Business Models and Evolving Economic Paradigms: A Systems Science Approach

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IBM Canada Ltd. and the Helsinki University of Technology
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Agenda

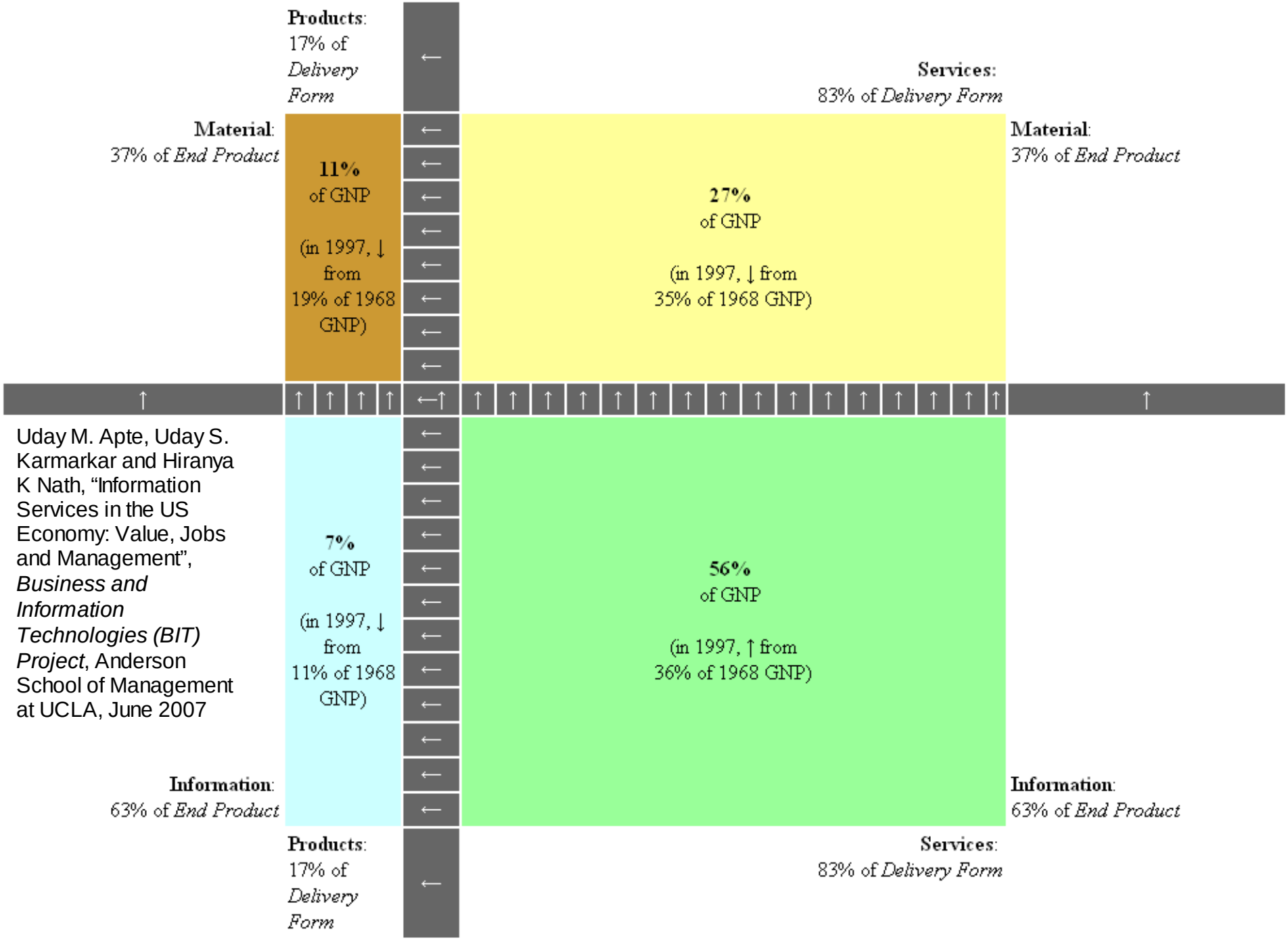
A. The challenge of evolving economic paradigms
   - Services with engineering, management and systems

B. Business models as a focal point for study
   - Multiple perspectives and offerings

C. Ten topics for inductive study
   - (A straw man ... or propose your own!)

D. A demonstration: how different?
   - (Sample matrix: resources by ethos)

E. Coproducing education
   - How can we learn together?



Uday M. Apte, Uday S. Karmarkar and Hiranya K Nath, "Information Services in the US Economy: Value, Jobs and Management", *Business and Information Technologies (BIT) Project*, Anderson School of Management at UCLA, June 2007

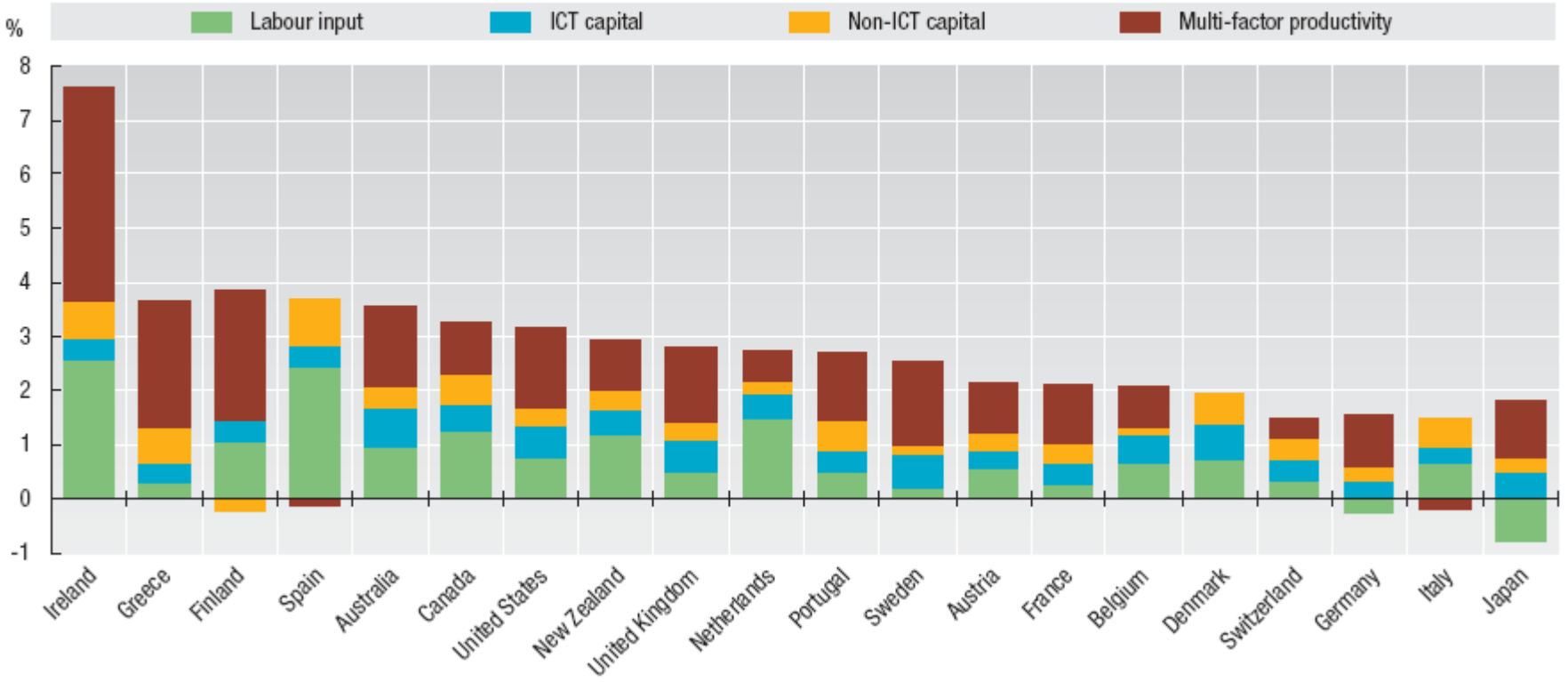
Contributions to GDP growth, G7 countries, 1995-2000 and 2000-05[1]

Percentage points

OECD Science, Technology and Industry Scoreboard 2007: Innovation and Performance in the Global Economy, p. 206, available from oecd.org.

Contributions to GDP growth, OECD countries, 1995-2005[2]

Percentage points



OECD Science, Technology and Industry Scoreboard 2007: Innovation and Performance in the Global Economy, p. 206, available from oecd.org.

Arming American Scientists: NSF and the Provision of Scientific Computing Facilities for Universities, 1950-1973

WILLIAM ASPRAY
BERNARD O. WILLIAMS

This article discusses the role of the US National Science Foundation in the provision of scientific computing facilities for colleges and universities in the period 1950 to 1973. In this period, the NSF played a major role in establishing computing facilities on American campuses for the purposes of scientific research and science education. By the end of this period, most of these programs at NSF had been disbanded, and the foundation was concentrating its support for computing not on the service of other scientific disciplines, but instead on the establishment of a theoretically oriented discipline of computer science. The primary focus here is on NSF institutional history, with only a few examples of the impact of NSF programs. But it is an important part of a larger story of the role of the federal government in establishing American hegemony in computing in this era.

Academic interest in computing grew to the point that, by 1959, 150 colleges and universities had introduced on campus some research or instructional use of computers. A survey of university computing conducted by Louis Fein for Stanford Uni-

The single strongest impulse for introducing computers on campuses in the mid-1950s did not come from the schools themselves or from any federal agency, but instead from IBM.

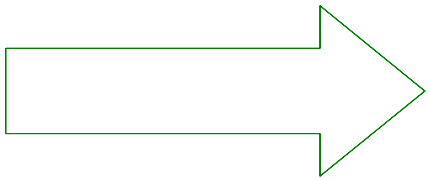
versity reported — perhaps with some overstatement — that universities, government, and industry were reorganizing to invent and apply new techniques of linear programming, game theory, automata theory, artificial intelligence, adaptive mechanisms, psychometrics, neural psychology, learning machines, information theory, coding theory, statistics, cybernetics, and a wide range of modeling techniques. Fein soberly reported that

Physicists

Electrical Engineers

Mathematicians

Philosophers (Boolean Logic)



Computer Science

W.B. Aspray and B. O. Williams 1994. Arming American scientists: NSF and the provision of scientific computing facilities for universities, 1950-1973. *IEEE Annals of the History of Computing*, 16 (4), 60-74.

Rendez

Innovation - Renewal - Redirection

http://rendez.org/en/curriculum

Curriculum

The flagship educational program for the *Rendez* project is the Master's program in International Service Business Management, offered at Helsinki Polytechnic Stadia. The 2007-2008 class had its first meeting on September 6, 2007. The program was launched with a 2006-2007 on September 7, 2006.

An outline of the program is available as a brochure on the Stadia web site.

Course Design

The content of the course is multidimensional, described on the 2006 Dimensions and Threads page.

Sessions

The fall term of the program includes an accelerated schedule of lectures. These are described on the 2007 Sessions Timetable page.

- During the term when theses are developed, students have been clustered into smaller groups to enable more personalized attention.

  For reference, the historical 2006 Sessions Timetable page has been retained on the web site.

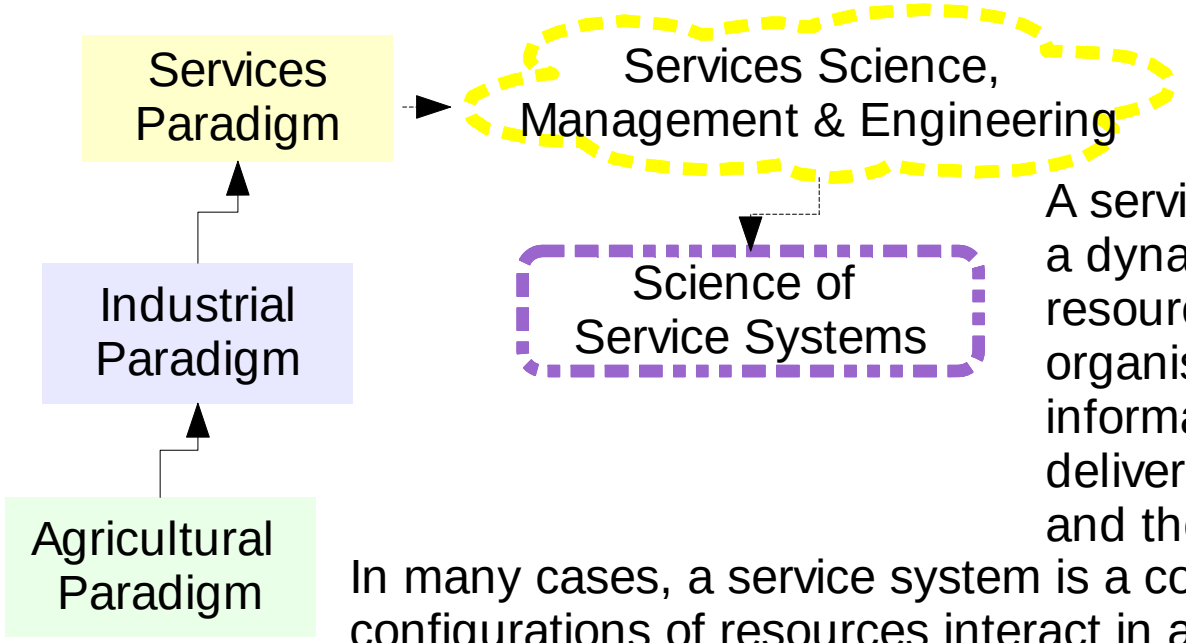
Credits

The tight scheduling of lectures is achieved through the blending of dimensions and threads. In order to satisfy academic requirements, students should pay attention to the layout of credits, with an intricate parsing of interwoven themes.

Evolving Curriculum

Initial development of this curriculum began with an "ideal" model that did not take holiday schedules

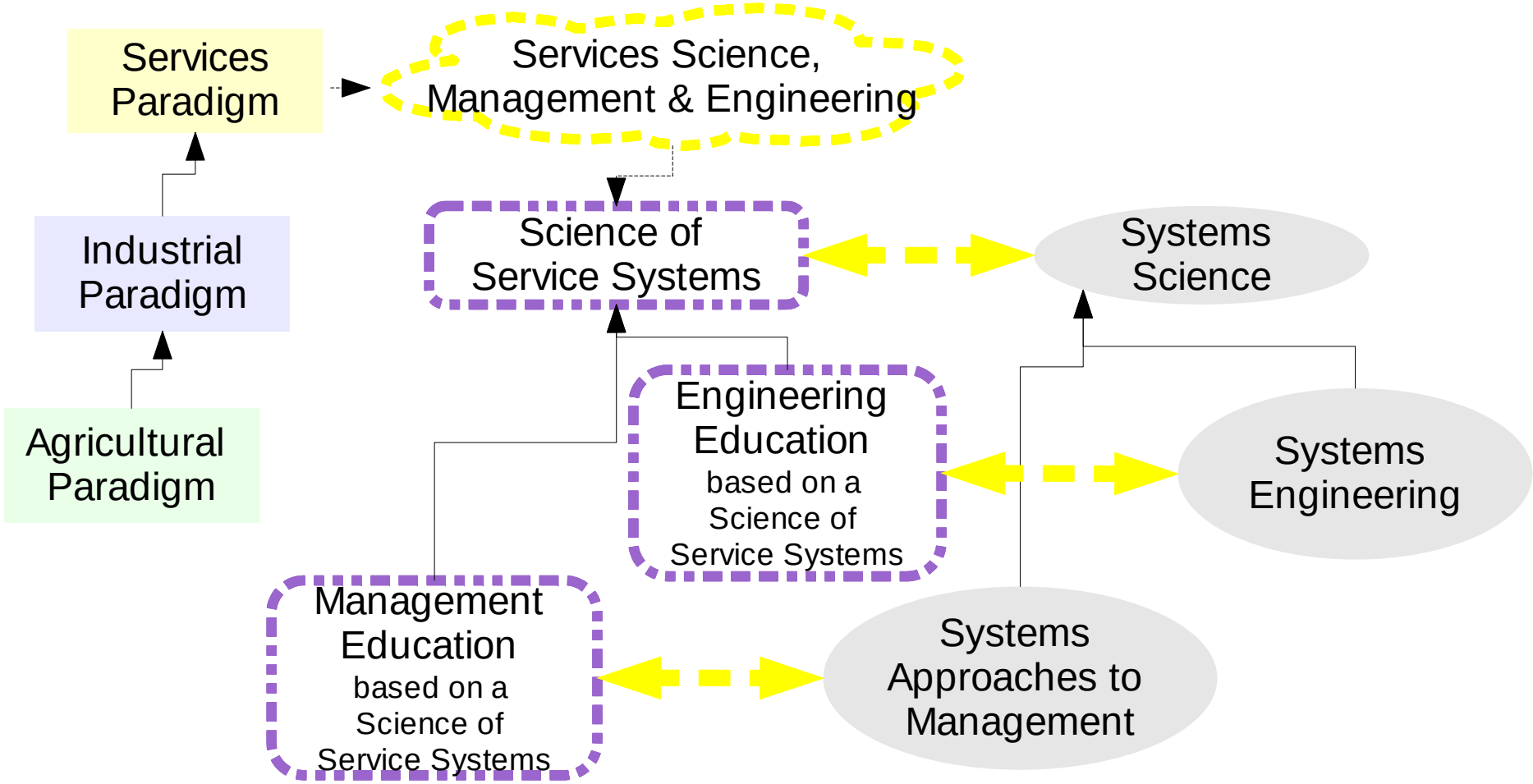
A. The challenge of evolving economic paradigms ...



A service system can be defined as a dynamic configuration of resources (people, technology, organisations and shared information) that creates and delivers value between the provider and the customer through service.

In many cases, a service system is a complex system in that configurations of resources interact in a non-linear way. Primary interactions take place at the interface between the provider and the customer. However, with the advent of ICT, customer-to-customer and supplier-to-supplier interactions have also become prevalent. These complex interactions create a system whose behaviour is difficult to explain and predict. (IfM and IBM, 2008, p. 6)

... with engineering, management, and systems



B. *Business models* as a focal point for study ...

The business model defines the value-creation priorities of an actor in respect to the utilization of both internal and external resources.

It defines how the actor relates with stakeholders, such as actual and potential customers, employees, unions, suppliers, competitors, and other internal groups.
It takes account of situations where the actor's activities may

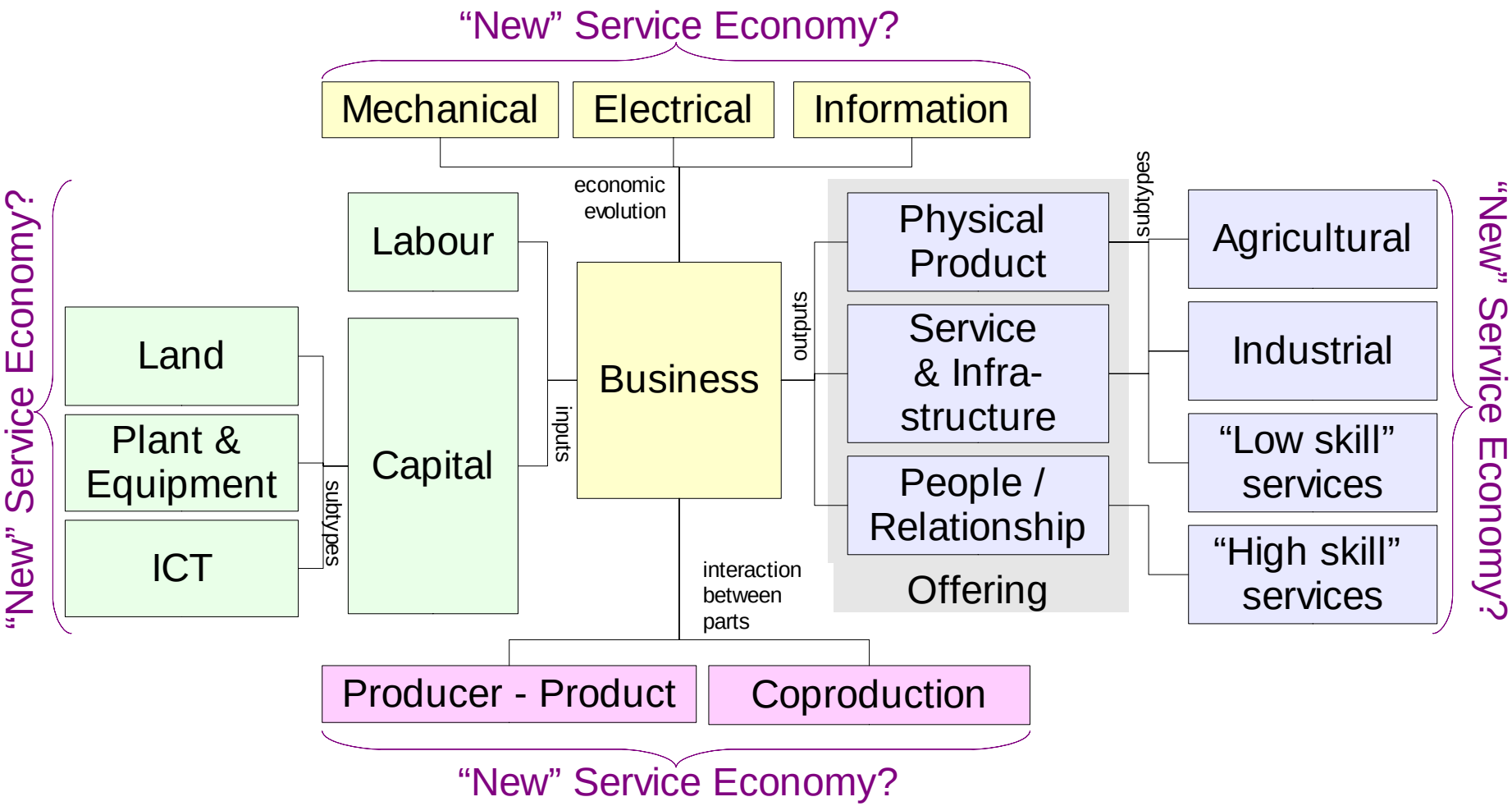
(a) affect the business environment and its own business in ways that create conflicting interests, or impose risks on the actor; or

(b) develop new, previously unpredicted ways of creating value.

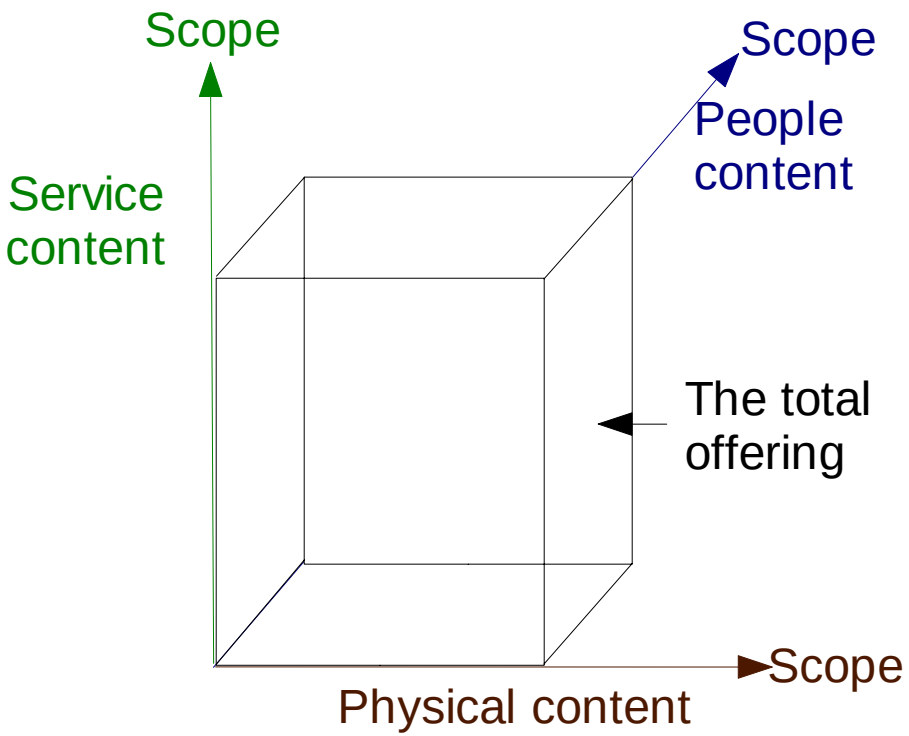
The business model is in itself subject to continual review as a response to actual and possible changes in perceived business conditions.

Johan Wallin, *Business Orchestration: Strategic Leadership in the Era of Digital Convergence*, Wiley 2006, p. 12.

... from multiple perspectives ...



... and an understanding of offerings



... it is useful to examine the offering in terms of a three-dimensional activity package ....

- The physical content of the offering consists of elements such as the core product, the packaging, the quality and dependability of the good and its material components, the product range, etc.
- The service content includes distribution, technical support, product modifications, customer training, on-line advice, troubleshooting, warranties and other trust-supporting insurance aspects, information brochures, brand reputation, complaint handling, invoicing, integrated information systems, etc.
- The people content covers issues like long-term partnerships, interpersonal trust, reputation, human resource co-development, etc.

... different customers will emphasize different axes of the offering.

Rafael Ramirez and Johan Wallin. *Prime Movers: Define Your Business or Have Someone Define It Against You*, 2000, pp. 58-59.

C. Ten topics for inductive study

1.	Business models, value creation, and the “new economy”
2.	Ignorance and knowledge
3.	Boundary
4.	Order, purpose, self-organization
5.	Living, being, becoming
6.	Energy and complexity
7.	Form, networks and power laws
8.	Information, communication and meaning
9.	Coevolution, competition and variety
10.	Aesthetics, ethics and morals

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- Science of service systems (IfM 2008)
- The “new” service economy: Wolfl 2005; OECD 2000; Florida 2002, 2004
- Engineering and services systems: Tien & Berg 2003
- Technology loosening constraints (Normann 2001)
- Business models: Ramirez & Wallin 2000

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- Competence development (Ing, Takala & Simmonds 2003)
- College on Medical Ignorance (Witte, Kerwin & Witte 1978)
- Unbounded Mind (Mitroff 1993)
- Design of Inquiring Systems (Churchman 1971)
- Ecology of mind (Bateson 1972)

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- Social interaction through mediating spaces (Ing & Simmonds 2002)
- Business design (Ackoff 1994)
- Pattern languages (Alexander, Ishikawa et al. 1977)
- Value constellations (Normann & Ramirez 1994)
- Critical systems theory (Jackson 2000)

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- Rule-based and negotiated order (Parhankangas, Ing et al. 2005, Strauss 1978)
- Turbulent environments (Emery & Trist 1965)
- Goal, objectives, ideals (Ackoff 1981)
- Context and coordination (Haeckel 1999)
- The cathedral and bazaar (Raymond 2000)
- Heterarchy (Hedlund 1986)
- Polycentric, geocentric organization (Perlmutter & Heenan 1979)

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- Deterministic, animate, social and ecological purposes (Ackoff & Gharajedaghi 1996)
- Living systems theory (Miller 1978)
- Viable systems model (Beer 1972/1981, 1979)
- Anticipatory systems (Rosen 1985)

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- Complication and complexification (Allen, Tainter & Hoekstra 1999, 2003)
- Mystery of capital (de Soto 2000)
- Energy, power and society (Odum 2007)
- Entropy law and economics (Hawk 1999, Georgescu-Roegen 1971)
- Nature of economies (Jacobs 2001)

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- Cellular form organization (Miles, Snow et al. 1997)
- How buildings learn (Brand 1994)
- Normal accidents (Perrow 1984)
- Social networks (Benkler 2002)
- Wealth of networks (Benkler 2006)
- Long tail (Anderson 2006)

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- Language action perspective (Ing 2008)
- Speech acts (Flores & Ludlow 1980, Winograd & Flores 1986)
- Banathy-style conversations (Rowland 2004, Walton 2004)
- What computers still can't do (Dreyfus 1992)
- Communities of practice (Wenger 1998)

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- Interactions between species (Odum 1983)
- Increasing returns (Arthur 1996)
- Requisite Variety (Ashby 1956)
- Diversity (Page 2007)
- Exit, voice and loyalty (Hirschman 1970)
- Upside of down (Homer-Dixon 2006)
- Post-normal science (Ravetz 2004)

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- Systems approach and its enemies (Churchman 1979)
- Appreciative systems (Vickers, in Checkland 2005)
- Critical systemic praxis (McIntyre 2005)
- Commercial and moral syndromes (Jacobs 1992)

D. Demonstration: Business model reference points

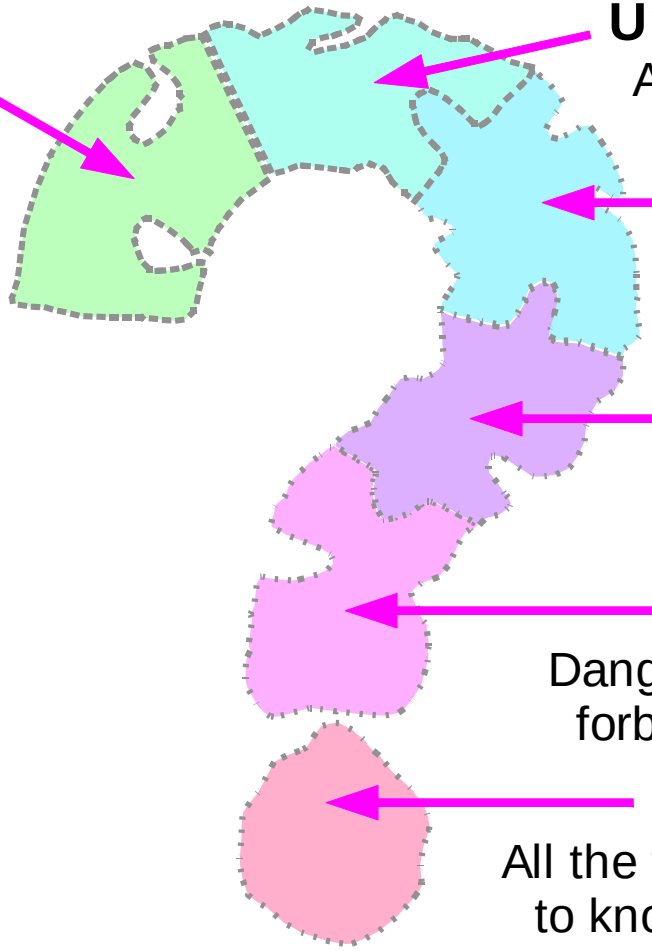
	(a) Organic ethos: local bounty	*(b) Industrial ethos:* machine efficiency	*(c) Service ethos:* humility
(1) Renewable resources: Cultivate and harvest	(1a) Agroecological business model • (Amish) family farms	(1b) Materials refining business model • Food processing • Pharmaceuticals	(1c) Physical wellness business model • Health care
(2) Appropriable resources: Acquire and process	(2a) Handcrafting business model • Fashion apparel	(2b) Lean production business model • Petrochemicals • Automobile	(2c) Security business model • Insurance • Banking
(3) Cultural resources: Affiliate and practice	(3a) Performative experience business model • Concerts • Live theatre	(3b) Media publishing business model • News • Television and movies	(3c) Intellectual development business model • Education

E. Coproducing education:
What do you know about what you don't know?

Known Unknowns
All the things you know you don't know

Ignorance Maps
Marlys H. Witte,
Ann Kerwin, and
Charles L. Witte,
The University of Arizona
College of Medicine

"Curriculum on Medical and Other Ignorance: Shifting Paradigms on Learning and Discovery", *Memory Distortions and their Prevention,* Margaret-Jean Intons-Peterson and Deborah L. Best, editors, Lawrence Erlbaum Associates, 1998



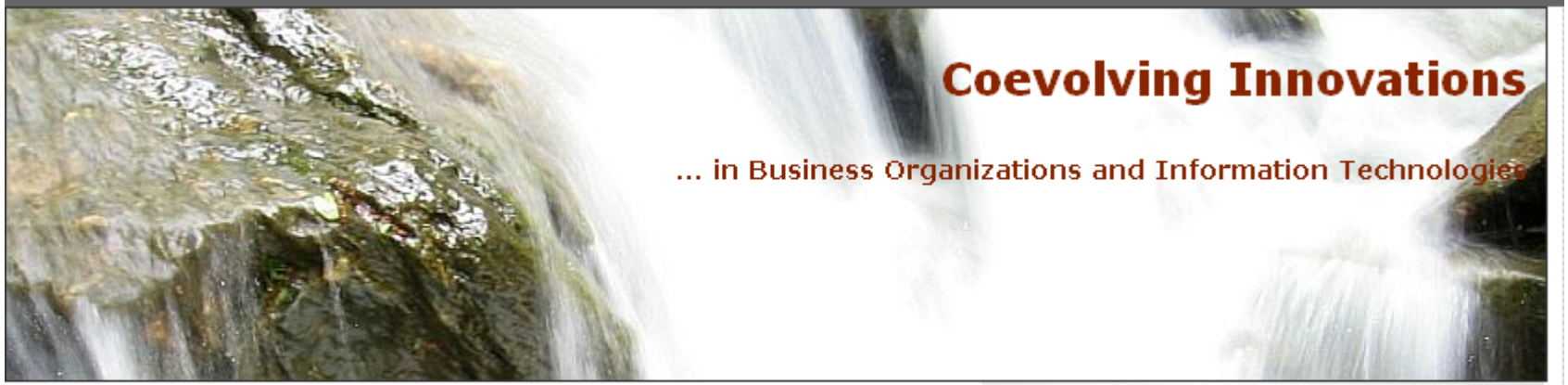
Unknown Unknowns
All the things you don't know you don't know

Errors
All the things you think you know but don't

Unknown Knowns
All the things you don't know you know

Taboos
Dangerous, polluting or forbidden knowledge

Denials
All the things too painful to know, so you don't



Innovation as open, collaborative, multidisciplinary, global

Posted by **daviding** on June 13, 2008 under **innovation** Edit This

On more than one occasion, I've heard IBM executives assert:

> The nature of innovation has changed. In the 21st century, innovation is *open*, *collaborative*, *multidisciplinary* and *global*.

The ideas of *open*, *collaborative*, *multidisciplinary* and *global* appeared in the **Global Innovation Outlook 2.0 report** that was published in mid-2006. These words appeared on IBM-internal slides presented by **Nick Donofrio** at an *Consulting Leadership Exchange* in September 2005, and at the external-facing conference on ***Education for the 21st Century*** **in October 2006** ... with lots of other occasions in between. But what do these four words mean?

To make some sense for myself, I've extended these words into phrases and contrasted their contexts in a table .

	Industrial age nature of innovation		*21st century nature of innovation*

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- **World diet is concentrated on a few cereal grains**
- **Conversations for action, commitment management protocol**
- **Coproduction, interactive value, offering, value constellation**
- **Talent in the (new) service economy: creative class occupations?**

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by David Ing

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