



Services Science

Luxembourg, November 13, 2007

Paul Van Droogenbroeck
IBM Belgium & Luxembourg
Governmental Programs
Academic relations



Agenda

Introduction

IBM Today

Services Innovation

Services Science

Origin ? What is it?

Current Actions

Expected future

21st-Century Drivers of Change

Network Ubiquity

- **More than a billion Internet users today**

Open Standards

- **Widely-adopted technical and transaction specifications**

New Business Designs

- **Horizontally-integrated operations**

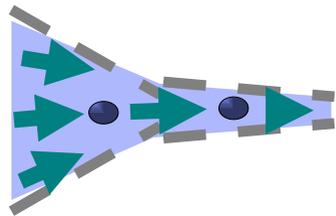
Global CEO Study – 2006

In-depth Interviews with 765 CEOs Across the Globe

Findings

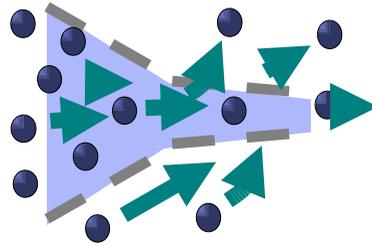
- **Innovation represents the best opportunity to achieve growth**
- **External collaboration separates winners from losers**
- **Sustainable innovation depends on culture and orchestration from the top**

Innovation moving out of the Lab

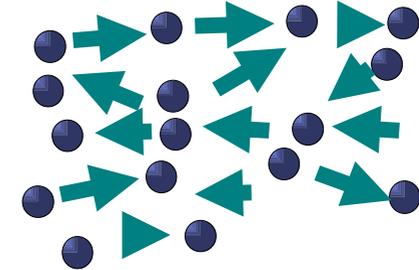


Centralized
inward
looking
innovation

**Closed
Innovation**



Open
Innovation

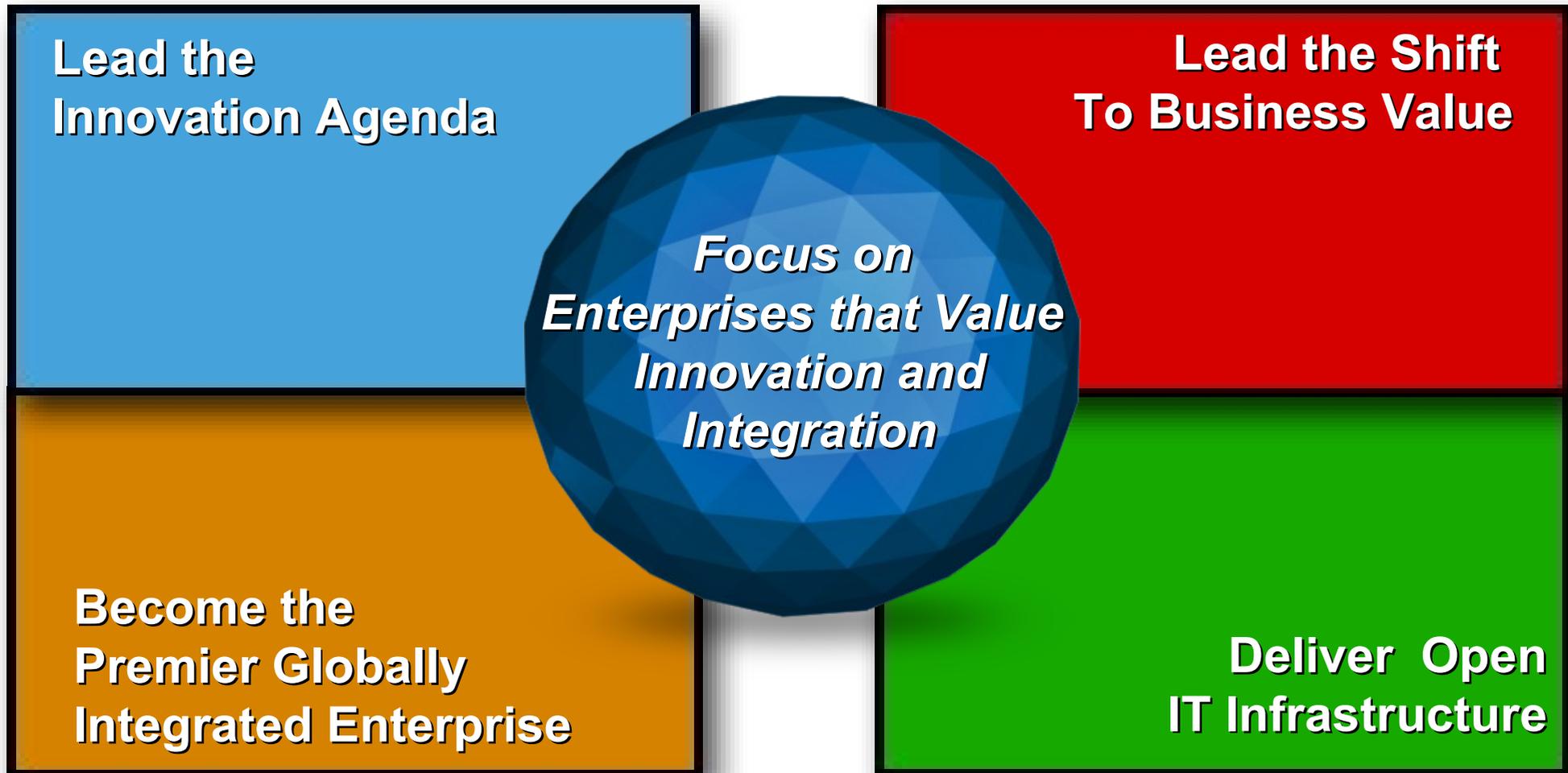


Innovation
Networks

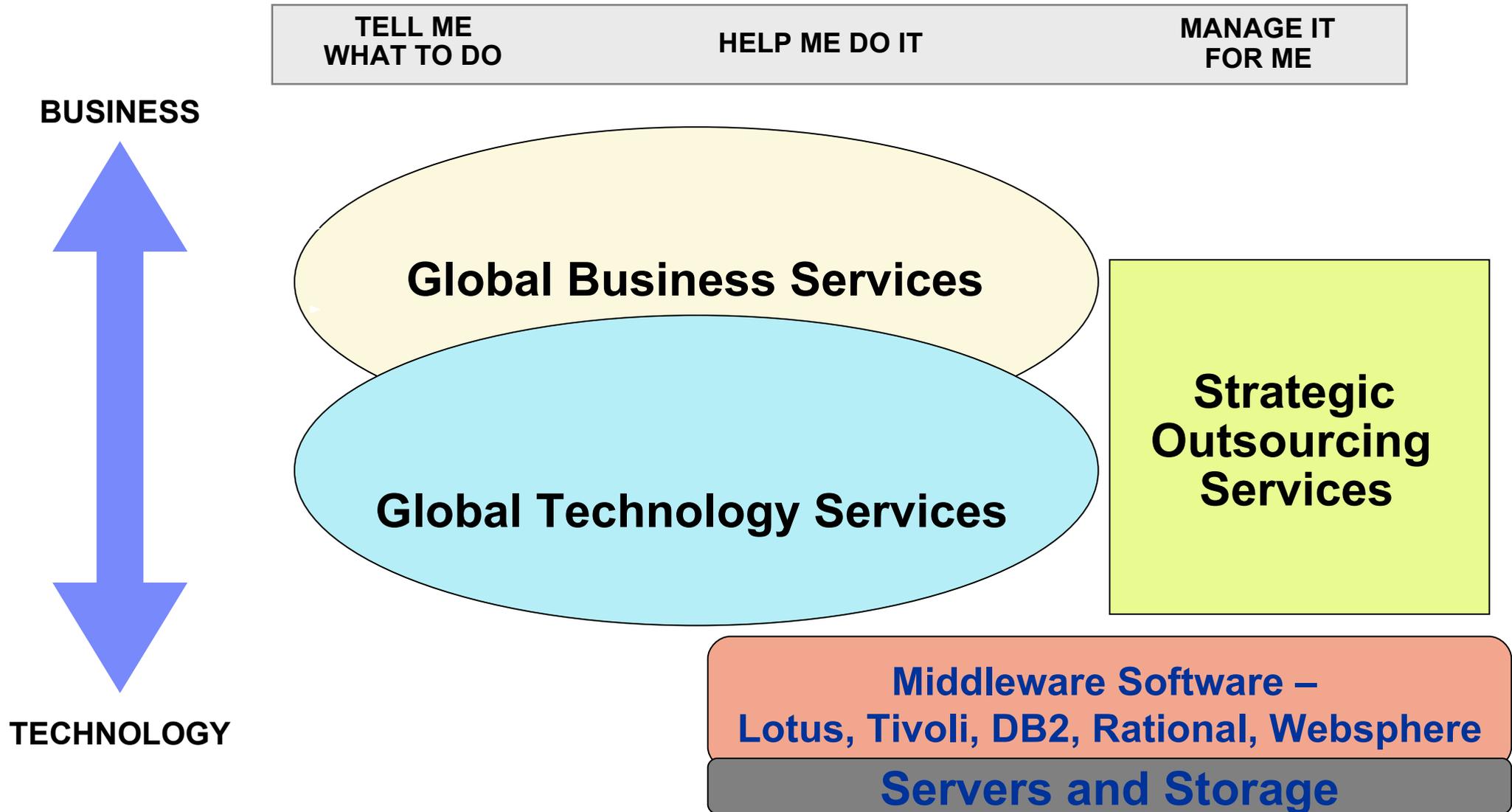
Sources: Chesbrough 2003, Forrester 2004, von Hippel 2005

IBM Strategy

How will we drive our future in a globally networked world?



IBM's End-to-end solutions from products to services



Corporate Business Results

2006 year-end from continuing operations

- Revenue: \$91.4 billion
- Net Income: \$10.7 billion
- Earnings per share: \$6.06
- Number of employees: 355,766

2006 IBM Corporate Revenue by Segment:

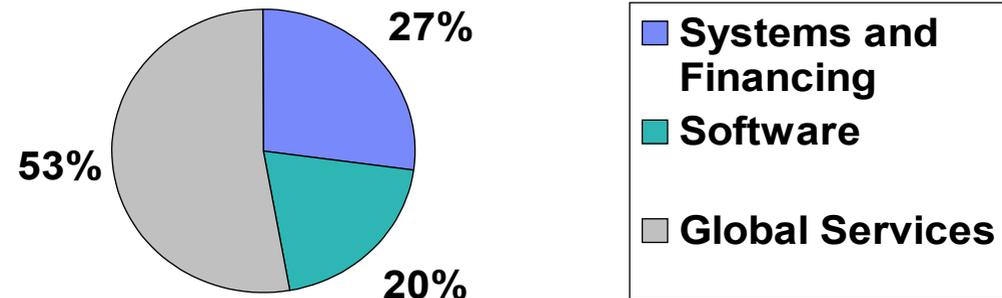
- Systems and Financing: \$24,8 billion
- Software: \$18,2 billion
- Global Services: \$48,3 billion

2006 IBM by Geography:

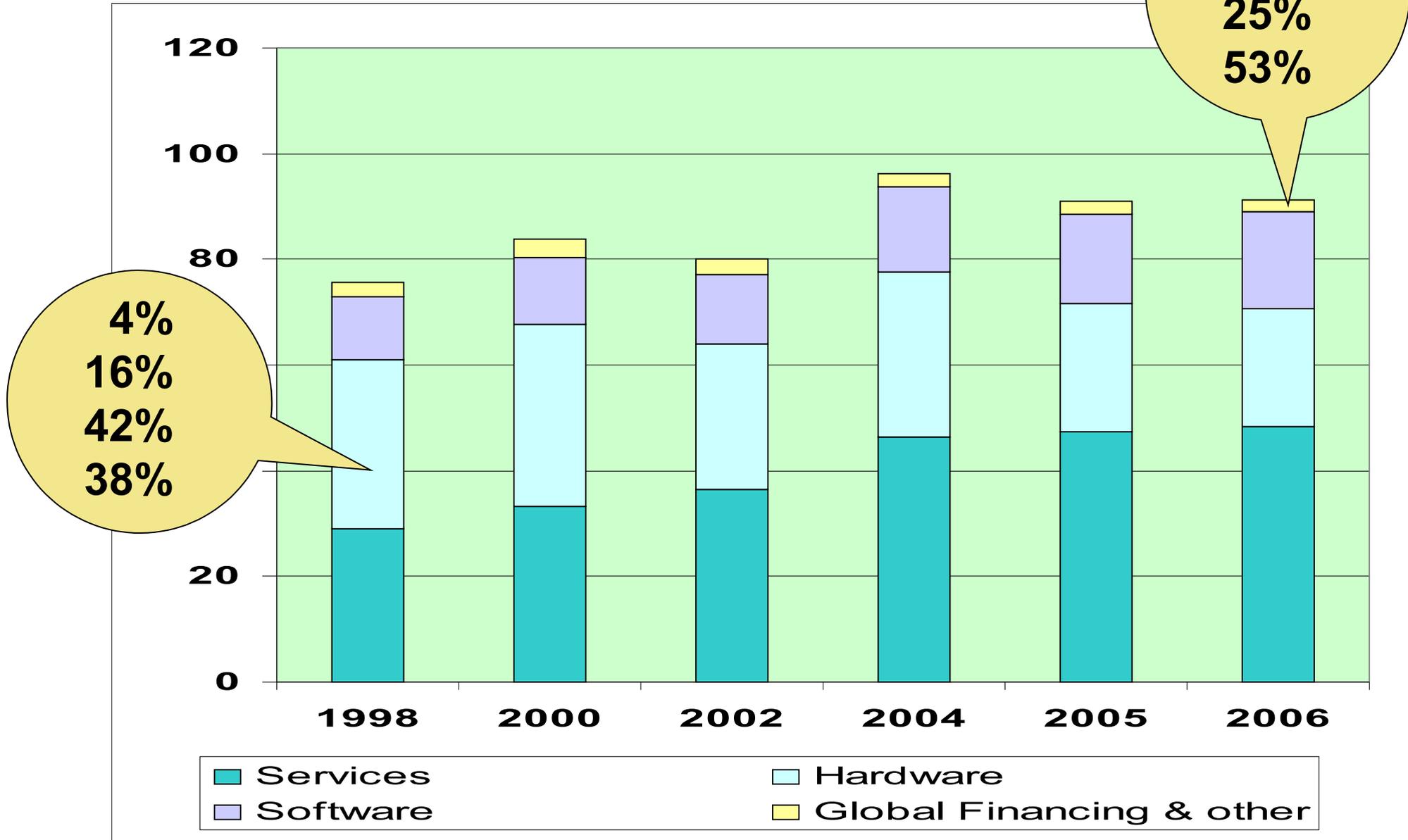
Employees % / Revenue %

▪ Americas	35%	43%
▪ EMEA:	35%	34%
▪ Asia:	30%	19%
	(OEM = 4% rev)	

2006 IBM Corporate Revenue by segment



Shape of revenue dramatically changed over past 10 years

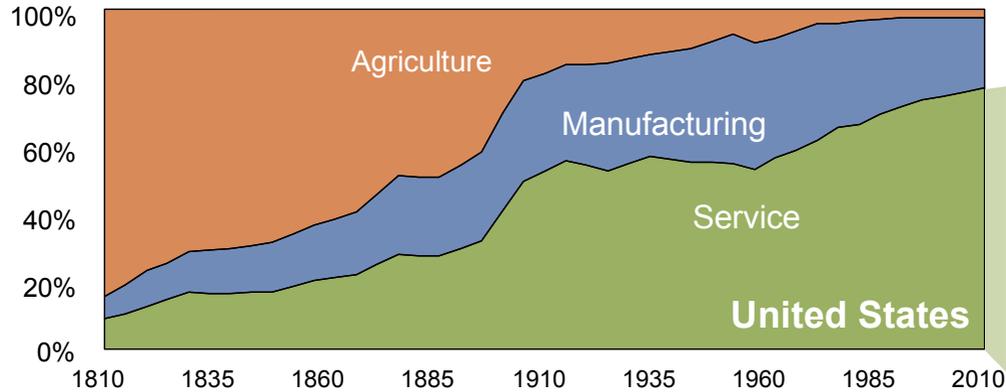


SSME, a new Science

Services as share of Gross Domestic product

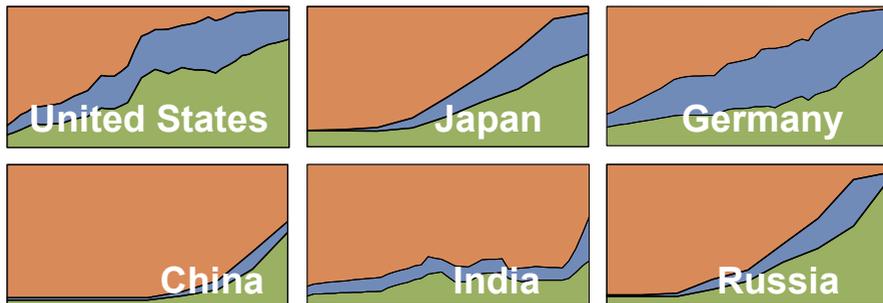
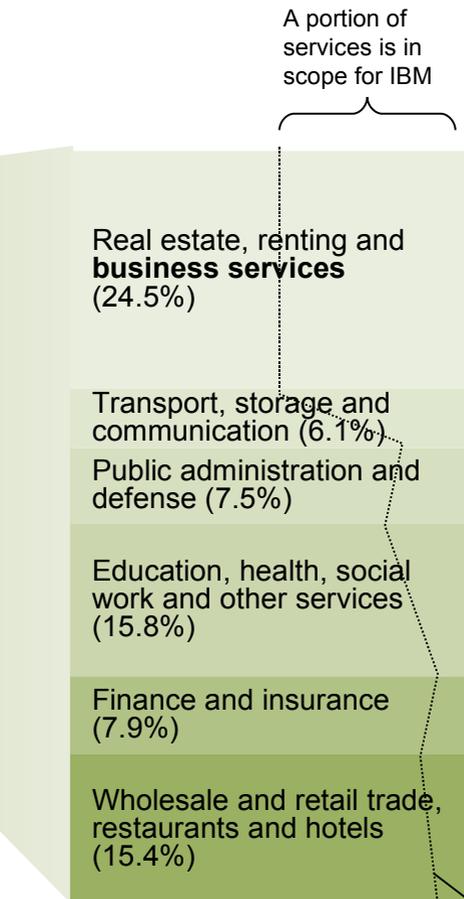
Economies have become services dominated

Historical Development of GDP contribution of industrial sectors in some example countries



Business and related services provide a growing part of overall services

Breakdown of services for U.S. 2004



Illustrative

Source: OECD in Figures 2006-2007

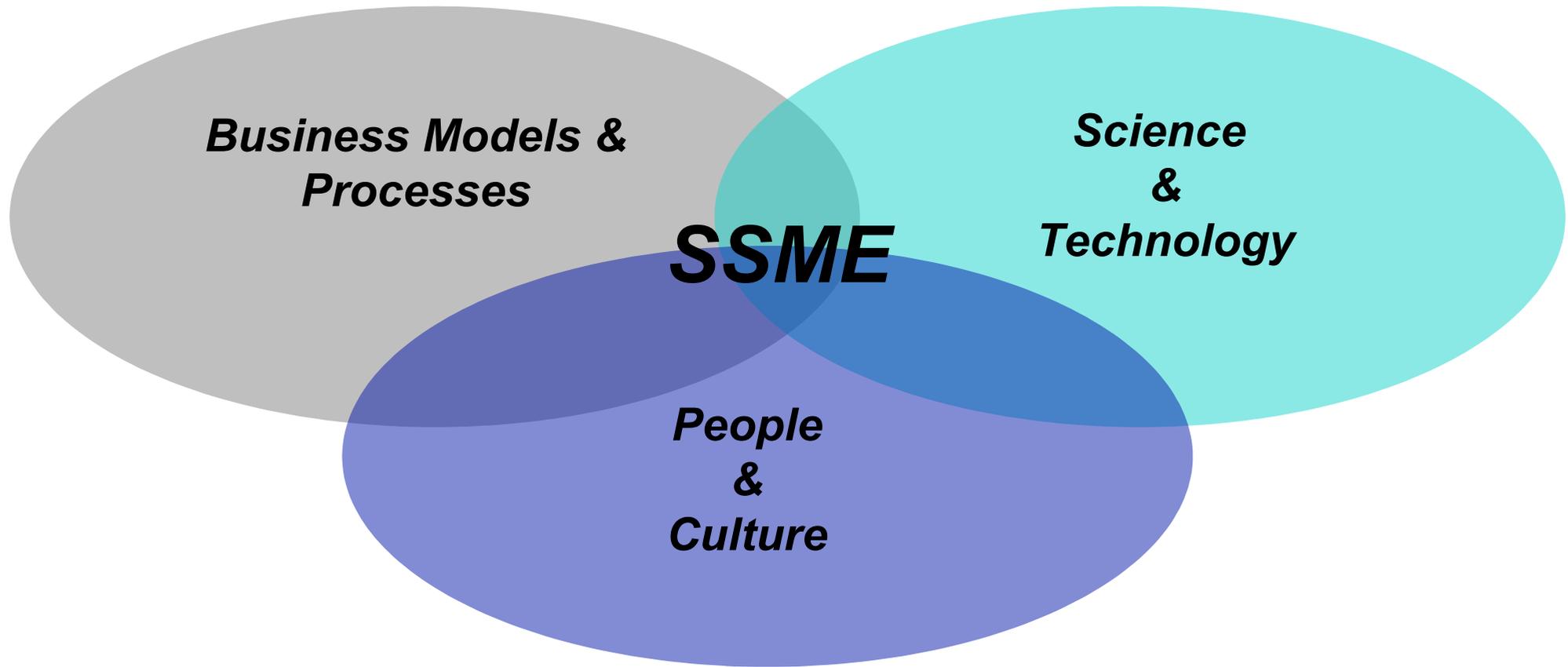
Why Should We Care?

- *Academics need to make service innovation a priority*
 - Job placement for existing students
 - University competitiveness for prospective students
 - Continued attractiveness to business for shared research

- *Governments need to make service innovation a priority*
 - GDP growth of nations increasingly depends on it

- *Businesses need to make service innovation a priority*
 - Revenue and profit growth increasingly depend on it

Science, Management & Engineering (SSME)



The marketplace requires innovation that combines
people, technology, value and clients

What is Service Science, Management and Engineering (SSME)

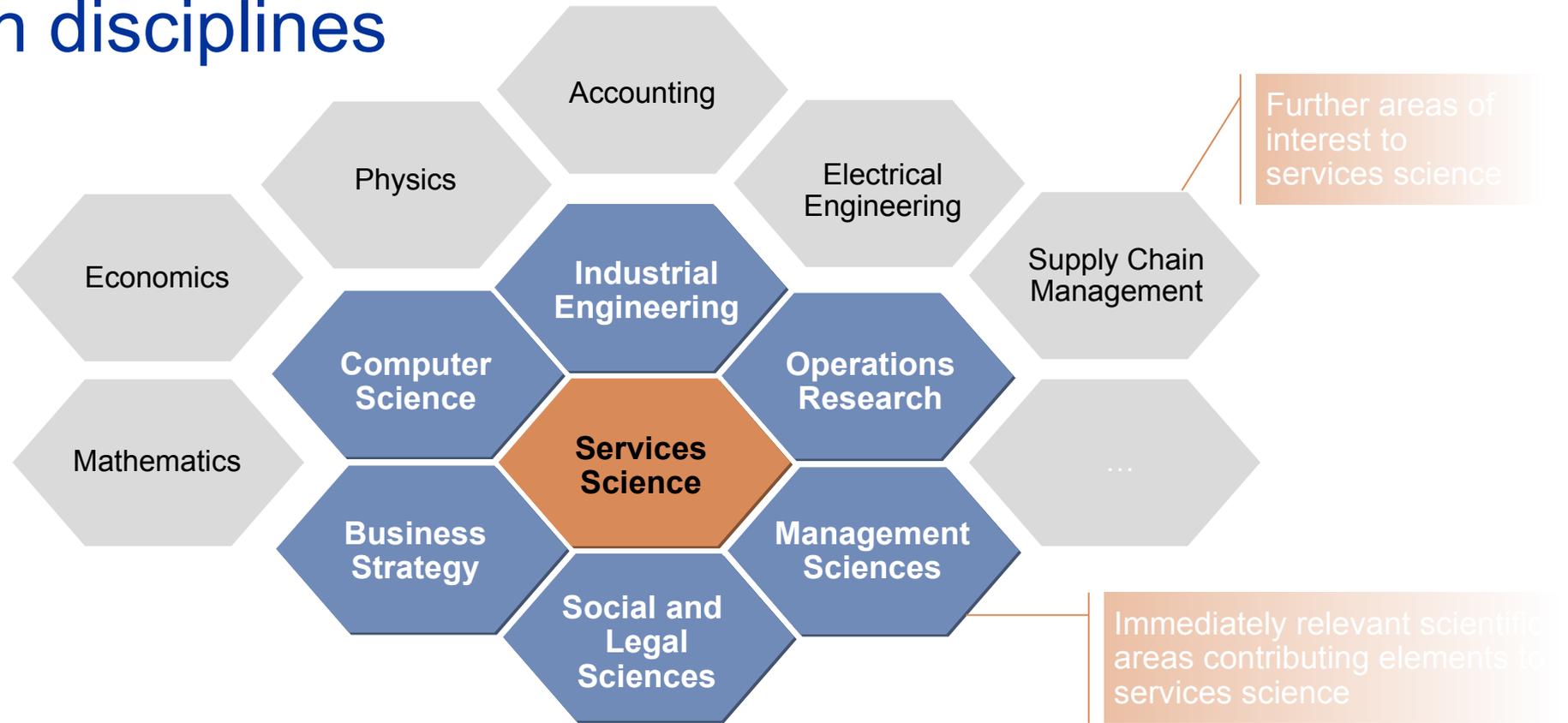
- The application of scientific, management, and engineering disciplines to tasks that one organization beneficially performs for and with another ('services')

Services are anything of economic value that cannot be dropped on your foot.

The key to service value is in actions, performed now or promised for the future. Services often create mutual interdependencies.

Especially complex organization to organization services – business to business, nation to nation, organization to population

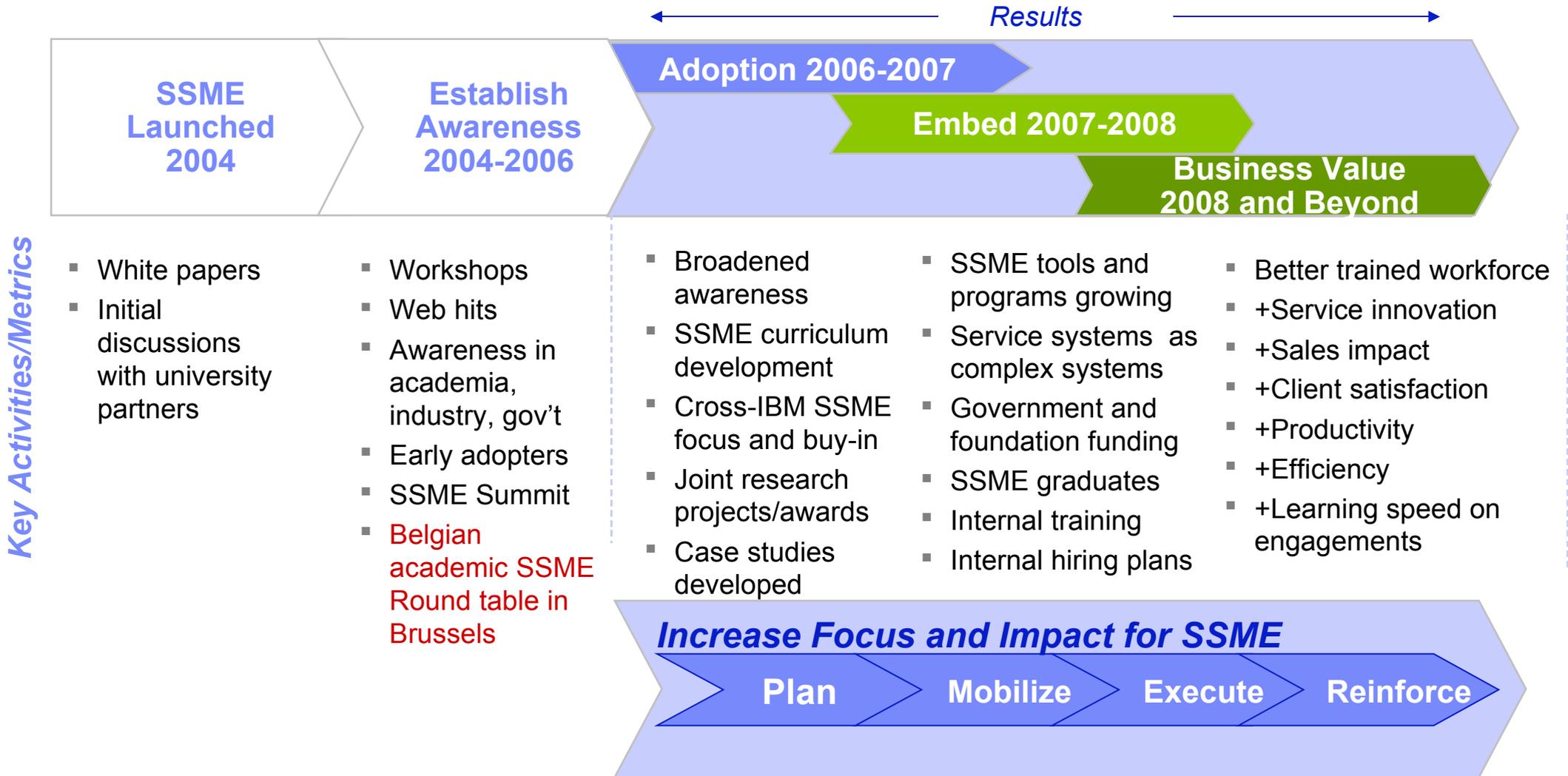
Services science draws from a number of establish research disciplines



“SERVICE SCIENCE DEFINED.– [...] the term "service science" means curricula, training, and research programs that are designed to teach individuals how to apply scientific, engineering and management disciplines that integrate elements of computer science, operations research, industrial engineering, business strategy, management sciences, and social and legal sciences in order to encourage innovation in how organizations create value for customers and shareholders that could not be achieved through such disciplines working in isolation.” [21st Century Competitiveness Act, 2007, US Congress]

SSME at IBM

SSME and Skills for the 21st Century Roadmap - from awareness to business value



2007 SSME Priorities

Create integrated strategy and execution plans to speed the adoption of SSME and build the pipeline of skills we need for the 21st century

Metrics – Awareness/Adoption/Results

Internal Outreach

Engage our services organizations in SSME
Create an internal “buzz” around SSME and skills
Catalyze SSME education/skills initiative for IBMers
Connect the dots and create internal governance model

External Outreach

Create a global movement and build momentum
Encourage funding and policy initiatives for SSME
Expand IBM lecture series and case studies globally
Support Research agenda to take SSME to the next level

Measures of Success

Thought leadership and press
Industry and Government participation and adoption
University and IBM adoption
Joint research, science and exploratory projects

Service Research and Innovation Initiative (SRII)

- Announced March 2007
- IBM and Oracle founding members
 - Advisory board includes Accenture, Cisco, EMC, Computer Sciences, Hewlett-Packard, Xerox, European Commission, Fraunhofer Institute
 - Research members from University of California, Los Angeles, Wharton School at University of Pennsylvania, Arizona State University
- Mission
 - Forum for collaboration to help set public and private research priorities
 - Pool corporate funds to support academic programs
 - Advise the government on preferred targets of basic research

SSME and EDUCATION

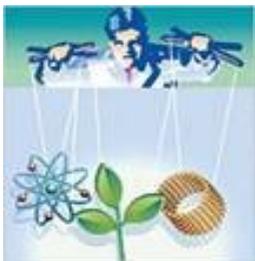
We need a new breed of innovator – **the service scientist**



**Management
(Business)**



**Social Science
(People)**



**Engineering
(Technology)**



Tower of Babel

- “Biggest problem in business is people don’t know how to talk to other people in the language they understand.”
- Charles Holliday, CEO Dupont



Service Education is Interdisciplinary



Science and Engineering

Industrial and Systems Engineering

Computer Science & Info. Systems

Math and Operations Research

Economics and Social Sciences

Business Anthropology

Organizational Change & Learning

Business and Management

Need more T-shaped people – both deep and broad

www.ibm.com/university/ssme

Academic Initiative > Skills for the 21st century >

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."

(Collins, P. (2002). Innovation in the Service Economy: The New Wealth of

IBM Academic Initiative

Products & technologies

Downloads & CDs

Training

Curriculum & courseware

Skills for the 21st century

- Services Science, Management & Engineering

- Globalization
- Accessibility

Forums & community

Certification

Library

Support

News & events

Membership

Site map

Feedback

Related links

- Student Portal
- Solutions for higher

SSME Highlights

[Services Science: A New Field for Today's Economy](#)

→ [SSME Conference: Education for the 21st Century](#)

[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](#)

SSME Roadmap for University Faculty

1. Learn about Services as a Science

Go to the IBM SSME website www.ibm.com/university/ssme:

- Recommended reading list
- SSME-related conferences
- Course-related linkages

3. Assess what your school is doing now in SSME-related studies and share with IBM and other universities. Identify gaps in curriculum and build SSME curriculum.

5. Collaborate with other Universities who are leaders in SSME research

- Berkley, CMU, Stanford, MIT, Oxford, Tsing Hua, NCSU, GA Tech, SJSU

7. Participate in the SSME evolution:

- Champion efforts to promote SSME
- Conduct research in various challenge areas
- Apply for research and new curricula grants from Government and Foundations
- Build new course curriculum for degree programs
- Build case studies using IBM customer examples, industry studies and business issues studies
- Post SSME curricula and courseware on IBM Academic Initiative website for collaboration
- Engage in SSME conferences and events



Example Curriculum: SSME at North Carolina State University

MBA Concentration in SSME

Required

Services Management

Consulting

Choose one of the following

Market Analytics

Marketing Research

Marketing Strategy

Project Management

Elective options

Market Analytics

Marketing Strategy

Supplier Relations

MS Concentration in SSME Required

Services Management

Management of Technology

Managing People in the High-Tech

Environment

Process Analysis and Design

Requirements and Electives

in Electrical Engineering or

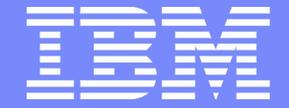
Computer Science Masters Programs

Examples of Universities Around the World Developing and Delivering SSME

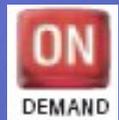
- | | |
|--|---|
| UC Berkeley, Merced, Santa Cruz | ■ SSME Certificate Program, SSME minor, and Tech and Innovation Mgmt program |
| NC State | ■ SSME Concentration in Masters of Business Admin and Masters of Engineering |
| Warwick and Manchester | ■ IT Architecture courses though collaboration with IBM; Warwick also offers “skills certificate” |
| Tsinghua University and Peking University | ■ Service Science courses |
| EPFL - Switzerland | ■ Computer Science Master’s for SSME |
| Universidade Federal de Rio de Janeiro | ■ SSME Research and Courses |
| Carnegie Mellon University | ■ Master’s course “Managing Service Organizations”, eSourcing |

More SSME curricula worldwide

- Brigham Young University
- **Brussels, Free University**
- Business school of IDC (Israel)
- Cornell University
- Delft University of Technology
- EPFL Federal Institute of Technology Lausanne
- Georgetown University
- Harbin Institute of Technology
- Helsinki Polytechnic Institute
- ITESM (Mexico)
- JAIST
- **Katholieke University Leuven**
- Long Island University
- Massachusetts Institute of Technology
- Michigan Technological University
- Missouri State
- Northern Illinois University
- Ohio State, Fisher College of Business
- Pace
- Portland State University
- Rensselaer Polytechnic
- RMIT University
- Rochester Institute of Technology
- Sogang University
- State University of Management, Moscow
- Technical University of Brno, Czech Republic
- Tampere University of Technology
- Texas A & M
- Tsinghua
- UNC Keenan Flagler School of Business
- University of Bridgeport
- University of California, Santa Cruz
- University College, Dublin
- University of Dublin (Trinity College)
- University of Porto
- University of Pretoria
- University of Sydney
- Universidad Federal de Rio de Janeiro
- University of Manchester
- University of MD Baltimore County
- University of Maryland RH Smith School of Business
- University of Pavia
- University of Pennsylvania, Wharton
- University of Virginia
- Universidad Torcuato Di Tella
- University of Tsukuba
- Western Michigan University
- Virginia Tech
- Warwick University
- William and Mary
- York University Canada



SSME and Industry



Industry Trend Reports for Teaching SSME

IBM Global Services > IBM Business Consulting > Innovation and research >

IBM Institute for Business Value

THOUGHT LEADERSHIP STARTS HERE

The IBM Institute for Business Value brings leading-edge thinking and practical insights to business executives



The IBM Institute for Business Value provides strategic insights and recommendations that address critical business challenges and help our clients capitalize on new opportunities.

“We work in collaboration with industry experts, leading-edge clients and our own field consultants to provide practical recommendations built on a foundation of fundamental research.”

— George Pohle, Partner and Global Leader, IBM Institute for Business Value.

We're here to help



Easy ways to get the answers you need.

E-mail us

or call us at
1-800-IBM-7080
ext. BCS

Learn more

Innovation and research podcasts

This audio series is brought to you directly from the researchers at the IBM Institute for Business Value. Listen in

Business thought leadership from IBM

Our research is used by senior executives to help them:

- Anticipate changes in their industries
- Prioritize strategic and operational alternatives for action
- Formulate road maps for change initiatives
- Determine the best metrics for measuring success
- Quantify the expected return on their investments.

Well over 100 studies are currently available across many industries and areas of functional expertise.

Search our reports

By industry

By business function

More about the IBM Institute for Business Value

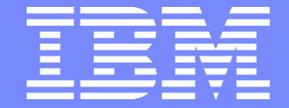
The IBM Institute for Business Value is comprised of 60 consultants who conduct research and analysis in 17 industries and across 5 functional disciplines. The institute is a worldwide presence, drawing on consultants in nine countries to identify issues of global interest and to develop practical recommendations with local relevance.

Service Research and Innovation Initiative (SRII)

- Announced March 2007
- IBM and Oracle founding members
 - Advisory board includes Accenture, Cisco, EMC, Computer Sciences, Hewlett-Packard, Xerox, European Commission, Fraunhofer Institute
 - Research members from University of California, Los Angeles, Wharton School at University of Pennsylvania, Arizona State University
- Mission
 - Forum for collaboration to help set public and private research priorities
 - Pool corporate funds to support academic programs
 - Advise the government on preferred targets of basic research

Open Innovation Policy Group for Services Creation

- Industry led with encouragement and support by the European Commission
- Nokia, Intel, BT, IBM, HP, SAP, Philips, Orange, Items International (non-industry Sitra and NESTA)
- Focus on Strategy and Policy in support of Open Innovation in Europe
- Service Economy and Services Innovation
- The empowered User
- Reality or Hype ?



SSME at Government



News | Thailand embraces Service Science as new approach to innovation - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Recycle Bin Mail Print Fax Connect To

Address http://w3.ibm.com/news/w3news/top_stories/2007/02/asean_thailand_embraces_ssme.html Go

Links IBM Business Transformation Homepage IBM Standard Software Installer IT Help Central Join World Community Grid

w3 News

Search w3 Search News

w3 Home | BluePages | HelpNow | Feedback

- News home
- Top stories
- In the news
- MyNews
- Archive index
- Help

Published on 05 February 2007

[News home](#) > [Top stories](#) >

Thailand embraces Service Science as new approach to innovation

Thailand, once content to be Asia's top tourist destination, wants to be a high value services-led economy – with IBM's help

Thailand and IBM took steps to further their collaboration on the country's national innovation with a Memorandum of Understanding (MoU) and talks held during a visit by Nick Donofrio, IBM's Executive Vice President of Innovation and Technology, to the capital Bangkok on February 1 and 2.



MoU formalises IBM's collaboration with

An MoU signed between IBM and Thailand's Ministry of Education, Ministry of Science and Technology, and Ministry of Information Communication and Technology (ICT), outlined ways in which IBM would support the government's effort to adopt Service Science, Management and Engineering (SSME). Areas covered included curricula design, knowledge transfer and collaborative and networking initiatives to promote Service

Experts on this topic

- 
[Stephen Braim](#)
 VP Governmental Programs, IBM CHQ, Innovation & Technology
- 
[Nicholas Donofrio](#)
 Executive Vice President, Innovation and Technology, IBM CHQ, Executive Offices
- 
[Kriengkrai Bhuvanij](#)
 Senior Public Affairs Professional, IBM Executive Staff

Related links

- [Innovation that matters](#)
[Innovation Portal]
- [Services Science: growing at a great idea](#)
[w3]
- [SSME Research](#)
[www.research]

Service Research and Innovation Initiative (SRII)

- Announced March 2007
- IBM and Oracle founding members
 - Advisory board includes Accenture, Cisco, EMC, Computer Sciences, Hewlett-Packard, Xerox, European Commission, Fraunhofer Institute
 - Research members from University of California, Los Angeles, Wharton School at University of Pennsylvania, Arizona State University
- Mission
 - Forum for collaboration to help set public and private research priorities
 - Pool corporate funds to support academic programs in service innovation
 - Define preferred targets of basic research based on industry input

Joined initiative by EC and industry: **NESSI:** Networked European Software and Services Initiative

“ Promoted by 13 major European ICT corporations (), totaling almost a million jobs and over 300 B€ of revenues, the NESSI Technology Platform aims to provide a unified view for **European research in Service Architectures and Software Infrastructures** that will define technologies, strategies and deployment policies fostering **new, open, industrial solutions and societal applications** that enhance safety, security and well-being of citizens.*

(*) Atos Origin, BT, Engineering Ingegneria Informatica, HP, IBM, Nokia, Object Web, SAP, Siemens, Software AG, Telecom Italia, Telefonica, Thales

NESSI: strategic drivers

- European dimension
- ICT simplification
- Adopting a citizen perspective
- A truly multicultural approach
- Business and administrative process flexibility
- Embracing open source as a model
- Open Standards adoption and development
- SME-friendly eco-systems

■ Conclusions

What to do next ?

- ***Academics need to make service innovation a priority***
 - Intensify collaboration amongst faculties and amongst universities, worldwide
 - Adaptation of curricula
 - Research in Services should lead to real service innovation

- ***Businesses need to make service innovation a priority***
 - Look ahead, invest in global networking
 - Innovation through collaboration within industry and with academia
 - Trade associations to support young entrepreneurs extensively

- ***Governments need to make service innovation a priority***
 - Policy definition which makes services innovation a priority
 - Encourage academia and facilitate their transition into services research & education
 - Encourage industry to invest in services innovation
 - Encourage young graduates to become an entrepreneur

Thank You!