

Conversations on an Emerging Science of Service Systems

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IBM Canada Ltd. and the Helsinki University of Technology

September 2, 2009, at the UK Systems Society

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and is clearer when viewed as a Screen Show

Agenda

→ A. Why a *science of service systems*?

B. Who and when in conversation?

C. How? Artifacts and tools for collaboration

D. What are (and which) service systems?

SSMED (Service Science, Management, Engineering and Design) ↔ Science of Service Systems

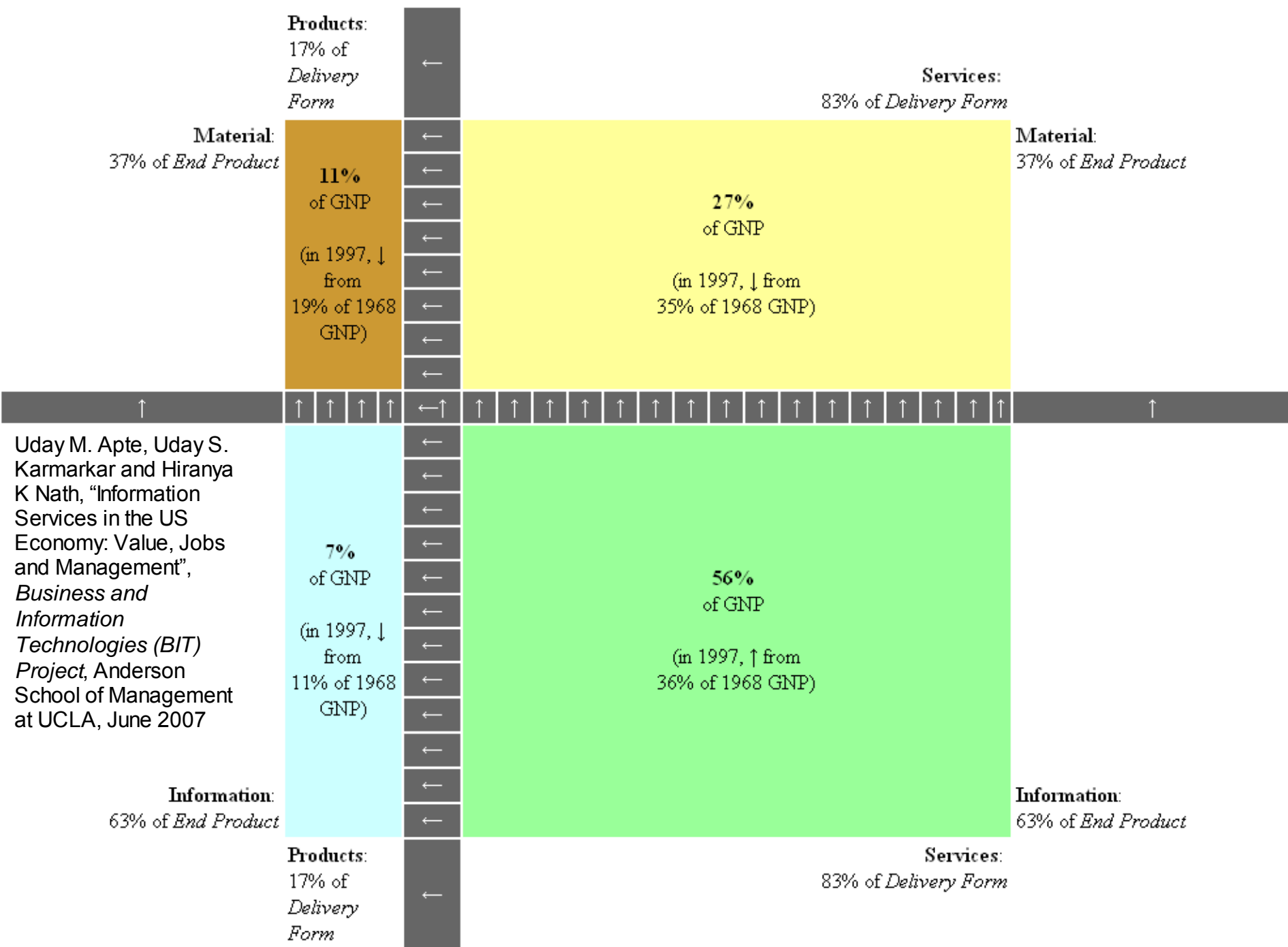
A **service system** can be defined as
a dynamic configuration of **resources**
(**people, technology, organisations and shared information**) that
creates and delivers **value**
between the provider and the customer through service.

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.

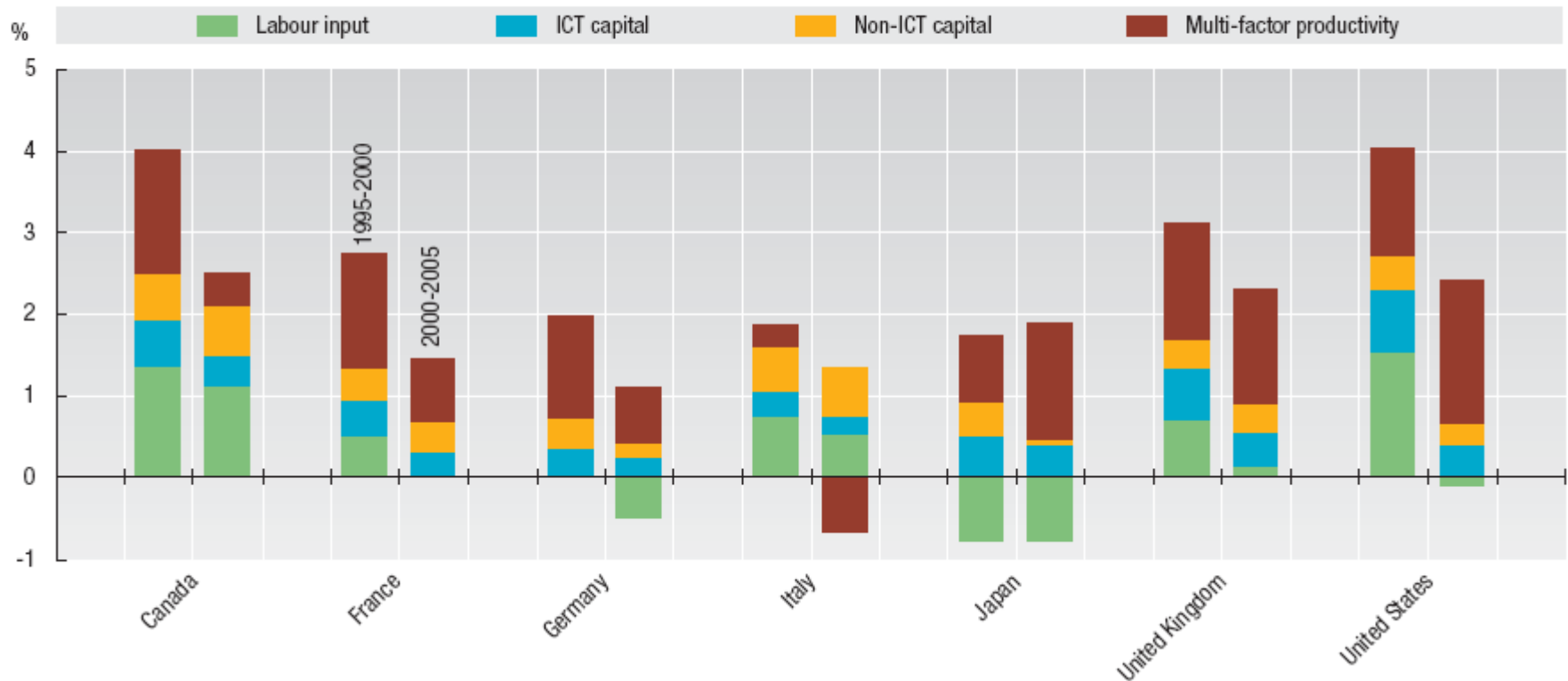
However, with the advent of ICT,
customer-to-customer and supplier-to-supplier interactions
have also become prevalent.

These complex interactions create a system whose behaviour is
difficult to explain and predict. (IfM and IBM, 2008, p. 6)



Contributions to GDP growth, G7 countries, 1995-2000 and 2000-05¹

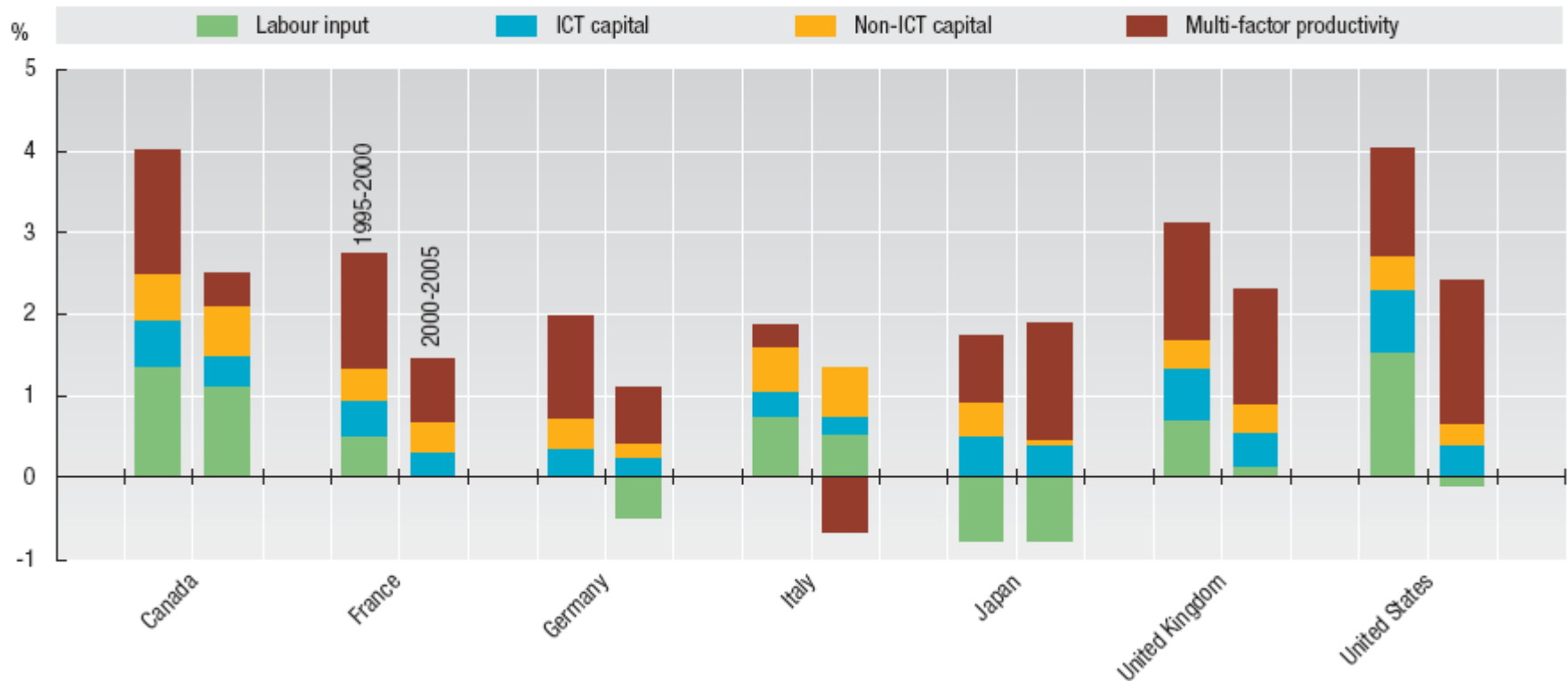
Percentage points



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

Contributions to GDP growth, G7 countries, 1995-2000 and 2000-05¹

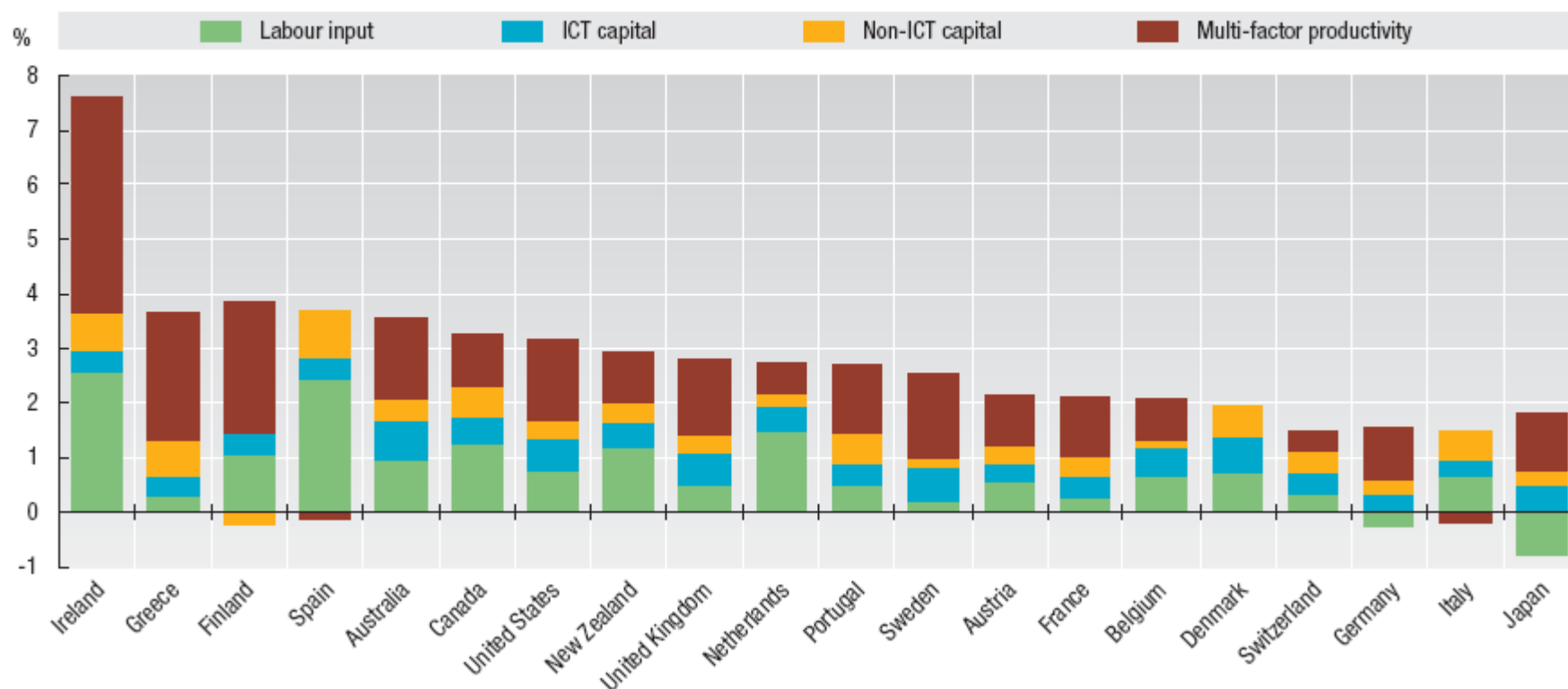
Percentage points



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

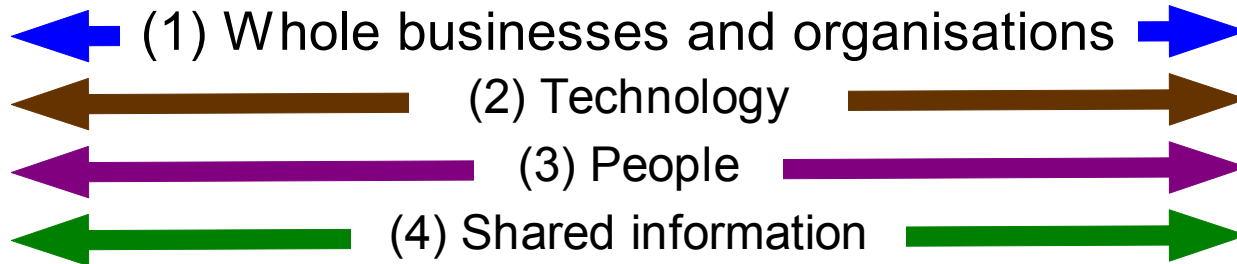
Contributions to GDP growth, OECD countries, 1995-2005²

Percentage points



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

Develop T-shaped professionals along 4 resource types



Studied primarily by schools of management (marketing, operations management, operations research and management sciences, supply chain management, innovation management)

Studied primarily by schools of science and engineering (industrial engineering, computer science, statistical control theory)

Studied primarily by schools of information (communications, management information systems, document engineering, process modelling, simulation)

Studied primarily by schools of social sciences and humanities (economics, cognitive science, political science, design, humanities and arts)

Source: IfM and IBM 2008.

Agenda

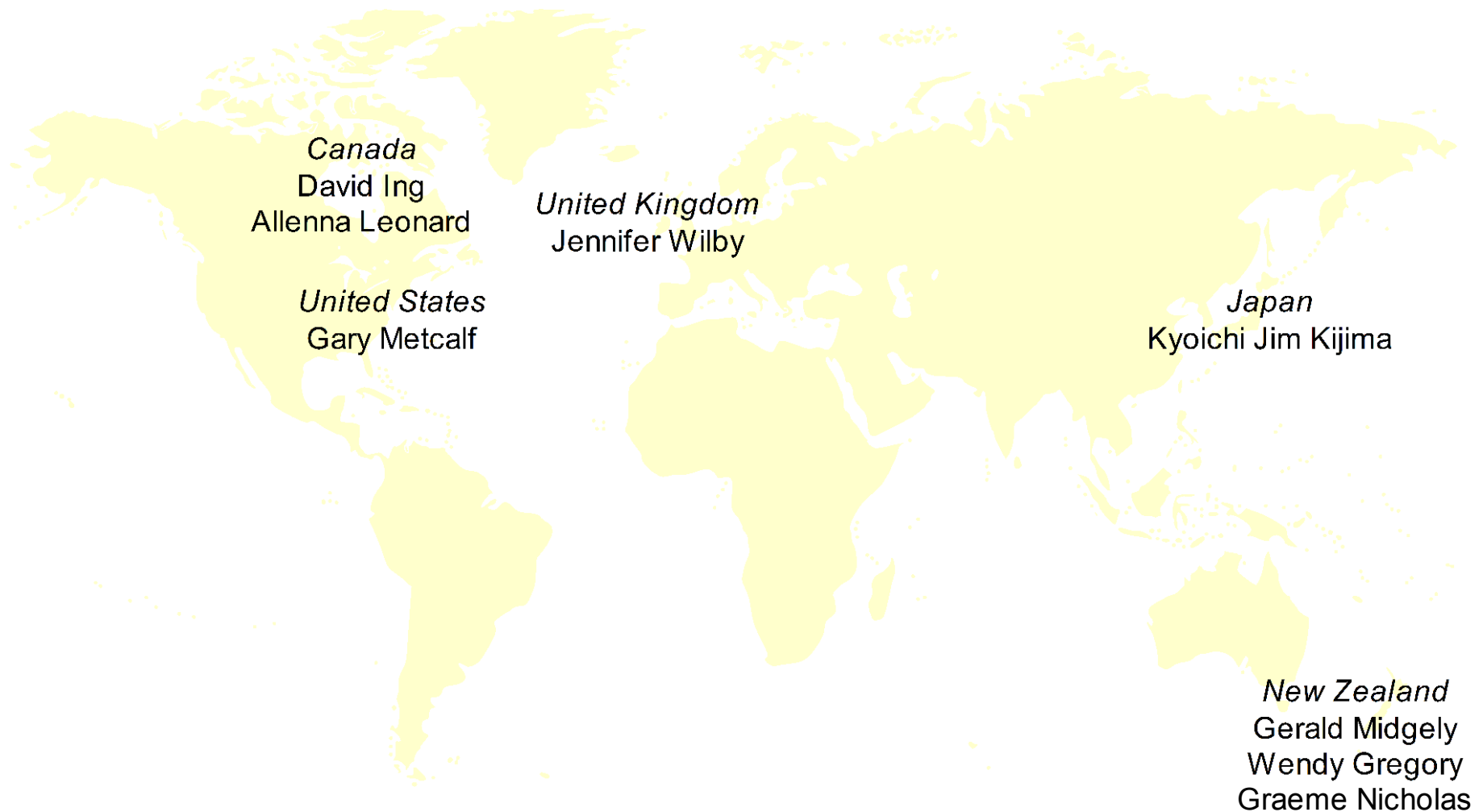
A. Why a *science of service systems*?

→ B. Who and when in conversation?

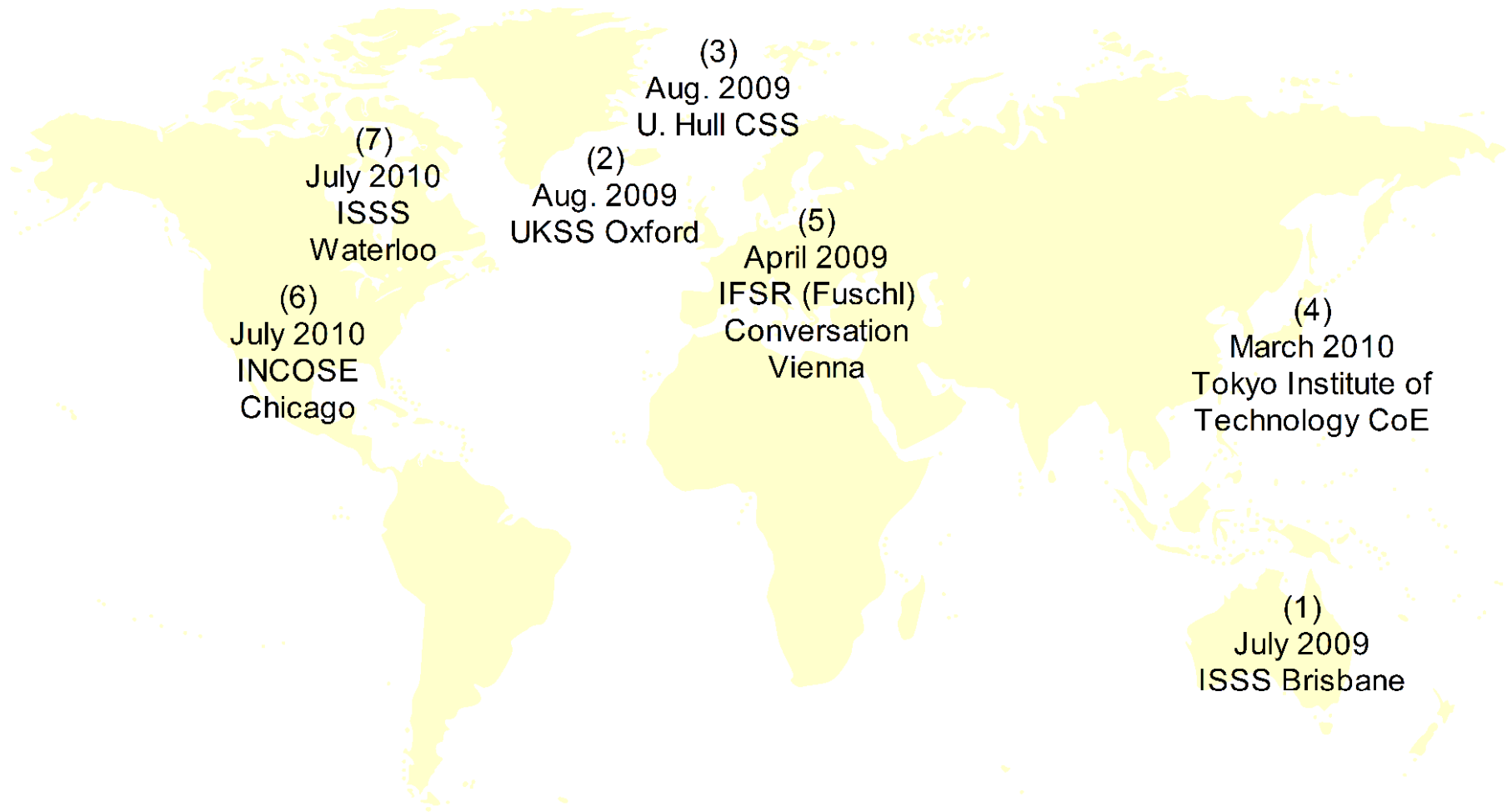
C. How? Artifacts and tools for collaboration

D. What are (and which) service systems?

Core researchers



Conversations, face-to-face



Agenda

A. Why a *science of service systems*?

B. Who and when in conversation?

→ C. How? Artifacts and tools for collaboration

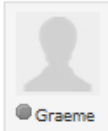
D. What are (and which) service systems?

Artifacts: (public/web) social bookmarking

<http://groups.diigo.com/groups/science-of-service-systems>

Time Created New Comments Thumb ups 1 - 20 of 31 Next>

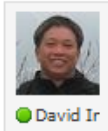
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☐ How Web-Savvy Edupunks Are Transforming American Higher Education |

"The Internet disrupts any industry whose core product can be reduced to ones and zeros," says Jose Ferreira, founder and CEO of education startup Knewton. Education, he says, "is the biggest virgin forest out there." Ferreira is among a loose-knit band of education 2.0 architects sharpening their saws for that forest. Their first foray was at MIT in 2001, when the school agreed to put coursework online for free. Today, you can find the full syllabi, lecture notes, class exercises, tests, and some video and audio for every course MIT offers, from physics to art history. This trove has been accessed by 56 million current and prospective students, alumni, professors, and armchair enthusiasts around the world. "The advent of the Web brings the ability to disseminate high-quality materials at almost no cost, leveling the playing field," says Cathy Casserly, a senior partner at the Carnegie Foundation for the Advancement of Teaching, who in her former role at the Hewlett Foundation provided seed funding for MIT's project. "We're changing the culture of how we think about knowledge and how it should be shared and who are the owners of knowledge."

But higher education remains, on the whole, a string quartet. MIT's courseware may be free, yet an MIT degree still costs upward of \$189,000. College tuition has gone up more than any other good or service since 1990, and our nation's students and graduates hold a staggering \$714 billion in outstanding student-loan debt. Once the world's most educated country, the United States today ranks 10th globally in the percentage of young people with postsecondary degrees. "Colleges have become outrageously expensive, yet there remains a general refusal to acknowledge the implications of new technologies," says Jim Groom, an "instructional technologist" at Virginia's University of Mary Washington and a prominent voice in the blogosphere for blowing up college as we know it. Groom, a chain-smoker with an ever-present five days' growth of beard, coined the term

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Artifacts: (public/web) news feed

<http://friendfeed.com/ssmed>



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Service Science, Management, Engineering, and Design (SSMED) began as a "call to action", focusing academics, businesses, and governments on the need for research and education in areas related to service. SSMED has grown into a global initiative involving hundreds of organizations and thousands of people who have begun to create service innovation roadmaps and to invest in expanding the body of knowledge about service systems and networks.

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 Tags: complexity innovation social change Posted by: Graeme Nicholas



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Collaboration: (private/web) wiki, discussion/mail

<http://groups.google.com/group/science-of-service-systems>

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Science Of Service Systems

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Welcome to the Google Group for the *Conversation on an Emerging Science of Service Systems*. This space is facilitated by David Ing.

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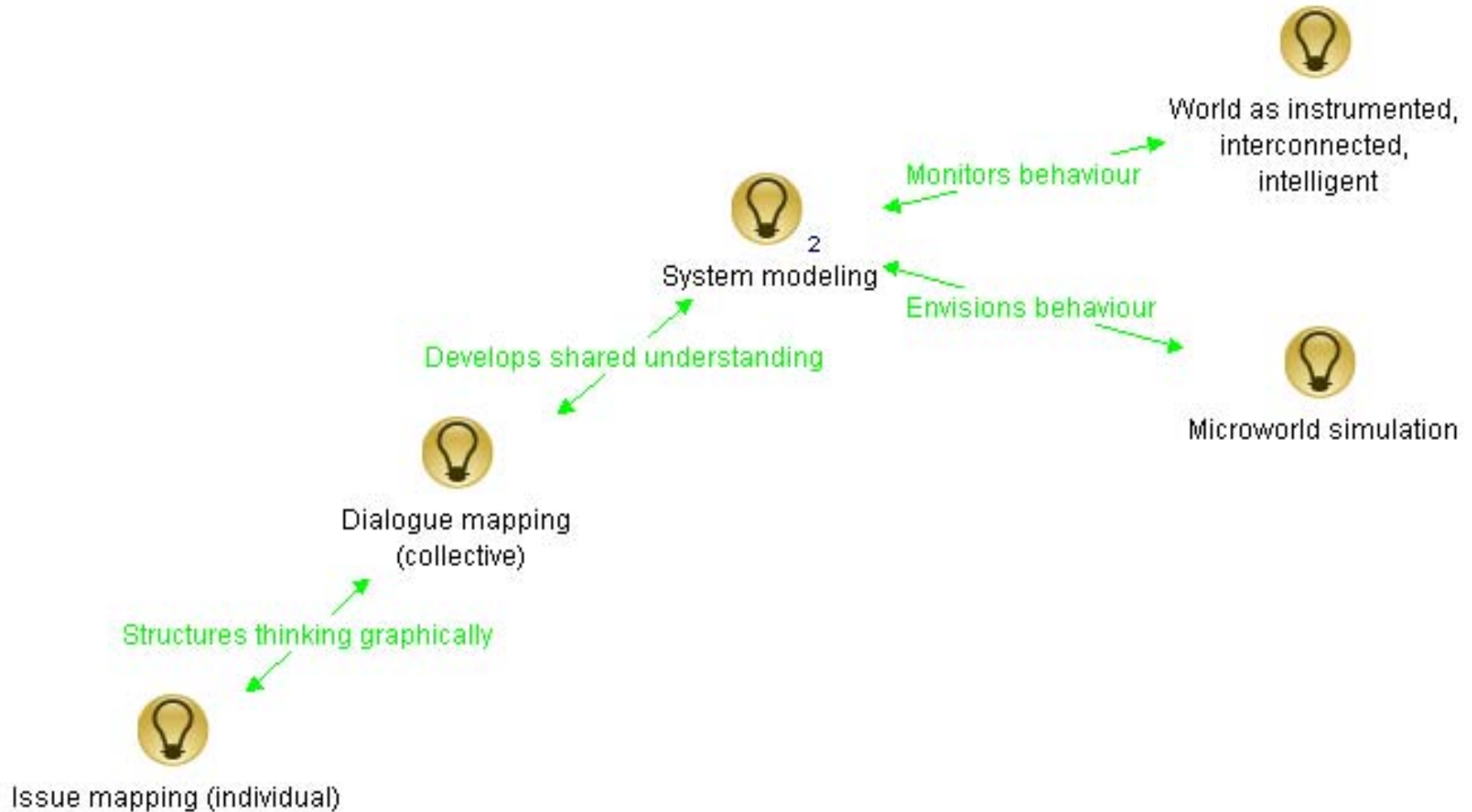
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Mapping and modeling



Issue mapping (individual) / dialogue mapping (collective)

<http://cognexus.org>

Issue Mapping

Issue Mapping is the process of crafting an issue map, a way of making *critical thinking visible*. An issue map is a graphical network that integrates many problems, solutions, and points of view and shows the deep structure of an issue.

Issue maps can be sketched on paper, but larger issue maps are typically crafted using a software tool such as [Compendium](#).

Why Issue Mapping?

Issue Mapping frames things as issue-based rather than the conversational basis that we humans most often use, which favors dualistic (either-or) thinking, sloppy arguments, lack of evidence, tangents, implicit assumptions, skipped steps, bias, and over-simplification. Issue Mapping admits all viewpoints and offers a way of engaging and understanding an issue in a whole sense.

The map holds competing views and contending actions in place visually, so that the brain can absorb the bigger picture and appreciate the validity and value of a larger perspective. Issue Mapping helps groups avoid jumping to easy answers or superficial conclusions, and promotes deeper reasoning, rigor, and even wisdom.

Issue Mapping supports the kind of thinking referred to by Laurence J. Peter when he said, "Some problems are so complex that you have to be highly intelligent and well informed just to be undecided about them."

[View a short YouTube demo illustrating the difference between conversational structure and issue-based structure.](#) (If you have trouble viewing the YouTube site, try this version.)



What is Dialogue Mapping Like?

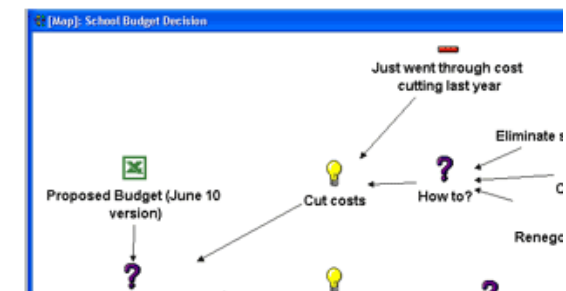
Picture a meeting room with the usual tables and chairs in a group of people working on a project or problem. I sit at the computer and types.

A typical Dialogue Mapping arrangement.

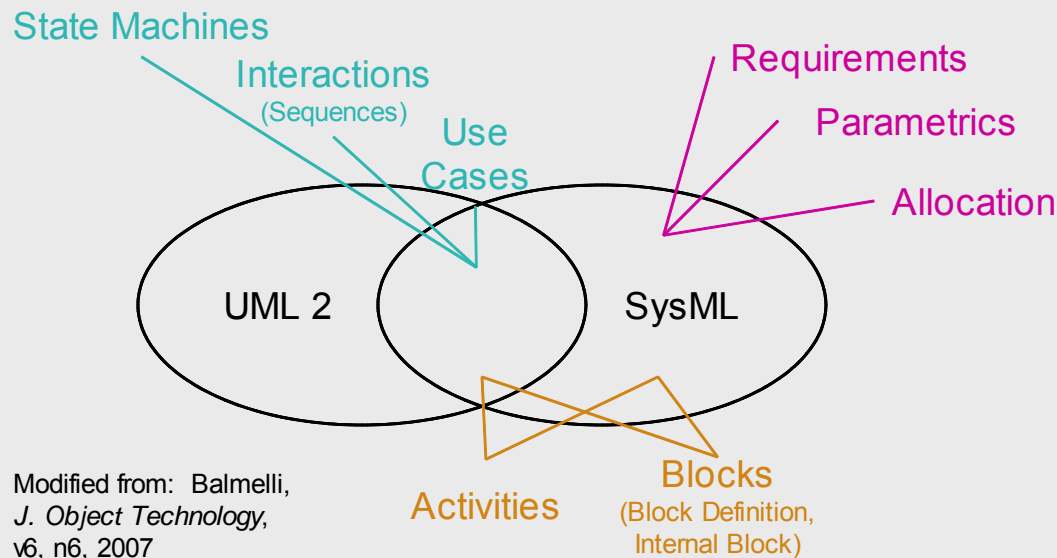


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As the people in the meeting speak, the facilitator par diagrams on the screen. For example, at one moment

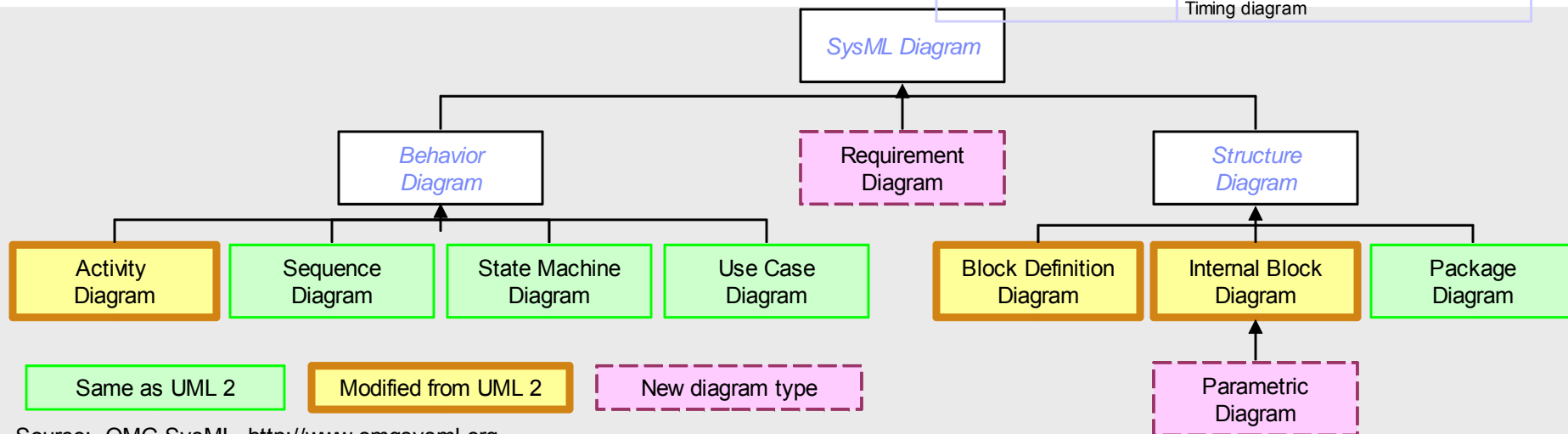


System modeling language: OMG SysML 1.1, Oct 2008



SysML	UML analog
Activity diagram	Activity diagram
Block Definition diagram	Class diagram
Internal Block diagram	Composite structure diagram
Package diagram	Package diagram
Parametric diagram	N/A
Requirement diagram	N/A
State Machine diagram	State Machine diagram
Sequence diagram	Sequence diagram
Use Case diagram	Use Case diagram
Allocation tables	N/A
N/A	Component diagram; Communication diagram; Deployment diagram; Interaction overview diagram; Object diagram Timing diagram

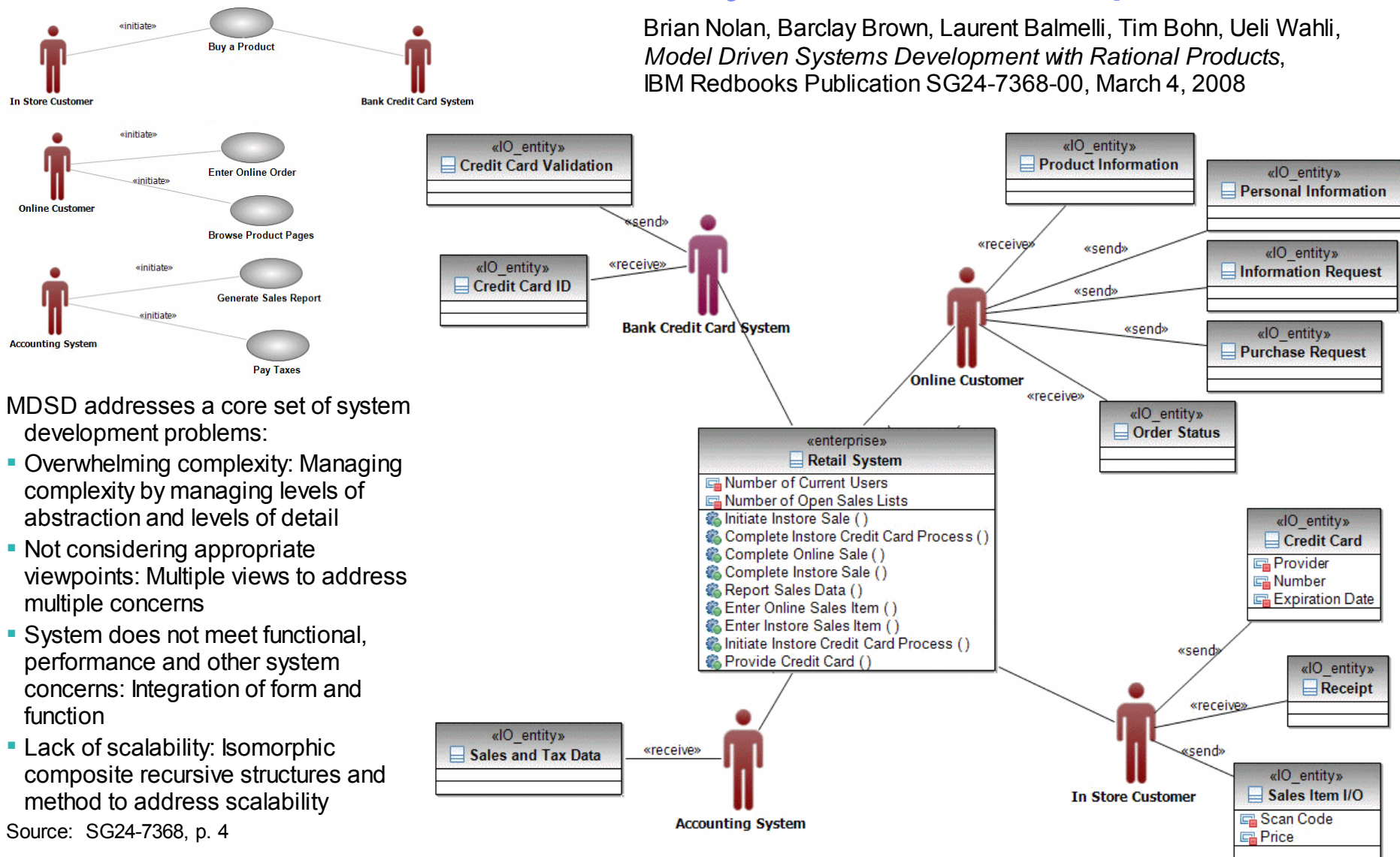
Source: sysmlforum.com/FAQ.htm



Source: OMG SysML, <http://www.omgsysml.org>

Technique: Model Driven Systems Development

Brian Nolan, Barclay Brown, Laurent Balmelli, Tim Bohn, Ueli Wahli,
Model Driven Systems Development with Rational Products,
 IBM Redbooks Publication SG24-7368-00, March 4, 2008



MDSD addresses a core set of system development problems:

- Overwhelming complexity: Managing complexity by managing levels of abstraction and levels of detail
- Not considering appropriate viewpoints: Multiple views to address multiple concerns
- System does not meet functional, performance and other system concerns: Integration of form and function
- Lack of scalability: Isomorphic composite recursive structures and method to address scalability

Source: SG24-7368, p. 4

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Compendium: Science of Service Systems

File Edit View Tools Bookmarks Workspaces Window Help

100%

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Outline View - Views and Nodes

- Science of Service Systems
 - David Ing's Home Window
 - Inbox
 - Quick Start
 - Conversations on an Emer...
 - Inbox
 - Mapping and modeling
 - Content: What service syst...
 - Challenge: What is the op...
 - Participation: How can a m...
 - Form: What tools can enab...
 - Schedule: When will conve...

Trash Bin

Inbox

Quick Start

Close

[Map]: David Ing's H...

[Map]: Conversations on an Emerging Science of Service Systems

```

graph TD
    A[?] -- "has a proposed approach" --> B[Conversation: Invite researchers to participate in discussions in convenient international venues, and via electronic collaboration]
    B -- "has scope" --> C[Challenge: What is the opportunity for development of a science of service systems informed by systems science?]
    B -- "has participants" --> D[Participation: How can a multinational team collaborate?]
    B -- "has artifacts" --> E[Form: What tools can enable distributed collaboration?]
    B -- "has domains of inquiry" --> F[Content: What service systems will benefit from systems science foundations?]
    B -- "has a timeline" --> G[Schedule: When will conversations take place?]
    B -- "has a style" --> H[Generative Conversations follow the style described by Bela A. Banathy]
  
```

Need: How can an emerging science of service systems be informed by prior knowledge in the systems sciences?

Conversation: Invite researchers to participate in discussions in convenient international venues, and via electronic collaboration

Generative Conversations follow the style described by Bela A. Banathy

Challenge: What is the opportunity for development of a science of service systems informed by systems science?

Participation: How can a multinational team collaborate?

Form: What tools can enable distributed collaboration?

Content: What service systems will benefit from systems science foundations?

Schedule: When will conversations take place?

1 px

Data Connection: Derby: Default

10 secs

Start

