

7. Business Patterns; Models of Business Organization [1]

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Plan for Today's Class

What is a pattern?

Why "businesses" follow patterns

Pattern abstraction and granularity

Patterns of business organization

Beginning the pattern "scavenger hunt"

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Patterns

A *Pattern*

is a model that is sufficiently general, adaptable, and worthy of imitation that it can be reused

It must be *general* so that...

It must be *adaptable* because ...

It must be *worthy* because ...

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Why Businesses Follow Patterns

At the most abstract level all businesses (or "enterprises," so that we can include governmental, educational, military, and non-profit "businesses") follow the same pattern

Businesses share common *external* influences, especially those in the same industry

They also share common *internal* influences and goals

Some resistance to using patterns arises from the need for a business to differentiate itself from competitors, but few companies have the market dominance or true innovations to divert from patterns in significant ways

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Patterns and Reuse

In addition to improving designs (by replacing an ad hoc approach with a successful one) - patterns promote reuse

Reuse has the immediate benefit of reduced implementation and maintenance costs

Reuse has the longer term benefit of encouraging and reinforcing consistency and standardization

Once patterns are identified they assist in analysis by simplifying structures and processes as they replace low-level specific descriptions with more abstract ones

Reuse at more abstract levels enables interoperability between systems that follow patterns that differ at more concrete levels

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Model and Pattern Abstraction and Granularity

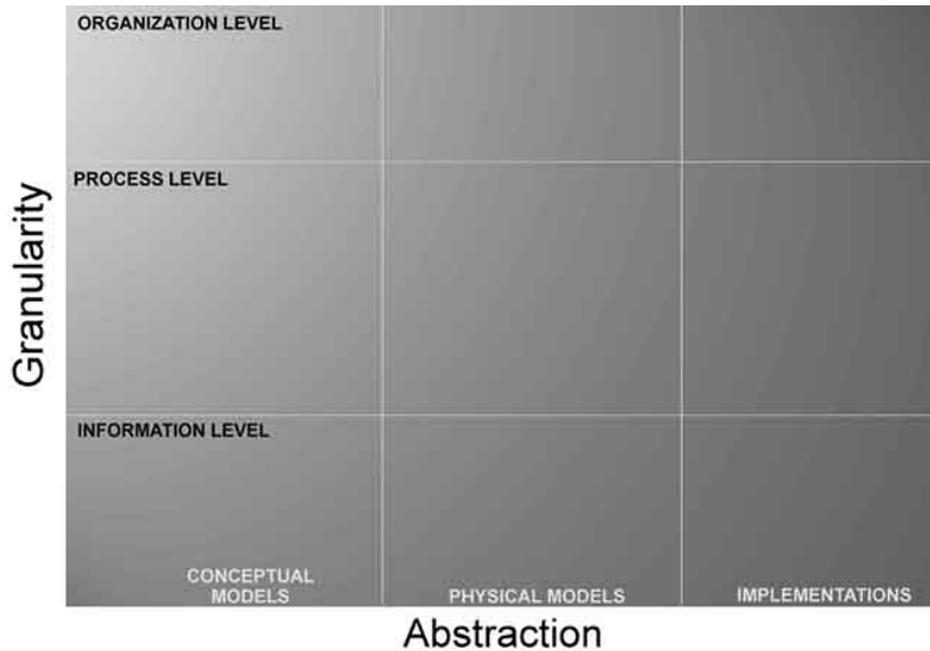
Recurring patterns in structures or processes are visible in abstract models but invisible in the concrete, real-world objects and functions that the model describes

Models can also be expressed at different levels of granularity

- *Business model or organizational*
patterns: marketplace, auction, supply chain, build to order, drop shipment, vendor managed inventory, etc.
- *Business process*
patterns: procurement, payment, shipment, reconciliation, etc.
- *Business information*
patterns: catalog, purchase order, invoice, etc. and the components they contain for party, time, location, measurement, etc.

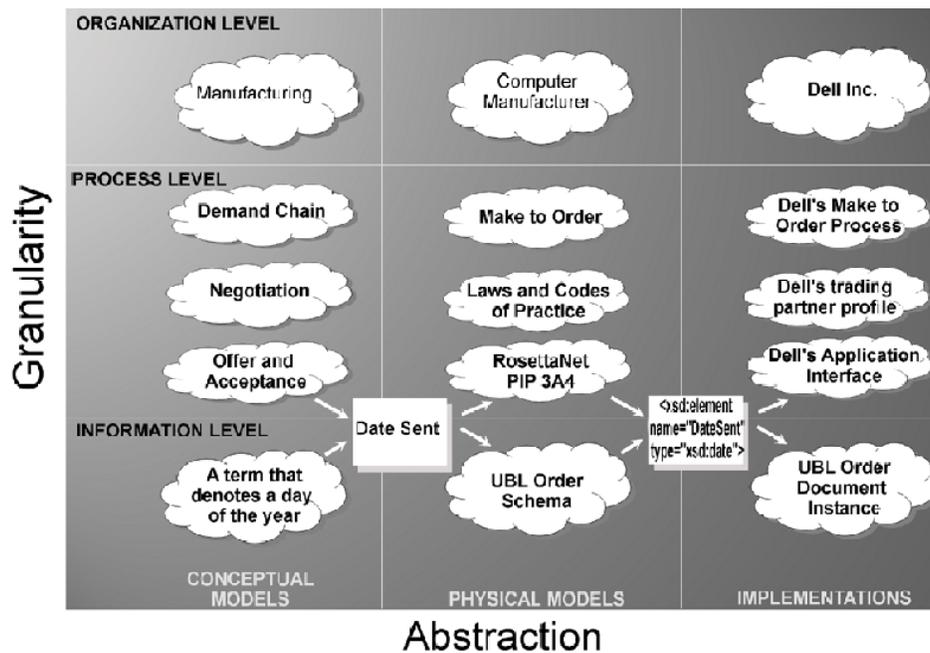
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The Model Matrix



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The Model Matrix: Examples



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Business Organization Patterns

Organization charts, facilities maps

"Organization of business unit" patterns

Business Models

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Why We Create Business Organization and Process Models (Generic Reasons)

To ensure that all participants, stakeholders, software providers, standards developers, etc. have a common understanding of the enterprise and business domain

To understand the enterprise independent of its current or future technology

To identify and understand:

- *Gaps* - things we should be doing but aren't
- *Inefficiencies* – things we should be doing but are doing badly
- *Overlaps* – things we should be doing but are doing redundantly
- *Opportunities* – things we might want to do

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Why We Create Business Organization and Process Models (Specific Reasons)

Need for greater business speed and efficiency

Need to evaluate potential new business partners; when two enterprises seek to "do business" with each other, they need to make their businesses *compatible*

Need to capture "know how" for operations and training

Other reasons? ...

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Business Models

A business model

is the story of what a business does and how it makes money doing it

- Who are the customers?
- What do the customers value?
- How does the business deliver this value to customers at a price they will pay and at a sustainable cost?

So the generic business model pattern has two parts:

- Making something or preparing to deliver something that customers value
- Finding the customer, transacting to create the sale or relationship, delivering the value

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Types of Business Model Patterns

Classifications for measuring economic activity (e.g., [NAICS](#))

Frameworks for understanding the adoption and impact of IT, migration to "self-service" or "web-based services"

Frameworks for understanding the financial performance of different kinds of economic activity

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MIT "Business Model Archetypes"

Extensive research on business model and business processes has been conducted by Tom Malone and others at MIT Sloan School

An innovative part of this research program is empirical study of what businesses actually do and the relative performance or effectiveness of different business models

A fundamental challenge was how to classify business activity to support this kind of analysis

- What is the business model -- what types of rights are being sold?
- What kind of asset is involved?

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Four Types of Business Models

Creators -- design what they sell

Distributors -- buys something from a creator and then sells it

"Landlords" -- sells the right to use, but not own some asset

Brokers -- match potential sellers and buyers

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Four Types of Assets

Physical -- durable and nondurable goods

Financial -- cash, stocks, bonds, insurance

Intangible -- intellectual property, knowledge, goodwill, brand image

Human -- time and labor

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Business Models X Assets: The Archtypes

This is interactive at <http://process.mit.edu/Info/eModels.asp>

Basic Business Model Archetype	What type of asset is involved?			
	Financial	Physical	Intangible	Human
Creator	Entrepreneur	Manufacturer	Inventor	Human Creator*
Distributor	Financial Trader	Wholesaler/ Retailer	IP Trader	Human Distributor*
Landlord	Financial Landlord	Physical Landlord	Intellectual Landlord	Contractor
Broker	Financial Broker	Physical Broker	IP Broker	HR Broker

* These models are illegal in the US and most places today because they involve selling human beings. They are included here for logical completeness.

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What Businesses Do

Basic Business Model Archetype		What type of asset is involved?				Total by Asset Right
		Financial	Physical	Intangible	Human	
What rights are being sold?	Creator <i>(ownership of asset with significant transformation)</i>	Entrepreneur (0%; 0)	Manufacturer (46%; 565)	Inventor (0%; 0)	Human Creator (0%; 0)	(46%; 565)
	Distributor <i>(ownership of asset with limited transformation)</i>	Financial Trader (~0%; 34)	Wholesaler/ Retailer (18%; 258)	IP Trader (~0%; 2)	Human Distributor (0%; 0)	(18%; 288)
	Landlord <i>(use of asset)</i>	Financial Landlord (10%; 187)	Physical Landlord (6%; 132)	Intellectual Landlord (5%; 85)	Contractor (13%; 308)	(34%; 516)
	Broker <i>(matching of buyer and seller)</i>	Financial Broker (2%; 55)	Physical Broker (~0%; 15)	IP Broker (~0%; 1)	HR Broker (~0%; 5)	(2%; 75)
	Total by Asset Type	(12%; 205)	(71%; 774)	(5%; 86)	(13%; 308)	100%; NA

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What Business Models Are Most Profitable

<i>Basic Business Model Archetype</i>	<i>What type of asset is involved?</i>				<i>Performance by Basic Business Model Archetype</i>
	<i>Financial</i>	<i>Physical</i>	<i>Intangible</i>	<i>Human</i>	
<i>Creator</i>	--	Baseline	--	--	Baseline
<i>Distributor</i>	\$525,000**	-\$79,000**	\$10,448,000	--	-\$74,000**
<i>Landlord</i>	\$238,000**	\$263,000**	\$269,000**	\$60,000**	\$231,000**
<i>Broker</i>	\$871,000**	-\$568,000**	-\$11,745,000	-\$180,000	\$801,000**
<i>Performance by asset type</i>	\$36,000**	Baseline	\$20,000**	\$9,000**	

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Betancourt and Gautschi - Patterns of Economic Activity

Production, Distribution, and Consumption are the three economic activities

What are their spatial relationships? What are their temporal relationships? 25 possibilities

Time	{P, D, C}	D {P, C}	C {P, D}	P {C, D}	P D C
Space					
{P, D, C}	1	2	3	4	5
D {P, C}	6	7	8	9	10
C {P, D}	11	12	13	14	15
P {C, D}	16	17	18	19	20
P D C	21	22	23	24	25

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Apte & Mason: "Disaggregation" of "Information-Intensive Services"

DISAGGREGATION is the "reformulation" and "geographical dispersion" of value chains

There are plenty of good reasons for doing this...

How can we analyze the "disaggregation potential" of a service or business model?

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Apte & Mason's Three Dimensions

Business models / occupations can be characterized by their intensity on three dimensions:

- *Information* actions that involve symbolic manipulation
- *Interpersonal* actions that involve dealing with customers and other people
- *Physical* actions that involve manipulation of physical objects

In addition, many interpersonal actions are predominately information exchanges

(A fourth dimension is the extent of "non-value adding" activities)

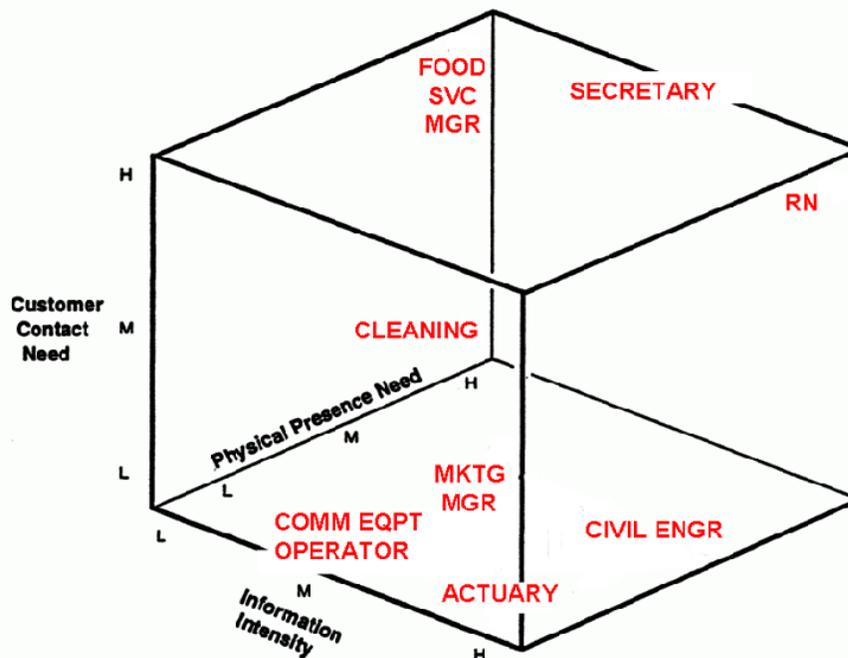
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Examples on the Three Dimensions

Occupation	Information Intensity	Customer Contact Need	Physical Presence Need
Actuary	H	L	L
Marketing Manager	H	M	L
Civil Engineer	H	L	M
Comm. Eqpt. Operator	M	L	L
Cleaning	L	L	H
Food Service Manager	L	H	H
Secretary	M	H	H
Registered Nurse	H	H	H

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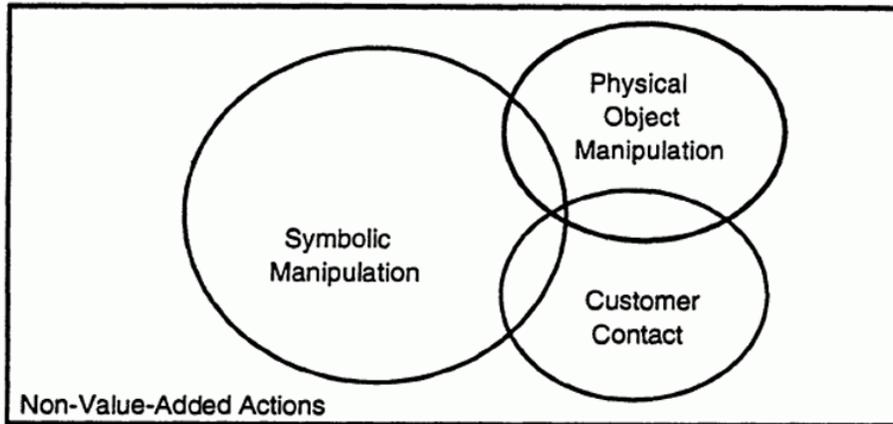
Apte & Mason: To Disaggregate, or Not To...



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Apte & Mason -- Before Disaggregation

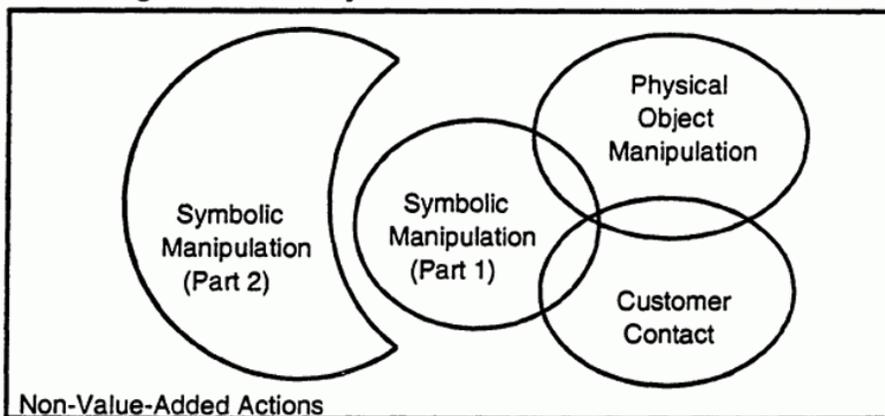
A. Original Activity



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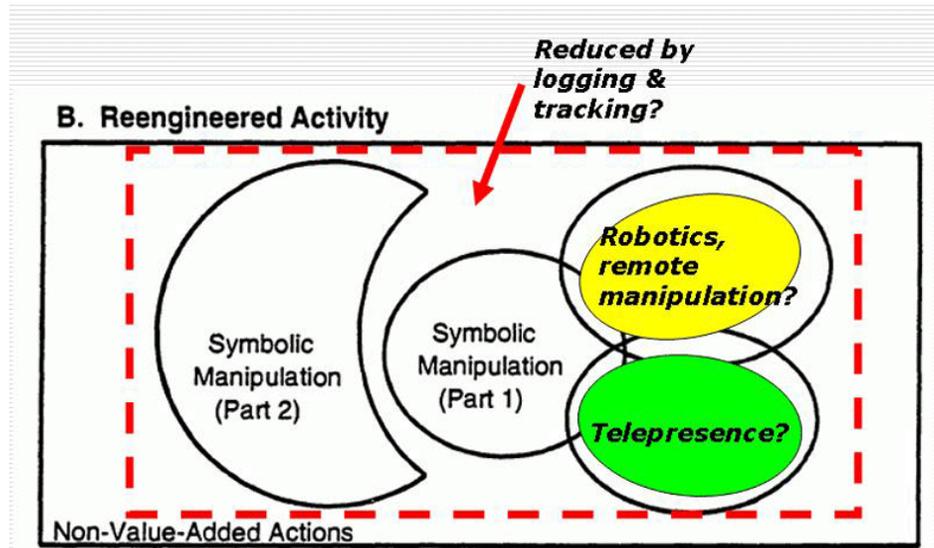
Apte & Mason -- After Disaggregation

B. Reengineered Activity



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Underestimating the Impact of Technology?



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Going Beyond Apte & Mason

Along with Christo Sims, I've refined A & M's ideas to enabled more nuanced analysis of disaggregation potential and to generate new kinds of services

A service design chooses the extent to which each dimension or factor is relevant, and how the extent or intensity of the factor is allocated between the service provider and service consumer

Some dimensions are only relevant when providers and consumers are people, while others concern the extent of technology and capital and can apply to services that don't involve any people

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Dimensions of Service Design - Human Factors

Knowledge/Expertise: How much knowledge or expertise must the service provider and service consumer possess?

Cognitive Capacity: How much intelligence, as opposed to knowledge, must the service provider and service consumer possess?

Physical Capacity: How much physical effort are required of the service provider and service consumer?

Emotional Intensity: To what degree will the service offering require intense emotional experience by the service provider or service consumer?

Time Intensity:
How much of the provider's and consumer's time is required?

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Dimensions of Service Design - Technology & Capital Factors

Technology & Capital Investments:
Which technologies and other fixed-capital resources must the service provider and service consumer control?

Disposable Resources:
Which resources are consumed in carrying out the service and which party must supply them?

Encoded Information:
What encoded information is required and which party must supply it?

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The Pattern "Scavenger Hunt"

Your next assignment is to familiarize yourself with several business reference models or collections of patterns

You'll need to visit each of them and learn enough to answer 16 short questions about a resource or that compare and contrast them

Most of the resources are also discussed in assigned readings

Due March 3

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Your Scavenger Hunt

Federal Enterprise Architecture

MIT Process Library

RosettaNet

Supply Chain Operations Model

OASIS

Universal Business Language

Cover Pages

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Readings for 20 February

Chapter 4 of Document Engineering, 102-118

"Marketplace and technology standards for B2B e-commerce: Progress, challenges, and the state of the art." Conan Albrecht, Douglas Dean, and James Hansen. *Information & Management* 42 (2005)

"Systemic Assessment of SCOR for Modeling Supply Chains." Vijay Kasi, *Proceedings of the 38th Hawaii International Conference on System Sciences* (2005)