



Almaden Services Research

## Services Sciences, Management, and Engineering (SSME)

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## Here are the facts...

- All national economies are shifting to services
  - major industrialized nations are >75% services, developing nations are close behind
  
- To better study, manage, and engineer service systems, new skills are needed
  - combination of business, organization, technology skills – soft skills enhance hard skills
  
- Educational system is slowly shifting toward services
  - service management, operations, marketing, and engineering courses and programs exist
  
- At national level, governments can draw investment toward service innovation by
  - bootstrapping investment in research and education through targeted programs
  - focusing attention on intellectual property protection for service innovation

## Put differently...

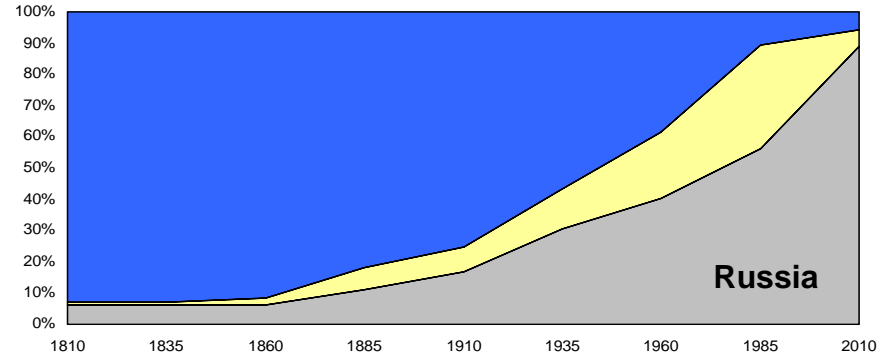
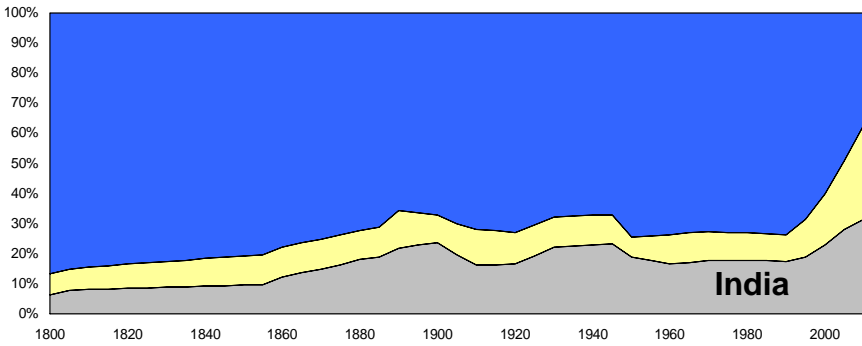
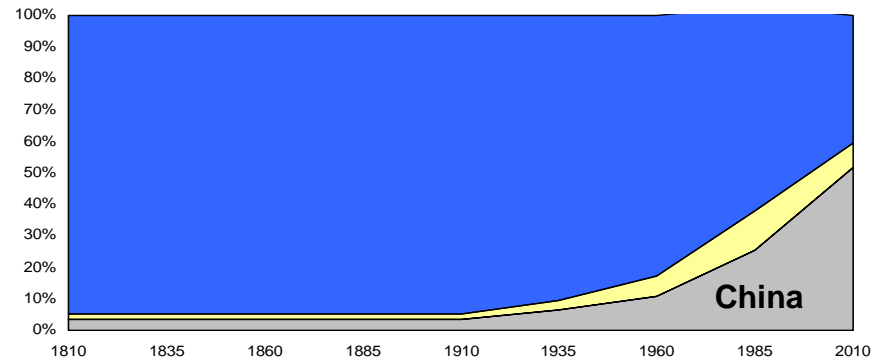
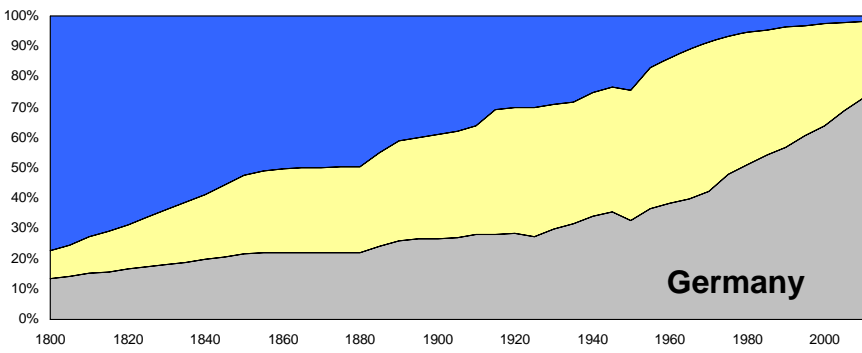
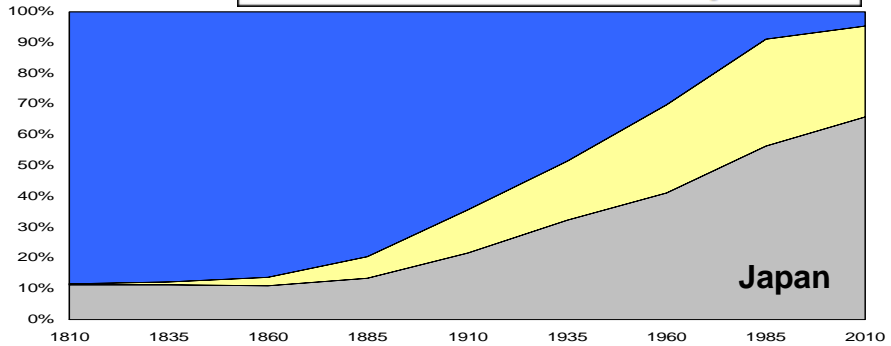
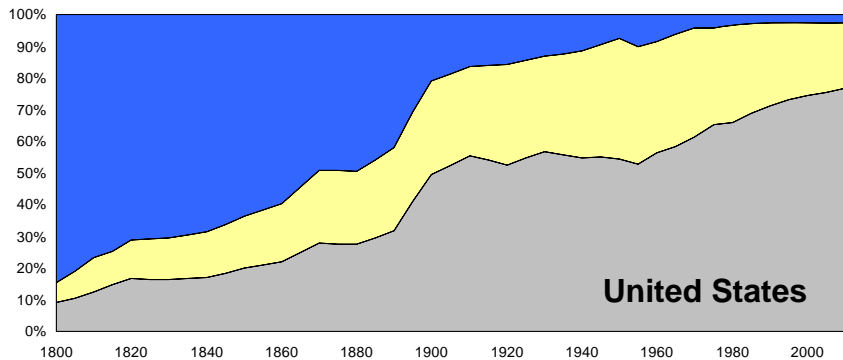
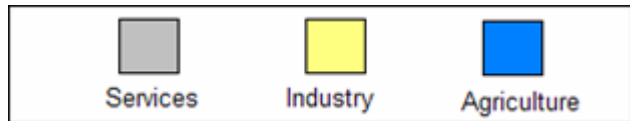
- “Services account for more than 80 percent of the U.S. gross domestic product, employ a large and growing share of the science and engineering workforce, and are the primary users of information technology. In most manufacturing industries, service functions (such as logistics, distribution, and customer service) are now leading areas of competitive advantage. Innovation and increased productivity in the services infrastructure (e.g., finance, transportation, communication, health care) have an enormous impact on productivity and performance in all other segments of the economy. Nevertheless, the academic research enterprise has not focused on or been organized to meet the needs of service businesses. Major challenges to services industries that could be taken up by universities include: (1) the adaptation and application of systems and industrial engineering concepts, methodologies, and quality-control processes to service functions and businesses; (2) the integration of technological research and social science, management, and policy research; and the (3) the education and training of engineering and science graduates prepared to deal with management, policy, and social issues.”
- National Academy of Engineering (2003). "The Impact of Academic Research on Industrial Performance"

## Put more crisply...

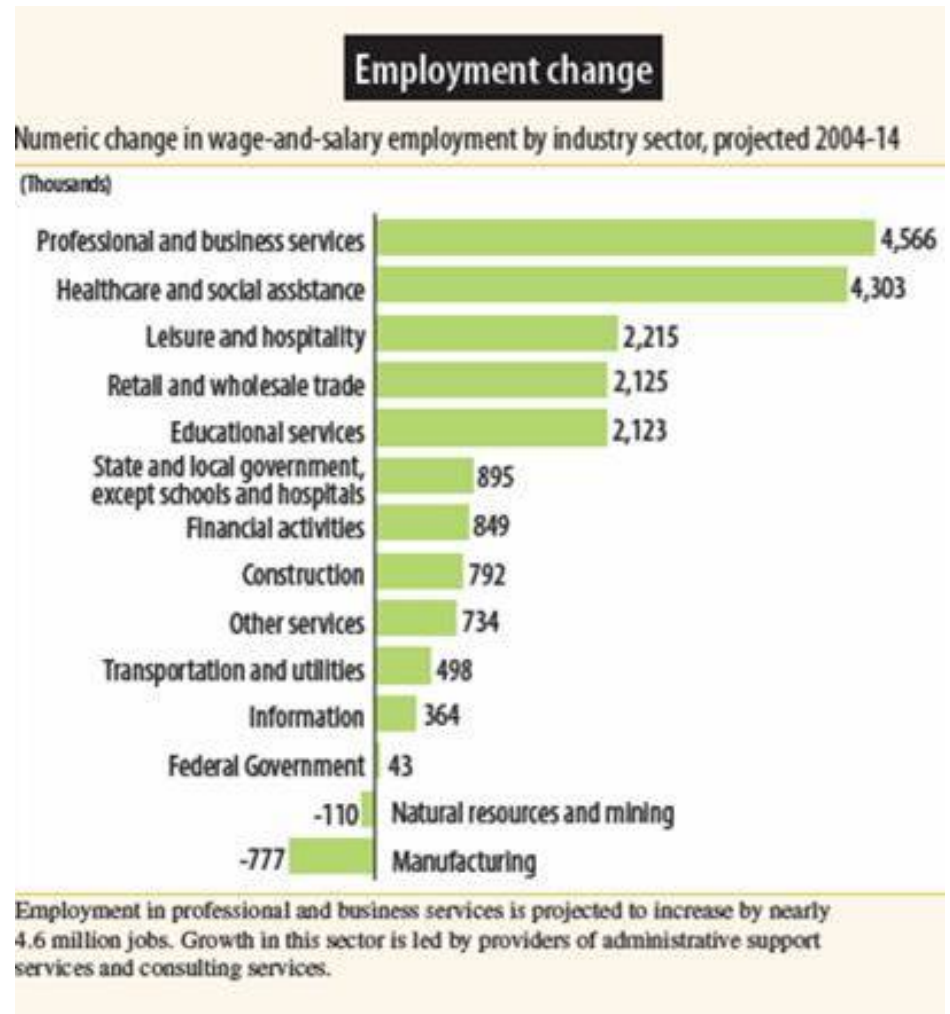
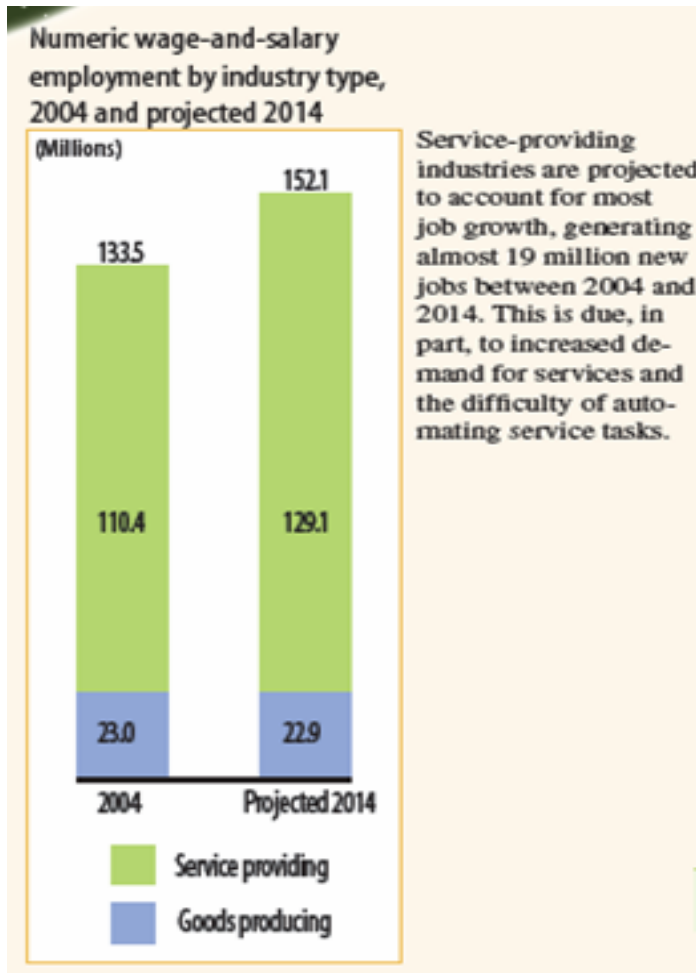
“... modern economies are both service economies and economies of innovation. Paradoxically, they are not regarded as economies of innovation *in* services, that is as economies in which service firms' innovation efforts are proportional to their contribution from the major economic aggregates. It is as if service and innovation were two parallel universes that coexist in blissful ignorance of each other.”

- Gallouj, F. (2002). *Innovation in the Service Economy: The New Wealth of Nations*. Cheltenham UK: Edward Elgar.

# The Rise of the Service Economy



# Projected US Service Employment Growth, 2004 - 2014



US Bureau of Labor Statistics.  
<http://www.bls.gov/opub/ooq/2005/winter/art03.pdf>

## So what are Services?

In economics and marketing, a **service is the non-material equivalent of a good**. Service provision has been defined as an economic activity that does not result in ownership, and this is what differentiates it from providing physical goods. It is claimed to be a process that creates benefits by facilitating either a change in customers, a change in their physical possessions, or a change in their intangible assets.

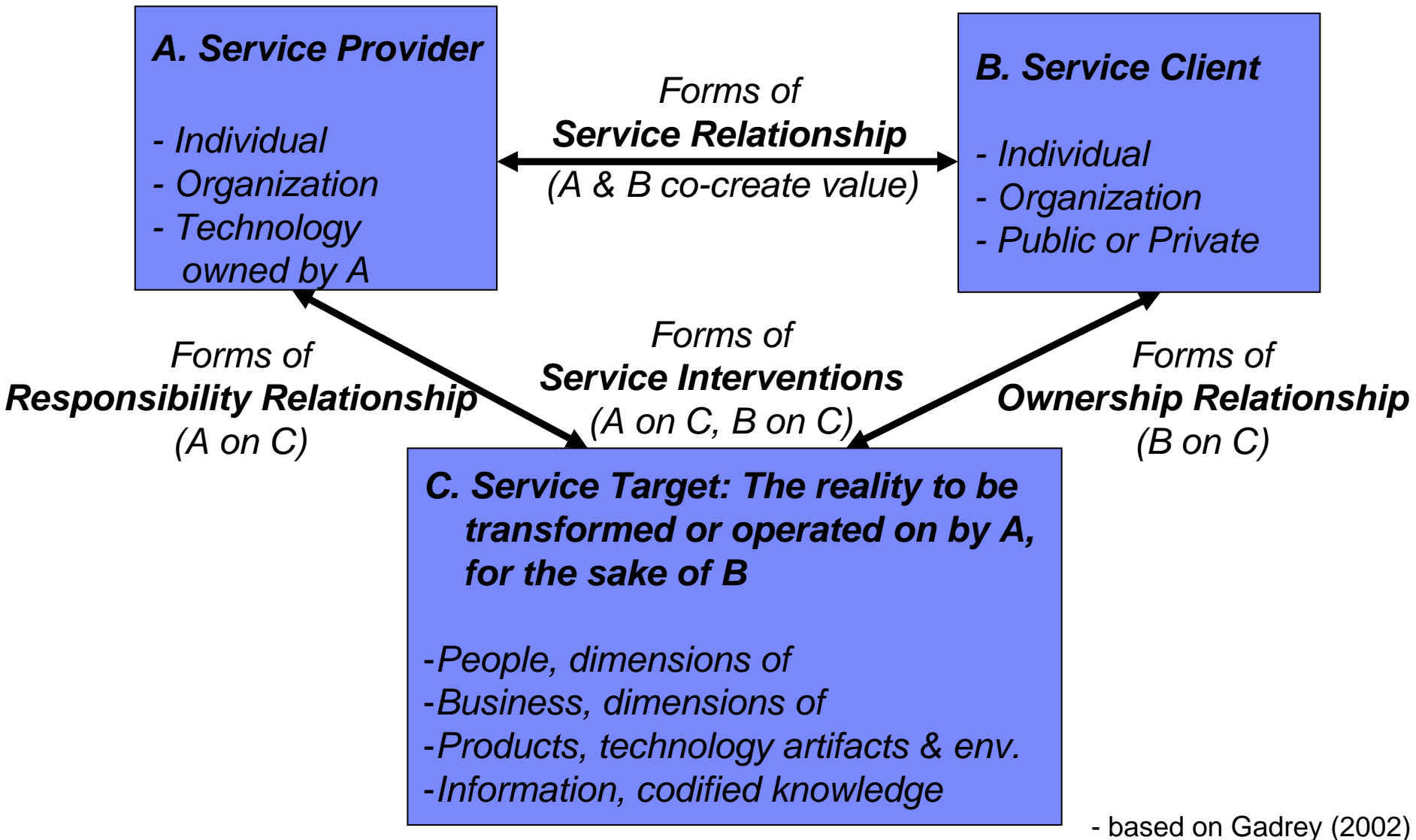
By supplying some level of **skill, ingenuity, and experience**, providers of a service participate in an economy without the restrictions of carrying stock (inventory) or the need to concern themselves with bulky raw materials. On the other hand, their investment in expertise does require marketing and upgrading in the face of competition which has equally few physical restrictions.

– from Wikipedia, see <http://en.wikipedia.org/wiki/Services>

# What really defines Services?

- Deed, act, or performance
  - Berry (1980)
- An activity or series of activities... provided as solution to customer problems
  - Gronroos (1990)
- All economic activity whose output is not physical product or construction
  - Brian et al (1987)
- A time-perishable, intangible experience performed for a customer acting as co-producer
  - Fitzsimmons & Fitzsimmons (2001)
- A change in condition or state of an economic entity (or thing) caused by another
  - Hill (1977)
- Deeds, processes, performances
  - Zeithaml & Bitner (1996)
- Application of specialized competences through deeds, processes, and performances to benefit another
  - Vargo & Lusch (2004)

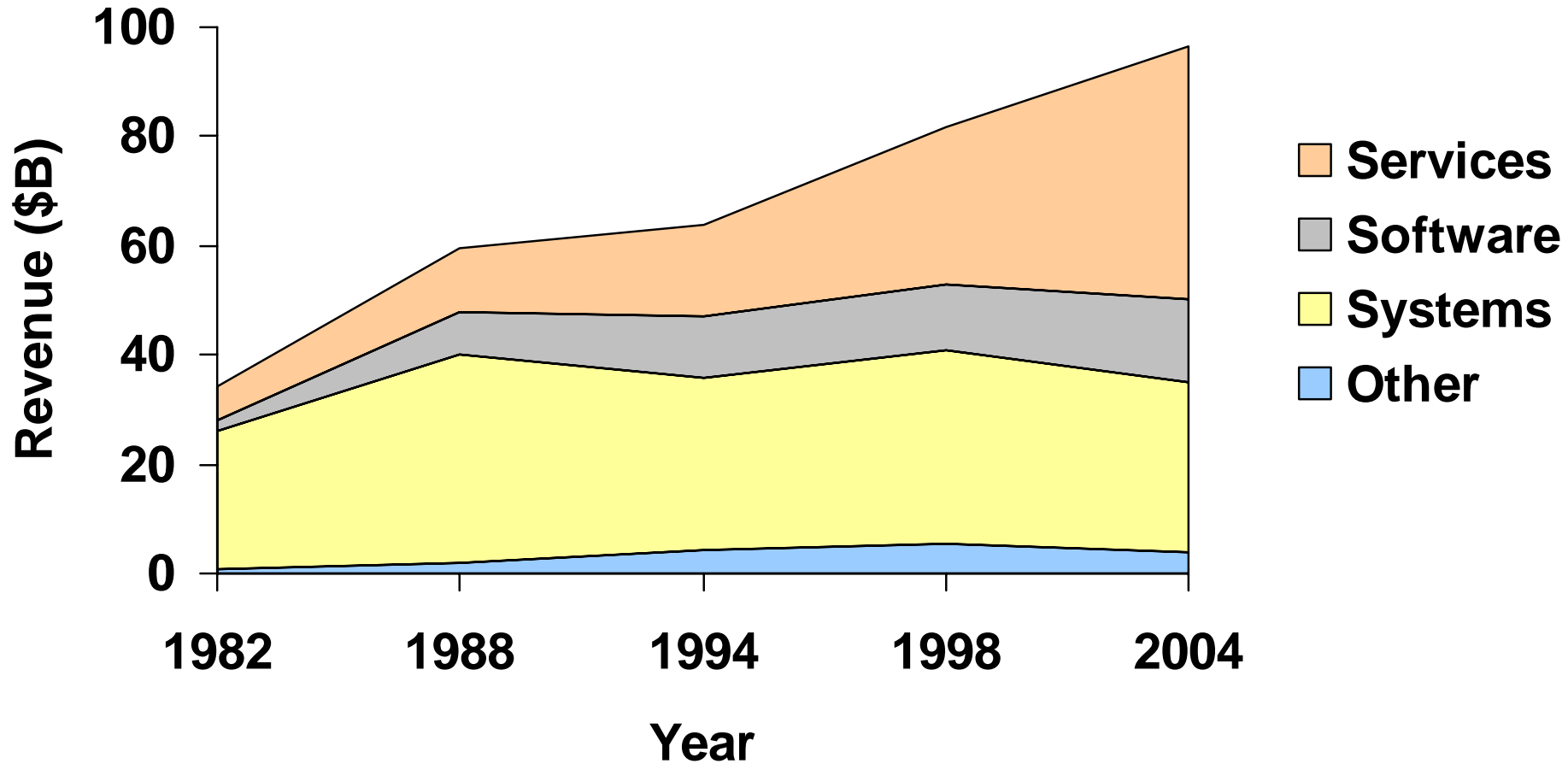
## Another definition of Services... as systems of relationships



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## IBM Revenue Growth is Now Led by Services...



# From Computer Science to Service Science...

machinery, see the use of computers or wind tunnels and engineers shatter disciplinary boundaries in all aspects of

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# Breakthrough Ideas for 2005

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### 14. [Toward a New Science of Services](#)

*Henry W. Chesbrough*

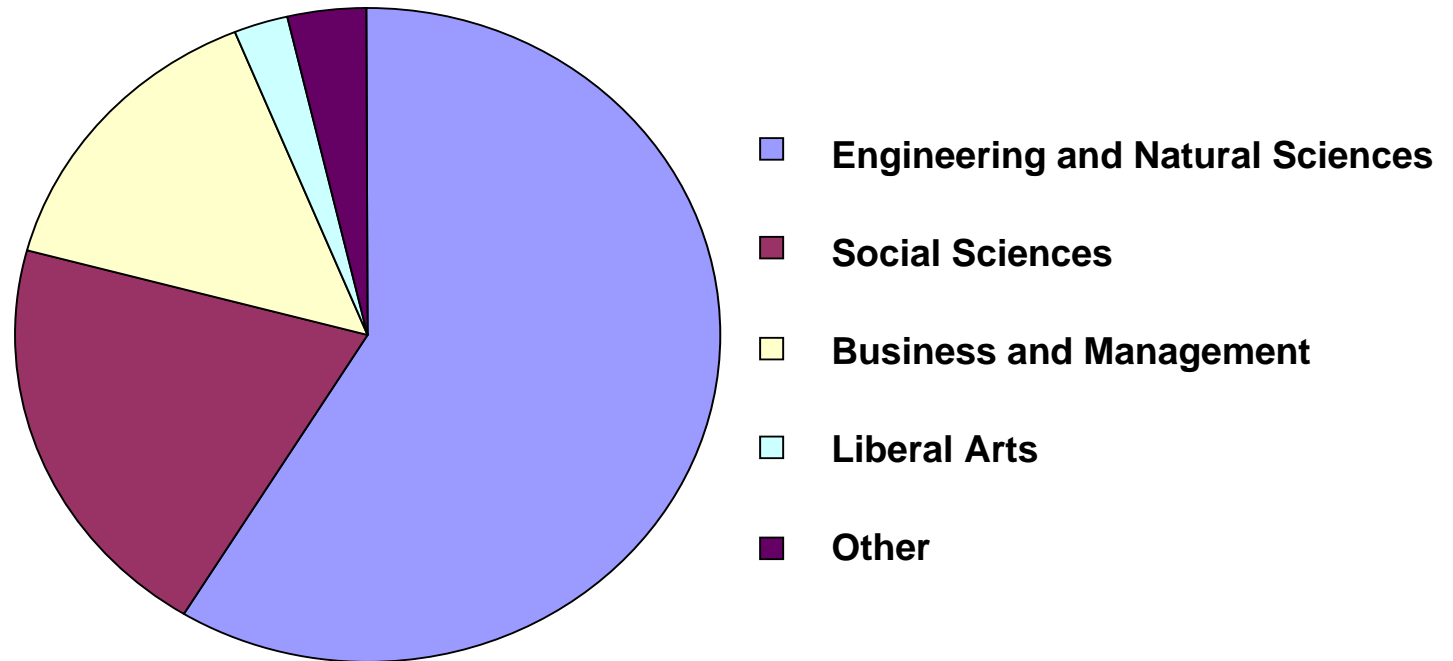
Services contribute even more to the global economy than products do. So shouldn't the science of services be an academic field in its own right? Whether it becomes one may depend on the same criteria—including the extent of corporate support—that set computer science apart from engineering, math, and physics.

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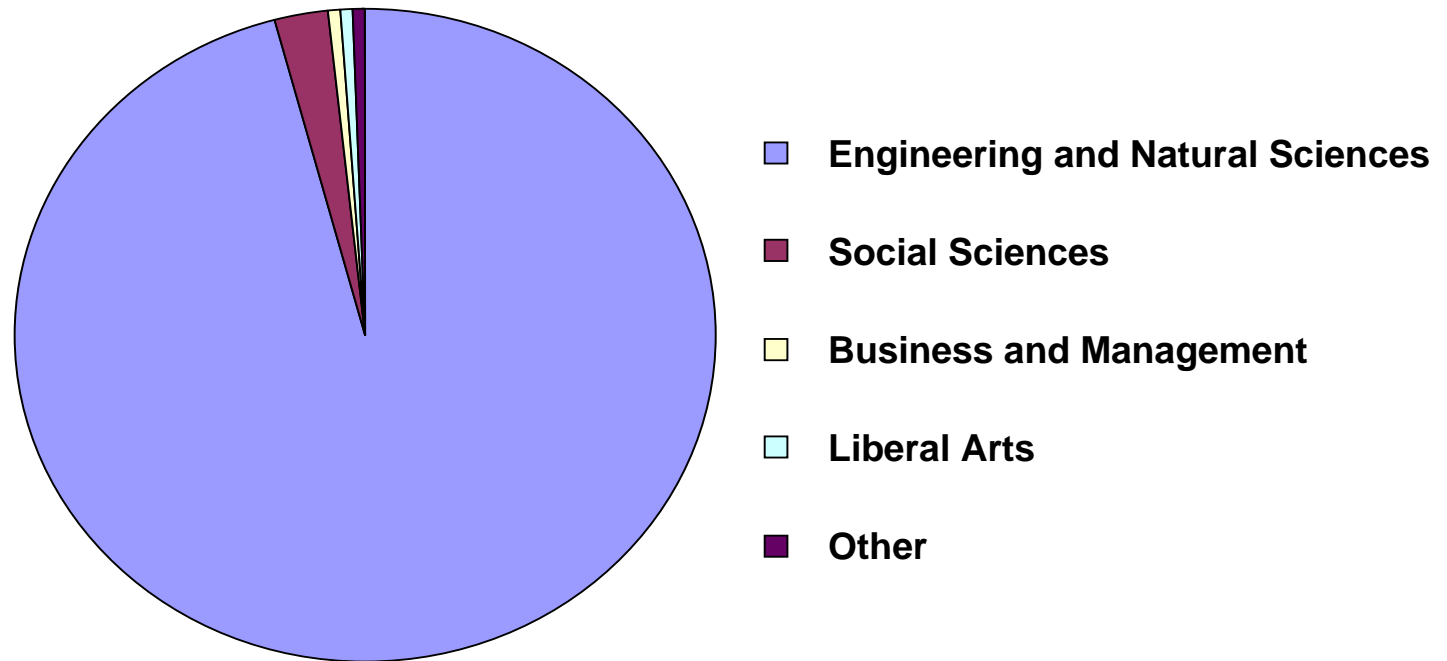
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## Services Science, Management, and Engineering



Getting Started
Learn
Teach
Connect

### What is SSME?

Services Science, Management and Engineering (SSME) is a new academic discipline and research area aimed at studying, improving and teaching services innovation. It is the application and integration of scientific, management and engineering disciplines to tasks that one organization beneficially performs for and with another (that is, "services").

The goal of the SSME discipline is to make productivity, quality, sustainability, learning rates and innovation rates more predictable across the service sector, especially in complex organization to organization services including business to business, nation to nation, government to population, and so on.

"... modern economies are both service economies and economies of innovation. Paradoxically, they are not regarded as economies of innovation in services, that is as economies in which service firms' innovation efforts are proportional to their contribution from the major economic aggregates. It is as if service and innovation were two parallel universes that coexist in blissful ignorance of each other."

(Gallouj, F. (2002). Innovation in the Service Economy: The New Wealth of Nations. Cheltenham UK: Edward Elgar.)

### Skills for SSME

All national economies are shifting to services. Major industrialized nations are more than 75% services and developing nations are close behind. The US Bureau of Labor Statistics projects that employment growth will continue to be concentrated in the service-providing sector of the economy (<http://www.bls.gov/news.release/ecopro.nr0.htm>).

What skills are needed for these economies in the 21<sup>st</sup> century? A services-based economy requires different skills than a manufacturing-based economy:

- ◆ next wave of computer science, engineering, and IT
- ◆ next wave of business management and administration
- ◆ next wave of operations research, industrial and systems engineering
- ◆ next wave of business anthropology, economics, and social science

Basic IT skills are becoming embedded in every job role. IT alone is no longer a differentiator. Both depth and breadth is needed in technology, business, and organizational studies even at the undergraduate level.

### SSME news

- [SSME conference coming in October](#)
- 📄 [Trends in Services Science](#)
- 🔗 [How IBM is Applying Science to the World of Services](#)
- 🔗 [Big Blue Shift: IBM lowers costs without skimping on service](#)
- 🔗 [IBM Wakes Up to India's Skills](#)
- 🔗 [IBM urges universities to go multidisciplinary](#)
- 🔗 [What is "Service Science"?](#)
- 🔗 [The New Science](#)
- 🔗 [Lou Barkan: Leading in the Digital Age](#)

### SSME resources

- 🔗 [Almaden Institute](#)
- 🔗 [Center for SSME at Arizona State University](#)
- [IBM BCS Center for Business Optimization](#)
- 🔗 [IT Services Qualification Center \(ITsqc\) at Carnegie Mellon](#)
- 🔗 [Networked European Software and Services Initiative \(NESSI\)](#)
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## What is SSME, really?

- An urgent “call to action”
  - To become more systematic about innovation in services
  - Complements product and process innovation methods
  - To develop “a science of services”
  
- A proposed academic discipline
  - Draws on many existing disciplines
  - Aims to integrate them into a new specialty
  
- A proposed research area
  - Service systems are designed (computer systems)
  - Service systems evolve (linguistic and social systems)
  - Service systems have scale-emergent properties (economic systems)

## Can there really be a science of services?

“Wherever there are phenomena, there can be a science to describe and explain those phenomena. Thus, the simplest (and correct) answer to “What is botany?” is, “Botany is the study of plants.” And zoology is the study of animals, astronomy the study of stars, and so on. Phenomena breed sciences.”

- Newell, A., Perlis, A. & Simon, H. A. (1967).  
Computer Science, *Science*, 157, 1373-1374.

## Possible Objections... to Computer Science

- Only natural phenomena breed sciences
- The term “computer” is not well defined
- Computer Science is the study of algorithms, not computers
- Computers are instruments, not phenomena
- Computer Science is a branch of another science
- Computers belong to engineering, not science

- Newell, Perlis, & Simon (1967)

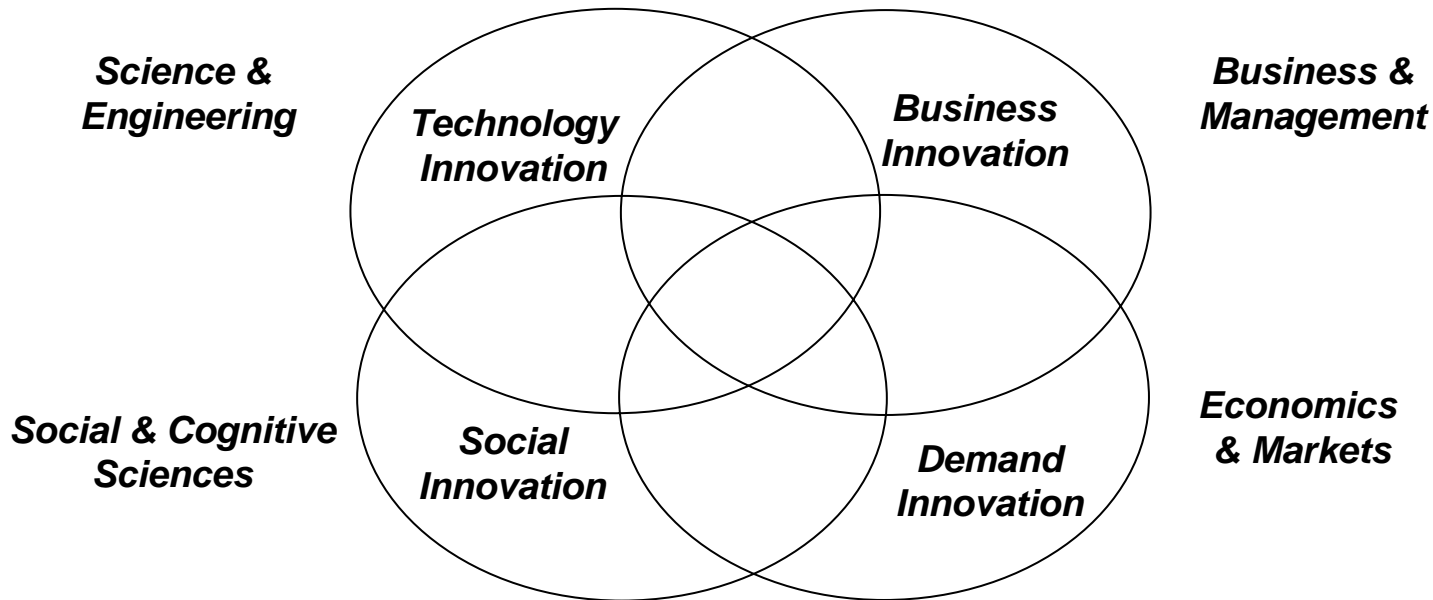
## Possible Objections... to Service Science

- Only natural phenomena breed sciences
- The term “service” is not well defined
- Service Science is the study of work, not services
- Services are performances, not phenomena
- Service Science is a branch of another science
- Services belong to engineering (or management), not science

- with apologies to Newell, Perlis, & Simon (1967)

## What I see...

- Services depend critically on people, technology, and **co-creation** of value
- People **work together** and with technology to provide value for clients
- So a **service system** is a complex **socio-techno-economic** system
- Growth requires innovation that combines **people, technology, value, clients**



## Some SSME Research Areas

- Measuring work, service intensity, and service complexity
  - What are the limits to self-service? How much work can we shift to end-users?
- Representing and cataloging skills
  - How do we organize and breakdown the human skills needed to do work? How can we take this into account in composing and optimizing teams?
- Global communication tools
  - What are the barriers to highly productive human-human coordination? Distance, trust, communication, common ground, culture, technology?
- Service workforce management
  - Application of supply chain methods to service supply chains, which are people-centered
- Effective service automation
  - Understanding tradeoffs in human vs computer effort in creating customized business services

## Some More SSME Research Areas

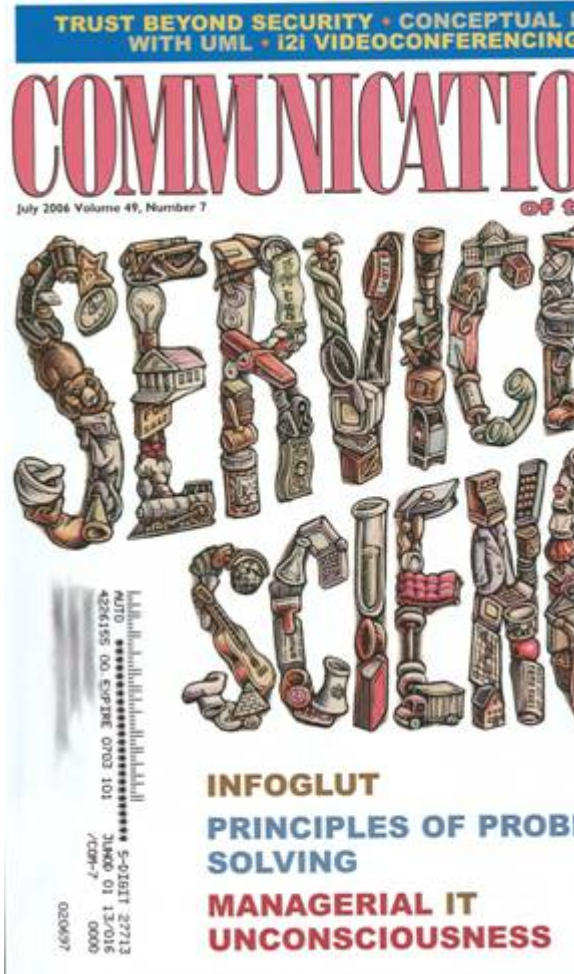
- Service scale effects
  - Take advantage of IBM-scale service data through semantic analysis. Are there scale laws of services?
- Computational theory and modeling of service systems
  - Need computational theories to generate models that help us understand and guide how services associating humans and information and communication technologies (ICT) emerge and how they help organizational structures emerge, interact, evolve and adapt to better meet the needs and aspirations of people, business, and society
    - problems of *data* (human behavior, distribution, privacy-transparency-accessibility, trust, quality)
    - problems of *comprehension* (e.g. generic problems of modeling, simulation and visualization)
    - problems of *engineering* (e.g. computational problems)
- Globalization of services
  - With globalization of services, are there shifts in business models? What will be done differently? What does it take to adopt and benefit from globalization? At some point, everyone will be leveraging global resources and labor arbitrage will be table stakes. Who wins then and why? How does one build and manage this global labor supply chain?

# Service Research and Education is Interdisciplinary



Need more T-shaped people – both deep and broad

# Communications of the ACM, July 2006



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OR/MS Today - June 2006

## Service Science

### Serving the Services

*The emerging science of service management opens opportunities for operations research and management science.*

By Brenda Dietrich and Terry Harrison

The services industry continues to be a rapidly growing segment of many developed economies, including the U.S. economy [1, 2]. Although a significant portion of the services industry is focused on providing services to individuals (medical, insurance, legal, financial), the business services sector, in which one company provides service to another company, is also a rapidly growing segment [3, 4]. Examples include traditional consulting, design, technical support (typically for products), call center operations, IT implementation and IT outsourcing. New business models, based on improving efficiency through automation, aggregation of risk, economies of scale or reduction of capital assets, lead companies to outsource and in some cases off-shore business processes that do not provide differentiation in the marketplace. Transportation and warehousing, procurement, manufacturing, benefits management and back-office processes such as accounting are all now being provided as services. Business services are complex, and are typically purchased and managed by separate organizations within an enterprise.

Over the past several decades mathematical models of traditional manufacturing and logistics systems have been developed and used for strategic planning. More recently similar models have been used to support operational decision-making. Significant gains in efficiency within the manufacturing and logistics industries have been attributed to the use of such models, together with a supporting information technology infrastructure [see 5, 6, 7, 8 for examples]. Manufacturing Resource Planning (MRP), which automated the calculations of material requirements within manufacturing, evolved into Enterprise Resource Planning (ERP), which monitors all manufacturing enterprise processes, and formed the information base for advanced planning and e-commerce.



## Quarterly Review

QUARTERLY REVIEW No. 19 / April 2006

3

### Trends in Services Sciences in Japan and Abroad

KAZUYOSHI HIDAKA  
*Affiliated Fellow*

#### 1 Introduction

American and European universities are taking a new approach to services. By regarding services as part of science and applying scientific methods to solve problems associated with services, they intend to increase productivity and bring about innovations in services, thereby invigorating the economy. This emerging academic discipline is called "Services Sciences, Management and Engineering," or simply "Services Sciences." The services here refer to the interactive process of creating economic values between the service provider and the user, and include not only the service industry as a tertiary industry but also the service business in the manufacturing sector. This article explains how services sciences have developed (Chapter 2), what services sciences are (Chapter 3), services sciences in European and American universities (Chapter 4), and the current status of this field of research in Japan (Chapter 5), followed by a conclusion (Chapter 6).

technology transfer to the manufacturing sector. It also points out the service sector's lack of research investment in innovative business process design, organization and management, despite services' major contribution to the economy. To put it simply, a factor behind this report is a perception that research investment in services should be addressed as part of U.S. national strategy. The report triggered a move toward integrating many recent approaches to services in academia into the term "services sciences."

#### 2-2 Development of the service economy

What kind of role are services given in the global economy? Nowadays, services are increasingly important to the economy. This is evident from two facts: the service industry has grown significantly, and even companies that fall outside of the service industry are more and more reliant on "service-based business."

#### (1) Development of the service industry


Trends in the working population by industry demonstrate that the workforce in the service industry has increased sharply worldwide. Figure 1 shows the change in the working population in the world's top 10 countries by workforce size over the past two centuries<sup>(2)</sup>. In developed countries, mainly in Europe and North America, the working population in the secondary (manufacturing) industry increased sharply over the periods of the First Industrial Revolution, which was ushered in by the improvement of spinning machines in England in the late 18th century, and the Second Industrial Revolution, which took place as a result of the increased use of oil and electricity in the late 19th century. However, by the middle of the 20th century,


#### 2 Background

##### 2-1 U.S. investment in service research as a national strategy

The U.S. Council on Competitiveness published a report (commonly known as the "Palmsano Report"<sup>(3)</sup>) in December 2004 that emphasizes the importance of national innovation strategy from the three perspectives of human resources, investment and infrastructure. Based on an analysis of the current position of the U.S., the report cites, as the reasons that the country needs innovation, threats from other countries as a result of globalization, a slowdown in research in science and technology, and delays in smooth

# Service Science at ASU





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## CENTER FOR SERVICES LEADERSHIP

**HIGHLIGHTS:**

- The 20th Annual Services Leadership Institute March 27-29, 2005 Tempe, Arizona [\[more\]](#)
- The 17th Annual Compete Through Service Symposium November 1-3, 2006 Phoenix, Arizona [\[more\]](#)
- Knowledge@W. P. Carey Special Section on the 2005 Compete through Service Symposium [\[more\]](#)



**Science** - We are in the business of the science of services - we base our understanding of effective services on research and objective criteria, not just platitudes

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**Symbiosis** - We are in the business of building a cross-industry and cross-functional network of companies and academics who can help each other discover fresh ways to compete through service - not just business as usual

<http://wpcarey.asu.edu/csl/>

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### What is SSME?



### The New Science of Services

Services Science, Management and Engineering (SSME) at UC Berkeley is a multi-disciplinary effort to conduct research

and teaching in the emerging discipline of services science. The theoretical foundations of SSME come from the disciplines of economics, computer science, engineering, law, and organizational sociology, each of which provides important perspectives on the evolution of the information and services economy. But SSME would be merely theoretical without the pragmatics provided by business strategy and operations, information technology, accounting and finance, and user-centered design, each of which contributes insight about the services lifecycle from design to implementation to deployment.

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### News:



#### Ravi Nemana Named Executive Director

(10 April 2006). Ravi Nemana is named the first Executive

Director of the Services Science, Management & Engineering program at UC Berkeley.

#### ["Academia Dissects the Service Sector, but Is It a Science?"](#)

(18 April 2006). NY Times article by Steve Lohr.

On his Asian trip last month, President Bush urged Americans not to fear the rise toward prosperity of emerging economies like India. Education, Mr. Bush said, was the best response to globalization, climbing further up the ladder of skills to "fill the jobs of the 21st century."

<http://ssme.berkeley.edu/>

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**MBA SERVICES SCIENCE CONCENTRATION ANNOUNCED AS PART OF IBM-NC STATE SSME CURRICULUM INITIATIVE**

Jan. 16, 2006 -- NC State's MBA program will be offering a new [concentration in services science](#) as part of a new curriculum initiative in Services Sciences, Management and Engineering (SSME) announced by NC State and [IBM](#) today. The new academic initiative is designed to prepare graduate students for careers in the evolving multidisciplinary field of services management. [See related story in [InformationWeek](#).]

**Innovation in Action**

NC State, whose motto is 'Innovation in Action,' will be the first research university in the U.S. to launch graduate-level studies in SSME, in collaboration with IBM through its [Academic Initiative](#) program. In the 1950s, IBM made a similar effort to help establish computer science as a new academic discipline.

The services sector develops and implements technological applications that help businesses, governments and other organizations improve what they do and tap into completely new areas. It currently represents over 75 percent of the U.S. economy and is growing rapidly as companies seize new business opportunities by building more efficient IT systems, streamlining business processes and embracing the Internet. At IBM alone, services now account for about 50 percent of the company's revenue.

"We clearly need to develop a more systematic approach to services innovation if we are to sustain this vital new sector in the economy," said Paul Horn, senior vice president, IBM Research. "It is critical that we work with universities to create curricula that provide students entering the workforce with skills and training needed for growing our services business."

"SSME positions NC State as a worldwide leader in developing the skills that companies like IBM are looking for in their employees," said [Steve Allen](#), associate dean for graduate programs and research at NC State's College of Management. "Our students will now have a chance to be part of this emerging field, opening the door for them to pursue a wide variety of services-related jobs."

**Prepare for a technology-based, services-led economy**

The new program at NC State draws on research and teaching in the fields of computer science, computer engineering, business strategy, and management sciences to help students develop the skills required in a technology-based, services-led economy.

A team of faculty members from the management and engineering colleges has developed five new services-related courses that will be added to the MBA and Master of Science in Computer Networking (MSCN) programs.


Graduates from both programs will have master's-level expertise in business processes, business strategy, information technology, and management of people in the workforce. Both colleges will be admitting students for the new curriculum in fall 2006. IBM will also encourage its employees to enroll in the program.

With thousands of technical researchers and business consultants around the world dedicated to services, IBM is in a good position to partner with universities to further develop SSME, providing a perfect breeding ground for testing and developing SSME theories and practices. In addition, many IBM developers and

[http://www.mgt.ncsu.edu/news/2006/mba\\_ssme.php](http://www.mgt.ncsu.edu/news/2006/mba_ssme.php)

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## Minor in Services Science

The economies of most developed countries are dominated by services, as more than 75% of employment, gross domestic product, and many other macroeconomic measures attributable to the service sector. Even traditional manufacturing companies such as GE (70% services revenue) and IBM (50% services revenue) are adding high-values services to grow their businesses. Information services and business services are two of the fastest growing segments of the service economy. The rise of web services, service-oriented architectures, and self-service systems suggest a strong relationship between the emerging disciplines related to services and the more established discipline of computer science. Improving productivity in services often requires combining technical, social, and business innovations and effective combinations of these often develop naturally together. Cross-disciplinary knowledge and skills relevant to services now seem necessary for most college graduates. The minor in Services Science aims to provide these skills by drawing together cross-disciplinary courses to understand services from management, economics, engineering, and/or cognitive science perspectives. The minor comprises a specific course in services, several service-related courses taken outside the student's major area, and a project course in which student teams conduct research on aspects of the service sector.

**Requirements<sup>1</sup>:**


**MGMT 150 (Services Science and Management)**

**One upper division MGMT-project course.**

**Three additional courses, one from each of the following areas (at least two must be upper division):**  
COGS, ECON, CSE

<sup>1</sup>All requirements are for informational purposes only. Please consult the current UC Merced catalog, or your advisor for official requirements.

**Upcoming Events**



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<http://ssha.ucmerced.edu/2.asp?uc=1&lvl2=77&lvl3=77&lvl4=87&contentid=124>

## Some Other University Courses and Curricula

- Tsinghua University and Beijing University
  - Service Science courses offered Spring 2006
  
- UC Santa Cruz
  - Technology and Innovation Management program started Fall 2005
  
- EPFL - Switzerland
  - Computer Science Master's for SSME in Fall 2006
  
- Carnegie Mellon University
  - Master's course "Managing Service Organizations", eSourcing
  
- RPI
  - Service Engineering Masters offered (for 5-10 years)
  
- Penn State
  - IE undergraduate degree adding services focus (past 3 years)

# IBM's SSME Course Materials

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- ← IBM Almaden Home
- ← IBM Services Research

**Almaden Services Research**

- On Demand Innovation Services (ODIS)
- Services Sciences, Management and Engineering (SSME)

**Working with ASR SSME**

**ASR SSME Course Modules**

- Workshop for Services Education
- SSME Summit Call for Papers

**Related Links**


- Almaden Talks and Events Calendar
- Career Opportunities
- Feedback
- Worldwide Labs
- Tangible Culture

## IBM Almaden Research Center

Almaden Services Research

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### Services Sciences, Management, and Engineering (SSME) - Course Materials



This course is about [Services Sciences, Management and Engineering \(SSME\)](#) --- a concept for a multidisciplinary educational foundation for graduate and undergraduate students in science, management, and engineering. SSME is the application of scientific, management, and engineering disciplines to tasks that one organization beneficially performs for and with another ("services"). SSME has the goal of making productivity, quality, performance, compliance, growth, and learning improvements more predictable in work-sharing and risk-sharing (co-production) relationships. SSME is the study of service systems, and it aims at improving service systems, particularly those involved in [complex, IT-enabled, business-to-business services](#) like [IBM Global Services](#) provides.

Many varieties of services education exist today (see our [list of related programs](#)), and this set of materials is culled from a variety of sources (see our [list of references](#)). But we are by no means experts in services research and services education. We present these materials in the hopes of fostering broad conversations and work on developing multidisciplinary service education.

Here we have a fairly modest goal: To provide materials for an introductory SSME course. We envision nine basic modules, and we already have drafts of five of them plus an overview module available. These slides and other materials are posted with no restrictions. You can use and customize them as you see fit. For your convenience, the notes are posted separately as well.

These modules are intended as raw materials that can be used by instructors, who we imagine will choose which of them might be appropriate to enhance current courses, and consider curriculum updates over time. Our intention is to make this an open course, a kind of community course. So we welcome your comments and contributions. If you use the materials, let us know. If are thinking about using them, let us know. If you don't like them for whatever reason, let us know. If you'd like to develop some materials to help our effort or if you'd like to contribute something you've already developed, let us know. Contact [SSME](#).

**Additional Data**

- [Global SSME Page](#)
- [Education for Services Innovation](#)
- [IBM Academic Initiative Program](#)

Module name	Slides MS PPT and PDF	Notes MS Word and PDF	Links to Case Illustrations <a href="#">IBM IBV site</a>
SSME Overview	<a href="#">Overview Slides</a> 415KB <a href="#">Overview</a> 98KB	<a href="#">Overview Notes</a> 256KB <a href="#">Overview Notes</a> 63KB	<a href="#">Specialized Enterprise Time to flex</a>
What are Services?	<a href="#">Services Slides</a> 708KB <a href="#">Services</a> 275KB	<a href="#">Services Notes</a> 254KB <a href="#">Services Notes</a> 169KB	<a href="#">Leisure</a>
Service Systems	<a href="#">Systems Slides</a> 595KB <a href="#">Systems</a> 242KB	<a href="#">Systems Notes</a> 726KB <a href="#">Systems Notes</a> 266KB	<a href="#">E-detailing</a>
Services Management	<a href="#">Management Slides</a> 1521KB <a href="#">Management</a> 416KB	<a href="#">Management Notes</a> 259KB <a href="#">Management Notes</a> 178KB	<a href="#">Managing Organizational Knowledge</a>

<http://www.almaden.ibm.com/asr/SSME/coursematerials/>

The New York Times

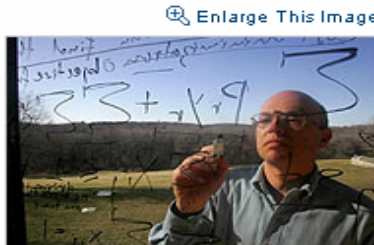
Business

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MEDIA & ADVERTISING	WORLD BUSINESS	YOUR MONEY	DEALBOOK	MARKETS	COMPANY RESEARCH	M		

## Academia Dissects the Service Sector, but Is It a Science?

By **STEVE LOHR**  
Published: April 18, 2006

On his Asian trip last month, President Bush urged Americans not to fear the rise toward prosperity of emerging economies like India. Education, Mr. Bush said, was the best response to globalization, climbing further up the ladder of skills to "fill the jobs of the 21st century."



Enlarge This Image  
Noah Berger for The New York Times  
Kurt Koester, a Berkeley student, is complementing his engineering studies with a course in services science.

But a ladder to where? That is, where are educated young Americans likely to find good jobs that will not be shipped off to India or China?

The answer, according to a growing number of universities, corporations and government agencies, is in what is being called "services science." The hybrid field seeks to use technology, management, mathematics and engineering expertise to improve the performance of service businesses like transportation, retailing and health care — as well as service functions like marketing, design and customer service that are

also crucial in manufacturing industries.

A couple of dozen universities — including the [University of California](#), Berkeley; Arizona State; Stanford; North Carolina State; Rensselaer Polytechnic Institute; and Georgia Tech — are experimenting with courses or research programs in the field.

The push for services science is partly a game of catch-up — a belated recognition that services now employ more than 75 percent of American workers and that education, research and policy should reflect the shift. "Services is a drastically understudied field," said Matthew Realff, director of a new program at the National Science Foundation to finance university research in the field. "We need a revolution in services."

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<http://www.nytimes.com/2006/04/18/business/18services.html>

# Recent Meeting on Education for Service Innovation

The screenshot shows the IBM Research website interface. At the top, there is a navigation bar with the IBM logo on the left, a search bar in the center, and links for 'United States [change]' and 'Terms of use' on the right. Below the navigation bar is a secondary menu with links for 'Home', 'Products', 'Services & solutions', 'Support & downloads', and 'My account'. The main content area features a sidebar on the left with a tree view containing 'Almaden Services Research', 'Education for Service Innovation', 'Agenda', 'Essays', and 'ASR SSME Course Materials'. The main heading is 'Workshop on Education for Service Innovation'. Below the heading, it lists the hosts as 'National Science Foundation, US Department of Commerce, and IBM Research', the date as 'When: April 18, 2006', and the location as 'Where: National Academies Building, Washington DC'. The 'Workshop Goals' section contains five numbered points. Below the goals are links for 'Agenda and Presentations', 'Submitted Essays', and a 'Summary' file (34KB). A 'Related Links' section on the right lists various external resources. At the bottom of the page, there is a link to a 'NY Times article "Academia Dissects the Service Sector - but Is It a Science?"'. The footer contains links for 'About IBM', 'Privacy', and 'Contact'.

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Almaden Services Research

Education for Service Innovation

Agenda

Essays

ASR SSME Course Materials

## Workshop on Education for Service Innovation

Hosts: National Science Foundation, US Department of Commerce, and IBM Research  
 When: April 18, 2006  
 Where: National Academies Building, Washington DC

**Workshop Goals:**

1. To highlight the importance of services in the US and other developed economies and the role of service innovation in promoting productivity and growth.
2. To identify and make explicit the knowledge and skills that industry has empirically observed are important to service innovation, and the gaps in our existing curricula.
3. To outline and debate some initial curricula developments that address the unique educational needs of careers in the service economy.
4. To identify how existing curricula can be enhanced to enable service innovation knowledge and skills to be acquired.
5. To understand and define the areas for additional funding investments in the development of service innovation research and education.

[Agenda and Presentations](#)

[Submitted Essays](#)

[Summary](#) 34KB

**Related Links**

- [NSF Service Enterprise Engineering](#)
- [NSF Engineering Education Programs](#)
- [IBM Research - SSME](#)
- [HP - Center for Systems and Services Sciences](#)
- [UC Berkeley - SSME](#)
- [RPI - Department of Decision Sciences and Engineering Systems](#)
- [PSU - Industrial and Manufacturing Engineering](#)
- [NCSSU - Services Management](#)
- [ASU - Center for Services Leadership](#)
- [University of Maryland - Center for Excellence in Service](#)
- [Service Support Professionals Association](#)
- [Federation of American Scientists](#)

[NY Times article "Academia Dissects the Service Sector - but Is It a Science?"](#)

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<http://www.almaden.ibm.com/asr/SSME/esi/>

# Upcoming Summit on Service Education – October 2006

The screenshot shows the IBM Almaden Research Center website. The main content area features a large heading: "Call for Position Papers" followed by "Services Sciences, Management and Engineering" and "Education for the 21st Century". Below this is an "Introduction" section with a sub-heading "SSME" and a paragraph explaining the need for new skills in a service business environment. It mentions that IBM Global Services is the largest IT services organization and that SSME is a cross-disciplinary approach. The text states that IBM will host a conference on October 5-7, 2006, in New York. The goals of the summit are listed as follows:

1. Demonstrate substantive results in the formation of multi-disciplinary Services Sciences, Management and Engineering.
  - ◊ Present ways SSME has been introduced into curricula to date.
  - ◊ Learn about services research underway or planned.
2. Outline a roadmap for establishing SSME as a legitimate discipline within the academic community.
  - ◊ Identify how practitioners can join with faculty and administrators to focus efforts on cross-functional, service-oriented courses and research.
  - ◊ Identify recommended actions for academia and governments.

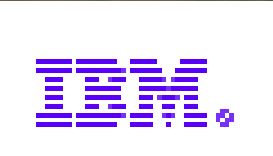
The left sidebar contains navigation links such as "Select a country", "IBM Almaden Home", "IBM Services Research", "Almaden Services Research", "On Demand Innovation Services (ODIS)", "Services Sciences, Management and Engineering (SSME)", "Working with ASR SSME", "ASR SSME Course Modules", "Workshop for Services Education", "SSME Summit Call for Papers", and "Related Links" including "Almaden Talks and Events Calendar", "Career Opportunities", "Feedback", "Worldwide Labs", and "Tangible Culture". The top navigation bar includes "Home", "Products & services", "Support & downloads", and "My account". A search bar is located in the top right corner.

<http://www.almaden.ibm.com/asr/SSME/summit/>

# 16<sup>th</sup> Annual AMA Frontiers in Service Conference

**2007**  
**October 4 - 7**

At San Francisco's  
Westin St Francis



**ROBERT H. SMITH**  
SCHOOL OF BUSINESS

Leaders for the Digital Economy



# Questions?

[pmaglio@almaden.ibm.com](mailto:pmaglio@almaden.ibm.com)