Service Innovation Using Design Patterns

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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
Production, Distribution, and Consumption are the three economic activities.

What are their spatial relationships? What are their temporal relationships? 25 possibilities.
### MIT Business Model Patterns

<table>
<thead>
<tr>
<th>Basic Business Model Archetype</th>
<th>What type of asset is involved?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Financial</td>
</tr>
<tr>
<td>Creator</td>
<td>Entrepreneur</td>
</tr>
<tr>
<td>Distributor</td>
<td>Financial Trader</td>
</tr>
<tr>
<td>Landlord</td>
<td>Financial Landlord</td>
</tr>
<tr>
<td>Broker</td>
<td>Financial Broker</td>
</tr>
</tbody>
</table>

* 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

- **Produce**
  - **Produce as what kind of organization?**
    - Produce as a voluntary 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 o-store {Drugstore.com}
      - Distribute books via e-store and physical {Barnes and Noble}
      - Distribute fashion clothing via electronic store {B obsc.com}
      - Distribute spoken audio via electronic store {Audible}
      - Distribute prerecorded music via electronic store {MP3.com}
      - Distribute software via electronic store {Beyond.com}
      - Distribute postage via electronic store {Stamps.com}
      - **Distribute books via electronic store {Amazon.com}**
      - Distribute grocery items via electronic store {Peapod}
      - Distribute office products - elec/phya store {Staples}
      - Distribute MRO supplies via electronic store {Grainger}
Patterns for "Componentized" Businesses

<table>
<thead>
<tr>
<th>Directing</th>
<th>Business Planning</th>
<th>New Business Development</th>
<th>Relationship Management</th>
<th>Servicing and Sales</th>
<th>Product Fulfillment</th>
<th>Financial Control and Accounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlling</td>
<td>Business Unit Tracking</td>
<td>Sector Planning</td>
<td>Account Planning</td>
<td>Sales Planning</td>
<td>Fulfillment Planning</td>
<td>Portfolio Planning</td>
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<tr>
<td></td>
<td>Staff Appraisals</td>
<td>Sector Management</td>
<td>Relationship Management</td>
<td>Sales Management</td>
<td>Fulfillment Planning</td>
<td>Compliance</td>
</tr>
<tr>
<td>Executing</td>
<td>Staff Administration</td>
<td>Product Management</td>
<td>Credit Assessment</td>
<td>Product Fulfillment</td>
<td>Customer Accounts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Production Administration</td>
<td>Marketing Campaigns</td>
<td>Credit Administration</td>
<td>Document Management</td>
<td>General Ledger</td>
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</table>
Supply Chain Operations Reference Model (SCOR)
Drop Shipment Pattern

- RETAILER
- WAREHOUSE / DISTRIBUTOR
- CREDIT AUTHORITY
- DELIVERY SERVICE
- CUSTOMER
The "Front Stage" and "Back Stage" Pattern

Any business is made of two parts.

INDUSTRY SECTOR

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

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Information Intensity</th>
<th>Customer Contact Need</th>
<th>Physical Presence Need</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actuary</td>
<td>H</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Marketing Manager</td>
<td>H</td>
<td>M</td>
<td>L</td>
</tr>
<tr>
<td>Civil Engineer</td>
<td>H</td>
<td>L</td>
<td>M</td>
</tr>
<tr>
<td>Comm. Eqpt. Operator</td>
<td>M</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Cleaning</td>
<td>L</td>
<td>L</td>
<td>H</td>
</tr>
<tr>
<td>Food Service Manager</td>
<td>L</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>Secretary</td>
<td>M</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>Registered Nurse</td>
<td>H</td>
<td>H</td>
<td>H</td>
</tr>
</tbody>
</table>
Apte & Mason -- After Disaggregation

B. Reengineered Activity

- Symbolic Manipulation
  (Part 2)

- Symbolic Manipulation
  (Part 1)

- Physical Object Manipulation

- Customer Contact

Non-Value-Added Actions
Apte & Mason: To Disaggregate, or Not To...
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!