



IBM Almaden Services Research



Systems

Service Systems Differentiation



Unit objectives

- After completing this unit, you should be able to
 - View services as a system and discuss what that means
 - Articulate key differentiators in a services system
 - Identify and articulate co-production membership
 - Understand how value is defined for a service system

What is a system?

- Premise of General Systems Theory
 - “*there exist models, principles, and laws that apply to generalized systems or their subclasses, irrespective of their particular kind, the nature of their component elements, and the relations or ‘forces’ between them*” (von Bertalanffy)
- A way of looking at and understanding the world
 - Perception or understanding of a phenomena
 - Construct to simplify complexity
 - Simplification results in assumption that only certain objects, attributes, or interactions are important

System characteristics

- The goal is to find the hidden pattern in apparent chaos
- A system is any set of available variables selected by an observer to identify fundamental objects, the influential attributes of the objects, and the relationships of these objects that result in a phenomena.
- Basic assumptions
 - Objects can be tangible or intangible
 - Objects have attributes
 - There are relationships amongst the objects
 - There are relationships amongst the object attributes

System examples

Type	Description	Key Characteristic	Examples
Natural Systems	Biological, geological, or climatological phenomena that occur in the natural world	Constitutionally organic	Animal Earthquake Weather
Manufactured Systems	Designed creations or artifacts of living beings	Having designed subsystems defined as components, parts, or assemblies	Automobile Computer House
Socio-technological Systems	Combination of natural and manufactured systems	Interaction elements between sociological and mechanical aspects	Business Government Services

Service System

Socio-technological System

Any number of elements, interconnections, attributes, and stakeholders interacting to satisfy the request of a known client and create value

Combination of natural and manufactured systems

Humans, Processes, and Goods

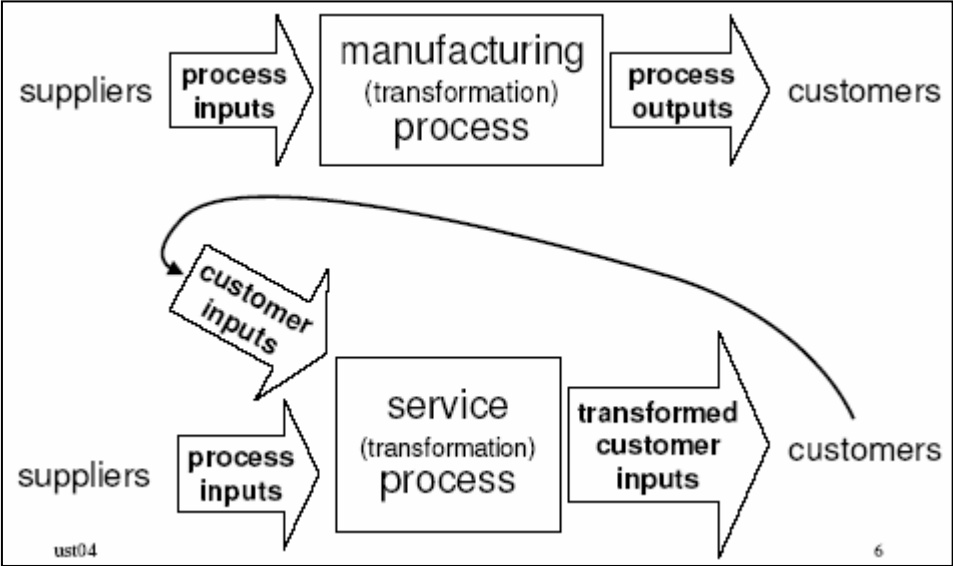
Interaction elements between sociological and mechanical aspects

Customization activity

Co-productive interaction between the provider and client

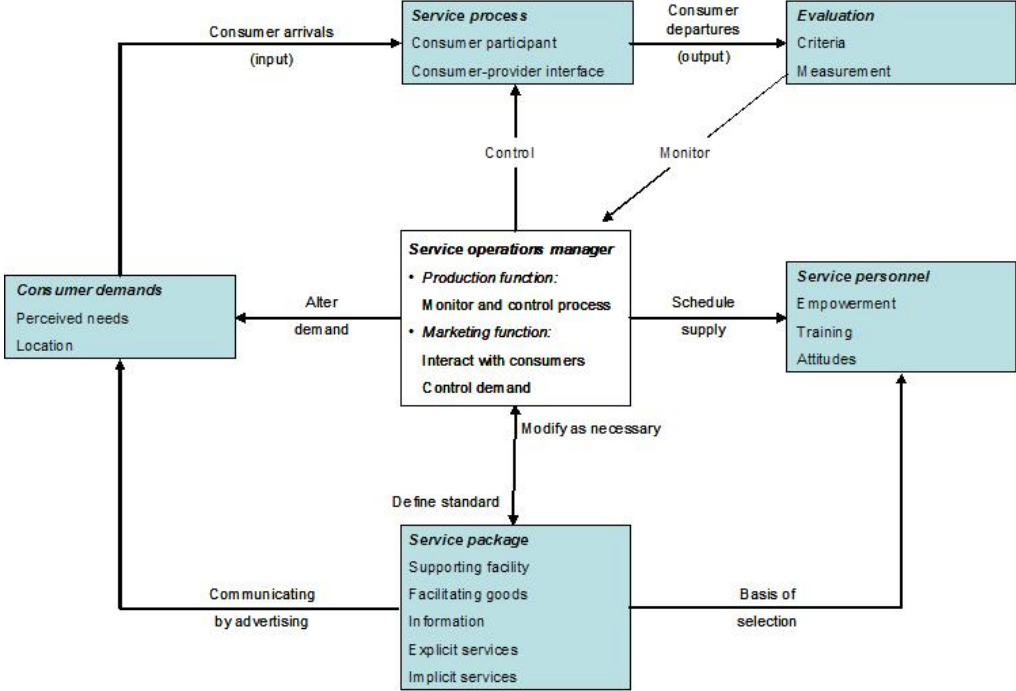
Economic transaction and creation of value

Model of Unified Services Theory



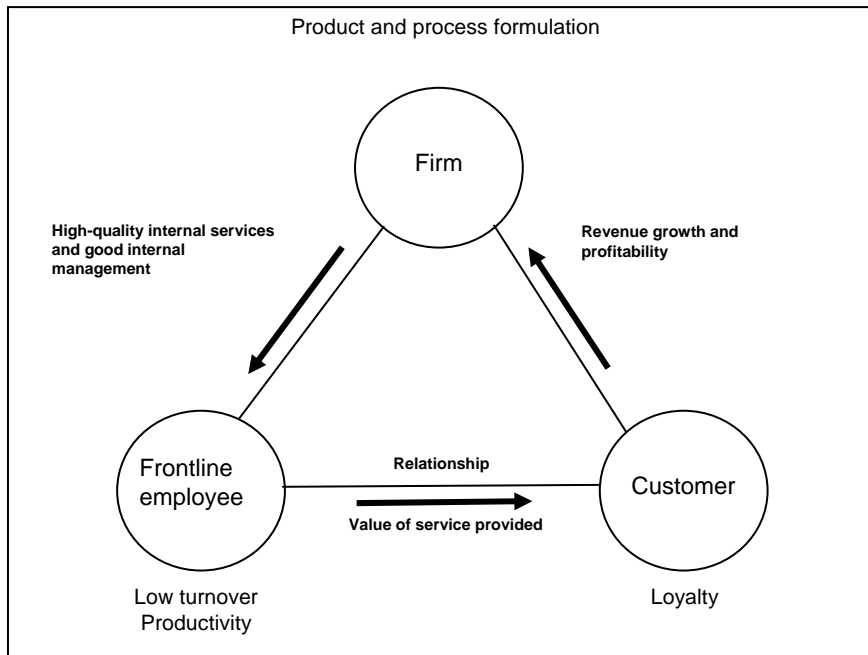
(Sampson, 2004, p. 6)

Open-Systems View of Service Operations



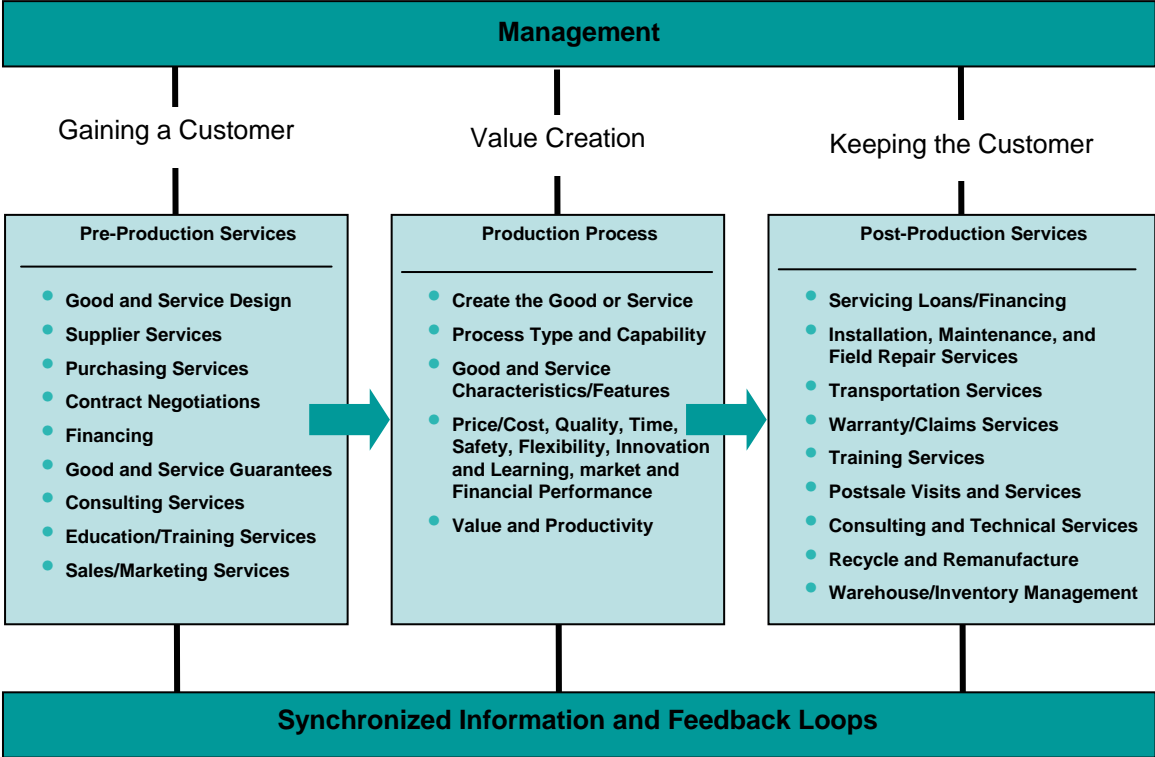
(Fitzsimmons & Fitzsimmons, 2006, p. 30)

Service-Profit Triangle



(Teboul, 2005, p. 33).

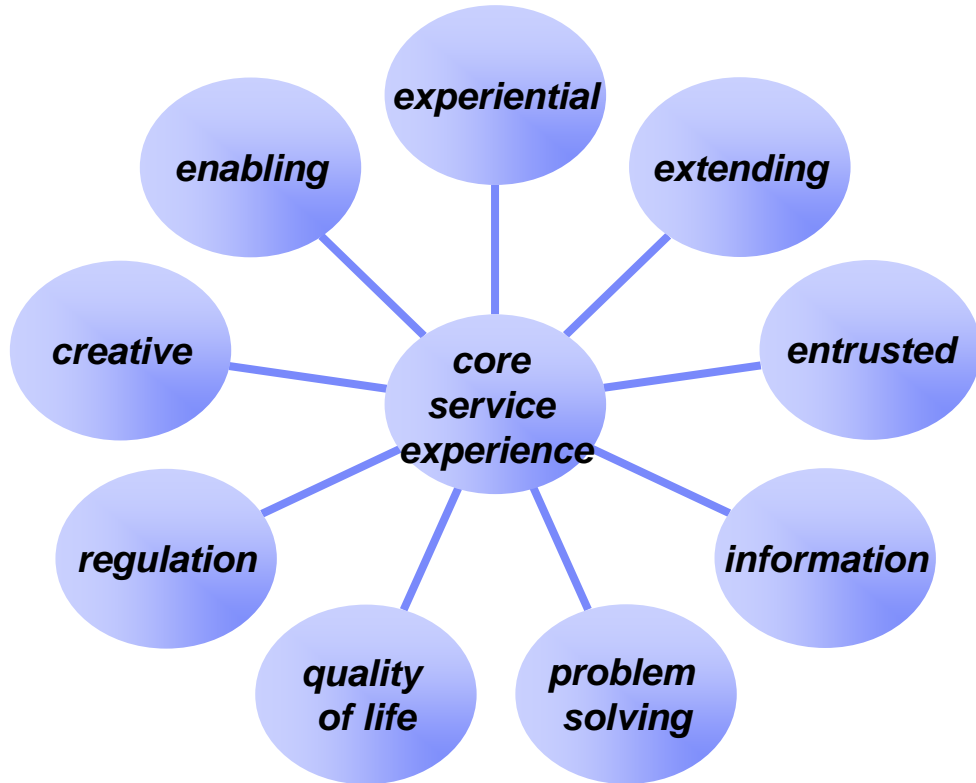
How is value created?



Characteristics of emerging services

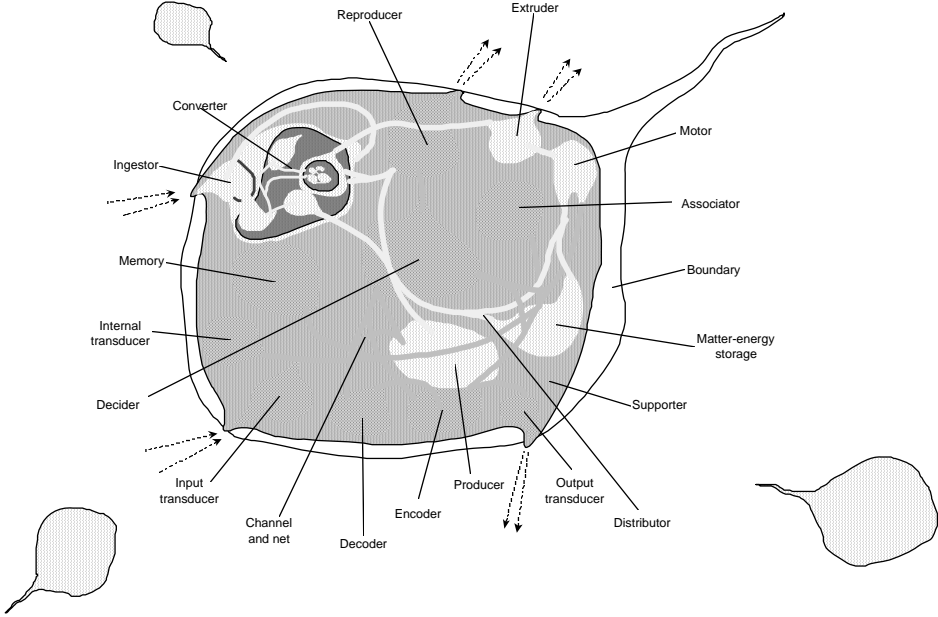
Example Emerging Services	Service Systems Engineering Characteristics			
	Information-Driven	Customer-Centric	E-Oriented	Productivity-Focused
Wholesale & Retail: Mass Customization	X	X	X	X
Business & Professional: “Early Warning” System	X			X
Education: Internet-Based Distance Learning	X	X	X	X
Government: Crime “Hot Spots”	X			X
Health Care: Medical Triageing	X	X	X	X
Finance, Insurance & Real Estate: Internet-Based Auctions	X	X	X	X
Transportation: Airline Passenger Screening	X	X		X
Communications: Real-Time Routing	X	X		X

Typology of services

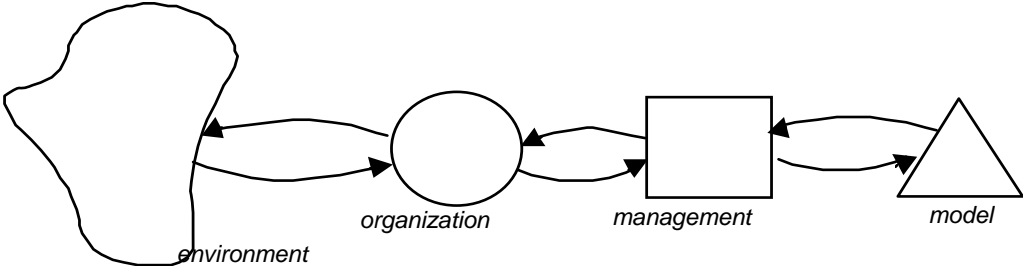


Addendum: System Images

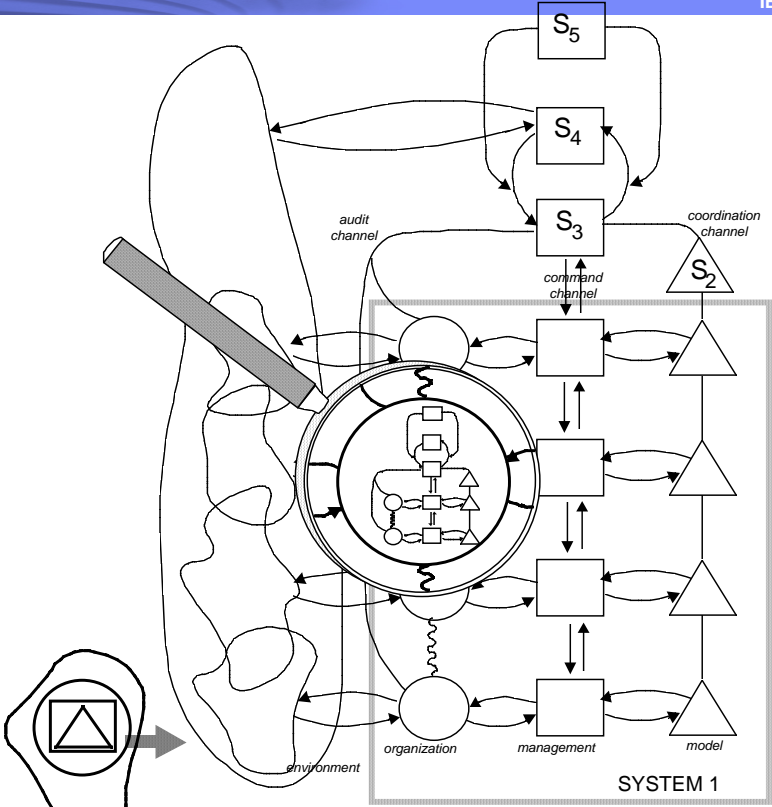
Living system



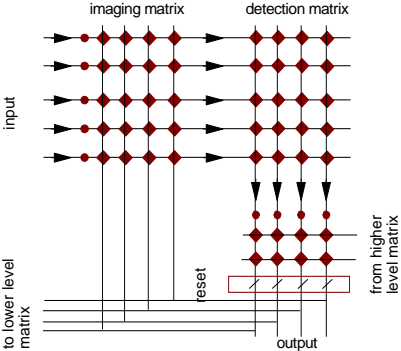
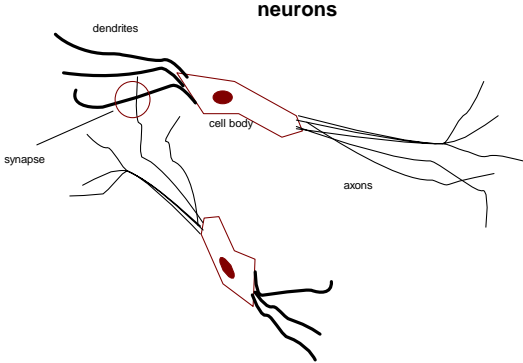
Viable Systems Model



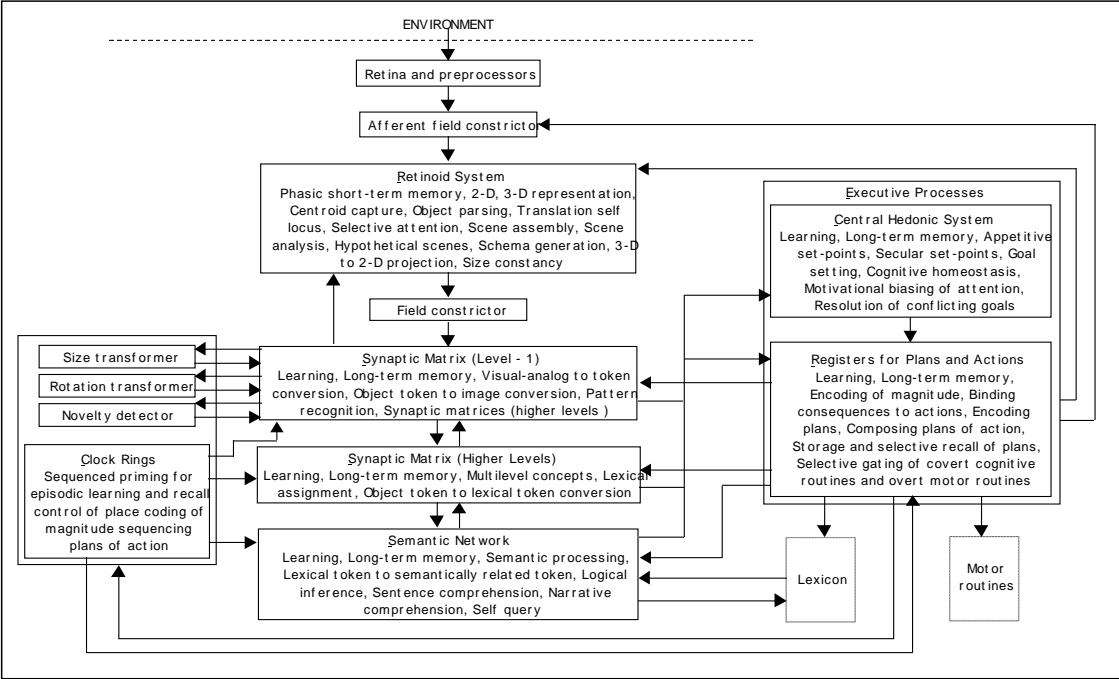
VSM



Cognitive System Architecture



Cognitive architecture



Socio-technical model

