Welcome and Overview of Services Science, Management, and Engineering (SSME) Initiative

Supporting presentation: SSME introduction.ppt

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Acknowledgements

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Welcome

This course is about Services Sciences, Management and Engineering (SSME) – a concept for a multidisciplinary educational foundation for undergraduates and graduates. Many variations of services education exist today within the domains of management, operations research, and economics to name a few. Most case studies and existing work has focused on business-to-consumer services. However, this set of modules is designed to not only understand business-to-consumer services, but also understand the complexities of business-to-business services. With respect to this focus on business-to-business services, a need is seen to explore and define the notion of truly multidisciplinary approach to educational offerings in the area of services. Of particular interest is the notion of the impact of technology, people, and process on how services are defined and delivered.

The modules are intended for use by instructors. Where, instructors can choose which module(s) might be used to enhance current courses and consider curriculum updates as time goes by. In this first iteration of the SSME modules, topics are provided as PowerPoint ™ slides and Word ™ documents with no restrictions. Instructors may customize these materials as needed. (If your IT platform does not support these applications, please send an e-mail to wendym@us.ibm.com and asking for an Adobe .pdf ™ version.)

The intention is to make these modules an open course (like open source code) – you are invited and welcomed to provide IBM with additional viewpoints and deeper thoughts on any area of interest. IBM is encouraging more research into services sciences, and as such challenges you to provide constructive criticism with respect to content, delivery, and use of the SSME modules.

Enjoy!

Overview of Module Format

In general, each module is designed to discuss a topic that is thought to be relevant to SSME. Each module is formatted to contain objectives, topic-specific content, summary, activities, references, and additional readings. There may, however, be slight deviations from this formulation due to the iterative nature of review, feedback, and modification that in encouraged to fully encompass relevant materials. To help you get acquainted with how the modules are designed, each element is described in the following.

Objectives

The objectives have been written to orient the instructor and student with respect to the module topic at hand—generally stating what one should have a cursory understanding of after reading the references, performing some or all of the activities, and reviewing the topic-specific content.

Topic-specific content

The topic-specific content either describes and/or illustrates what is thought to be relevant and important to the current subject at the time the modules were created. It is not the intention for the modules to be fully inclusive of all material related to the topic-specific content; but, instead to provide archetypal elements that may lead to additional discussion and/or investigation on the parts of the instructor and student.

Summary

The summary is provided to recap, connect, and provide closure to the ideas presented in the module. As with the topic-specific content, the summary is not meant to be all inclusive but instead a launching point for more in-depth study and discussion.

Activities

The activities provided in the modules are suggested as aids for further investigation, experimentation, and comprehension of the concepts presented in the modules.

References and Additional Readings

The references contained in each module are listed with respect to providing direct context for the topic. It is suggested that both instructors and students familiar themselves with the reference materials. The additional readings are thought to provide considerable, yet supplemental, context for the topic.

Overview Presentation Notes

The presentation paired with this overview is considered to be supplemental and provide general context around the notion of Services Science, Management, and Engineering. Materials can be used as a stand-alone introductory topic or supplemental to individual topics.

Slide 1: Introduction to SSME

Introduction to Services Sciences, Management and Engineering (SSME)
This module describes the group of SSME modules and how they fit together. Modules can be read in any order. Parts of them can be used to supplement existing courses. There is a great deal of related materials among the modules. You may find that you need to reference more than one at a time.

Slide 2: What is SSME?

What is SSME?

- **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 application of scientific, management, and engineering disciplines to tasks that one organization beneficially performs for and with another (i.e., services)**
- **SSME is the study of service systems—aimed at improving service systems**

Example: e-Sourcing capability modeling (eSCM) at Carnegie Mellon University can be found at http://www.cmu.edu/corporate/news/2004/0204_esourcing.html

The call for a services sciences can explored in readings such as:

- J.R. Bryson, P.W. Daniels, and B. Warf's (2004) book "Service Worlds: People, Organizations, Technologies"
- H. Chesbrough in the Harvard Business Review (2005) article entitled, "The HBR List: Breakthrough Ideas for 2005"
- J.M. Tien and D. Berg's (2003) article "A Case for Service Systems Engineering"
- R.K. Shelp's (1981) book "Beyond Industrialization: Ascendency of the Global Service Economy"

Examples of SSME champions and leaders can be found on the IBM (2006) Research website at http://www.research.ibm.com/ssme/influencers.shtml

Slide 3: Why is SSME Important?

Why is SSME important?

- **The world is becoming flat and networked, dependent on information and information technology**
- **Science needs to provide tools and methods to study services and develop solutions to problems that span multiple disciplines**
- **Graduates may be solution designers, consultants, engineers, scientists, and managers who will grow into becoming entrepreneurs, executives, researchers, and practitioners**

There are several points of view about the importance of creating SSME.
Services are the largest part of the U.S. economy and fastest growing sectors in developing countries (in fact, manufacturing includes services too)

- GDP growth depends on companies' ability to earn revenue and make profits
- Revenue and profit increases depend on productivity and innovations
- Innovation and productivity depend on multidisciplinary skills

- Multidisciplinary skills depend on getting students and employees trained in services sciences

(The notion of flat refers to writings by T.L. Friedman (2005) in “The World is Flat: A Brief History of the Twenty-first Century”)

U.S. academic institutions are failing to attract computer science students
Global students are either learning in the U.S. and taking their skills back home or are learning in their own countries

IBM’s Motivation
- Need better trained people: Services professionals & researchers
- Need more knowledge about sustainable service innovation techniques: Innovation is the key to value creation and capture; hence the key to sustainable business advantage
- Need more systematic methods for studying and creating knowledge about service systems: Investment in science & research pays in new knowledge. Example: Computer Science (co-evolution of occupation, discipline, techniques, science)

Slide 4: Service Innovation

Service innovation is inherently multidisciplinary
Knowledge sources driving service innovations…
- **Science & Engineering—technical innovation**
- **Social Sciences—social-organizational innovation**
- **Business Administration and Management—business innovation**
- **Global Economy & Markets—demand innovation**

SSME = Service Sciences, Management, and Engineering

Services sciences are multidisciplinary.

Socio-technical systems theory - A framework for describing and explaining the relationship between technical and non-technical elements in a work organization, based upon systems theory and the observation that technology and human are interdependent in achieving organizational performance.

Why SSME?
The world needs more service innovation & systematic approaches to service innovation must be interdisciplinary.

Science & Engineering = Study phenomena and create new knowledge
Social Sciences = Study phenomena and create new knowledge
Global Economy & Markets = Emergence of new knowledge in practice!
Business Administration and Management = Study phenomena and create new knowledge

Slide 5: Modules

Modules
- **Services (What are services?)**
- **Systems (Services depend on socio-technological systems)**
- **Management, Marketing, and Operations (What’s the difference for services?)**
- **Productivity and Innovation (Do services resist productivity gains?)**
- **Challenges, Frameworks, and Call for Participation**

Services
This module discusses the ideas of

- The emerging importance of services in economies and movement towards a global service economy
- Customer as co-producer of value
- Locus of innovation (e.g., clients, business models, technology, people)
- How the emerging field of SSME brings together the disciplines such as computer science, operations research, industrial engineering, business strategy, management sciences, social and cognitive sciences)

Systems
This module discusses the ideas of

- General types of systems (e.g., natural, manufactured, socio-technological)
- Services being socio-technological systems
- Co-production as the service system differentiator
- Value in a service system

Management, Marketing, and Operations
This module discusses the ideas of

- Management, market, and operations considerations specific to services
- Strategic planning, policies to empower, and measurements
- Differentiation is required and consider of client as co-producer
- The perception of value

Productivity and Innovation
This module discusses the ideas of

- Measurement challenges
- Resistance to productivity gains
- Engineering and interpretive models
- People

Challenges, Frameworks, and Call to Action
This module reviews the motivations for creating SSME and begins to explore what could be considered interesting problems for future services research. It includes some suggestions for institutions and policy makers.

Slide 6: Planned modules

- **Methods (Delivery depend on methods)**
- **Industrialization, Componentization, and Commoditization (Delivery "factory", standards, modules)**
- **Science (Is there a science of services?)**
- **Engineering (Can engineering foster innovation? Can we be systematic about it?)**

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