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DESCRIBING SERVICE SYSTEMS

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The Service System

- "Value co-creation configurations of people, technology, and value propositions that interconnect service systems, and shared information" (Maglio et al 2006)
- Has rapidly become the conventional unit of analysis in services research
- But its comprehensiveness, abstractness, and recursiveness poses some challenges in scoping and boundary-setting
- How natural is it as a way to describe a configuration of services?

Models for Service Descriptions

- Many academic fields – management, operations research, informatics, etc. – provide models for describing service systems.
- These models distinguish and highlight different aspects of the same service system.
- Can be thought of as different perspectives or points of view

Describing Service Systems

- A Taxonomy of Models
  - Physical Model
  - Functional / Process Models
    - Functional (or Organizational) description
    - Process-level description
  - Value Creation Focused Models
    - Value chain analysis
    - Service blueprinting
  - Operations Research Models
    - Queuing model
    - System dynamics
- Modeling the BART Service System

Models for Describing Service Systems

Physical Model

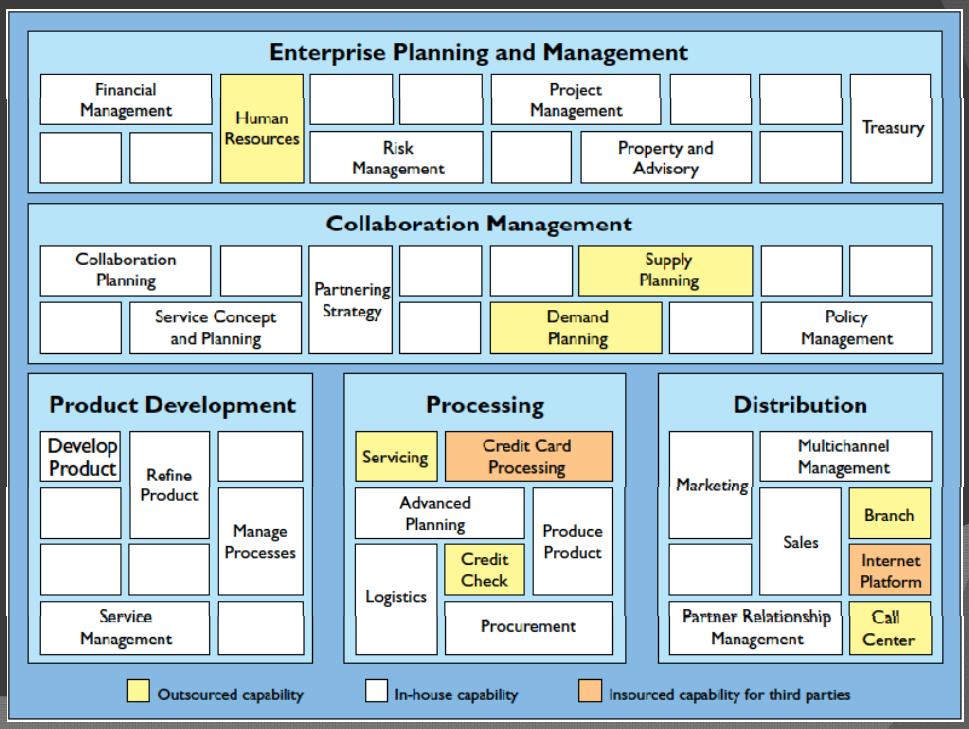
- Physical layout of a “servicescape” greatly affects the customer experience.
- e.g. Number and layout of customer queues, centrally-visible “wait number” system in a bank

Functional Description

- Service description organized as functions or “component services”
- Sometimes this is an abstraction, but sometimes maps directly to the structure of the service provider organization.
- Easy to understand roles and responsibility of each component of the service system
- In information-intensive service systems functions are expressed as APIs or information exchanges

Flexible Value Structures in Banking
Ulrich Homann, Michael Rill, and Andreas Wimmer

e.g. Functional Description of a Bank

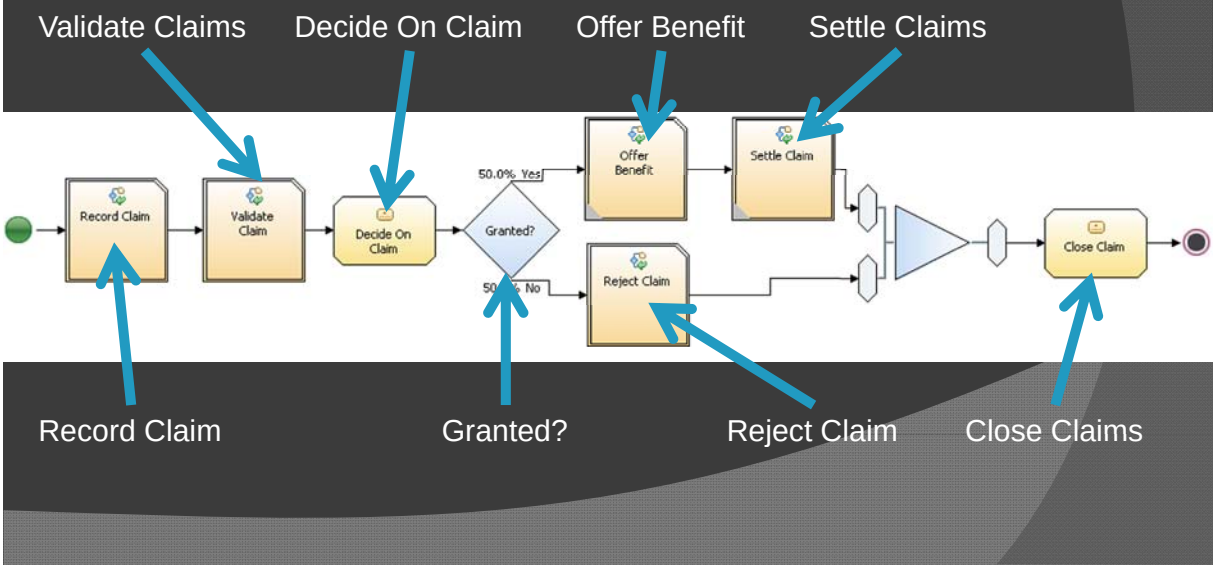


Process-level Description

- Represents sequence of processing and workflow
- Reference models depict best practices of service delivery
- Can highlight discrepancies between as-is and to-be models and give insight on which processes can be changed and improved

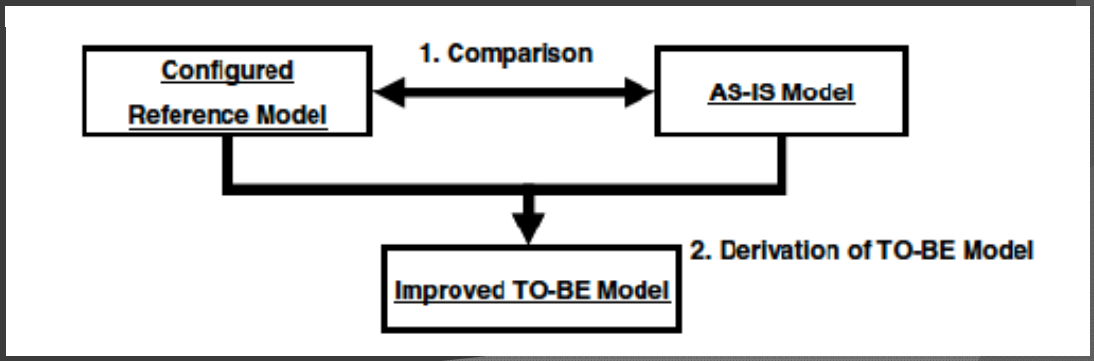
e.g. Processing Claims

Improving Business Process Models with
Reference Models in Business-Driven Development
Jochen M. K¨uster, Jana Koehler, and Ksenia Ryndina
IBM Zurich Research Laboratory
8803 R¨uschlikon, Switzerland



Process-level Description

- Compare AS-IS model with a reference.
- Derive TO-BE model based on comparison

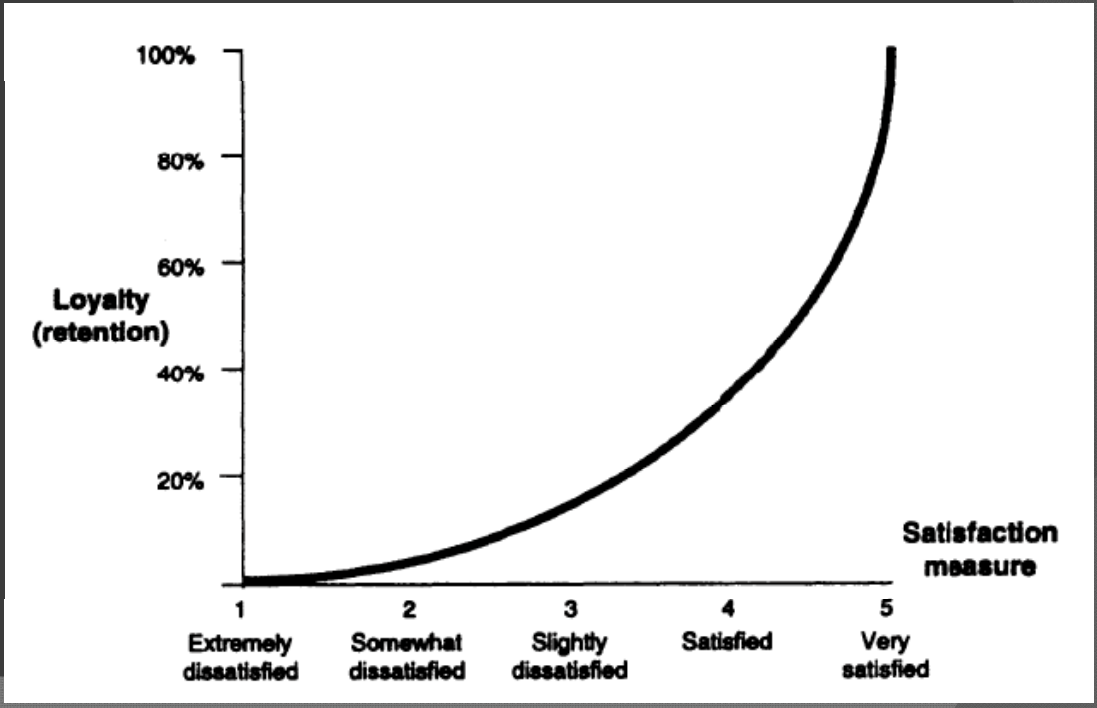


Value Chain Analysis

- Depicts the creation of value within a service system
- Emphasizes the dimensions or drivers of service quality and their dependencies in producing revenue growth and profitability

Employee Satisfaction, Customer Loyalty, and Financial Performance: An Empirical Examination of the Service Profit Chain in Retail Banking
Gary W. Loveman

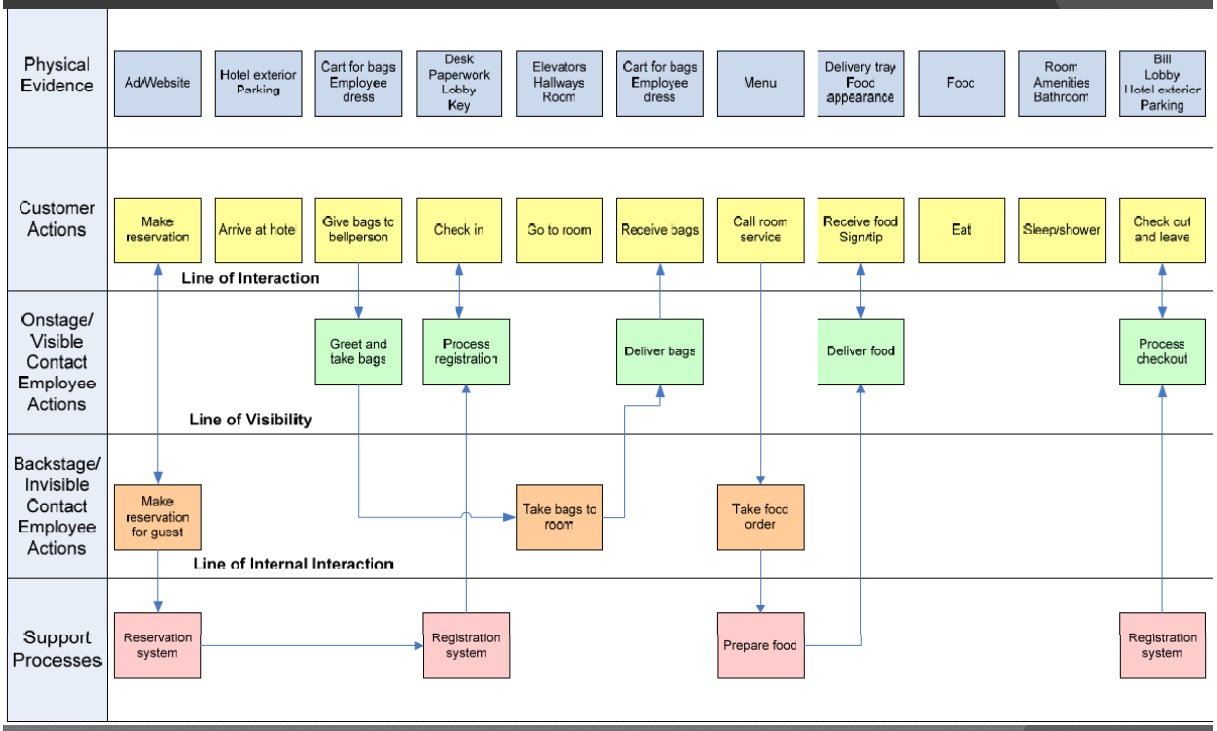
e.g. Satisfaction => Loyalty



Service Blueprinting

- Represents the specific points of interaction between customers and service providers in a service system
- Highlights the connections between back stage processes that create value and the front stage activities and evidence that reveal it to customers
- In information-intensive service systems (e.g., bank) the connections are exchanges of information and the artifacts are often documents

e.g. Hotel Stay Blueprint

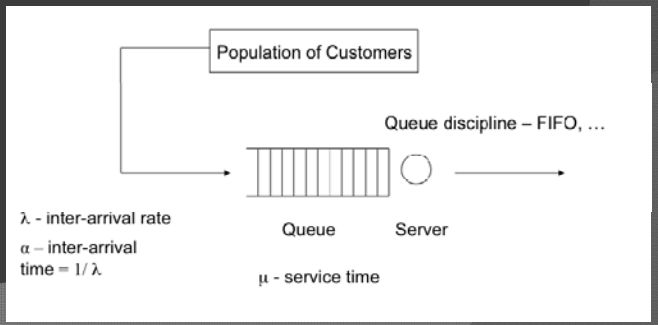


Service Blueprinting, Mary Jo Bitner

Queueing Model

Queueing Model PPT Slide (Dropbox)
http://www.ics.uci.edu/~mingl/

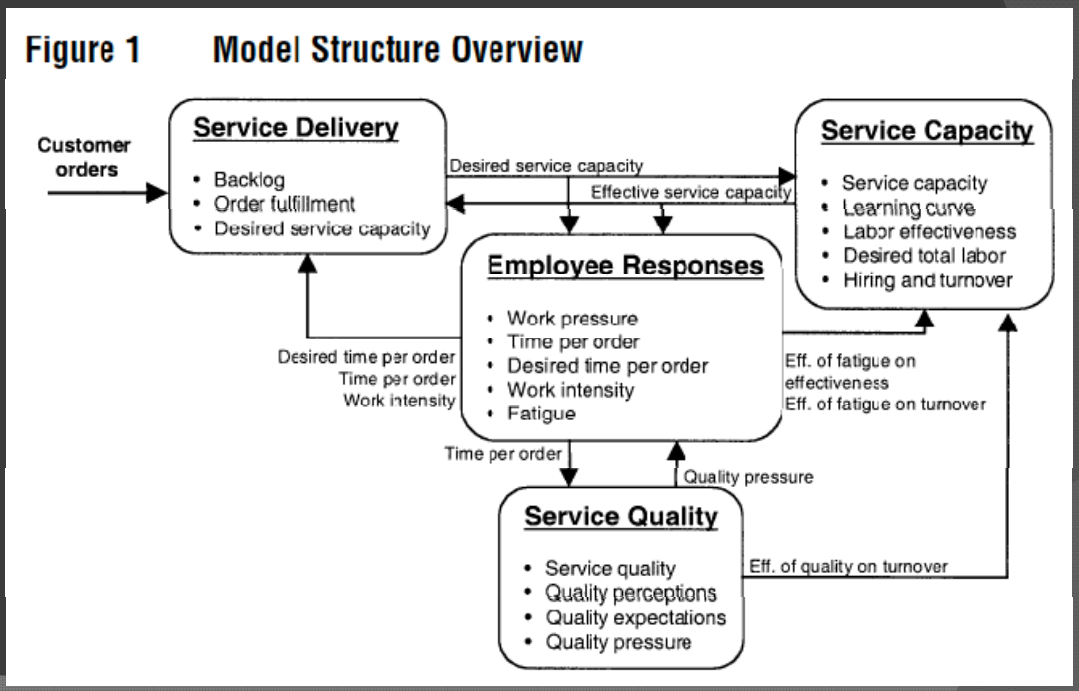
- Prescriptive model with small number of parameters
- Well-packaged framework
- Generally applicable, but describes only a part of a service system (e.g. waiting line in a bank)



System Dynamics

- Descriptive models that depict dimensions or stores of value creation and their dependencies using feedback links
- Widely applicable but arbitrary types and number of parameters makes each model very context-specific

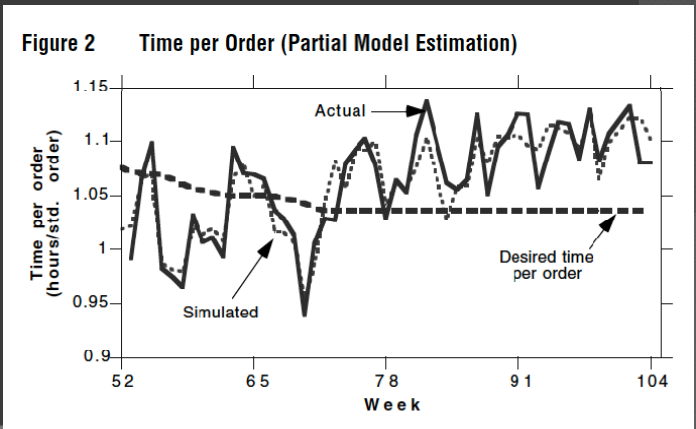
An Example of System Dynamics Model



Cutting Corner, Oliva/Sterman

System Dynamics

- Data-driven model
- Risk of over-fitting (Adjusting parameters just to fit the data)



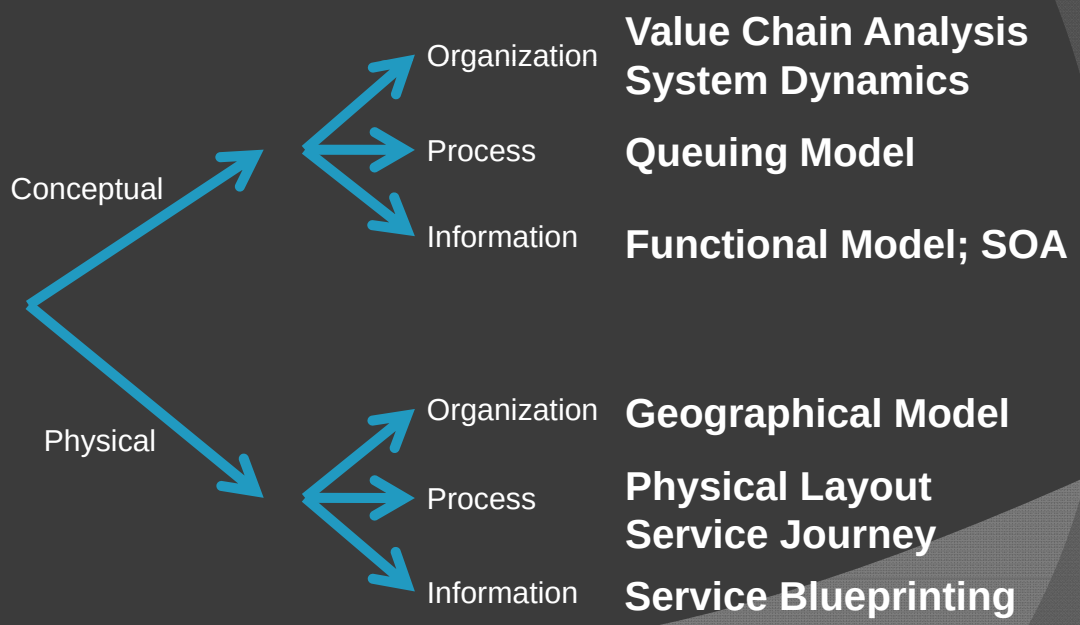
Model Comparison (Pros / Cons)

Model	Concept	Pros	Cons
Physical Model	Correlates service system with physical layout	Most closely connected with offline customer interactions	
Functional Model	Divide system into functional groups	Clear role & responsibility	Lack of holistic view on service as a whole
Process Model	Abstracts separate functions into aggregated processes	Focusing on actual work flow / Effective scope for AS-IS / TO-BE analysis	
Value Chain Analysis	Chaining economic value creation parts	Understanding the underlying driving force of value creation	
Service Journey	Describes a service from a customer's perspective	Identifying customer's perceived value	Lack of quantification
Queuing Model	Mathematical modeling of service queues	General: applicable to various service contexts	Limited scope
System Dynamics	Describes as interconnections of parts	Clear description on feedback and loops within service system	Risk of over-fitting to data / Not much generality: case-by-case

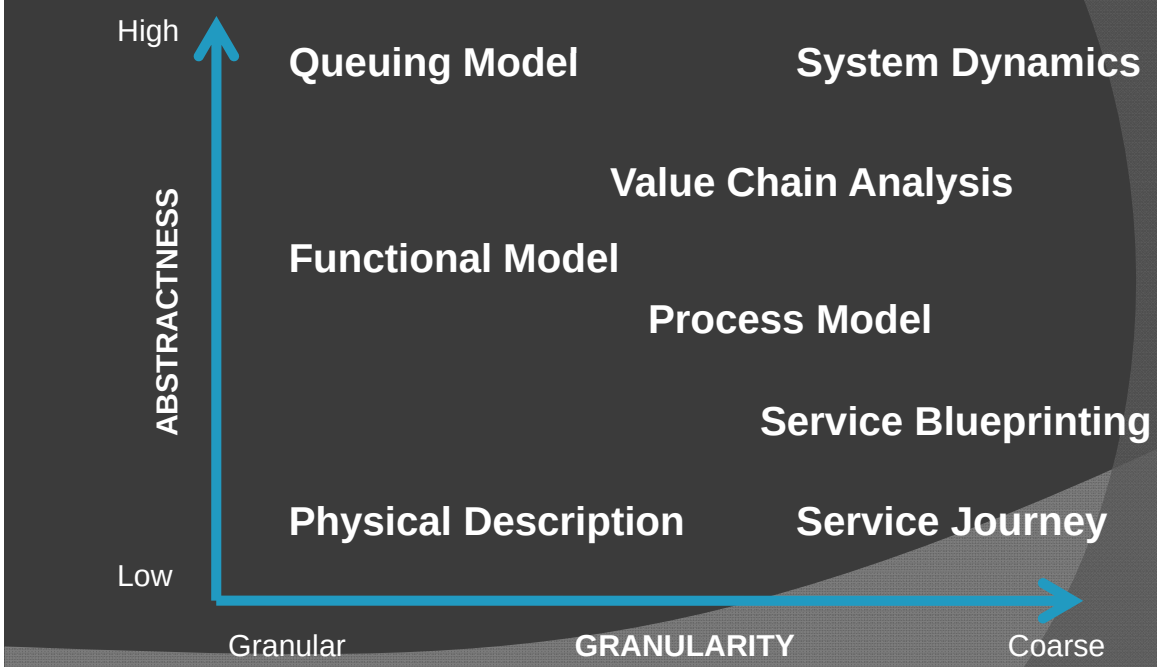
A Classification

	Conceptual Model	Physical Model
Organization Level	Value Chain Analysis; System Dynamics	Geographical or Topological Model
Process Level	Queuing Model	Physical Layout; Service Journey
Information Level	Functions; Service–Oriented Architecture	Service Blueprints

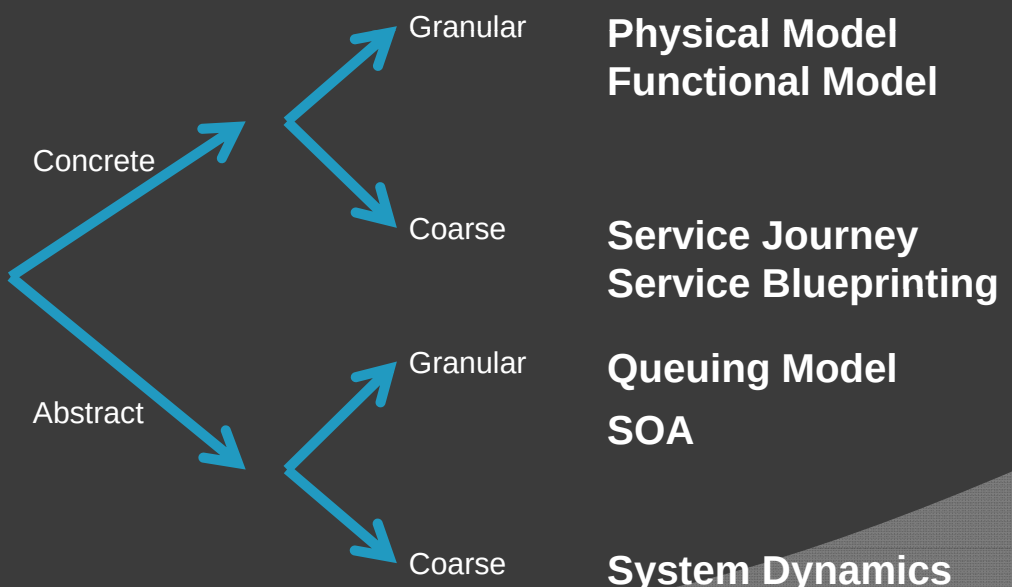
Decision Tree for Model Selection



Abstractness vs. Granularity



Decision Tree for Model Selection



Describing the BART Service System

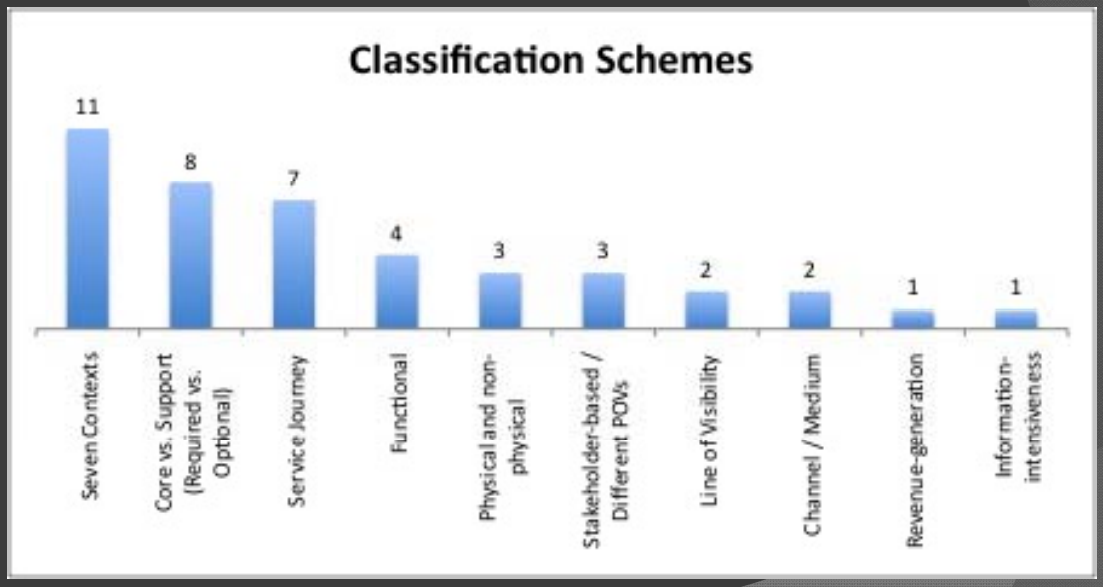
Bay Area Rapid Transit

- Public transit system covering the Bay Area around SF (104 mi in total)
- **Core service**: Electric train transportation
- **Peripheral services**: Parking, Bicycle storage, Retail

BART Assignment

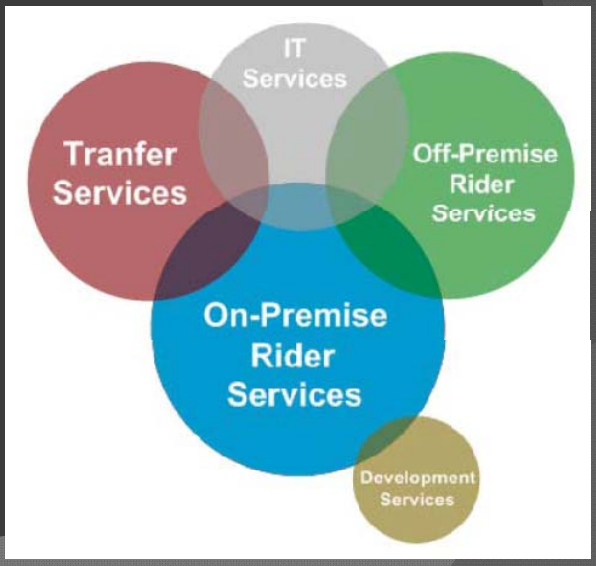
- 31 students in a service design course were asked to describe the BART service system using “at least two different ways” or “perspectives”
- First assignment – before they’d been systematically introduced to any service system design frameworks
- Most of them were graduate students majoring Information, Engineering, Management
- => 10 different types of models or descriptive frameworks

Classification of Model Types



Topological and Functional View

- Straightforward: Physical location & touch points



Service Journey

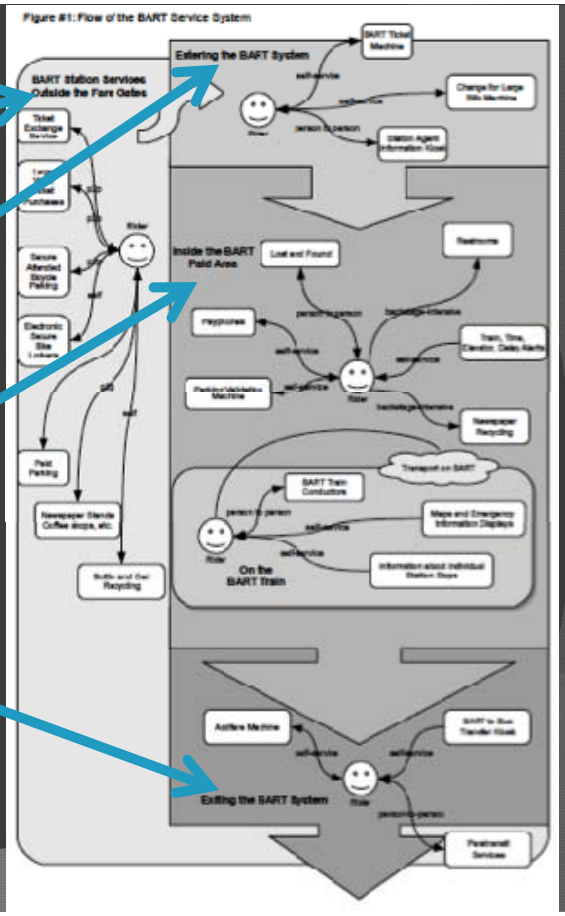
- Chronological description of the system
- Fixed point of view
- Hard to describe behind-the-scene components

BART Station Services Outside the Fare Offices

Entering the BART System

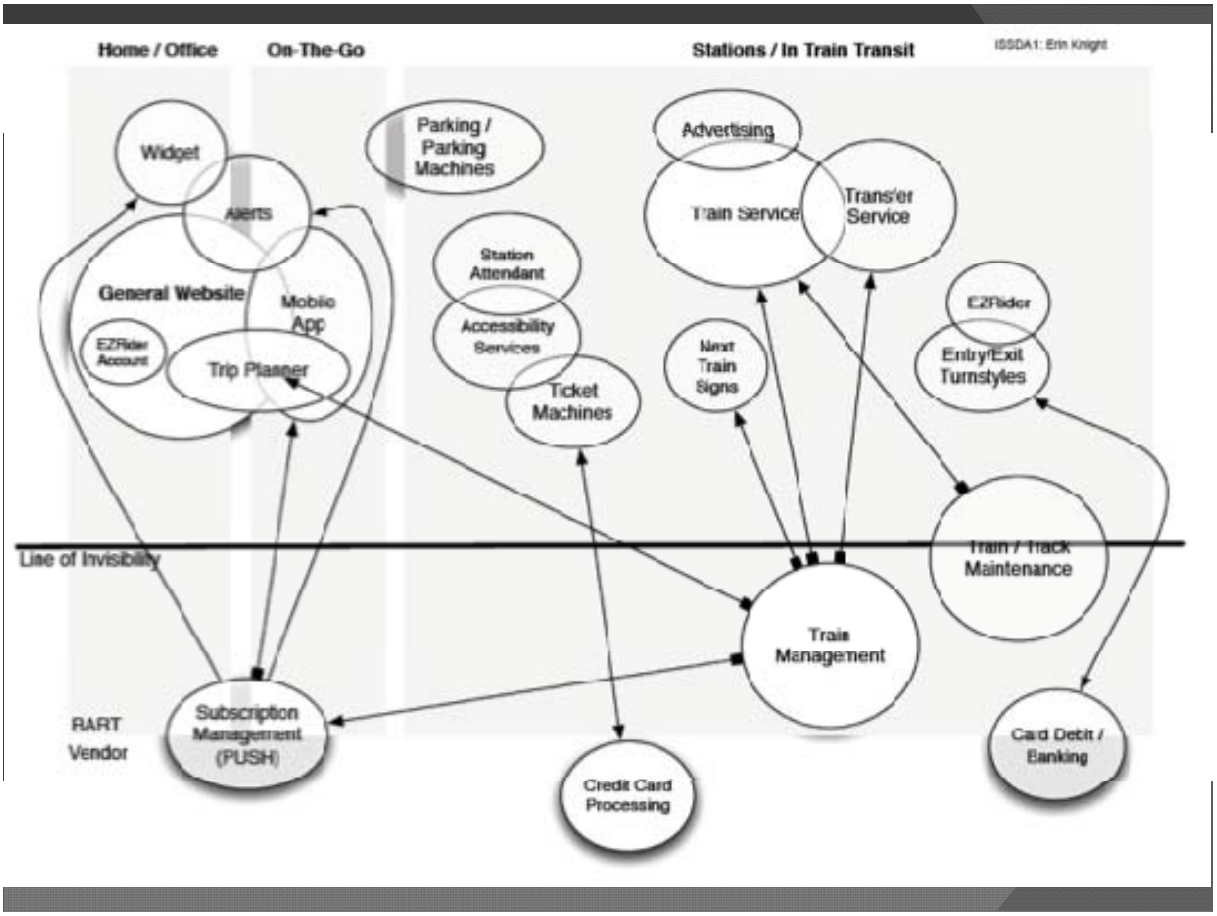
Inside the BART Paid Area

Exiting the BART System

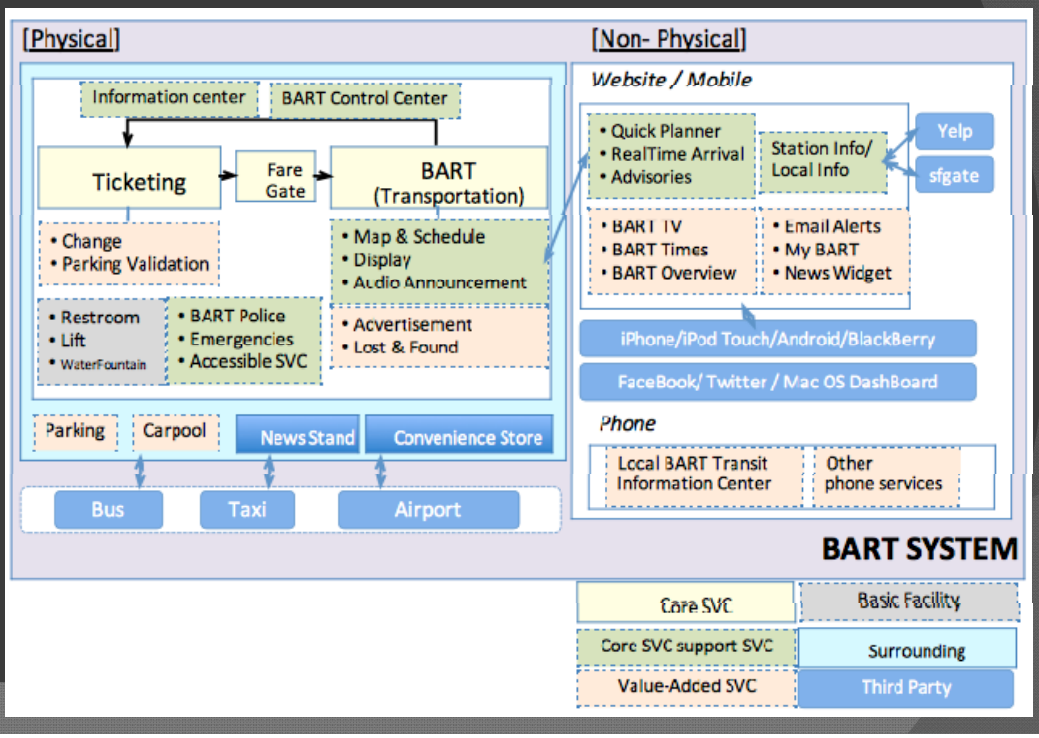


Line of Visibility Model

- Divide components by whether they are seen by customers
- Anticipates the front/back stage distinction in service blueprints and other models

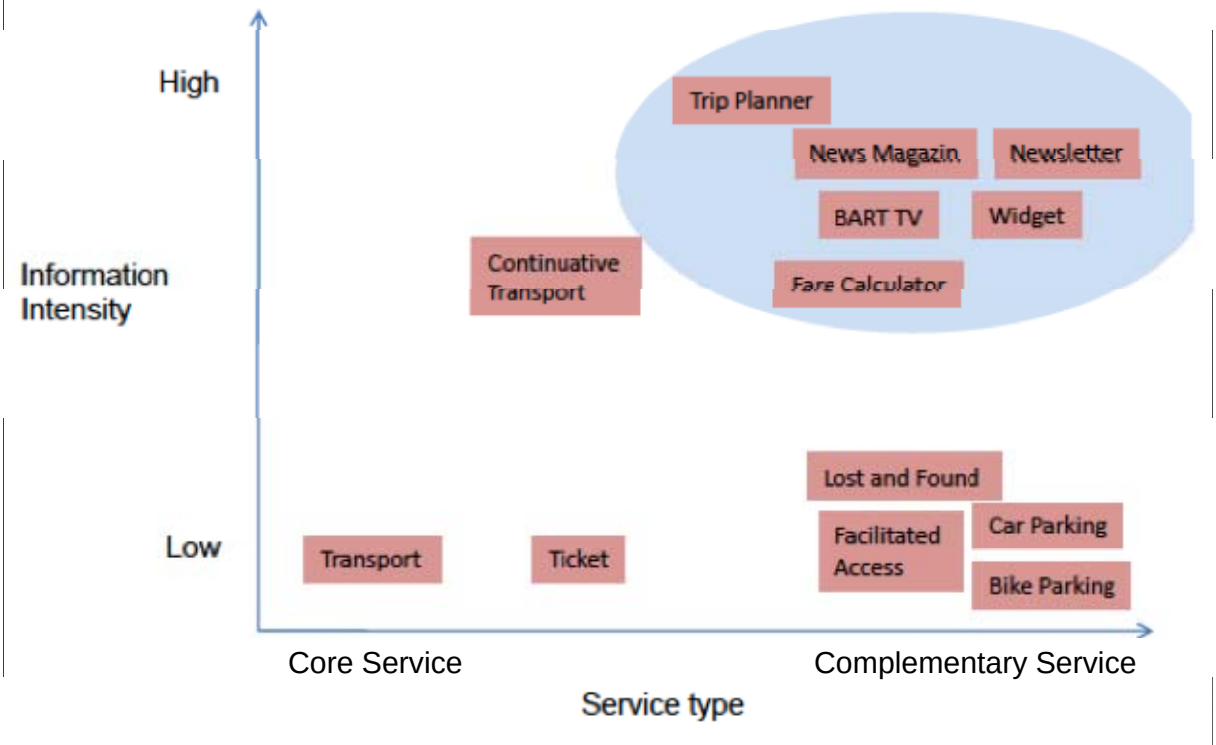


Physical vs. Non-physical



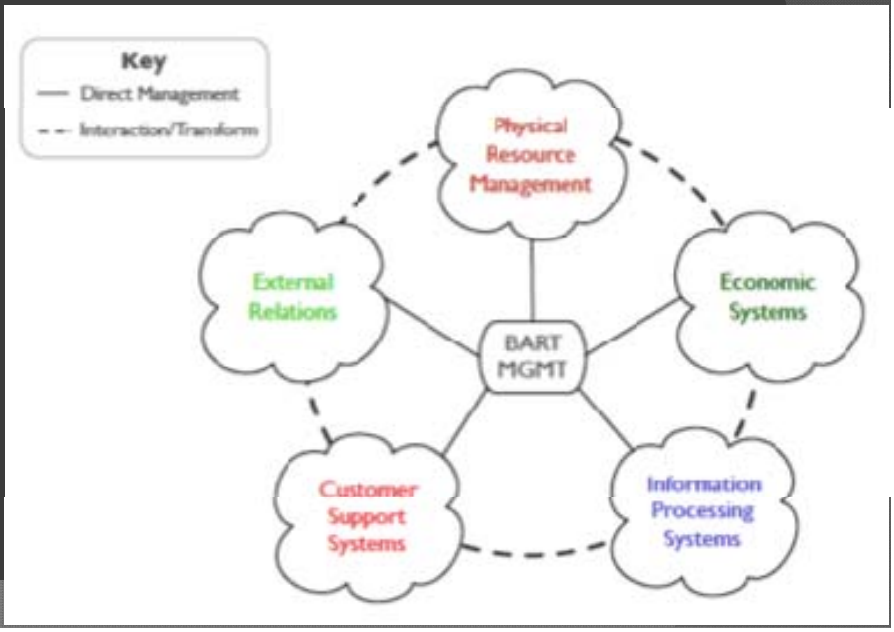
Information Intensity

- Contrasts services as more Information-intensive or experience-intensive
- A continuum and not a binary distinction



Organizational Chart

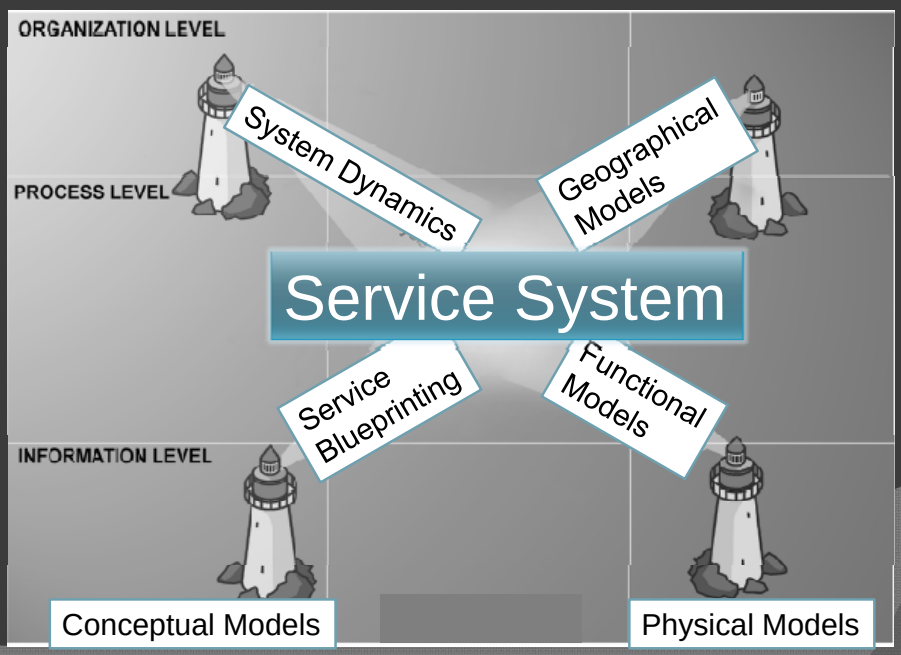
- Similar to the functional view



Conclusion

Comparing "Academic" and "Intuitive" Descriptions of Service Systems

Different Models Highlighting the Same System



Intuitive or Untrained Modeling

- Unexpected variety of representations with different emphasis and configurations.
- These descriptions reflected previous academic training and work experience, and were sometimes quite inventive, often anticipating and hybridizing concepts in the “academic” models
- Variation in scope
  - From station to station
  - From home to destination
  - As part of a multi-modal transit service system

Models and Descriptions for Service Systems are Complementary.

- Topological, temporal, and functional frameworks were used by many people quite intuitively, while more formal and parametric models were not.
- No single framework can fully describe a service system => Description frameworks are complementary.

- ***Is there an optimal sequence to learn or teach or apply these modeling approaches?***

For More Information

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Glushko, RJ. Seven Contexts for Service System Design. In Maglio, P. P., Kieliszewski, C, & Spohrer, J., *Handbook of Service Science*, (2010)

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