Service Innovation Using Design Patterns

Frontiers in Service Conference

5 October 2007

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Outline for the Talk

Motivation for Using Design Patterns

A Top-Down Survey of Design Patterns

Defining Services for Designers

Motivation

Because services are often less tangible or more abstract than products, service descriptions are more amenable to conceptual manipulation

As "service" moves beyond traditional person-to-person services to self-service, web services, computer-to-computer service we are induced to take a more abstract perspective to emphasize what they have in common

This suggests that design patterns or models for services could be exploited systematically to invent new or improved services

This is a framework for innovation, not for evaluation

What Are 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 can apply to a meaningfully large set of possible instances or contexts

It must be *adaptable*
because the instances or contexts to which it might apply will differ in details

It must be *worthy*
because the instances or contexts to which it might apply are supposed to benefit by following the pattern rather than being impaired

Why We Use Patterns

Assist in analysis

Expose inefficiencies

Encourage best practices

Simplify / consolidate / remove redundancies

Enable transparent substitution

Facilitate generalization and specialization

A Top-Down Survey of Patterns

Patterns that describe connected / combined services

- *Business model or organizational* patterns

- *Process* patterns

Patterns that describe individual services

- *Information* patterns

- *Service dimensions* or *facets*

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 / Space	{P, D, C}	D | {P, C}	C | {P, D}	P | {C, D}	P | D | C
{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

MIT Business Model Patterns

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.
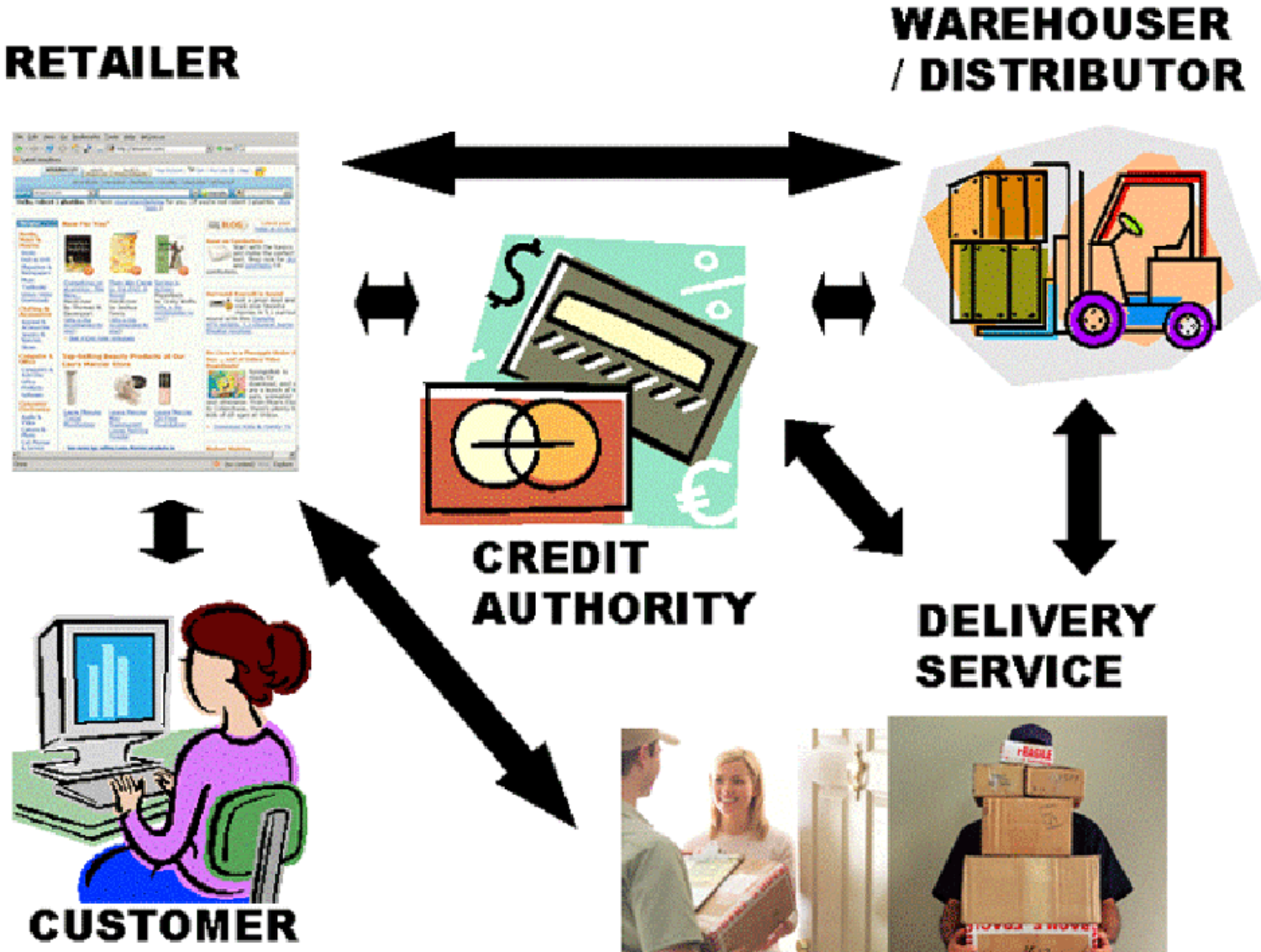
MIT Model Generalization Hierarchy

Patterns for "Componentized" Businesses

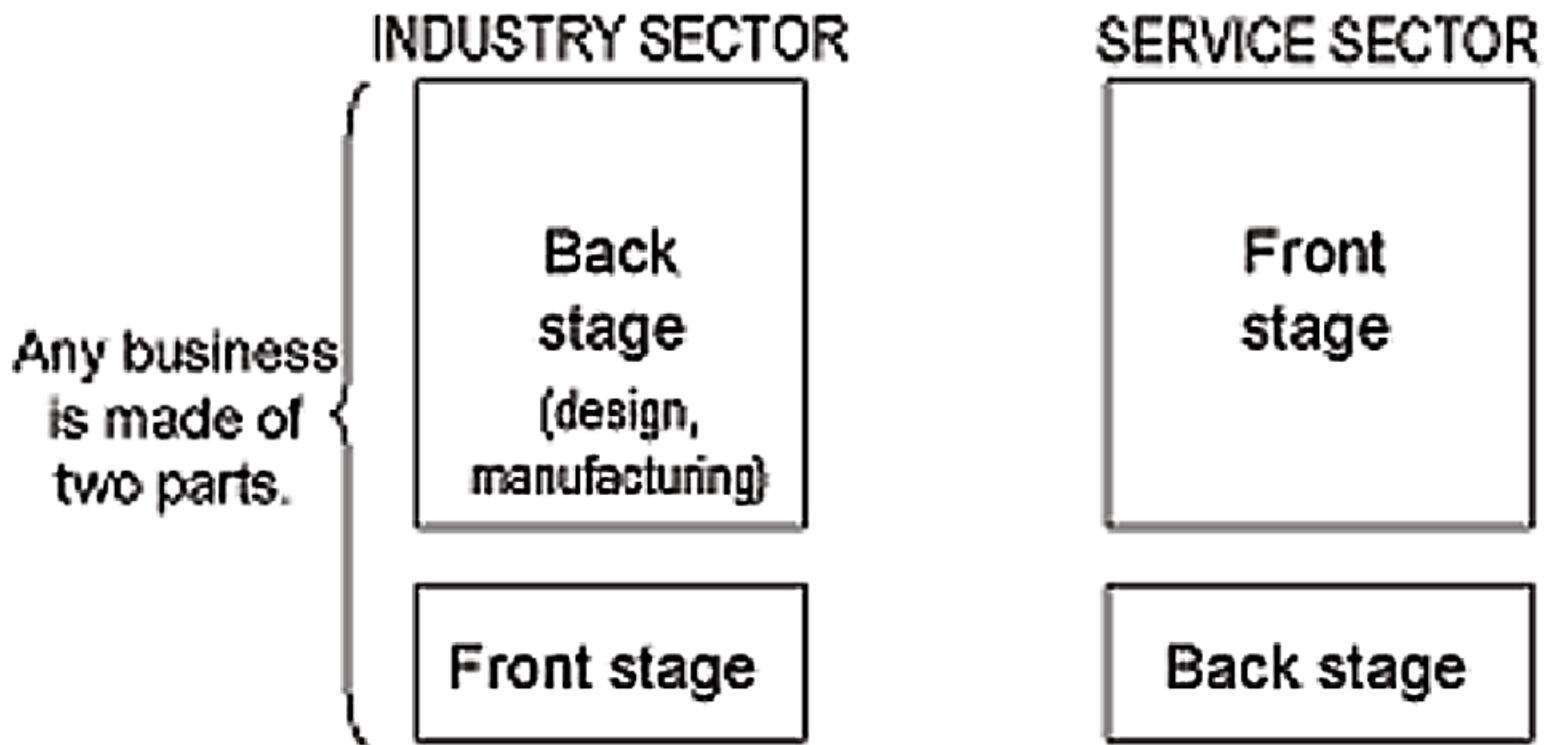|	Business Administration	New Business Development	Relationship Management	Servicing and Sales	Product Fulfillment	Financial Control and Accounting
Directing	Business Planning	Sector Planning	Account Planning	Sales Planning	Fulfillment Planning	Portfolio Planning
Controlling	Business Unit Tracking / Staff Appraisals	Sector Management / Product Management	Relationship Management / Credit Assessment	Sales Management	Fulfillment Planning	Compliance / Reconciliation
Executing	Staff Administration / Production Administration	Product Directory / Marketing Campaigns	Credit Administration	Sales / Customer Dialog / Contact Routing	Product Fulfillment / Document Management	Customer Accounts / General Ledger

Supply Chain Operations Reference Model (SCOR)
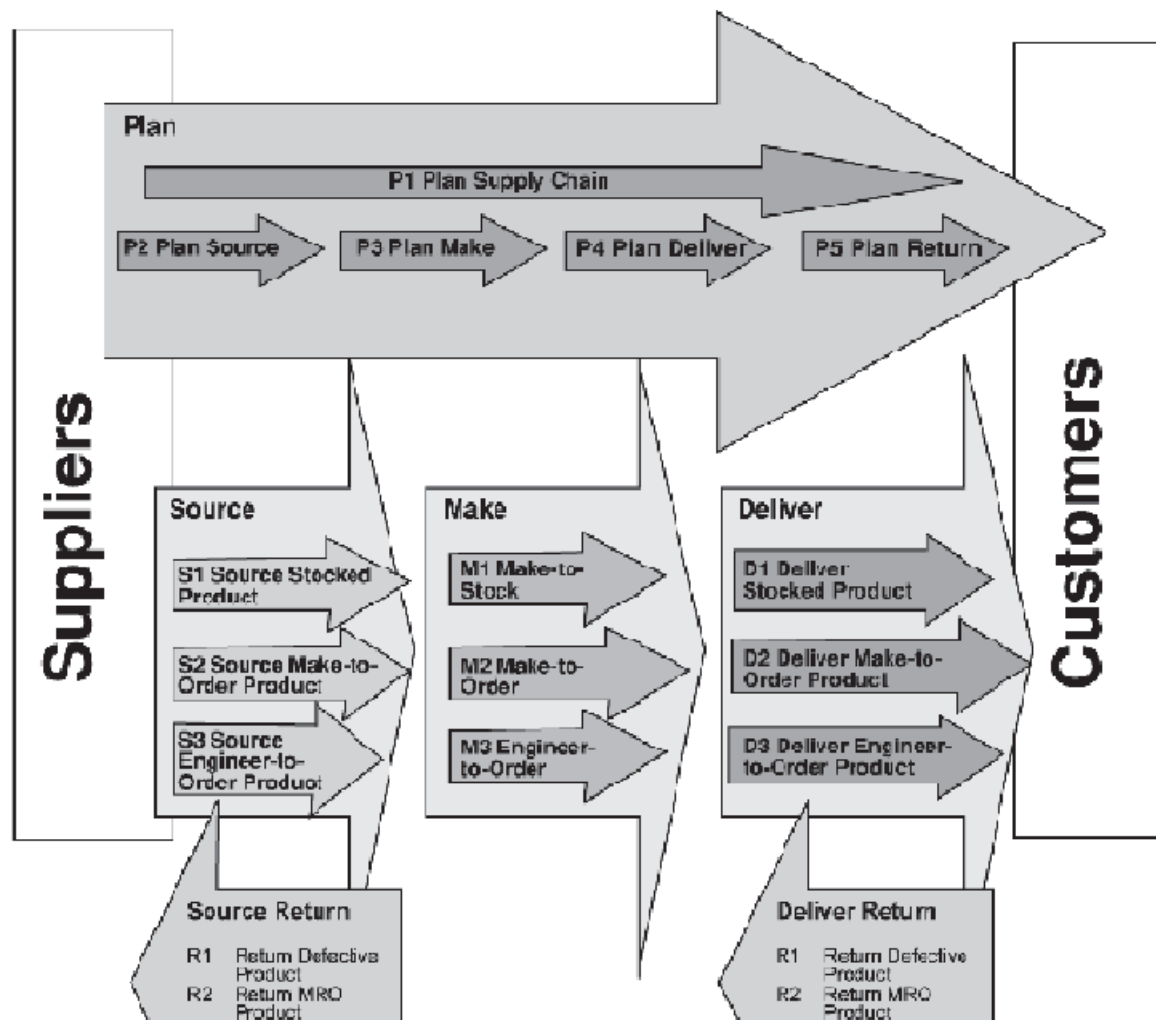
Drop Shipment Pattern

The "Front Stage" and "Back Stage" Pattern

INDUSTRY SECTOR

Any business is made of two parts.

Back stage (design, manufacturing)

Front stage

SERVICE SECTOR

Front stage

Back stage

Innovation Through Manipulation of the Front / Back Stage Boundary

Front stage
Waiting lines and self-service

Back stage
Production lines

McDonald's restaurant

Front stage
Dining room experience

Kitchen

Gourmet restaurant

Front stage
Dining room with the chef cooking and serving

Kitchen

Benihana-type restaurant
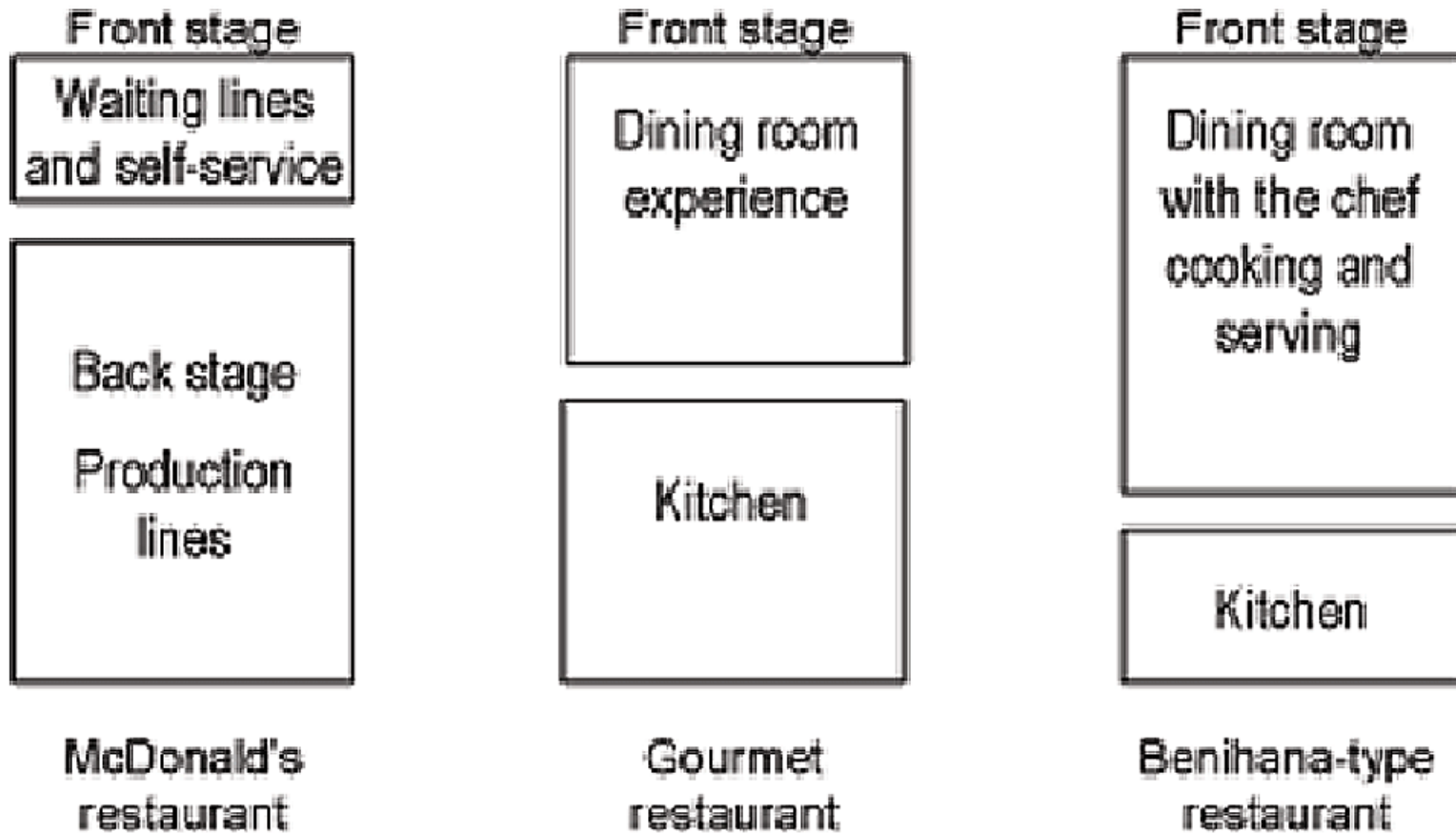
Apte & Mason -- Patterns for Service "Disaggregation"

Business models / occupations can be characterized by their intensity on 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

Apte & Mason -- After Disaggregation
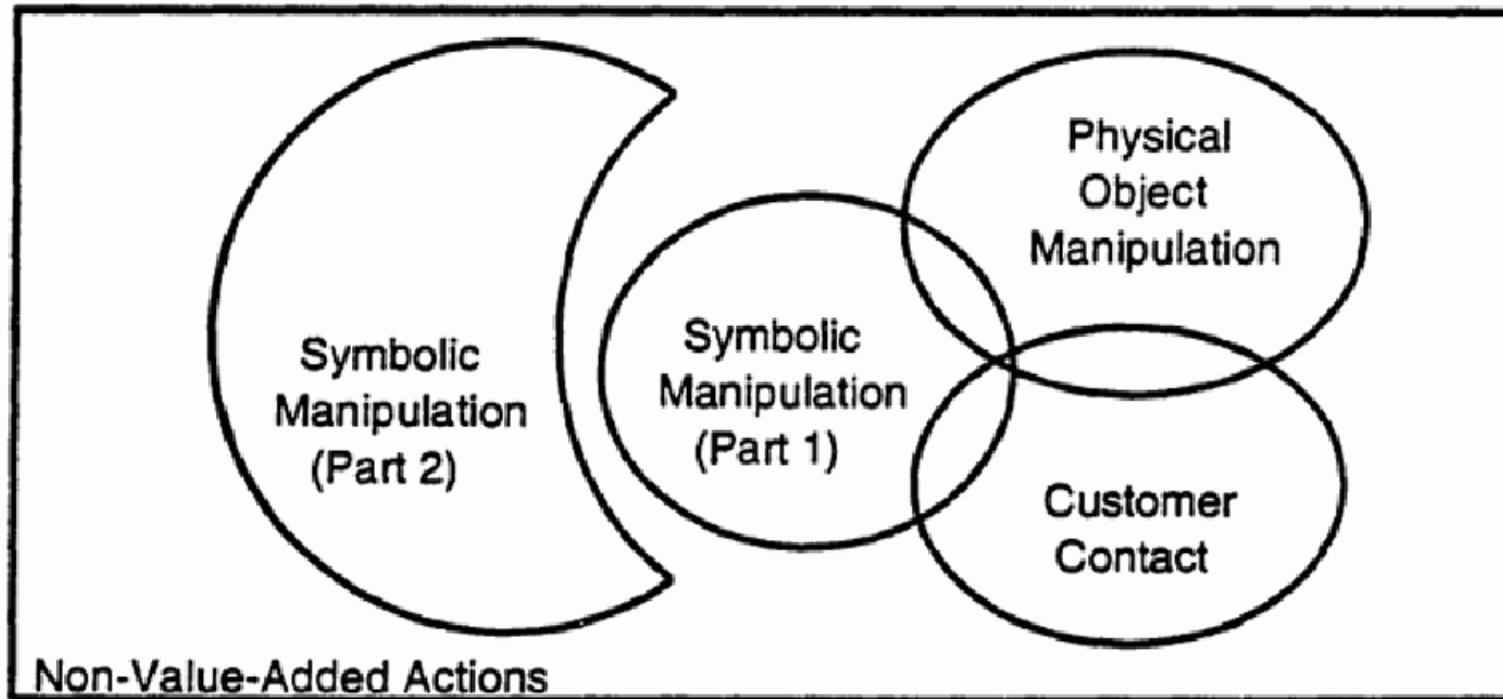
Apte & Mason: To Disaggregate, or Not To...
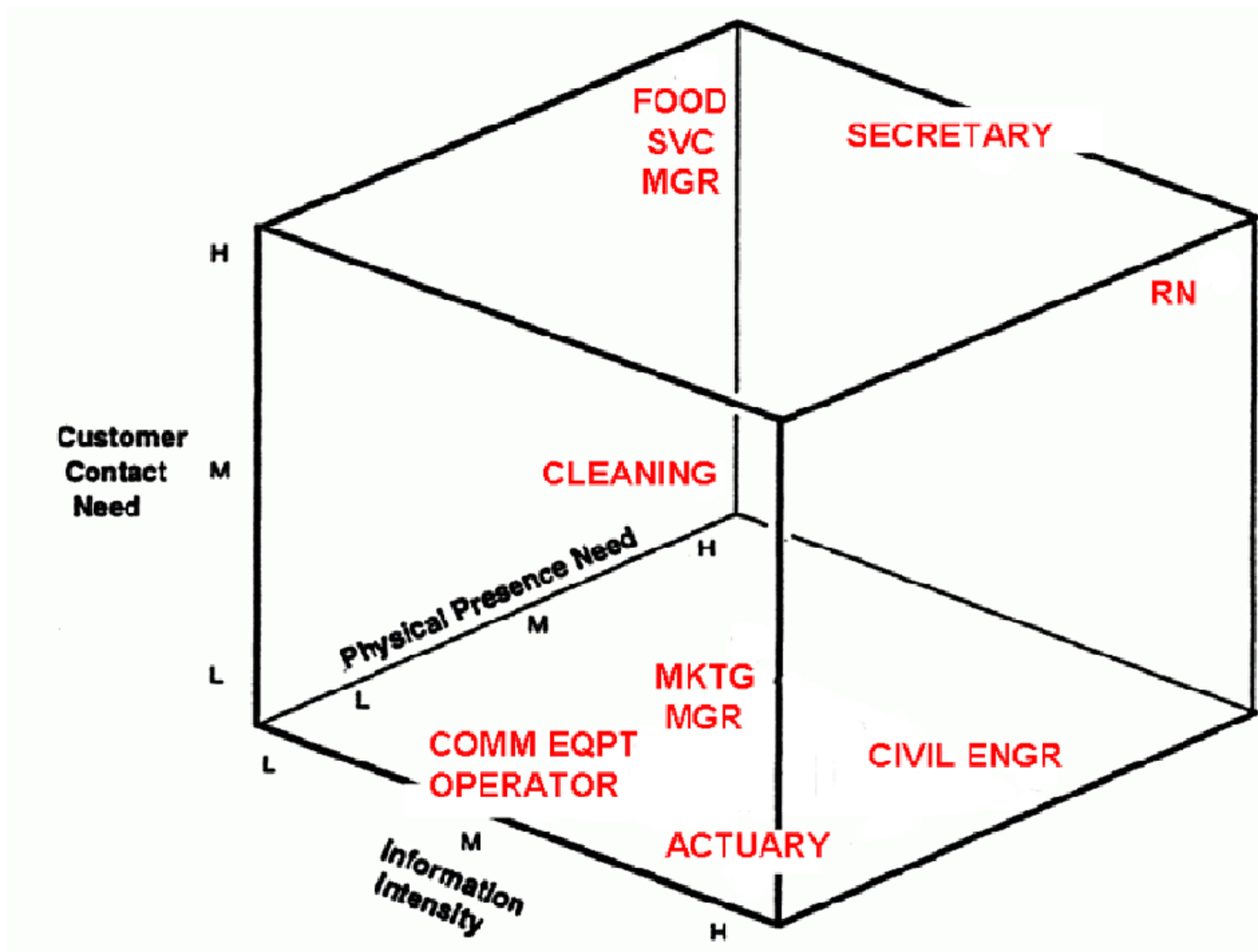
A New Design Framework for Services -- Glushko & Sims

Service innovation is hampered by pattern frameworks that describe business models or services in "one and only one" place they fall in a classification scheme

Rather than focus on categories for service classification, it is more useful to emphasize dimensions or facets of service design that define abstract characteristics 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

Dimensions of Service Design - Human Factors

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

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?

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?

Some Implications and Hopes About this Design Framework

Instead of trying to fit services into categories, these design dimensions can serve as facets that enable more nuanced comparisons between services

It should be easier to recognize similar design challenges and identify reusable design patterns

This approach naturally enables us to invent new services through analogy, generalization, induction and other classical mechanisms

We might be able to use the dimensions to assess the capabilities of service providers

But we're not there yet... stay tuned!