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Universität Münster
Institut für Wirtschaftsinformatik

Lehrstuhl für Wirtschaftsinformatik
und Interorganisationssysteme
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Contingencies, drivers, motives for networking. Network and IOS examples.

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Lehrstuhl für Wirtschaftsinformatik und Interorganisationssysteme

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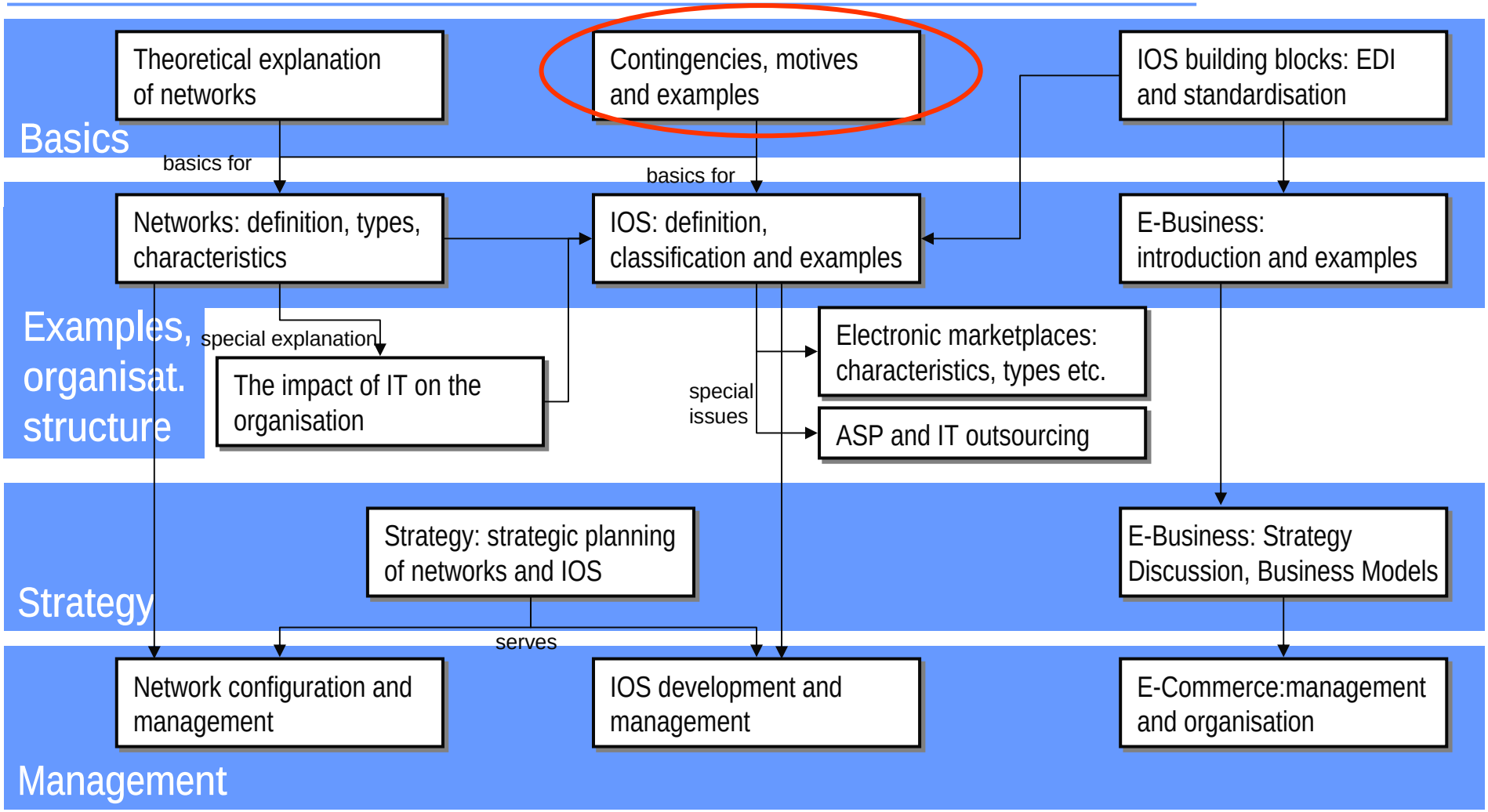
IOS

Course Outline



Objectives of this modul

- Give an overview of **motives** for networking and collaboration
  - why does it seem to be a promising solution?
- Introduce environmental changes and **drivers**
  - what drives firms to establish cooperation links and inter-firm networks?
- Illustrate the network idea with several real-life **examples**
- Give an introduction to inter-organisational information systems with real-life examples
- Show the **necessity of management** of networks and IOS
- Give an **outlook** to the next steps of the course

Agenda

1. Contingencies and motives for networking
2. Network examples
3. IOS examples
4. Lessons learned and outlook

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1. Contingencies and motives for networking
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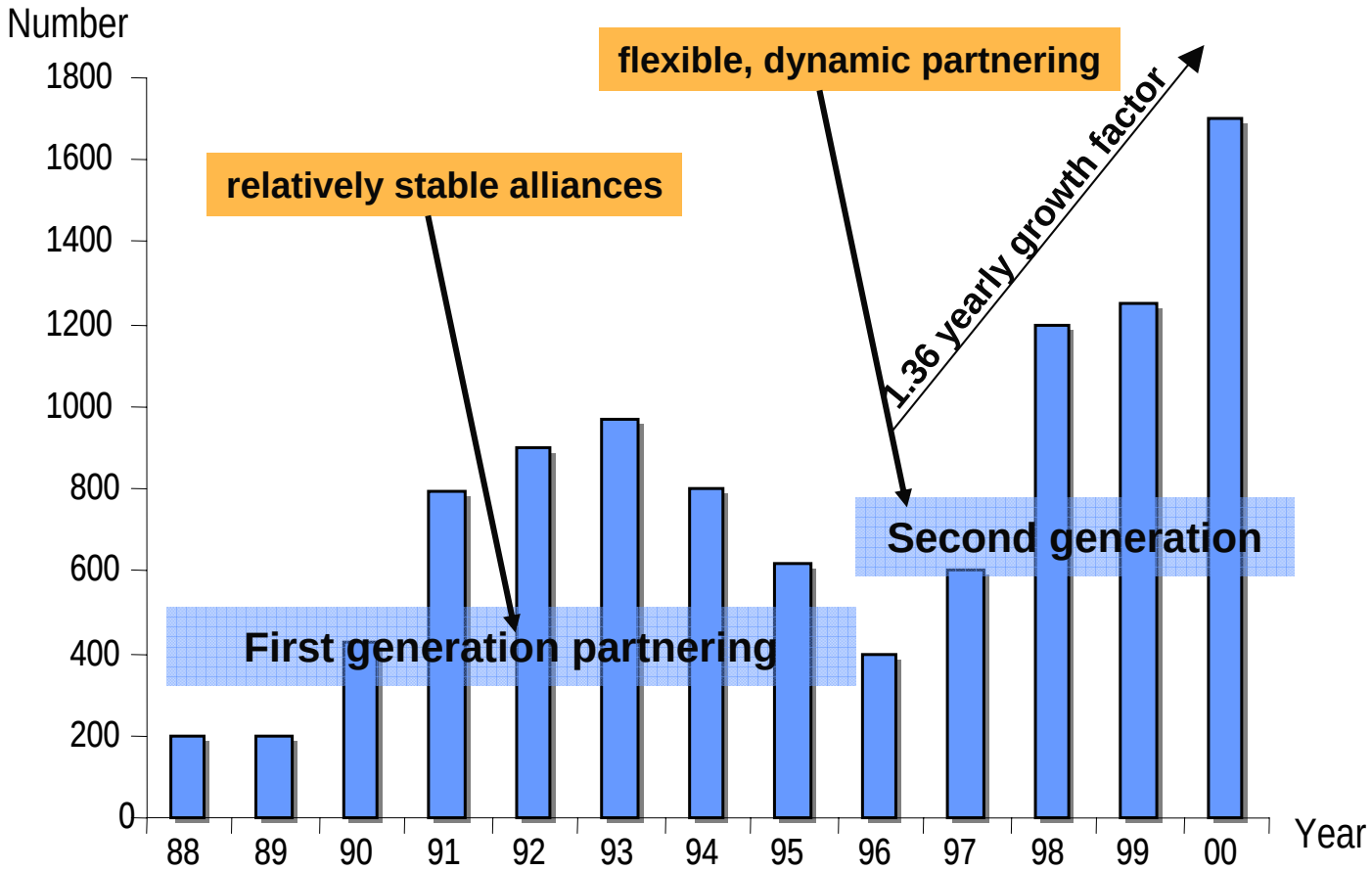
There is a trend towards partnering and networking between companies

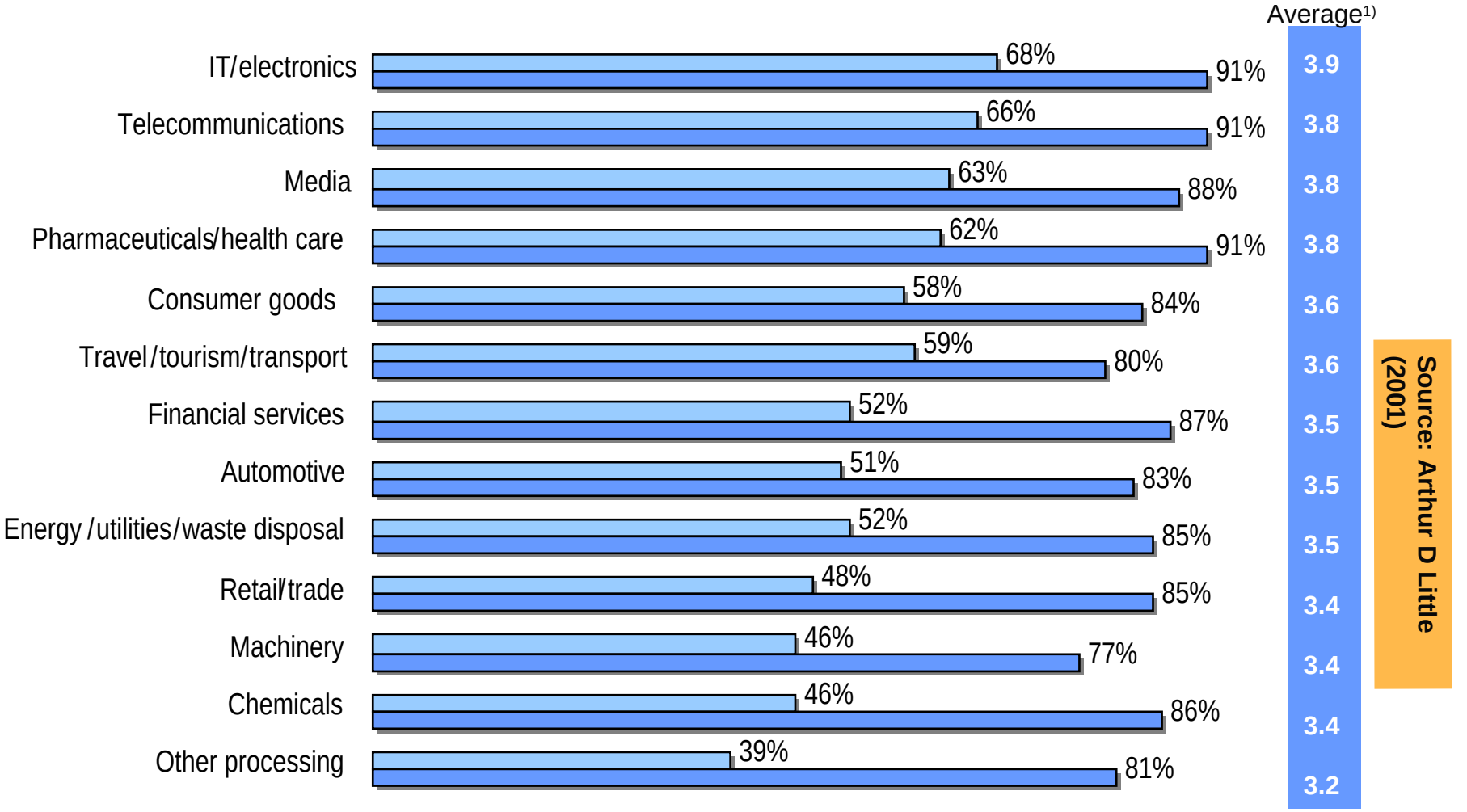
- Increasing collaboration along Supply Chains (SCM):
  - e.g. automotive sector: e.g. DaimlerChrysler
- Emergence of virtual organisations
  - collaboration of small and mid-sized companies (SMEs)
- New networked business models in e-Business based on the Internet
  - web-based business integrate services from different providers
- Convergence of technologies (WebTV, MultimediaWeb, UMTS etc.)
  - leads to inter-industry cooperation, e.g. between Telecommunications and Media companies
- Technological innovation and shorter development and product life cycles drive the emergence of development partnerships
  - e.g. in the Chip manufacturing Industry

Empirical evidence: increasing amount of worldwide partnerships



Source : Thomson Financial Securities Data – worldwide partnerships with at least one partner from Europe were considered

Importance by sectors – 2001 and 2005



Contingencies: underlying trends

1. Technology changes

- new ways of communication and information processing
- redefine market roles and rules
- new opportunities and challenges, not to be achieved alone

2. Globalisation

- changing competition, eroding of market structures
- often based on deregulation of former closed national markets
- collaboration to enter new markets, or to reduce competition

3. Changing customer behaviour/needs and fragmented markets

- individualisation and mass customisation
- increasing uncertainty
- R&D partnerships & supply chain collaboration

4. Increasing information intensity & importance of knowledge

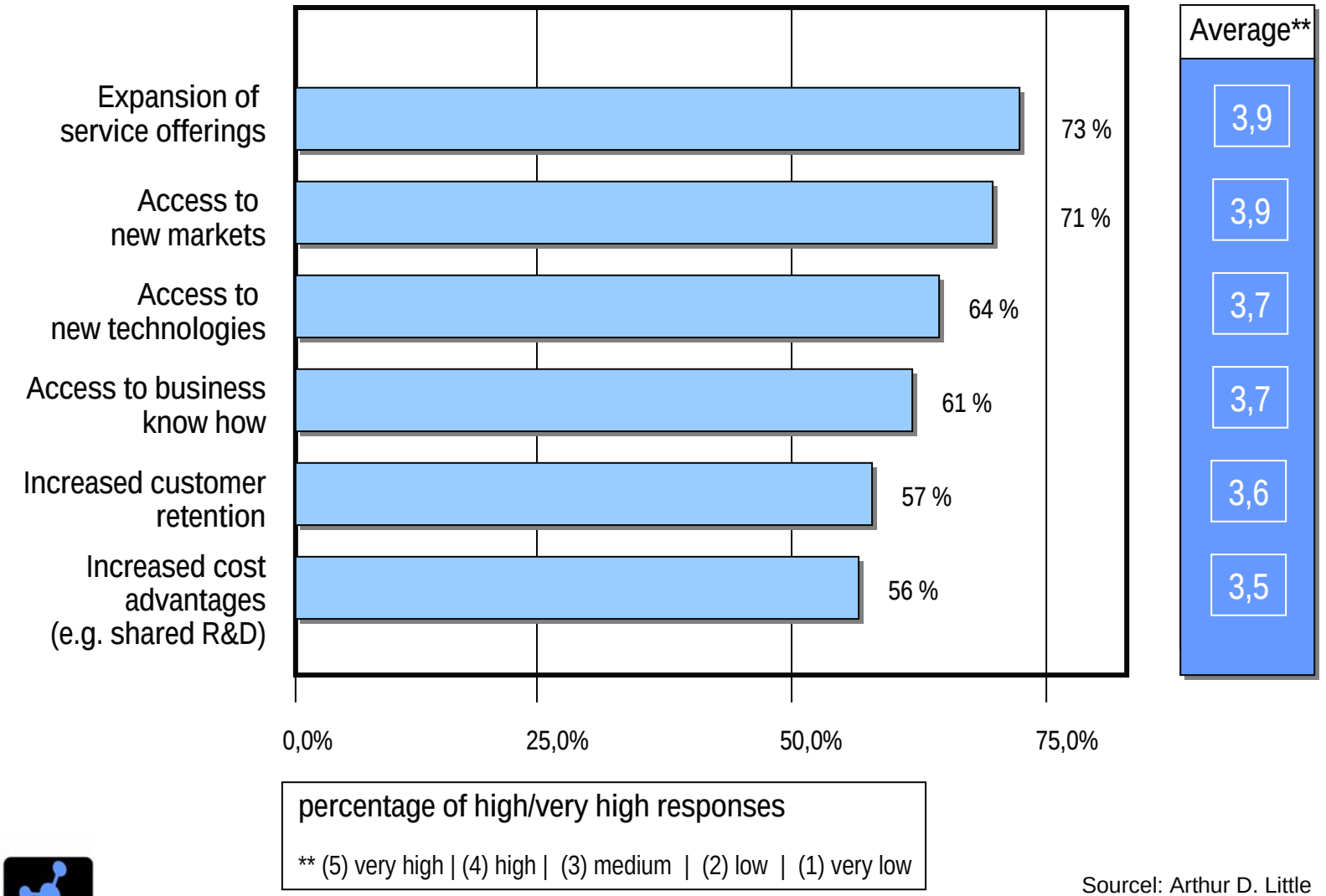
- products, services and production processes increasingly information intensive
- companies are not able to access and control necessary knowledge alone

Challenges: ... complex contradictions

- "think global - act local"

  "Varying types of cooperative partnerships develop across national boundaries as organisations attempt to ... take advantage of the connections or intimate knowledge that only a 'local' can have ..." Scott (1992), 208
- Flexibility (customisation) and efficiency (time to market, shorter product life cycles)
- Complexity and reliability (product and service quality)
- Autonomy and control

Motives: Which objectives are pursued with partnering 1/2



Sourcel: Arthur D. Little

Motives: Which objectives are pursued with partnering 2/2

- Integrate external competencies:
  - “It is unlikely that organisations can master all the key competencies they need.
  - Thus, it is essential that organisations collaborate to gain access to such competencies to enhance their scope.“ (Prahalad/Hamel 1990.)
- Gain access to new technology or markets
- obtain economies of scale in joint research, production, marketing,
- Build complementary skills
- Share risks for activities
- Technology licensing agreements

(Nassimbeni 2000, 545)

Exemplary taxonomy of inter-firm strategies for cooperation

Strategy domain	Motivation	Examples, type of arrangement
Market-oriented strategy	Enter a new market, develop a market	Marketing, distribution partnership
	Enter a new market, overcome barriers to entry	Code-sharing-, information partnerships in tourism market
	Reduce competition within the market	R&D collaboration; coalitions with competitors
Functional strategy	Technology management: expand resource base; especially for innovation management	Technology partnerships: UMTS alliances: Telefonica/Sonera; Vizsavi, etc.
	Procurement: order pooling	Procurement cooperations: EUROSELECT
	Information management: collaborative development of infrastructures and information resources. Especially coordination along the value chain (collaborative planning and forecasting) knowledge and innvovation learning competition, coopetition	CPFR partnerships (retail sector) Information partnerships Internalizing external know how
	Operations: reduction of vertical integration (operations, manufacturing), flexibility concerns, scale of operations	Outsourcing partnerships, supplier networks, contract manufacturing

[Klein 1996, pp. 27]

Exemplary taxonomy of inter-firm strategies for cooperation

Strategy domain	Motivation	Examples, type of arrangement
Functional strategy (cntd.)	Distribution: Enlargement of regional range, customer groups etc. flexibility concerns	Marketing Alliances, Outsourcing partnerships, distribution partnerships (shop-in-shop), logistics networks
	Marketing: customer service co-branding reputation transfer	Co-Brand initiatives (MegaBrands): SonyEricsson, StarAlliance
organisational strategy	Higher flexibility of small organisational units	Quasi desintegration: Outsourcing partnerships
	Synergies due to vertical cooperation and virtual or quasi integration	Inter-firm process integration: e.g. supply chain hubs
	Economies of scale and achievement of critical size in single enterprise areas	Transaction partnerships
Risk strategy	Risk reduction (innvovation, volatile demand, seasonal variations)	Outsourcing, R&D partnerships
Generic strategy	Adoption of common strategy patterns	e.g. UMTS sector: partnership dominated or Airline Alliances

[Klein 1996, pp. 27]

Economic motives: “increasing efficiency” vs. “extending scope”

Two major directions can be distinguished:

1. **Cost-oriented strategies** concentrating on efficiency concerns:

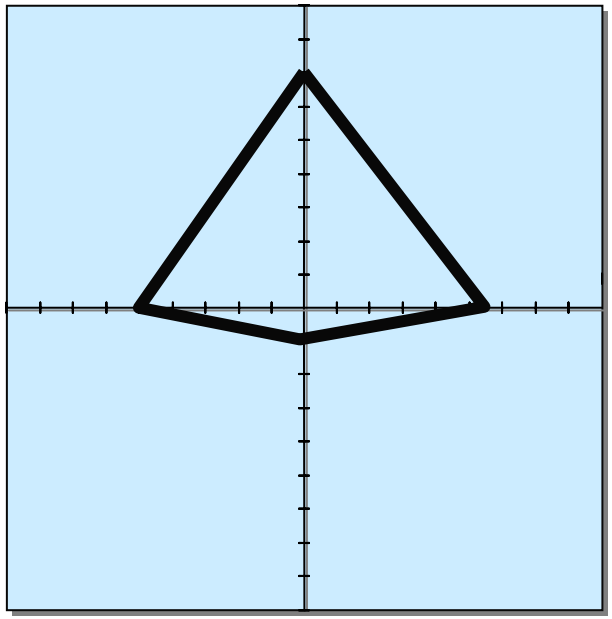
   “do the same things, but do them better by cooperating”.

2. **Strategic positioning** in terms of differentiation regarding quality, services or value. This strategy is about enhancing the company’s scope:

   “doing different things by cooperating”.

Motives: Profiling the collaboration idea

Enhance:
Quality, Services,
Add Value, Scope,
Knowledge



Share/Manage Risks
Market, financial,
legal, operational,
investment risks

Improve:
Efficiency,
reduce costs,
enhance scale.

Redefine/innovate:
New products,
new services,
new processes,
new business ideas

Acc. to: Merchand, Donald A., Hard IM choices for senior managers, Financial Times Supplement Mastering Information Management, April 5, 1999, S. 4

Summary
Partnering and Networking: Rationale

- There is a trend towards networking
- Several factors drive the formation of networks
- Networking seems to be a promising reaction
- But networking is risky to some extent
- Ergo: What matters is an explicit network management
- A classification of network types is necessary

Agenda

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Common structure for all examples

- contingencies/drivers
- motives of the co-operating parties
- object of networking (what the parties do)
- managerial cooperation challenges
- cooperation risks
- other (market) risks
- usage of IOS

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THE FREELANCE NETWORK

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IBM, Sony, Toshiba team on chip processes

The StarAlliance: global airline alliance

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The Star Alliance Network Welcomes TAP Portugal as the Alliance's 16th Member Carrier

At a joining ceremony held in Lisbon today, March 14th, 2005, representatives of the Star Alliance network welcomed TAP Portugal as their 16th member. With Portugal's leading airline having joined, the

Media Room

Star Alliance and Aeroports de Paris Sign MoU Outlining Co-location at CDG1

PARIS, March 8th, 2005 - Jaan Albrecht, CEO Star Alliance and Pierre Graff, President of Aéroports de Paris signed an agreement on the principles of a partnership between the alliance and the airport.

more ...

www.starallicance.com

Airline Alliances: StarAlliance

- **contingencies/drivers:**
  - deregulation, globalisation: new competition
  - increasing importance of information: passenger data
  - major competitors are forging alliances
- **motives of the co-operating parties:**
  - enhance service portfolio:
    - global presence/more destinations
    - global, networked routing of passengers (data routing)
  - efficiency concerns: share infrastructure
- **object of networking (what the parties do):**
  - connect their distribution/reservation systems and share data
  - compile a global star alliance flight&destination table (code sharing)
  - joint marketing and customer retention activities: miles&more

Airline Alliances: StarAlliance

- **managerial cooperation challenges:**
  - configuration of alliance network and partner attraction
  - process connections, technical interfaces, logistics
  - cultural differences
- **cooperation risks:**
  - partners drop out (e.g. Ansett Australia)
  - operational inefficiencies, complexity
  - conflicts due to internal competition (e.g. SIA and Thai)
  - technical breakdown of vital IOS
- **other (market) risks:**
  - industry crisis: e.g. September 11
- **usage of IOS:**
  - global distribution systems (GDS, CRS), data exchange
  - joint web-activities

UMTS partnerships and consortia

UMTS-Licence Alliances:
e.g.. Group 3G (now Quam):
Joint Venture of Sonera (FIN)
and Telefonica (ES)

Development alliances:
- E-Plus and Group 3G
- Deutsche Telekom and British Telecom Wireless (Viag Interkom; O2)

Share risks and the immense costs of developing and implementing UMTS infrastructures.

Standardisation Bodies:
„UMTS soll das GSM-System - verwendet von der Telekom (D1) und Mannesmann (D2) - ablösen und ist ein Kompromiß zwischen dem Vorschlag von Ericsson und Nokia ("W-DCMA"-Gruppe) auf der einen und Siemens, Bosch, Motorola, Alcatel, Nortel, Sony und Italtel ("UMTS-Allianz") auf der anderen Seite“ (Quelle: Glossar.de)

Bilateral Alliances for various purposes:
- Vodafone and T-Mobile cooperation for the development of mobil payment systems

UMTS partnerships and consortia

- **contingencies/drivers:**
  - technological evolution and changes
  - deregulation: UMTS auctions to facilitate market competition
  - increasing importance of information and knowledge
- **motives of the co-operating parties:**
  - sharing risks and costs of developing new infrastructures
  - innovation: develop novel services
- **object of networking (what the parties do):**
  - negotiations on new standards
  - joint bidding in the UMTS auctions: financial purposes: risk and effort balancing
  - joint development and resource/knowledge sharing

UMTS partnerships and consortia

- **managerial cooperation challenges:**
  - innovation management, joint development activities
  - intellectual property rights issues in innovation projects
  - interest balancing
- **cooperation risks:**
  - technological failure in R&D activities
  - financial investment risks
- **other (market) risks:**
  - no customer acceptance of new UMTS services
  - competition with other technological systems (e.g. i-mode)
- **usage of IOS:**
  - UMTS services/systems are IOS !
  - ergo: the purpose of the alliances is to develop new IOS

Chip development alliances: e.g. IBM, Sony and Toshiba

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02 April 2002

IBM, Sony, Toshiba team on chip processes

East Fishkill, N.Y. - High-tech giants IBM, Sony Corp., Sony Computer Entertainment and Toshiba Corp. today signed a multi-year agreement to jointly develop advanced semiconductor technologies based on silicon-on-insulator (SOI) and other IBM expertise.

Participants predicted the joint development effort would lead to high-perfor
electronic products – from digital consumer applications to supercomputers.

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IBM, Sony and Toshiba to co-develop advanced chip processes

By David Lammers
EE Times
April 4, 2002 (9:56 a.m. EST)

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IBM, SONY, SCE AND TOSHIBA TO JOINTLY DEVELOP CHIP-MAKING PROCESS TECHNOLOGY

Tuesday, April 2, 2002

Powerful alliance is formed for semiconductor processes

(BUSINESS WIRE)--In a unique collaboration, IBM, Sony Corporation, Sony Computer Entertainment Inc. and Toshiba Corporation have signed a multi-year agreement to jointly develop advanced semiconductor technologies based on silicon-on-insulator (SOI) and other IBM materials advances. This will lead to the development of high-performance, low-power chips necessary for a wide range of future electronic products, from digital consumer applications to supercomputers.

The team will spend several hundred million dollars over four years to develop new process technologies for building chips with features as small as 50 nanometers on 300 mm wafers. Smaller features mean more can be packed on a single chip. The parties plan to use this technology to create system-on-chip (SoC) designs, integrating processor, memory and communications functions, which normally are found on separate chips within a device.

The new processes are expected to be the world's most sophisticated, incorporating advanced chip-making materials pioneered by IBM, such as copper wiring, silicon-on-insulator (SOI) transistors and "low-k" insulation. The use of new designs and materials will be guided by the applications requirements of Sony, one of the world's largest consumers of semiconductors. Toshiba will contribute its high-volume manufacturing capability and SoC technology expertise to meet targeted performance and quality levels.

Chip development alliances: e.g. IBM, Sony and Toshiba

- **contingencies/drivers:**
  - technological evolution and changes, changing customer behaviour:
    - new technical needs
    - smaller and mobile devices
    - convergence of services and devices
- **motives of the co-operating parties:**
  - share risks and costs of developing new infrastructures
  - share knowledge and technologies
  - innovation: develop novel services
- **object of networking (what the parties do):**
  - negotiations on new standards
  - share development infrastructers (hardware)
  - share personnel and experts: joint teams in IBM laboratory

Chip development alliances: e.g. IBM, Sony and Toshiba

- **managerial cooperation challenges:**
  - innovation management, joint development activities
  - intellectual property rights issues in innovation projects
  - interest balancing
- **cooperation risks:**
  - technological failure in R&D activities
- **other (market) risks:**
  - other superior competing technologies
  - time-to-market
- **usage of IOS:**
  - e.g. joint development databases
  - CSCW and groupware for distance collaboration

Joint Mass Customisation Initiatives: e.g. the public funded EUROShoE project

EUROShoE is a research project aimed at a dramatic renovation of the concept of the shoe as a product and of its production, based on the transformation of the first from a mass produced good to a mass customised one; this product evolution goes in parallel with a transformation of the footwear company into an extended and agile enterprise capable of handling the complexity that such a change in the nature of the product implies and of mastering the new challenges deriving from a direct involvement of the consumer in the design and manufacturing process of the shoe he is going to buy.

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Example: 3D feet scanning technology

Joint Mass Customisation Initiatives: e.g. the public funded EUROShoE project

- **contingencies/drivers:**
  - technological evolution and changes: new technological opportunities
  - changing customer behaviour and needs: trend towards individualisation
- **motives of the co-operating parties:**
  - enhance service portfolio
  - innovation: new technologies (e.g. 3D feet scanner technology)
- **object of networking (what the parties do):**
  - joint development activities
  - joint marketing initiatives
  - operational coupeling of value chains
  - value chain wide data processing (SCM)

Joint Mass Customisation Initiatives: e.g. the public funded EUROShoE project

- **managerial cooperation challenges:**
  - negotiations on standards: data, interfaces, processes etc.
  - innovation management
  - process coordination: to avoid operational inefficiencies
  - special case EUROShoE: managing a large scale research project
- **cooperation risks:**
  - technological failure in R&D activities
  - competition among participants: opportunism, mistrust
- **other (market) risks:**
  - lack of customer acceptance
- **usage of IOS:**
  - joint development databases
  - interfirm data processing
  - end-customer web-services and mass customisation interfaces

Virtual organisation: the virtual factory at Lake of Constance (Euregio Bodensee)

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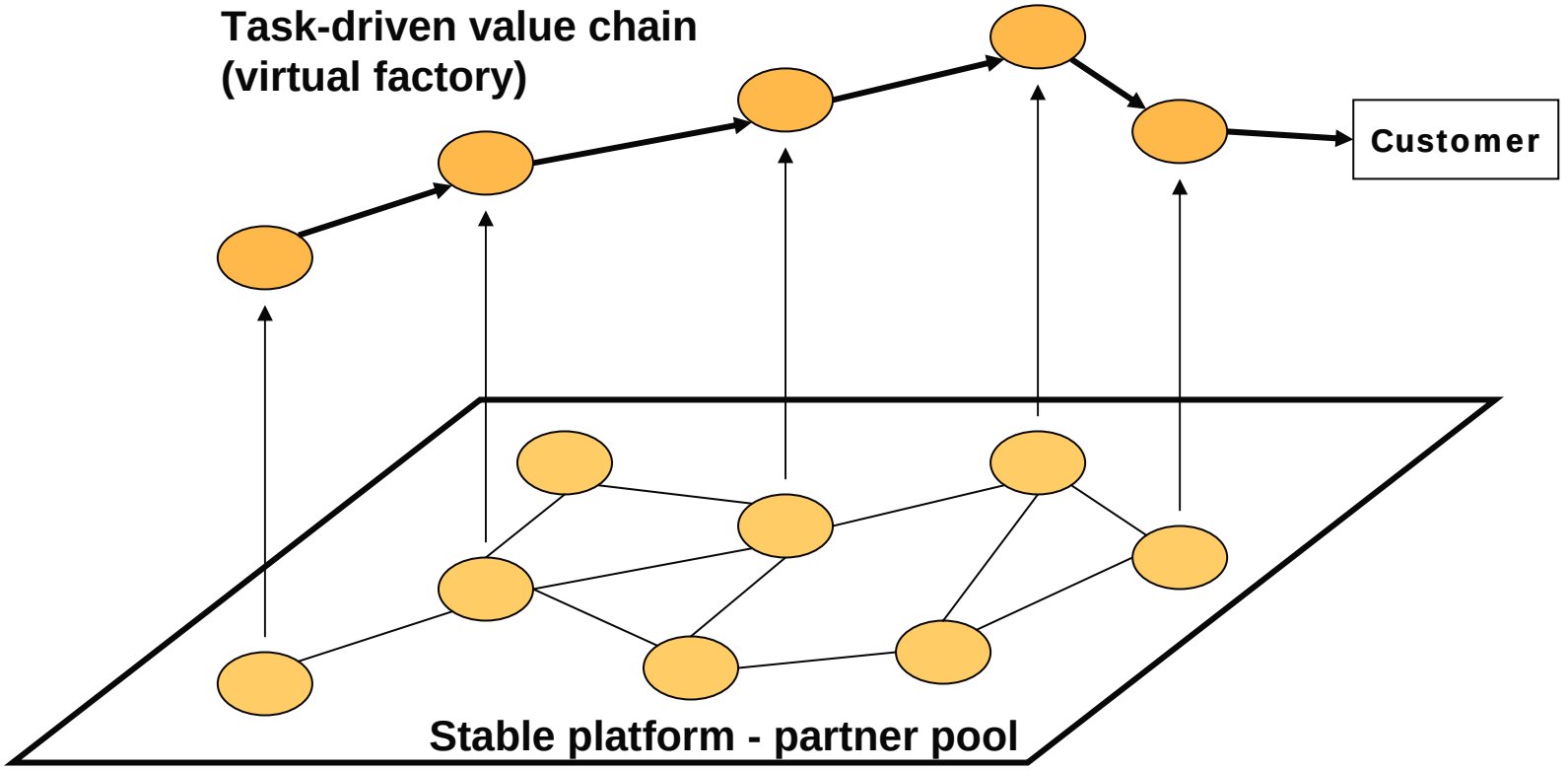


Virtual organisation: the virtual factory at Lake of Constance (Euregio Bodensee)

- **contingencies/drivers:**
  - globalisation: new levels of global competition
  - technological evolution and changes: new technological needs
- **motives of the co-operating parties:**
  - enhance service portfolio
  - achieve virtual size: compete with larger firms:
    - economies of scope
  - efficiency concerns: core competence concentration allows better
    - economies of scale
- **object of networking (what the parties do):**
  - joint customer-specific order fulfilment
  - connect value chains and inter-firm processes
  - joint development in project with high degree of novelty
  - share production capacities

Virtual organisation: the virtual factory at Lake of Constance (Euregio Bodensee)

- **managerial cooperation challenges:**
  - inter-firm order processing and coordination
  - partner attraction and integration (management the pool of firms)
  - conflict management and resolution
- **cooperation risks:**
  - dependence on external network
  - no clear position in the market (brand management concerns)
  - drop out of important partner firms
  - problems with the integration of partner competencies
- **other (market) risks:**
  - lack of customer acceptance
- **usage of IOS:**
  - partner competence databases
  - joint (development) databases
  - interfirm data processing
  - CSWC and groupware

Freelance Networks: e.g. „freelancers.network“ or „The Freelance Network“

Examples:
www.freelancers.net
www.thefreelancenetwork.com

Freelance Networks: e.g. „freelancers.network“

- **contingencies/drivers:**
  - globalisation: opportunity to get in contact with individuals globally (especially in knowledge intensive and web-based business, e.g. consultancy, software development)
  - technological evolution and changes: new and flexible opportunities to get in contact with and to manage a network of freelancers
- **motives of the co-operating parties:**
  - achieve virtual size: to be able to perform large project: economies of scope
  - flexibility concerns: be independent, but participate in interesting projects
- **object of networking (what the parties do):**
  - loose-coupled network of individuals to perform specific projects
  - joint customer-specific order fulfilment
  - pool competencies to achieve superior project teams
  - share capacities

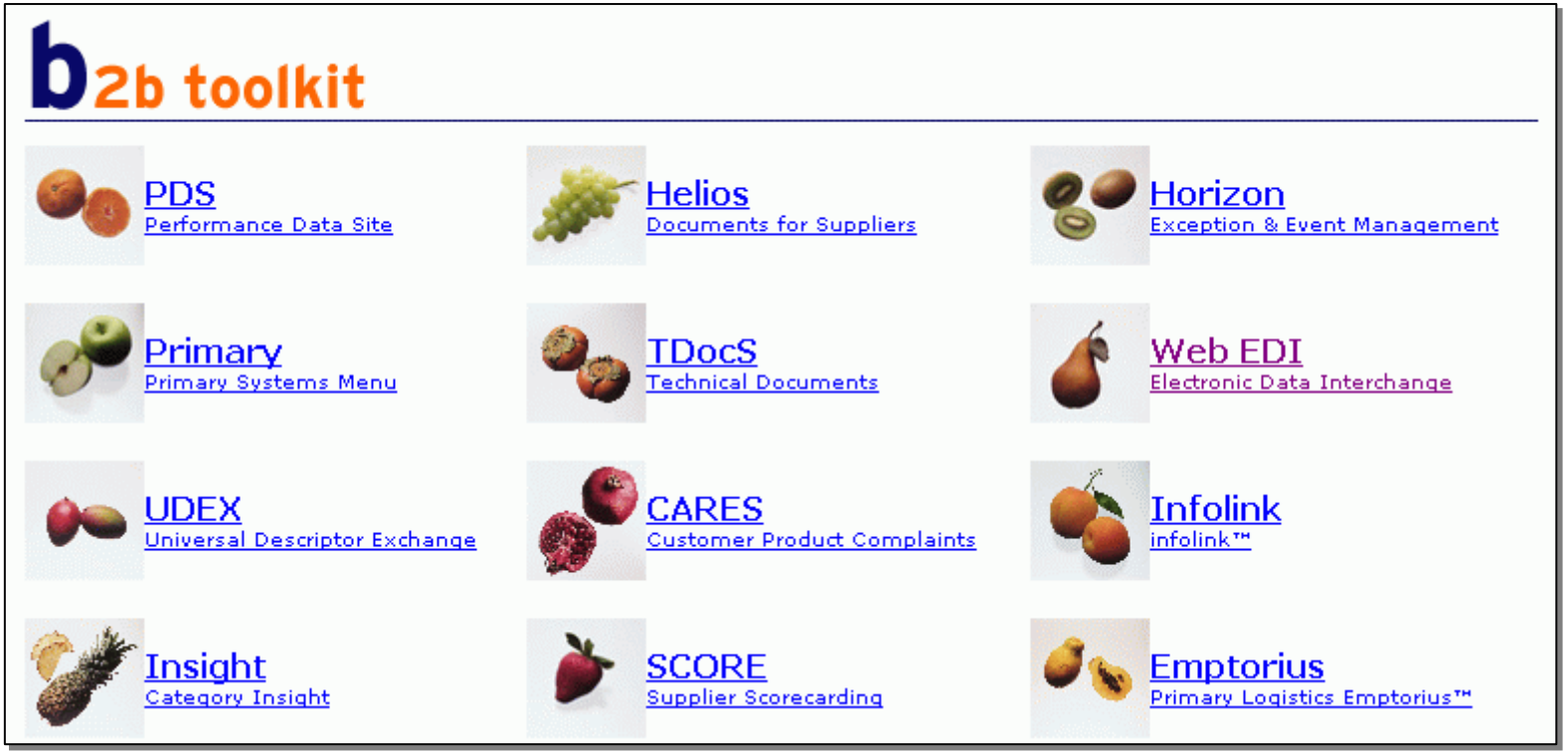
Freelance Networks: e.g. „freelancers.network“

- **managerial cooperation challenges:**
  - find the right competencies (partner identification) for a project
  - coordination and project management: esp. in solely computer mediated environments
  - trust management: can I trust another unknown expert to fulfil a specific task?
  - conflict management and resolution
  - quality management
- **cooperation risks:**
  - dependence on quality of unknown individuals: opportunism
  - cultural and communication differencies: misunderstandings
  - drop out of important partners
- **other (market) risks:**
  - lack of customer acceptance: project structure may be confusing for customer
- **usage of IOS:**
  - freelance web-portal: some sort of electronic marketplace
  - e-mail, groupware and other CSCW tools
  - joint databases

Value-/Supply-Chain-Networks: Sainsbury supermarket ECR supplier network

www.sainsburys.co.uk/sid

Value-/Supply-Chain-Networks: Sainsbury supermarket ECR supplier network



www.sainsburys.co.uk/sid

Value-/Supply-Chain-Networks: Sainsbury supermarket ECR supplier network

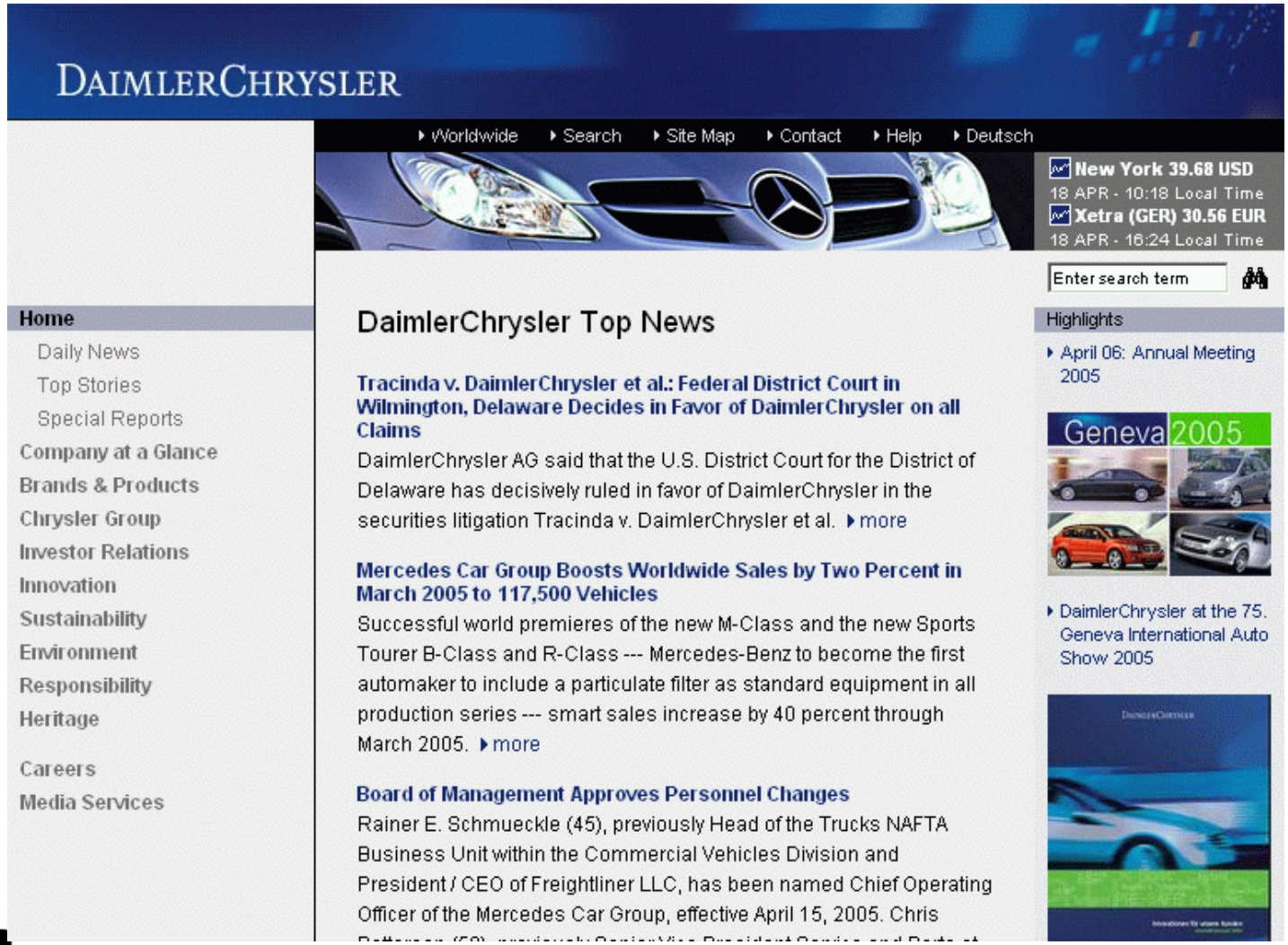
- **contingencies/drivers:**
  - Increasing importance of information: it is increasingly important for all participants in the value chain to share information to better meet customer needs (idea of efficient consumer response)
- **motives of the co-operating parties:**
  - efficiency concerns: improve disposition processes, stock availability as well as customer service
- **object of networking (what the parties do):**
  - Sainsbury shares information with suppliers over an Extranet
  - joint planning of promotion activities
  - collaborative planning and forecasting of demands
  - development of further ECR opportunities

„The real-time visibility and collaborative process that SID PDS enables has delivered genuine benefit. It has helped us to **better manage promotional opportunity and risk, minimised inventory across the total supply chain and improved promotional execution**. Most importantly, it helps us achieve our ultimate goal of better servicing the customer."
Andy Richardson, Kraft Jacobs Suchard

Value-/Supply-Chain-Networks: Sainsbury supermarket ECR supplier network

- **managerial cooperation challenges:**
  - attraction and convincing of suppliers (ECR adoption)
  - technical solution
- **cooperation risks:**
  - drop out of important partners
  - transparency of internal data to suppliers: vulnerability in case of diffusion of information to competitors
- **other (market) risks:**
  - low risks in case of failure, mainly operational project
- **usage of IOS:**
  - Extranet, EDI

Just-in-Time Supply-Chain-Network: DaimlerChrysler Supplier Network Collaboration



Just-in-Time Supply-Chain-Network: DaimlerChrysler Supplier Network Collaboration

e-Supply Chain Management cuts costs in logistics

„(...)
DaimlerChrysler has embarked on a program called Supplier Network Collaboration, in order to improve communication and planning for both the suppliers and the Company. The program involves sharing weekly and monthly forecast information of parts requirements to all critical tiers of the supply chain, relative to a specific commodity or module. In addition to sharing real-time requirements, the program creates exception-based alerts to detect supply issues and avoid them completely, thereby supporting the just-in-time manufacturing principles and avoiding the need for inventory stockpiling. Also suppliers will be able to optimize their production capacities. (...)“

source: DCXnet - DaimlerChrysler eBusiness
http://www.dcx.net/business/supply_achievement_e.htm

„DaimlerChrysler uses a combination of Web, EDI and manual processes to communicate with suppliers“, Louise Linder, director of materials and supply operations for DaimlerChrysler said.
Each day, Daimler tells suppliers what it expects and when parts should be delivered. The carmaker within the last year intensified its efforts to save money by employing a lean manufacturing and just-in-time inventory strategy, keeping parts to a minimum as it builds cars to meet demand.
"We have to be able to react week-by-week, so we have put the systems in place to make sure that suppliers can respond to us very quickly," Linder said.

Source: InternetWeek, Sep. 28 - 2001
http://www.internetweek.com/newslead01/lead092801.htm

Just-in-Time Supply-Chain-Network: DaimlerChrysler Supplier Network Collaboration

- **contingencies/drivers:**
  - changing customer behaviour: customers become increasingly unwilling to wait several months for a car
  - Increasing importance of information: it is increasingly important for all participants in the supply chain to share information to better meet customer needs
- **motives of the co-operating parties:**
  - efficiency concerns:
    - decrease stock inventories and therefore costs
    - improve supply-chain processes (speed-up)
- **object of networking (what the parties do):**
  - information sharing
  - integration, adaptation and aligning of manufacting processes
  - just-in-time ordering and delivery
  - joint planning, but also developing

Just-in-Time Supply-Chain-Network: DaimlerChrysler Supplier Network Collaboration

- **managerial cooperation challenges:**
  - logistical challenges: alignment, scheduling of processes
  - convince partners
  - integrate systems, establish functioning and performing infrastructure
- **cooperation risks:**
  - technical fallout of systems (e.g. Sep. 11)
    - can lead to shut down of assemply line!
  - lack of willingness to share information and to adapt to the processes of the OEM
  - leads to fewer, higher integrated suppliers, which then can gain more power (also problematic then: drop out of important partners)
- **other (market) risks:**
  - low risks in case of failure, mainly operational project
- **usage of IOS:**
  - web-based Extranet, EDI

Just-in-Time Supply-Chain-Network: DaimlerChrysler Supplier Network Collaboration

September 28, 2001

Web Supply Chains Revised

By RICHARD KARPINSKI

Manufacturers that have used the Web to regulate incoming parts and keep inventories to a minimum were thrust into chaos on Sept. 11 when parts didn't come and assembly lines screeched to a halt.

See Also

More on post-9/11 supply chain disruptions

Lean inventories quickly became a handicap following the terrorist attacks in New York and Washington, which grounded air traffic and snarled cross-border commerce. Shutting down an assembly line because of stalled parts deliveries can cost big manufacturers $10,000 per minute. It's a risk companies never had to factor into their supply chain planning--until now.

Balancing that risk against the rewards of keeping inventory costs down will be job one for manufacturers as the international crisis persists.

The immediate impact was severe for some companies. Automakers--some of the leanest manufacturers this side of high tech--were hit particularly hard. DaimlerChrysler had to shut down one assembly line for a few hours. Harder hit were Ford and General Motors, impacted for several days across multiple lines.

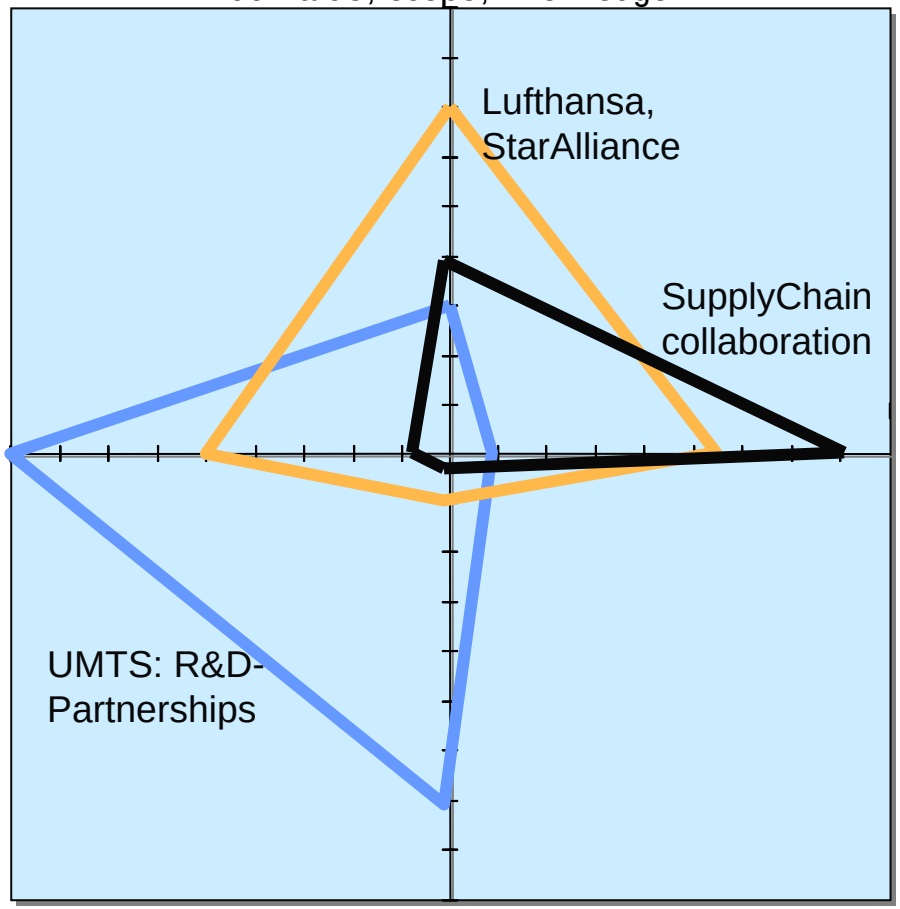
http://www.internetweek.com/newslead01/lead092801.htm

Network examples summary

- Global alliances
  - e.g. StarAlliance
  - ➢ connect and integrate processes; joint marketing; market access
- Development partnerships
  - e.g. UMTS, chip development
  - ➢ joint innovations
- New service networks
  - e.g. mass-customisation, web-based value webs
  - ➢ bundle services, new services, virtualize business, internet frontend
- Virtual organisations/Virtual Networks
  - e.g. Virtual Factory, Freelance Networks
  - ➢ pool resources/competencies; fulfil customer-specific projects
- Value-/Supply Chain Collaborations
  - e.g. retail: Sainsbury ECR; automotive: DaimlerChrysler Supplier Network
  - connect/integrate processes; improve performance (efficiency)

Network examples summary: Profiling the collaboration Idea

Enhance: Quality, Services, Add Value, Scope, Knowledge



Share/Manage Risks Market, financial, legal, operational, investment risks

Improve: Efficiency, reduce costs, enhance scale.

Redefine/innovate: New products, new services, new processes, new business ideas

Acc. to: Merchand, Donald A., Hard IM choices for senior managers, Financial Times Supplement Mastering Information Management, April 5, 1999, S. 4