

Nordic Service Science Summit
– What Should Universities Teach and Research?
IBM Finland, Feb. 28th 2007

Knowledge-Intensive Services in Research: What, Why and How?

Prof. Marjatta Maula
Tampere University of Technology
Institute of Business Information Management

KNOWLEDGE-INTENSIVE SERVICES IN RESEARCH

1. WHAT?

- **How to define services?**

2. WHY?

- **Knowledge-intensity: Where knowledge is located in service production?**

3. HOW?

- **TIP Research Program at Tampere University of Technology**

KNOWLEDGE-INTENSIVE SERVICES IN RESEARCH

1. WHAT?

- **How to define services?**

SERVICE VS. A PRODUCT

”In service production value is transferred without transferring ownership”.

A participant in an Executive MBA course

TERMINOLOGY

- Changes in positioning:
- Less knowledge Int. serv. disappearing
 - Low vs. high salary industries
 - Public and private services
 - Consumer services and self-services

Business services

Consumer services

Knowledge Intensive Services

Professional business services

Knowledge Intensive Business Services
KIBS (Tieto-intensiiviset liike-elämän palvelut)

Expert services
(Asiantuntijapalvelut)

Industrial Services
(Teollisuuden palveluliike-Toiminta)

Professional services
(asiantuntijapalvelut)

Less Knowledge Intensive Services

Other business services

Other consumer services,
(Muut kuluttajapalvelut)

THREE GENERIC STRATEGIES OF PROFESSIONAL FIRMS

1. Solution or output based strategy).
 - Based on a firm's superior collective capability or a portfolio of (standardized) services, methods and solutions.
2. Client relation based strategy.
 - Based on a firm's capability to understand and help particular client groups
3. Problem solving or creativity based strategy.
 - Based on the professional's competence in problem solving, creativity and expertise

(Source: Løwendahl, 1997, 2000)

THREE PROFESSIONAL FIRM STRATEGIES

(Source: Løwendahl, 1997, 2000)

	SOLUTION	CLIENT	PROBLEM SOLVING
Status & authority	Hierarchical mgmt	Client rel.	Expert
Mgmt focus	Internal. R&D	External. Sales	Int'l + Ext'l competence dev't
Control	Authority	Price	Trust
Coordination	High. From HQ to local.	Low	Medium. Two-way.
Performance evaluation	Sales revenues. New solutions.	Client satisfaction; % repeat buy	Innovation. Chall. projects
Org. design	Top down	Bottom up	Self designing
Org. flexibility	Low	High	Medium
Service complexity	Low	Medium	High
Ownership	External possible	Internal	Internal
Key assets	Organisational control	Individual control	Org. + Ind. control
Vulnerability	Obsolescence of solutions	Exits	Loss of innovativeness
Strategic focus	Target markets	Target clients	Target proj./probl. (challenges)

THREE PROFESSIONAL FIRM STRATEGIES, INDIVIDUAL PRIORITIES

(Source: Løwendahl, 1997, 2000)

	SOLUTION	CLIENT RELATION	PROBLEM SOLVING
Priority	Job security	Autonomy	Learning. Innovation
Risk aversion	High	Low	Medium
Goal setting	Firm	Individual	Team
Primary goal	Sell or develop solutions	Pleasing the client	Enhancing the competence
Authority	"The boss"	Client = decision maker	Professional expert
Reference group	Firm	Client	Academe/peers
Status/rewards linked to	Loyalty. New solutions. Sales.	Client satisfaction. Retention.	Creativity. Challenging projects completed.
Demand from org.	Org. support	Challenging clients. autonomy.	Challenging projects. Expert colleagues
Degree of autonomy preference	Low	High	Medium
Conflict resolution mode	Loyalty	Exit	Voice

THREE PROCESSES OF PROFESSIONAL SERVICE FIRMS

Process 1: The ability to sell a credible promise.

Process 2: To deliver what have been promised (professionals and the client firm together).

Process 3: The ability to learn from the project and to institutionalize the learning to improve efficiency and quality with future clients

It may be difficult to explain the behavior of professional service firms by using traditional theoretical models because of their different value creating processes.

(Source: Løwendahl 1997, 2000)

KNOWLEDGE-INTENSIVE SERVICES IN RESEARCH

2. WHY?

- **Knowledge-intensity: Where knowledge is located in service production?**

KNOWLEDGE-INTENSIVE SERVICES

Where knowledge is located?

1. In a service/product

Service, product or their combination, i.e., the 'outcome' includes knowledge or information that has value for the client.

Examples:

- News services, information retrieval
- Data base services, data mining.
- Industrial services in the context of high-tech products
- Knowledge in the web (may be free). 'NetDoctor' services.
- R&D services

KNOWLEDGE-INTENSIVE SERVICES

Where knowledge is located?

2. In the employees' expertise and experience (professional services, expert services).

- Knowledge is located in the (certified) expertise and/or experience.
- Knowledge is tacit, based on long education and/or training. Services: often unique, or partly non-standardized or non-repeatable.

Examples:

- Consulting services (consultant)
- Medical services (doctor)
- Education services (teacher)

KNOWLEDGE-INTENSIVE SERVICES

Where knowledge is located?

3. In the process or system

Knowledge is located in the process or system that enables the marketing, availability, combination, modification, personalization and delivery of the service.

Examples:

- Self-services, such as ticket offices, travel services, banking services.
- Www-based services.
- Logistics services;
- Increasingly also public sector services.

KNOWLEDGE-INTENSIVE SERVICES

Where knowledge is located?

4. In the organization's competence and capability to innovate, learn and renew itself

Examples:

CRM systems, feedback from the customers

Quality systems

'Codes of conduct'

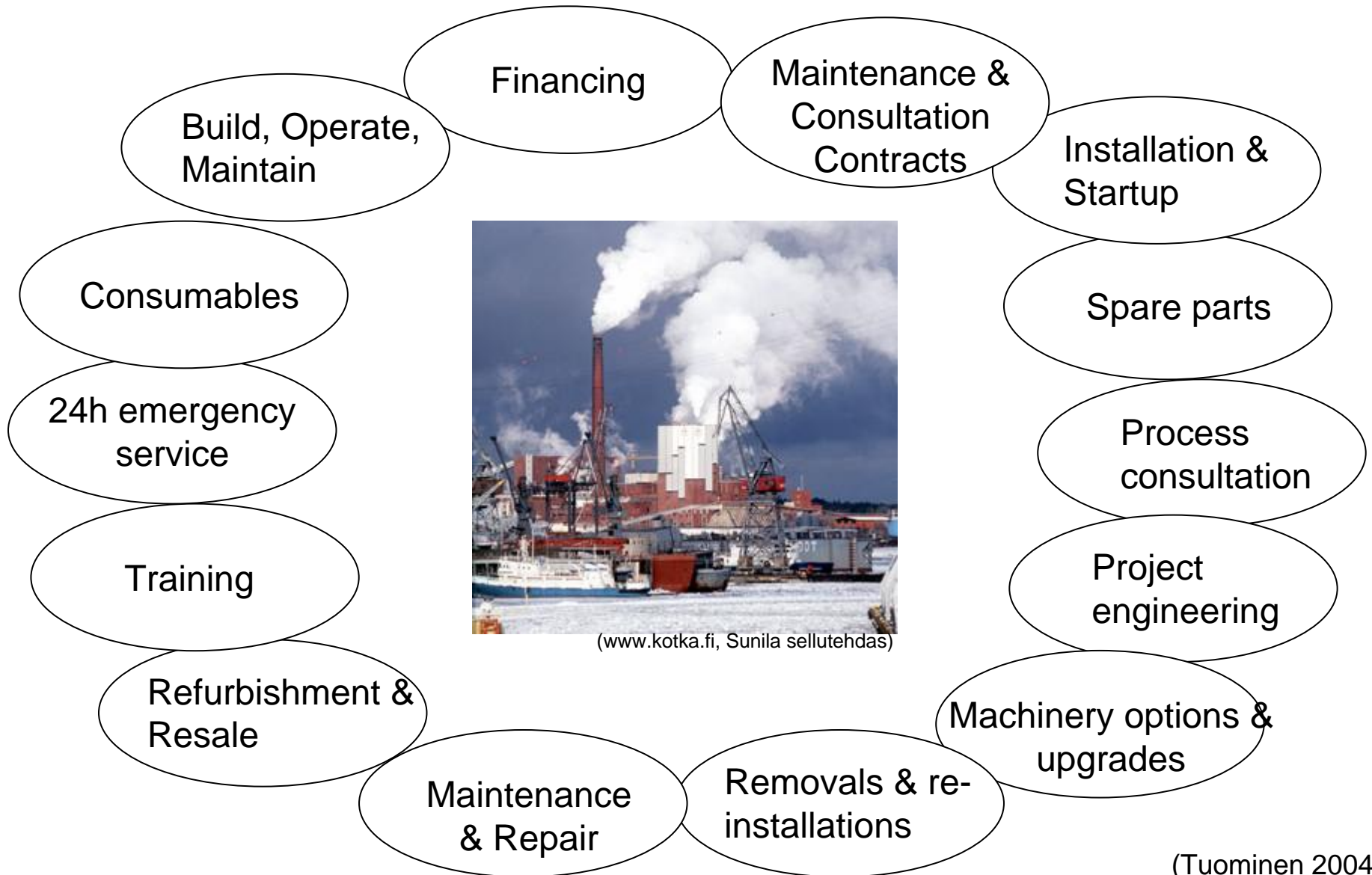
Education, r&d, innovation processes and continual learning

TWO SPECIFIC CATEGORIES OF KNOWLEDGE-INTENSIVE SERVICES

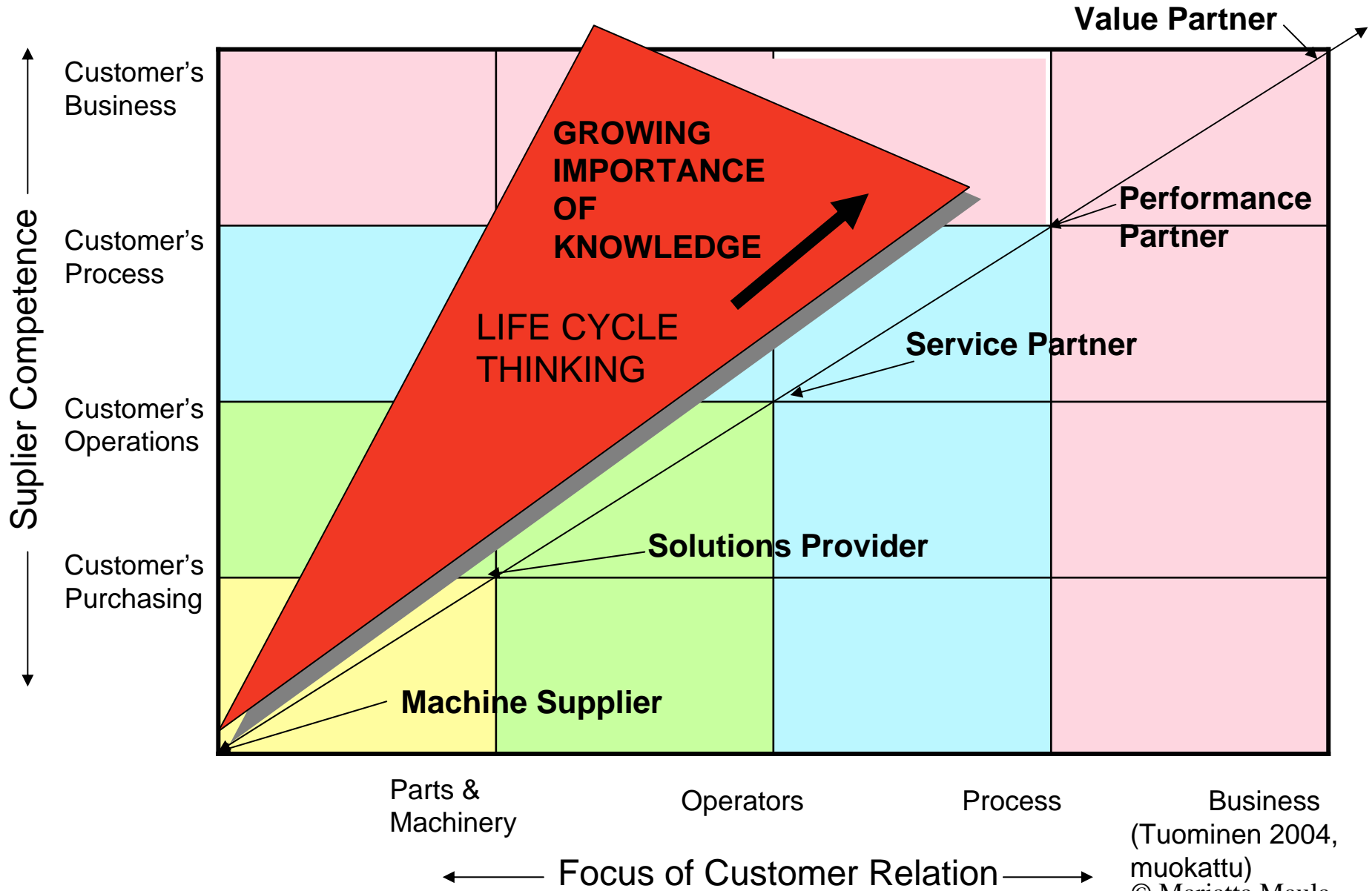
**1. KNOWLEDGE-INTENSIVE
BUSINESS SERVICES (KIBS)**

2. INDUSTRIAL SERVICES

Scope of Industrial Services



FRAMEWORK OF INDUSTRIAL SERVICES



KNOWLEDGE-INTENSIVE SERVICES IN RESEARCH

3. HOW?

- **TIP Research Program at Tampere University of Technology**

TIP RESEARCH PROGRAM

TIP RESEARCH GROUP

TIP

- Knowledge and Information Management in Knowledge Intensive Services(*)

The purpose is to explore knowledge intensive service organizations and organization populations, their competitiveness, functioning and development potential from the angle of knowledge and information management.

(*) Tietointensiivinen palvelutoiminta tietojohdamisen näkökulmasta

OBJECTIVES OF TIP RESEARCH PROGRAM

- To support the **competitiveness** of knowledge intensive service companies by examining their functioning and development possibilities from the angle of knowledge and information management.
- To develop better **knowledge and information management methods** and procedures for the use of service organizations.
- To explore and apply **CAS and CES theories**, particularly some of their applications (eg. living system, business ecosystem). To create better knowledge and information management procedures for developing organizations and business ecosystems.
- To create a high level, long-term and globally networked **research group**.
- To launch focused, **international research cooperation** with selected universities, companies and other organizations.
- To publish **articles and papers** of the research subject.
- To produce material for **teaching** purposes.
- Possibly to carry through service, product or social **innovations** related to company projects.
- To develop **scientific knowledge and know-how** in the field of knowledge and information management.

MANAGEMENT OF TIP RESEARCH PROGRAM

TIP research program is coordinated by Tampere University of Technology, the Institute of Business Information Management, Finland.

Steering Group

The Research Director of the program:
Prof. Marjatta Maula, D.Sc. (Econ. and bus. adm), M.Sc.(Computer Sciences)

The Coordinator of the research Program:
Development Manager Ilkka Virtanen, M.Sc.

International expert group members

- **Prof. Ron Sanchez (Copenhagen Business School)**
- **Prof. Eve Mitleton-Kelly (London School of Economics)**
- **Prof. Yves Doz (INSEAD)**
- **Prof. John L. Casti.**

STAGES, TIMETABLE AND FINANCING

Preliminary study in 2003.

Stage I: The analysis of theoretical models, methods and tools 2004

Stage II: Empirical research in organizations in cooperation with companies and public service organizations, 2005-31.8.2006

Stage III: Further empirical research. Institutional framework, management and regulation. Further activities concerning doctoral dissertations. 1.9.2006-2007 (-2008)

The financing of TIP research program

- The total budget of the TIP research program is circa 1,5 million euros.
- The preliminary study (Fall 2003) was financed by Sitra.
- Stage I has been financed by Tekes The National Technology Agency of Finland, Professia Ltd. and eBusiness Research Center eBRC.
- Stages II and III is financed by Tekes, various firms, and other organizations.
- The TIP research group includes also researchers, whose work is financed completely from other sources.

Tutkimusohjelma
TIP – Tietointensiivinen palvelutoiminta tietojohdamisen näkökulmasta

Tutkimusohjelman vastuullinen johtaja
 Projektkoordinaattori

Marjatta Maula
Carl Löfberg

Tutkimushankkeet		Vaihe I / 2004: Mallintaminen	Vaihe II / 2005 -2006	Vaihe III / 2006
Esiselvitys v. 2003 1.1 Kilpailukykymallit ja niiden vertailu Complex Adaptive System - teoriaryhmään 1.2 Complex Adaptive System - elävä organisaatio lähestyminen organisaatioon 1.3 Complex Adaptive System - lähestyminen liiketoiminta-ekosysteemiin (populaatioon) Hankekoordinaatio			Organisaatiolähtöinen tutkimus ja soveltaminen 2. Tietointensiivinen palvelutoiminta osana elävää liiketoimintaympäristöä 3. Uuden tiedon luominen ja innovaatiot vaatiot palvelutoiminnassa 4. Ohjelmistoliiketoiminta liiketoiminta-ekosysteemeissä 5. Hyvinvointipalvelut tietointensivisinä palveluina	Institutionaaliset puitteet palveluyritysten tietojohdamisessa 6. Ohjaus ja sääntely palvelutoiminnan tietotarpeiden ja tietojohdamisen kannalta
Jussi Okkonen	NN.	Mirva Peltoniemi		
Marjo Haataja	Muutosdynamiikka Muutosjohtaminen	CAS ja liiketoiminta-ekosysteemin mallintaminen		
Kilpailukykykymallien vertailu	DT VK	VK		
	Matti Koivuaho	Elisa Vuori		
	Sisäinen vuorovaikutus kommunikaatio ja tiedonvälitys	Agenttipohjainen ajattelu		DT
	DT			
	Harri Laihonen	Ville Vainio		
	Tietointensiivisen palveluyrityksen tietovirrat	Ekosysteemin tieto- ja asiakasvirtojen mallintaminen		DT
	VK			
	Jussi Viljanen			
	Elinkaariajattelu tietointensiivisissä palveluissa			VK

Tutkimusohjelma
TIP – Tietointensiivinen palvelutoiminta tietojohdamisen näkökulmasta

31.10.2006

Tutkimusohjelman vastuullinen johtaja: Prof. Marjatta Maula
Tutkimusohjelman koordinaattori: Ilkka Virtanen

Esiselvitys / 2003

Vaihe I / 2004

1.1
Kilpailukyymallit
ja niiden vertailu
Complex Adaptive
System -
teoriaryhmään

1.2
Complex Adaptive
System –tarkastelu:
elävä organisaatio
(yksi organisaatio)

1.3
Complex
Adaptive
System -
tarkastelu:
liiketoiminta-
ekosysteemi
(organisaatio-
populaatio)

DT=diplomityö
VK=väitöskirjaprojekti
PD=Post Doctor

Vaihe II / 2005-2006, Organisaatiolähtöinen tutkimus ja soveltaminen
1.1.2005-31.8.2006

TEEMA 1: Tietointensiivi-
sen palveluorganisaation
dynamiikka

Maiju Markova

Tiedon merkitys
organisaation muuttumiselle
ja uudistumiselle **DT**

Mobiilit liiketoiminnan palvelut **VK**

Jenni Rapanen

Asiakkaiden ja rajapinta-
elementtien merkitys
uuden tiedon luomiselle
palveluyrityksessä **DT**

TEEMA 2: Uuden tiedon
luominen ja innovaatiot
palvelutoiminnassa

Marjo Huhtala

Innovaatiot T&K-
yrityksissä **VK**

Antti Lönnqvist

Aineeton pääoma palvelu-
yrityksessä **PD**

Markku Lampola

Tutkimuslähtöisen innovaa-
tion arvoketju ja
hyödyntämisprosessit **VK**

TEEMA 3: Liiketoiminta-
ekosysteemit ja tieto-
intensiiviset palvelu-
organisaatiot niiden osana

Mirva Peltoniemi

Tietointensiivisten toimialojen
kehittymisen mallintaminen
- Case suomalainen
pelitoimiala. **VK**

Elisa Vuori

Suhteet
liiketoimintaekosysteemissä -
Avainyrityksen
päättökentätiedon
empiirinen tutkimus **VK**

TEEMA 4: Hyvinvointipalvelut
tietointensiivisinä palveluina

Matti Rimpelä

Terveystieteiden ja
sosiaalitoimen
ekosysteemi **PD**

Harri Laihonen

Tietovirrat
hyvinvointipalvelujen
muodostamassa
ekosysteemissä **VK**

Matti Koivuaho

Organisaation
sisäinen vuorovaikutus,
kommunikaatio ja
tiedonvälitys **VK**

Vaihe III / 2006-
Empiirinen jatko-
tutkimus.
Institutionaaliset
puitteet, ohjaus
ja sääntely palvelu-
organisaatioiden
tietojohdamisessa.
Väitöskirjojen
loppuunsaattaminen

TIP Research Program / Research Group

TIP – Knowledge Intensive Services (Tietointensiivinen palvelutoiminta tietojohdamisen näkökulmasta)

6.2.2007

Director of the Research Program: Prof. Marjatta Maula
Cordinator: Ilkka Virtanen

Preliminary Study / 2003

Stage II / 1.1.2005-31.8.2006 Empirical research

THEME 1: The dynamics of a knowledge intensive service organization

THEME 2: The creation of new knowledge and innovations in services

THEME 3: Business ecosystems and knowledge intensive service organisations as part of them

THEME 4: Well-being services as knowledge intensive services

Stage I / 2004

1.1 Competitiveness models and their Comparison to Complex Adaptive System - theories

1.2 Complex Adaptive System –approach: 'Living Organization' (one organization)

1.3 Complex Adaptive System -approach: Business Ecosystem (organization population)

Stage III / 1.9.2006- 2007 (-2008) Further empirical research. Institutional framework, management and regulation. Further activities concerning doctoral dissertations.

THEME 1: Knowledge intensive service organization, osaaminen ja innovations

THEME 2: Business ecosystems

THEME 3: Public administration and knowledge intensive well-being services

Maiju Markova
Mobile business services VK
NN
The innovation processes of R&D firms VK
Antti Lönnqvist
Intellectual capital in a service firm PD
Markku Lampola
The agreement processes of a science-based innovation VK
NN
The development of industrial services by utilizing life cycle thinking and knowledge management DT or VK

Mirva Peltoniemi
Modelling the development of a knowledge intensive Industry - Case: Finnish Games industry. VK
Elisa Vuori
Business ecosystem - An empirical study on business relationships of a keystone company VK

Maija Katainen
Industrial services in a food industry company DT
Merja Tarvainen
Utilizing customer-related Knowledge in knowledge-intensive service organization DT
NN
An intermediary organization and services DT

Matti Rimpelä
Health care and social care ecosystems PD
Harri Laihonen
Health ecosystem as an interpretation framework for knowledge flows VK
Matti Koivuaho
The internal communication of knowledge intensive health care organisation VK
Harri Jalonen
Information, knowledge and communication in the preparation of decision making in the context of local government VK
NN
A research topic concerning health care services DT

TIP research program workshop on 14.2.2007

International ServiceForum 07 on Oct/Nov 2007. Chief Coordinator: Johanna Tommila, M.Sc., Project Manager.

DT=Master's thesis
VK=Doctorel project
PD=Post Doctor

PUBLICATIONS, TEACHING AND OTHER CONTRIBUTION

More than 50 scientific articles in academic journals, reports, conference papers, and books.

Academic theses

- **6 finalized master's thesis + 3 in the process.**
- **7 doctoral studies in the process.**

Workshops, etc:

- **TIP research program workshop on 14.2.2007**
- **International ServiceForum 07 on Oct/Nov 2007.**
- **Project oriented workshops and events according to the needs of each research project and partner organization.**

The researchers act as

- **Experts and lecturers in various occasions, including MBA –programs**
- **Assistants in the courses of the university.**

Active participation in international conferences.

Linked to teaching on courses: "Knowledge Intensive Service Organizations", and also "Organizations as Learning Systems" and "Innovation Milieus".

LESSONS LEARNED

The research group was created fast and successfully. Success factors:

- **Clear focus (knowledge intensity in services), connected to the core competence of the Institute of Business Information Management.**
- **New theoretical foundations (complexity, knowledge management) help to take distance from traditional strategy and business management approaches**
- **Young talented and motivated people, 'pioneer' spirit; Freedom of ideas**
 - **Critical mass necessary.**
 - **The research group supports individual researchers**
 - **Visibility**
 - **Better opportunities to get financing**
 - **Strong support from the supervisor**
 - **Fast global exposure to international conferences, experts, etc.**
 - **Fast, shared successes, increasing expert role**
- **Results linked to courses at the university, MBA programs, etc.**
- **Successful financing**

CHALLENGES

Mental models: Perception of services, service production and organizations and their importance in a University of Technology and whole society.

Pragmatic and theoretically sound concepts, models and theories.

Success stories and cases.

Intensive international co-operation between firms and public sector organizations, and researchers. Career structure of the researchers should include employment periods in firms.

Financing of research (business and public sector sources).

Extensive education and teaching required (academic, firms, public)

Contact Information

Prof. Marjatta Maula
Tampere University of Technology
Institute of Business Information Management
marjatta.maula@tut.fi

TIP Research Program / Tietointensiivinen
palvelutoiminta tietojohdamisen näkökulmasta

www-pages:

<http://www.tut.fi/public/>

=>Units

=>Institute of Business Information Management

=>Research

=>TIP Research Program