness in the relationship.

Exit Mode

In the exit mode, problems with suppliers result in a change of suppliers

Auctions are the big "weapon" against suppliers in exit mode

The US auto industry has generally worked in exit mode, especially in lower tiers.
Voice Mode

In the voice mode, problems are resolved by collaboration, which creates opportunities to improve processes and designs.

Collaborative design and inventory planning software are key technologies for voice mode relationships.

The Japanese auto industry has generally worked in voice mode.
Summary: Technical Requirements for Successful Supply Chain Collaboration

Can our systems exchange information?
Can our systems understand the information they get from each other?

Summary: Non-Technical Requirements for Successful Supply Chain Collaboration

Can our firms and people talk to each other?

- Do we have a common vocabulary or reference model (like SCOR or RosettaNet) so we can understand each other's roles in the patterns we are trying to follow?
- Do we have executive sponsorship that encourages us to talk with each other about how to be more efficient and effective in our supply chain?
- Do we trust each other?
The Information Supply Chain

The flow of materials and goods in a supply chain is accompanied by information about it.

But information about supply chain activities and processes is increasingly separated from the physical flow of materials and goods, and for information-based services there is no physical stuff.

Information also flows in the opposite direction from the customer, retailers, and distributors back into the supply chain – this is also called the DEMAND CHAIN.

The information supply chain has become especially important because increased global competition and better informed customers are forcing forms to shift from forecast to demand (i.e. customer) driven business models.

Design Issues for the Information Supply Chain

What information is exchanged?

Which entities in the supply chain are able to exchange information?

What is the frequency of this information exchange?
"Document Automation" or STP Pattern

Many business processes can be described as "moving information around"

At each step information might be added to the input document or a new document might be created that contains most of the input document's content

However, even though the end-to-end process might span multiple departments (or companies), the business applications (run by separate departments) may not have been designed to share information with each other

Clerical functions can usually be totally automated

Processes carried out by knowledge workers can often be partially automated

Typical Characteristics of Document Automation Efforts

Create documents with templates or via guided assembly (aka "wizards")

Minimize manual intervention via rule-based routing, access control, exception handling

Concurrent process re-engineering

Documents are regenerated when source information changes

End-to-end perspective to maximize content reuse

Standard content components and processes
Buzzwords in the "Middle"

The Internet has been a disruptive force on many traditional business model patterns, particularly in the value chain activities of supply and demand chain management

*Disintermediation* – cut out the middleman

{**re**} *Intermediation* – introduce new middleman

Patterns in the "Middle"

**Marketplaces and Auctions**

- Bring together sellers (or their catalogs)
- Bring together buyers (or their RFIs or RFQs)
- Match buyers and sellers
- Provide critical mass and infrastructure for other service providers
Glushko & McGrath's definition:

- A "market maker" or "market operator"
- Participating businesses
- The services these businesses provide to each other
- The messages and documents that are exchanged to request and perform the services
The MIT Process Handbook -- "Organizing Business Knowledge"

There is an infinite amount of knowledge that could be recorded about business

The handbook uses the business model archetypes as the framework for hierarchically organizing progressively specialized types of businesses

The MIT folks imagined it as a collaborative knowledge repository to which people would contribute, with discussion lists, etc. but that didn't really happen. Maybe it was ahead of its time, or more likely the people who would have done it have been hired by IBM, SAP, HP, etc to build their own proprietary process and knowledge libraries
Pattern Compass

MIT Process Library -- Amazon

Produce
- Produce as what kind of organization?
  - Produce as a volunteer association
  - Produce as a government
  - Produce as a part of a business
- Produce as a business
  - Produce as a business: examples
  - Produce as a business: views
- Produce with what business model?
  - Produce as a Creator
  - Produce as a Distributor
- Distribute what asset?
  - Distribute financial asset [Financial trader]
  - Distribute physical asset [Wholesaler/retailer]
  - [Distribute how?]
  - Distribute via Internet [Wholesaler/retailer]
    - Distribute via electronic auction (Wholesaler/retailer)
    - Distribute via electronic lottery (Wholesaler/retailer)
    - Distribute via electronic store (Wholesaler/retailer)
    - Distribute catalog goods via electronic store [Land’s End]
    - Distribute health & beauty items via e-store [Drugstore.com]
    - Distribute books via e-store and physical (Zones and Noble)
    - Distribute fashion clothing via electronic store [Barnes.com]
    - Distribute spoken audio via electronic store [Audible]
    - Distribute preserved music via electronic store [Spotify.com]
    - Distribute software via electronic store [Beyond.com]
    - Distribute postage via electronic store [Stamps.com]
    - Distribute books via electronic store [Amazon.com]
  - Distribute product items via electronic store [Peapod]
  - Distribute office products - elec/phys store [Staples]
  - Distribute MRO supplies via electronic store [Granger]
MIT Process Library
-- Distribute Health Information on Internet

- Produce with what business model?
  - Produce as a Creator
  - Produce as a Distributor
  - Produce as a Landlord
- Rent what asset?
  - Rent financial asset (Financial landlord)
  - Rent physical assets (Physical landlord)
  - Lease intangible asset (Intellectual landlord)
  - License information (Publisher)
  - Sell attraction (Attractor)
- Attract what?
  - Attract web audience using incentive site
  - Attract web audience using a digital mail
  - Attract web audience as a digital publisher
  - Attract web audience using a digital community
  - Attract web audience using incentives/community (Epinions)

Disseminate health information via internet
- Attract web audience using a digital community (Fortunecity)
- Attract via virtual community business model (Motley Fool)

Rosetta Net -- Three Level Hierarchy

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<thead>
<tr>
<th>The RosettaNet Three Level Process Hierarchy (partial)</th>
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<td>Clusters</td>
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<tr>
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</tr>
<tr>
<td>1 Partner Product &amp; Service Review</td>
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<td>3 Order Management</td>
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3B Transportation & Distribution
3C Returns & Finance
3D Product Configuration
3E Collaborative Forecasting
4B Inventory Allocation
4C Inventory Reporting
4D Inventory Replenishment
4E Sales Reporting
4F Price Protection

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For Wednesday 27 February

Chapter 4 of Document Engineering [128-147]

Chapter 6 of Document Engineering