

PENNSSTATE



# Introduction to Service Science: A Research Perspective

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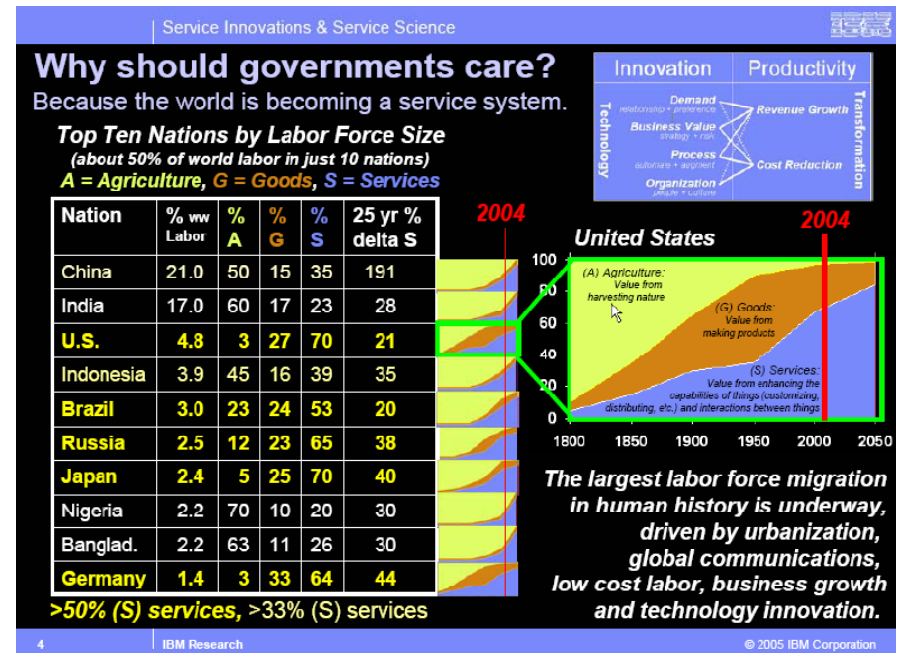
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# Service-led Economy

- The services sector has grown to dominate developed economies, and it is growing quickly in emerging economies. In the US 80% of GDP in 2006 is derived from a variety of services, whereas in China a rapidly growing services sector represents about 35% of the economy.

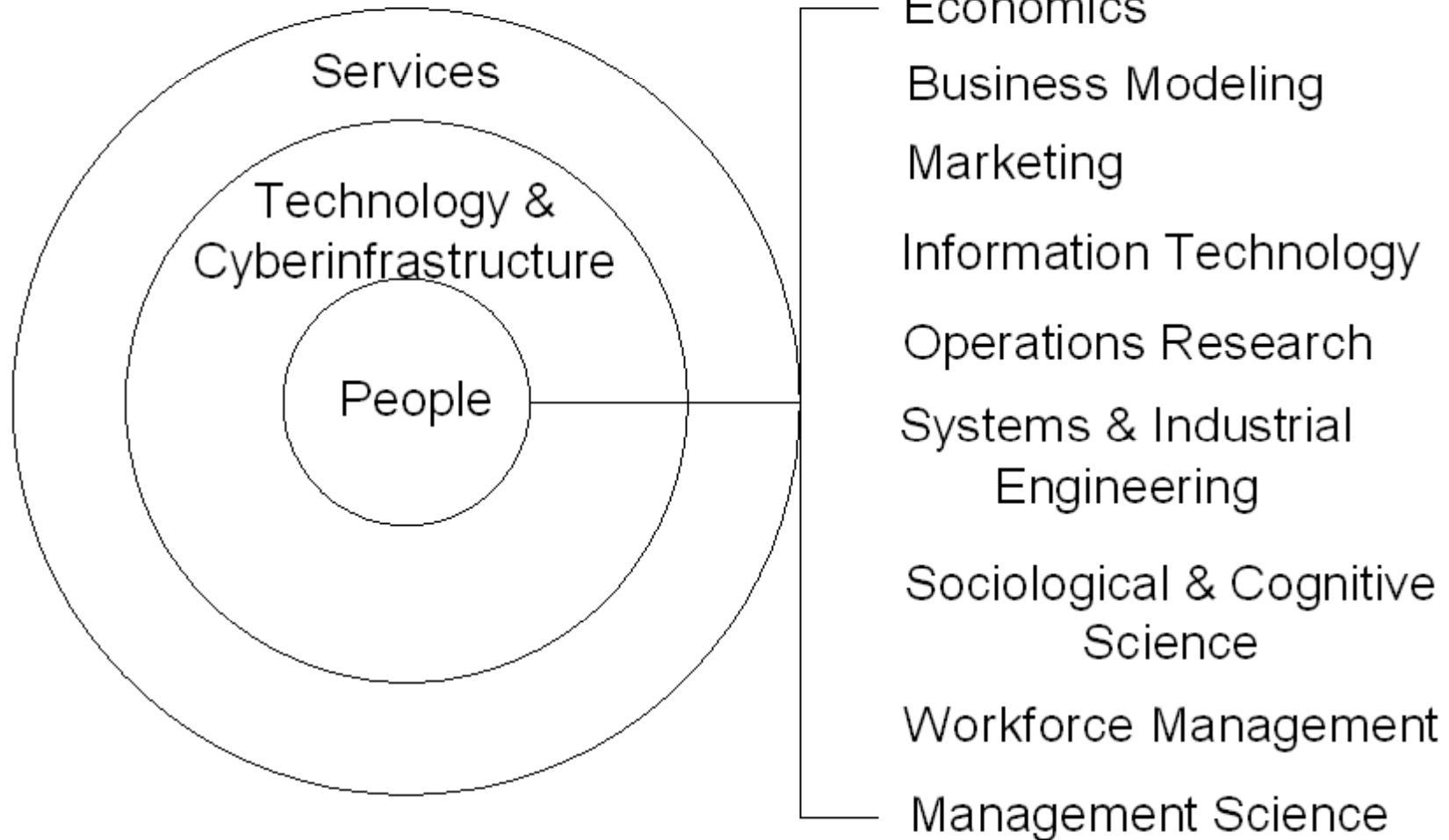


(Source: Jim Spohrer, IBM)

# Challenges

- Driven by a business environment that includes advanced telecommunications, accelerated business globalization, and rapid technology innovations, emphasis in service has evolved from a traditional labor-based business to sources of **innovation, collaboration, and value co-creation**.
- However, the focus shift to service has created a research and education gap due to the complexity of inter-disciplinary issues across service business strategy and modeling, operations research, information technologies, industrial engineering, management science, social and cognitive science, work force management, and legal science, etc.

# Service Science: Service and Service Systems

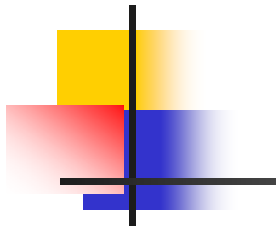




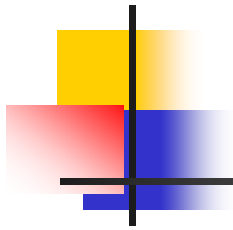
# Service Systems

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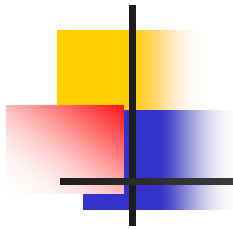
- In a broader view, service can not be in inventory, and are typically intangible, perishable, difficult to port, hard to measure, and co-production with customers. Thus, service systems should be highly adaptable and sustainable to the service environment (when, where and who to deliver and whom to be served, etc). Service systems then should be well defined and developed through well understanding of the following:



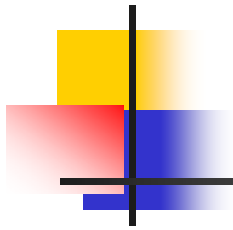
- Service demand/marketing: need, perception, and satisfaction spanning from varieties, market acceptance, penetration, and potentials, competitiveness and economic benefits, to beneficial opportunities in the long run.
- (Research areas include *Service Dynamics and Strategy*, *Service Marketing*, *Service Pricing*, *Capacity and Demand Management*, and so forth.)



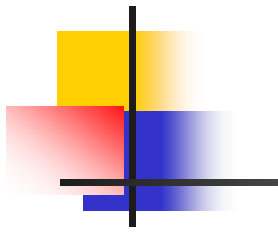
- Service environmental settings
  - Service consumer's environmental setting: value proposition, customs, languages, cultures, and regional regulations, etc.
  - Service provider's environmental setting: workforce management, labor relationships, human behavior, skills/training, knowledge transfer, etc.
  - Human interfaces and interactions (psychological and physiological).
- (Research areas include *Service Engineering, Service Operations and Productivity, Self-service, Customization vs. Standardization, Workforce Management*, and so forth.)



- Adaptable and sustainable service engineering process: resource alignment (e.g., workforce management), operations function and value, hybrid designed (artificially) and evolved (naturally) to meet the diverse needs of service environmental settings (co-production).
- (Research areas include *Complex Adaptive Service Systems, Service Operations and Productivity, Workforce Management*, and so forth)

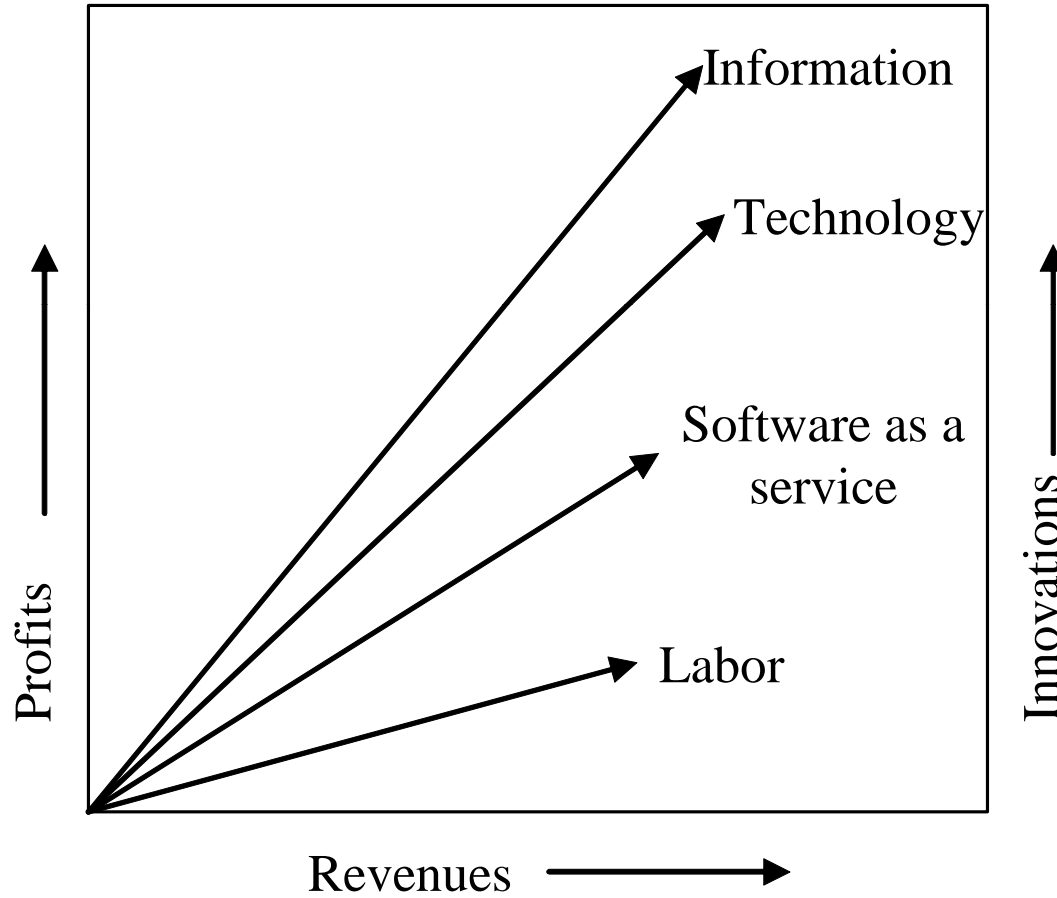


- Large-scale information infrastructure: a complex and integrated system that can evolve over time to optimally support the defined service engineering processes, aimed at the delivery of needed data, information, and knowledge to the right user at the right time.
- (Research areas include *Complex Adaptive Service Systems*, *Service Ecosystems*, *Information and Knowledge Systems*, and so forth)

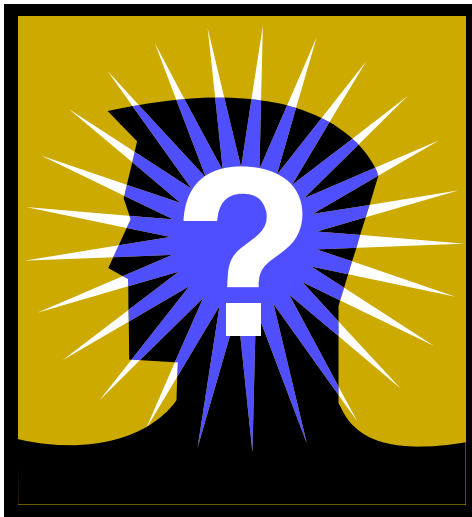


- Effective management and efficient organization: planning, design, execution, and reengineering of the defined complex and adaptable services systems.
- (Research areas include *Value Proposition, Quality, Risk, and Management, Service Innovations, Business Transformation* and so forth)

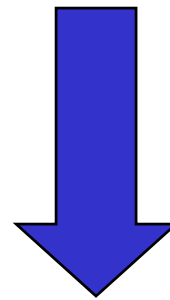
# Outcomes Scale of Service Systems with Different Configurations



**I really appreciate your attention and time.**



**Questions?**



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