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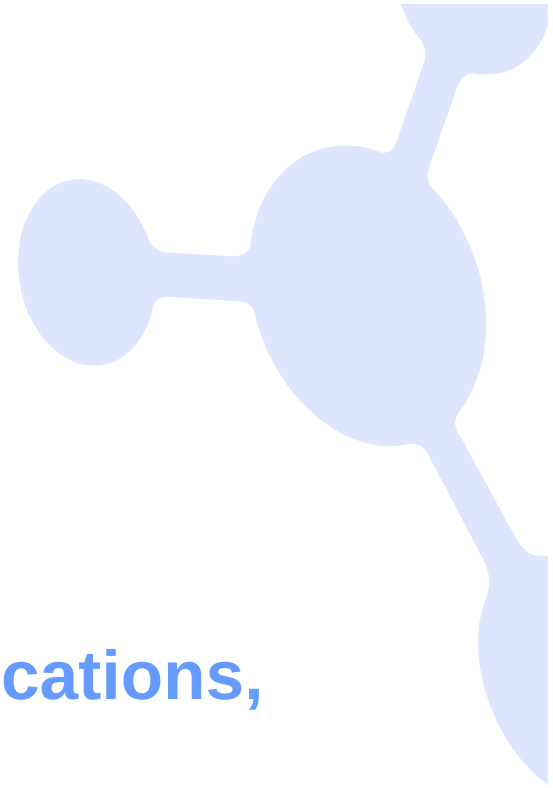

Networks: definition, characteristics, classifications, types and examples

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Universität Münster

WIRTSCHAFTS INFORMATIK

IOS

Objectives of this module

*"Networks are **organizational arrangements** that use resources and/or governance structures from more than one organization ... simultaneously a single organization and a product of sovereign organizations." Borys, Jemison (1989)*

… defining what networks are.

… positioning networks vis-à-vis markets and hierarchies as hybrid arrangement (“best of both worlds”)

… classifying types of networks by giving illustrating examples.

Agenda

1. Definition of networks
2. Networks between hierarchies and markets
3. Network classification and examples

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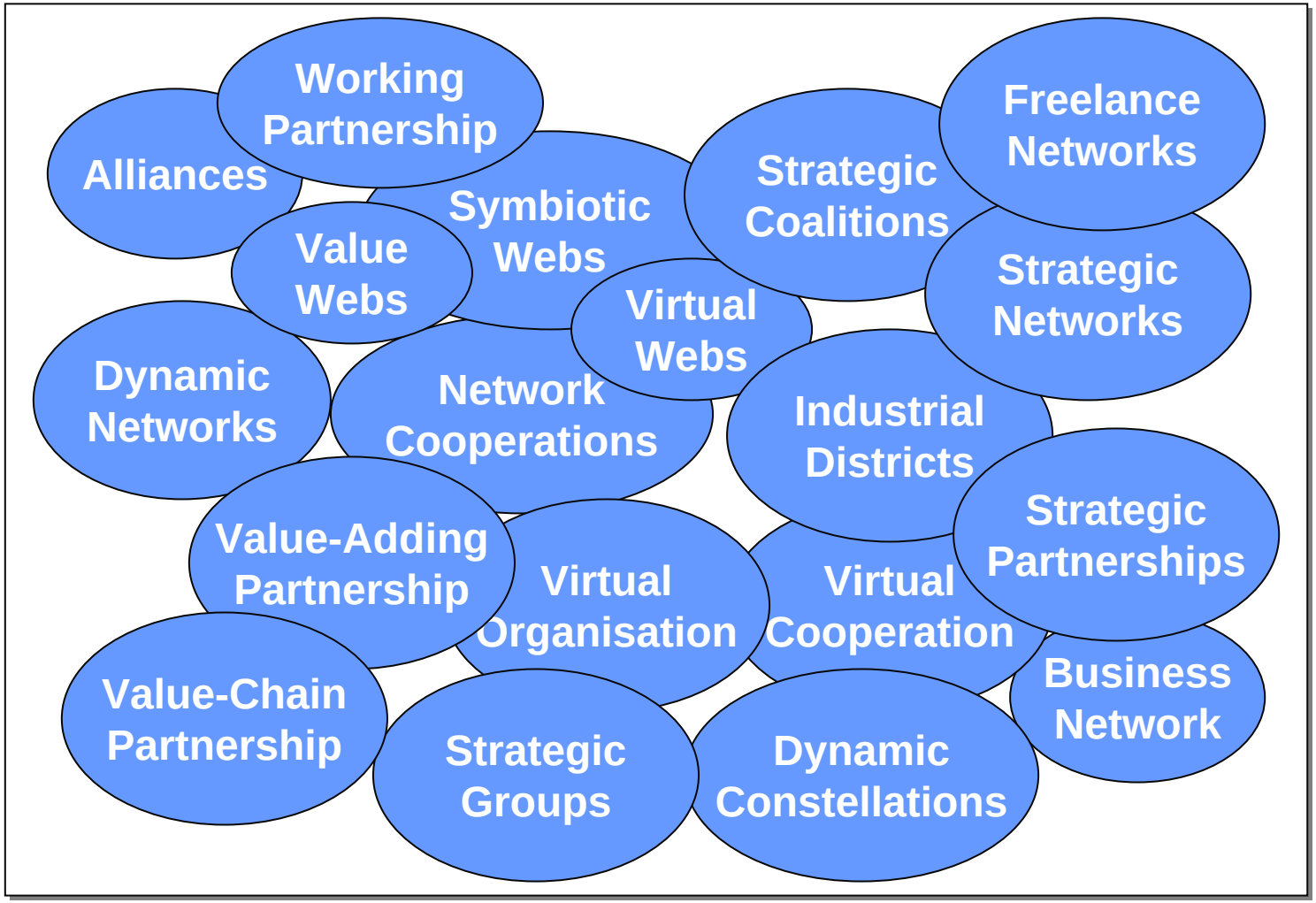
Vast variety of network types



Definitions for Networks

Author	Definition
Forsgren; Johanson 1992a, 5-6	"... we define business networks as **set of connected exchange relationships** between actors controlling business activities ... Business networks differ from social networks - and from networks in general - by being coupled to business activities. The business network model is therefore based on some assumptions about business activities. ... The interdependence bet-ween activities - in the sense that the outcome of the one is dependent on the performance of the other - becomes stronger."
Grandori; Soda 1993, 4	"... a mode of **regulating interdependence** between firms ... which is based on a cooperative game with partner-specific communication."
Nohria; Eccles 1992, 289	"... a fluid, flexible, and dense **pattern of working relationships** that cut across various intra- and interorganizational boundaries. ...The network organization is envisioned as a sprawling and organic electronic network connecting the employees of the firm with one another as well as with their customers, vendors, and strategic partners ..."
Sydow; Windeler 1993, 193	"Corporate networks are a **long-term arrangement** among distinct but related for-profit organisations. As such, they are an organisational form between **markets and hierarchies**. Compared to markets, a network has more structure, produces more interaction among the network organisations, provides 'thicker' information channels, demands more loyalty, exhibits more trust, prefers voice to exit, and puts less emphasis on prices. If compared to hierarchies, a network is somewhat underorganised, due to the loose coupling of the network organisations and due to the open boundaries of the network itself."
Webster 1992, 5. 9	"Network organizations are the **corporate structures** that result from multiple relationships, partnerships, and strategic alliances." "The basic characteristic of a network is *confederation*, a loose and flexible coalition guided from a hub where the key functions include development and management of the alliances themselves, coordination of financial resources and technology, definition and management of core competence and strategy, developing relationships with customers, and managing information resources that bind the network."

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A first basic definition: the social network

A social network is

- “a specific set of linkages among a defined set of actors
  (structure/relation)
- with the additional property that the characteristics of these linkages as a whole may be used to interpret the social behaviour of the actors involved
  (process/interaction)

(Source: Mitchell (1969), p. 2, cited from Sydow/Windeler (2000), p. 3).

Questions arise:

- Which relations are between which actors in specific single networks (the structure)?
- How do the actors interact under the structure within the single networks (the process)?

A more precise definition by Nohria/Eccles:

- “The most general use of the term ‘network’ is for the structure of ties among the actors in a social system.
- These actors may be roles, individual persons, organisations, industries, or even nation states.
- Theirs ties may be based on conversation, affection, friendship, kinship, authority, economic exchange, information exchange, or anything else that forms the basis of a relation.”

(Nohria/Eccles (1992), p. 288, cited after Klein (1996), p. 37)

A working definition

An organisational inter-firm network is defined by

- the relations between a defined set of distinct organisations (the network structure)
- and their interactions (the network process).
- The linkages are based on a different types of exchange (e.g. economic goods, money, information or knowledge).
- The network has a boundary to its environment
- and pursues a common goal,
- at the same time, the participants have different, specific goals.
- The network consists of relationships characterized by mutual investments or interdependencies (no simple transactional linkages).

Embeddedness

- (re-)constructed social context …
  "As in the embeddedness approach, the concept of social context ... is not one of a once-and-for-all influence but of an ongoing process that is **continuously constructed and reconstructed during interaction**." (Grabher 1993, 5)

- in time …
  "... interfirm cooperation is complex, embedded in various institutional arrangements, and at once **forward-looking** (linked to the shadow of the future) and **backward looking** (linked to the cooperative history of the partners)." (Parkhe 1993, 819)

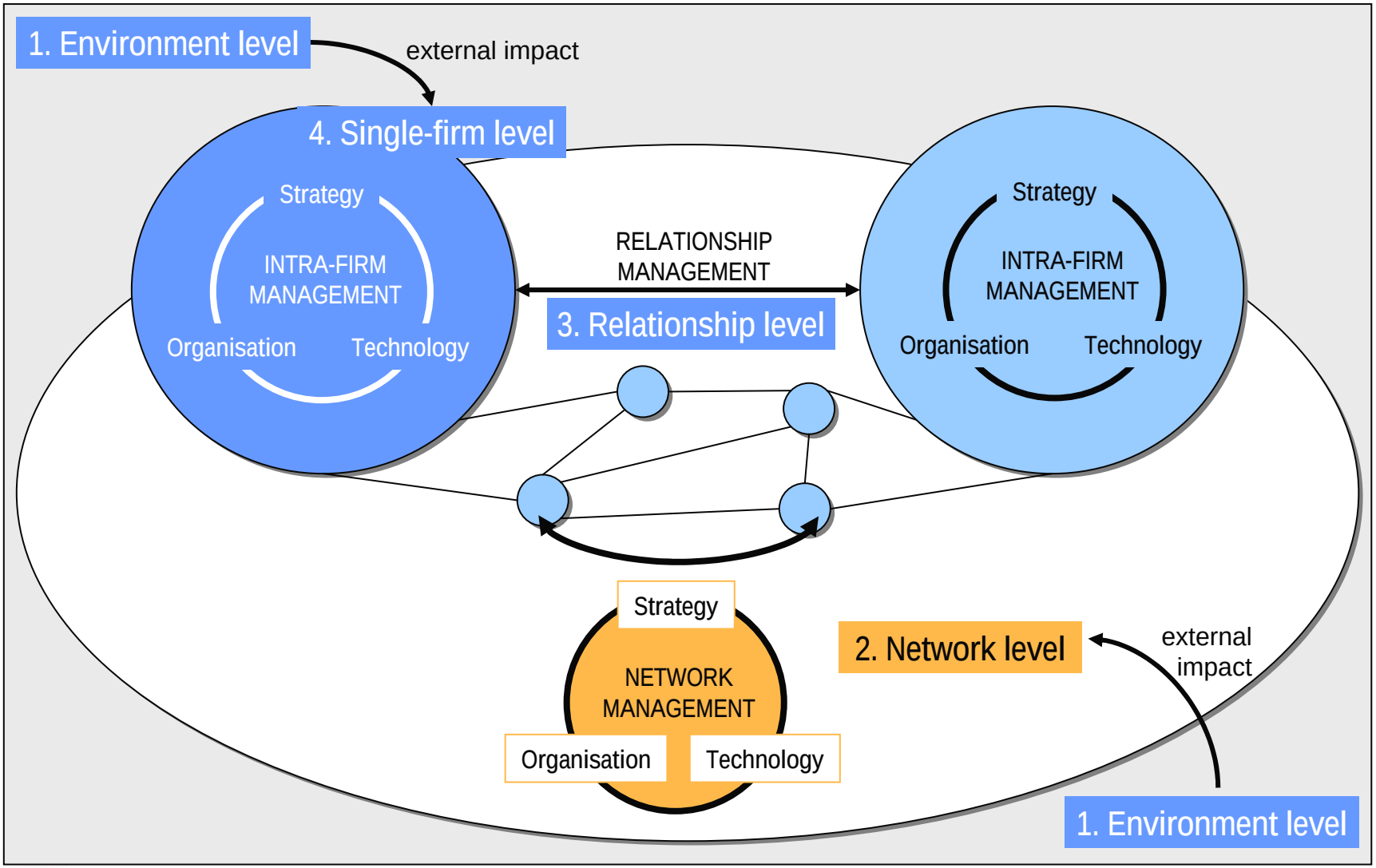
Development path and dissolution

" ...four reasons for the **dissolution of cooperative IORs**:
(a) excessive legal structuring and monitoring of the relationship,
(b) conflicts between role and interpersonal behaviors of organisational parties,
(c) conditions for violations of trust, and
(d) escalating commitments to failing transactions.

... the seeds for disintegration of relationships are contained in the very governance structures, safeguards, and processes that lead to their formation and growth.

... excessive formalization and monitoring of the terms of interorganisational relationships lead to conflict and distrust among parties. Parties strive to maintain their unique identities and autonomy in the face of a growing web of interdependencies that emerge with time ..." (Ring; Van de Ven 1994, 108)

Views on networks (EU-IST project DOMINO)



Agenda [2]

1. Definition of networks
2. Networks between hierarchies and markets
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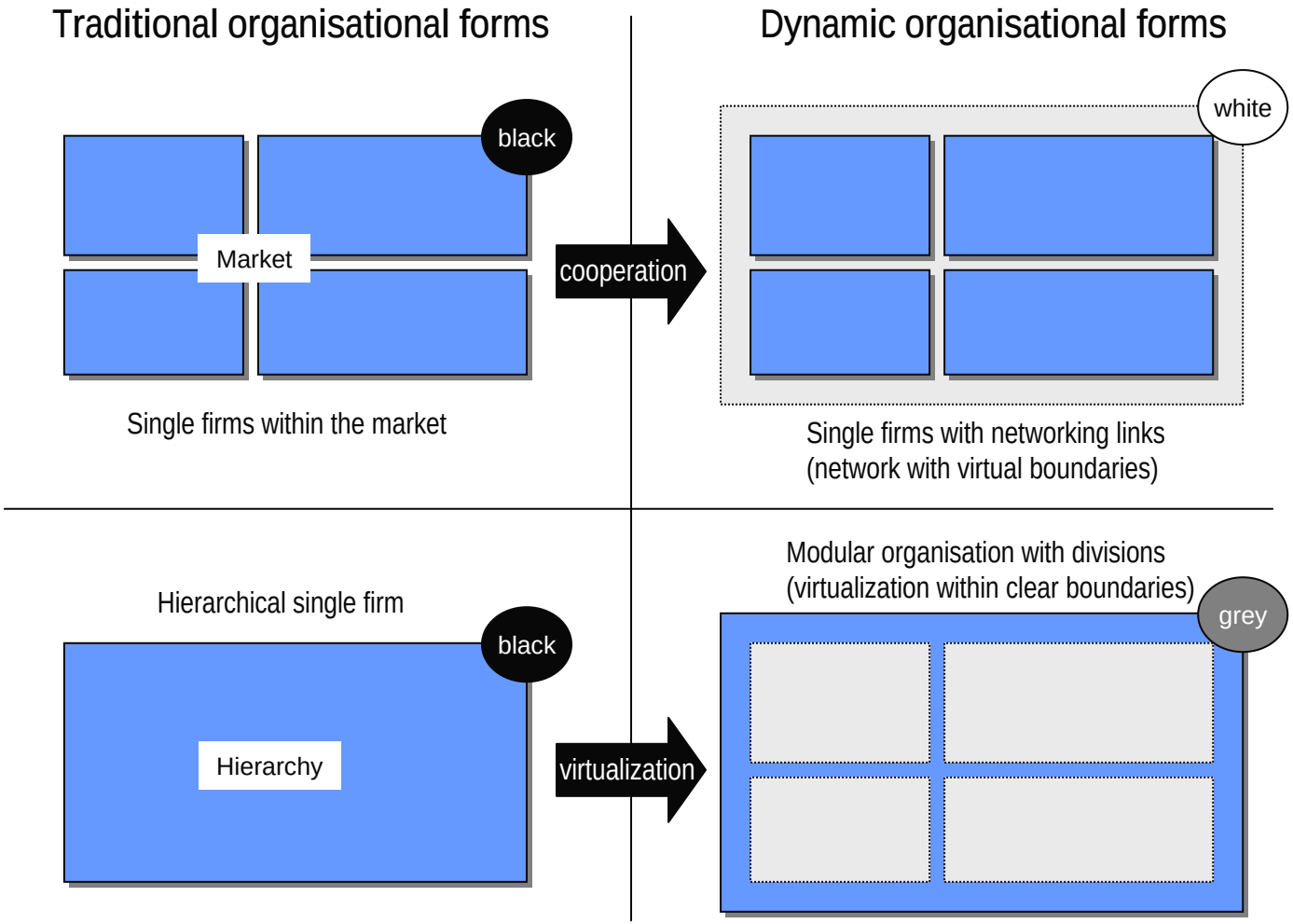
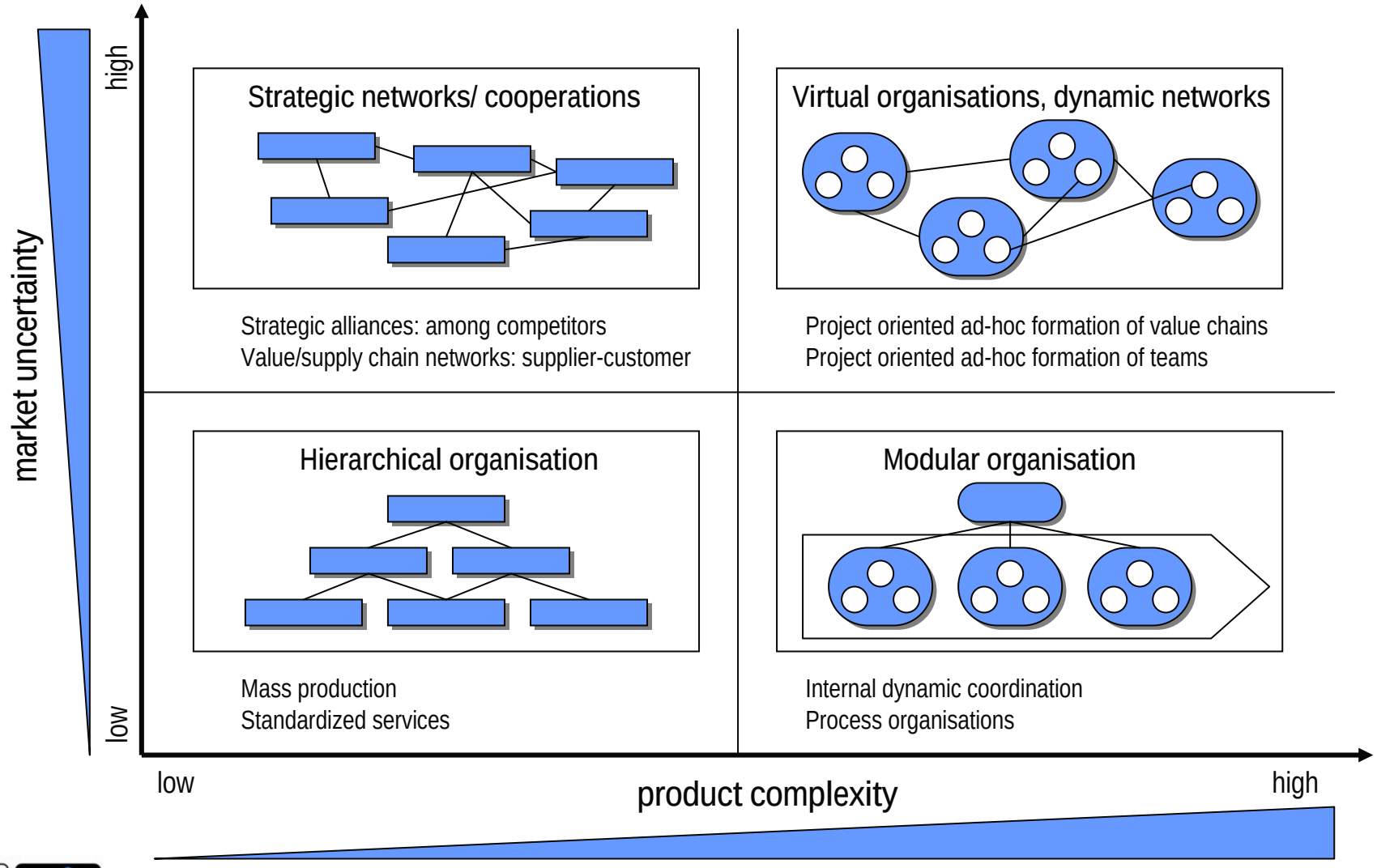
New forms of organizing



Source: acc. to Sydow, J. (1999), p.282, and Zenger, Hesterly (1997), p. 251.

Networks as a result of organisational virtualization



Picot/Reichwald/Wigand (2001), p. 273, and Pribilla/Reichwald/Goecke (1996).

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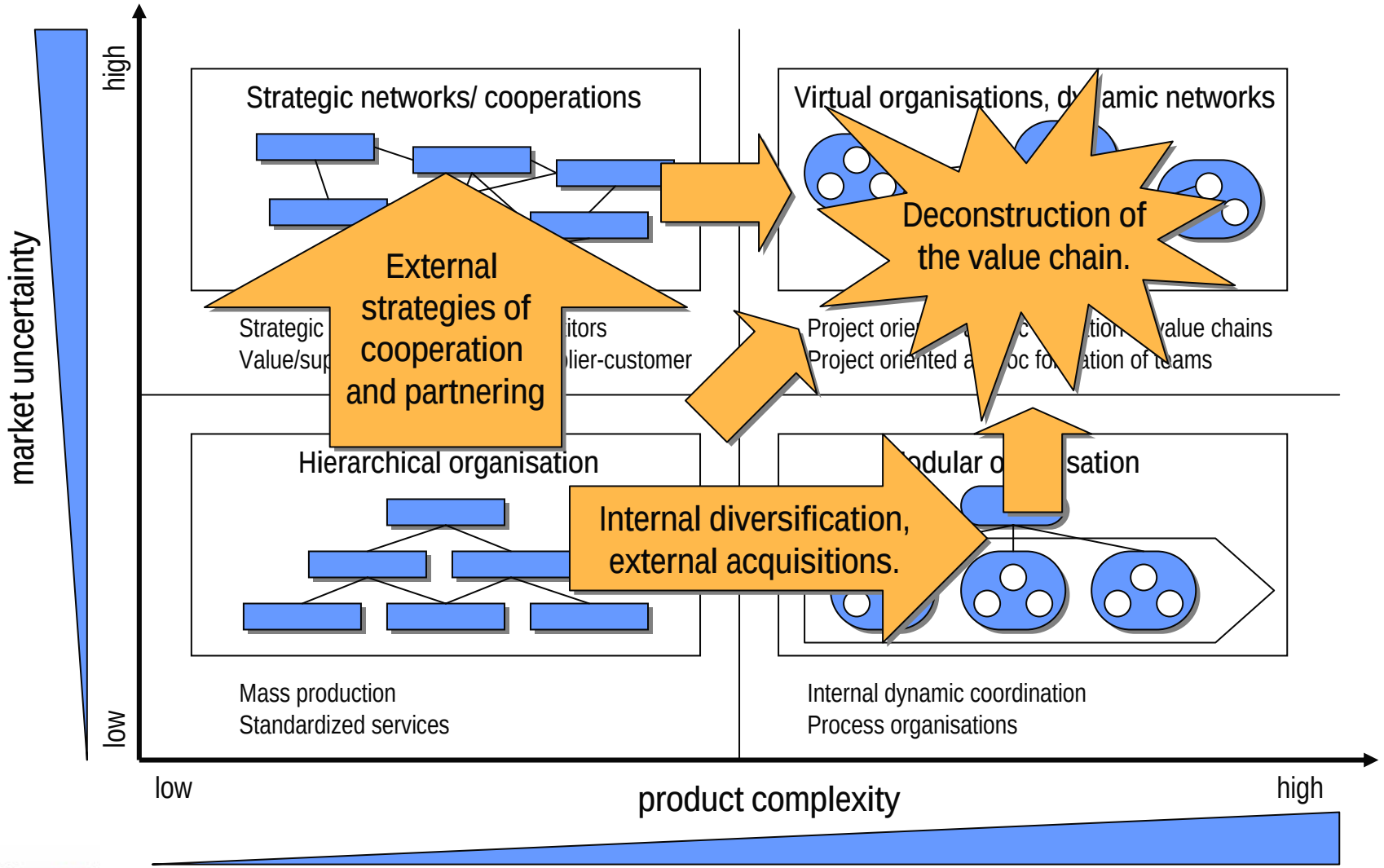

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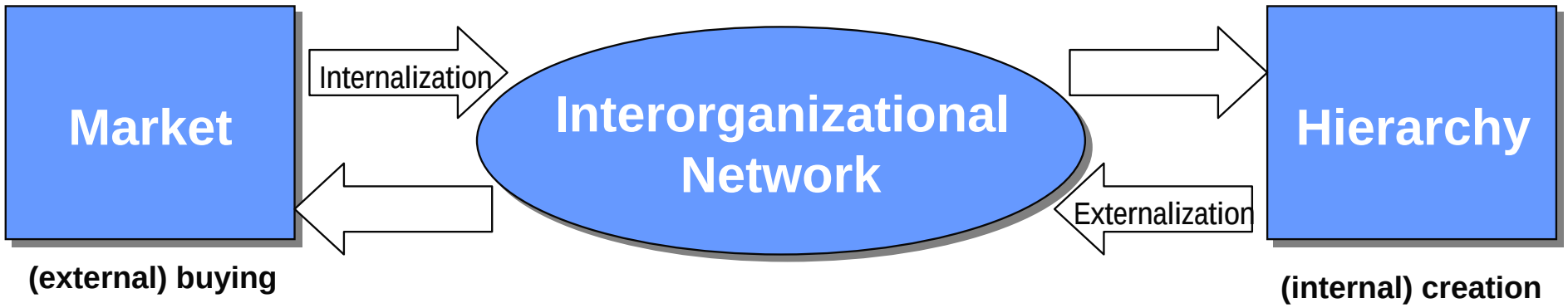
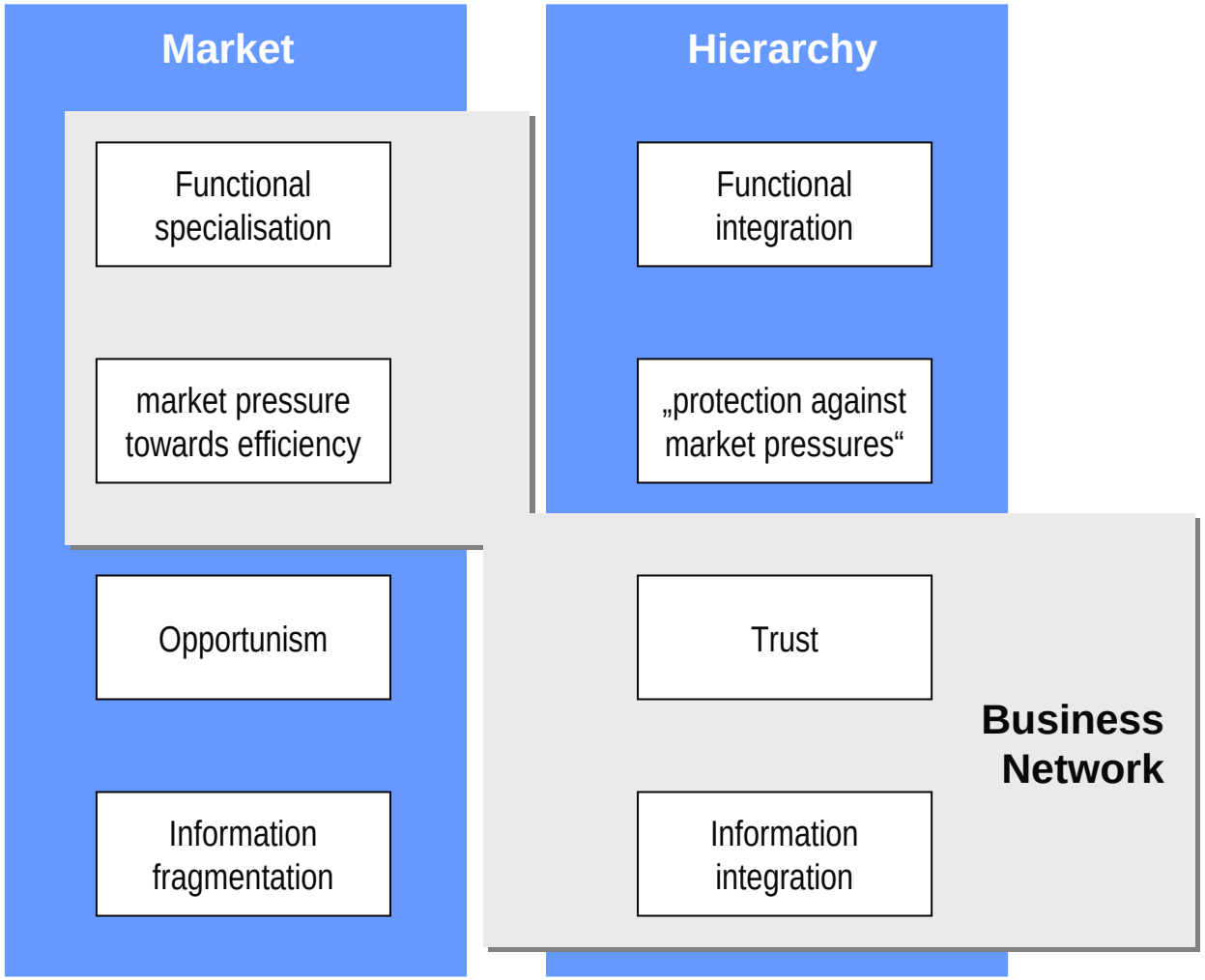
Networks - Between markets and hierarchies



Characteristics of business networks



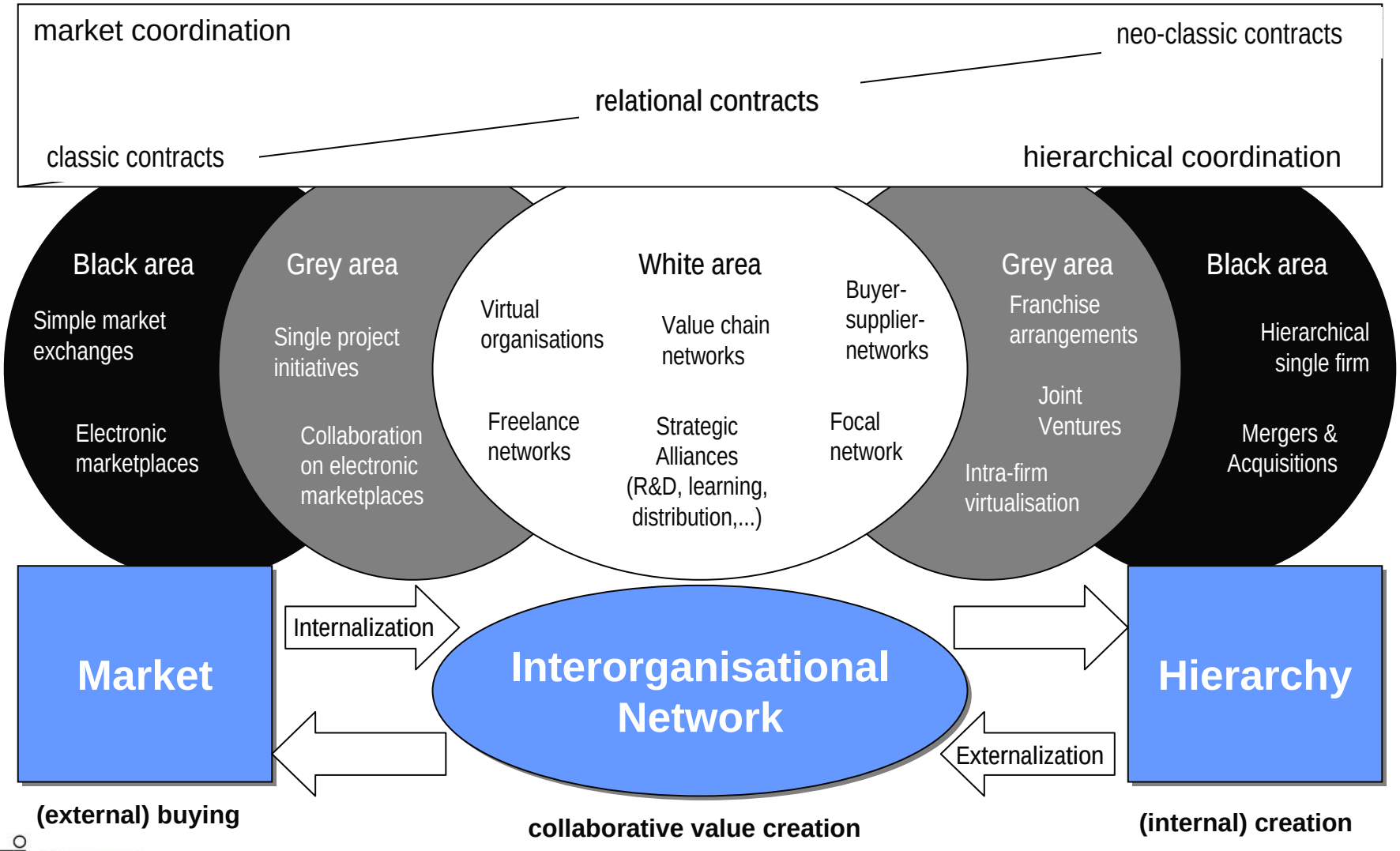
Source: acc. to Siebert, H. (1999), p. 11.

Stylized comparison of forms of economic organisation

	Forms		
Key features	**Market**	**Network**	**Hierarchy**
Normative basis	Contracts – property rights	Complementary strengths	Employment relationship
Means of communication	Prices	Relational	Routines
Methods of conflict resolution	Haggling – Resort to courts for enforcement	Norm of reciprocity – reputational concerns	Administrative fiat – supervision
Degree of flexibility	High	Medium	Low
Amount of commitment among the parties	Low	Medium to high	Medium to high
Tone or climate	Precision and/or suspicion	Open-ended, mutual benefits	Formal, bureaucratic
Actors preferences or choices	Independent	Interdependent	Dependent
Mixing forms	Repeat transactions Contracts as hierarchical documents	Multiple partners Formal rules	Market-like features: profit centers, transfer pricing

Source: Powell 1990

Definition and demarcation of organisational networks



Source: acc. to Siebert, H. (1999), p. 9 and Sydow, J. (1992), p. 104.

Agenda [3]

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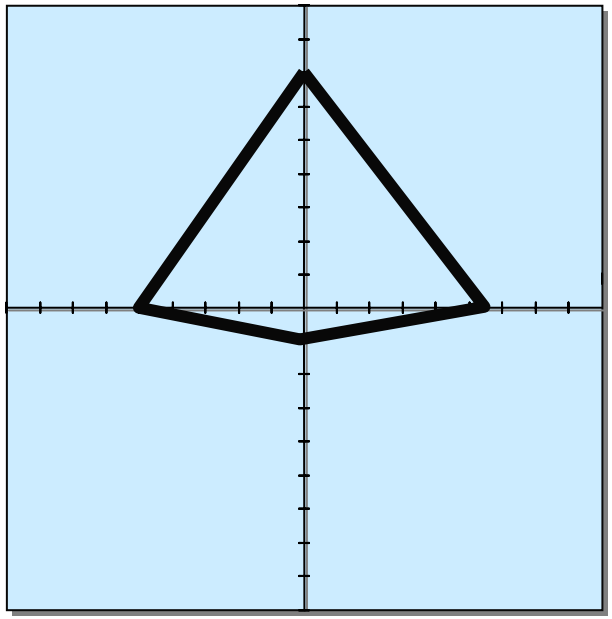
Remember ... Profiling networking motives

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

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

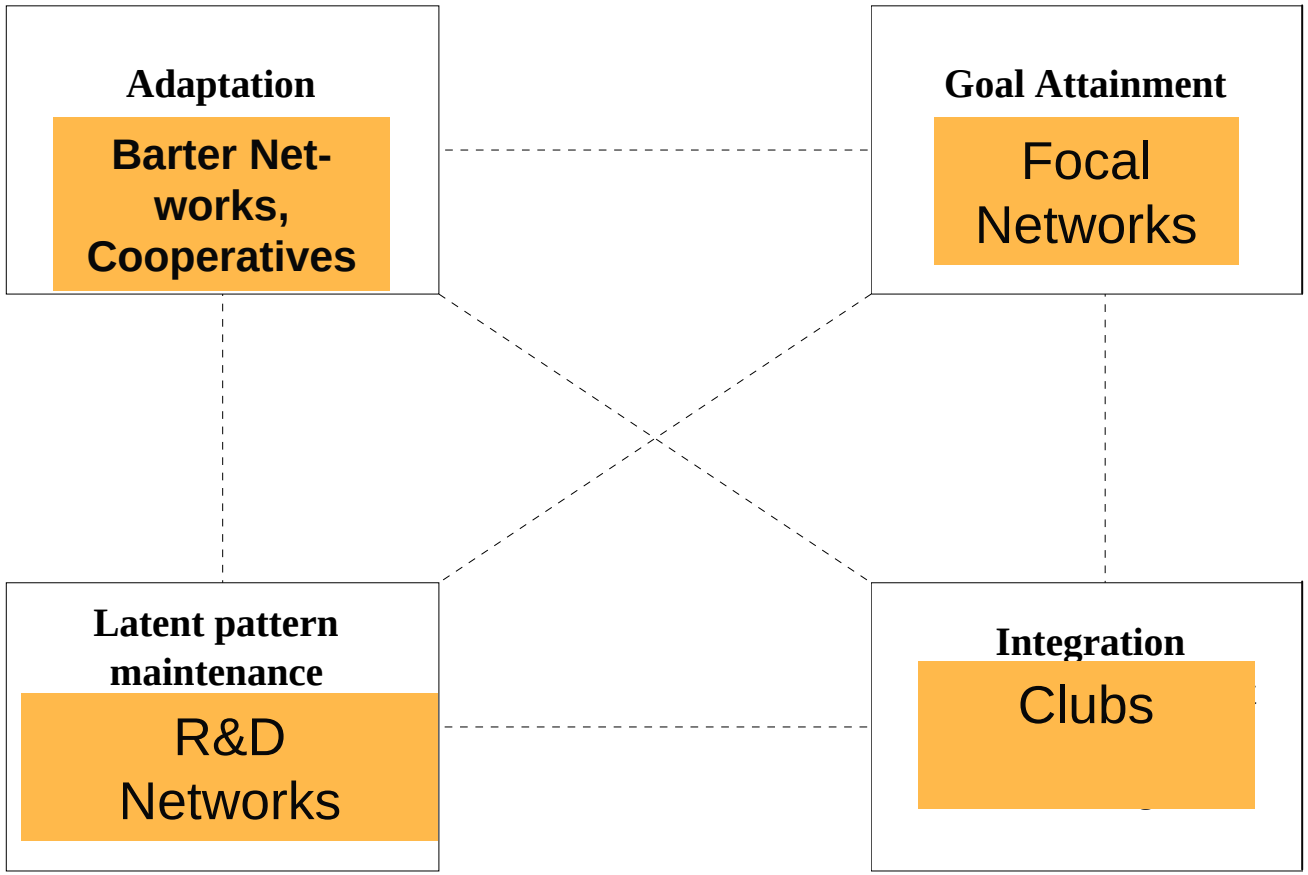


Improve:
Efficiency,
reduce costs,
enhance scale.

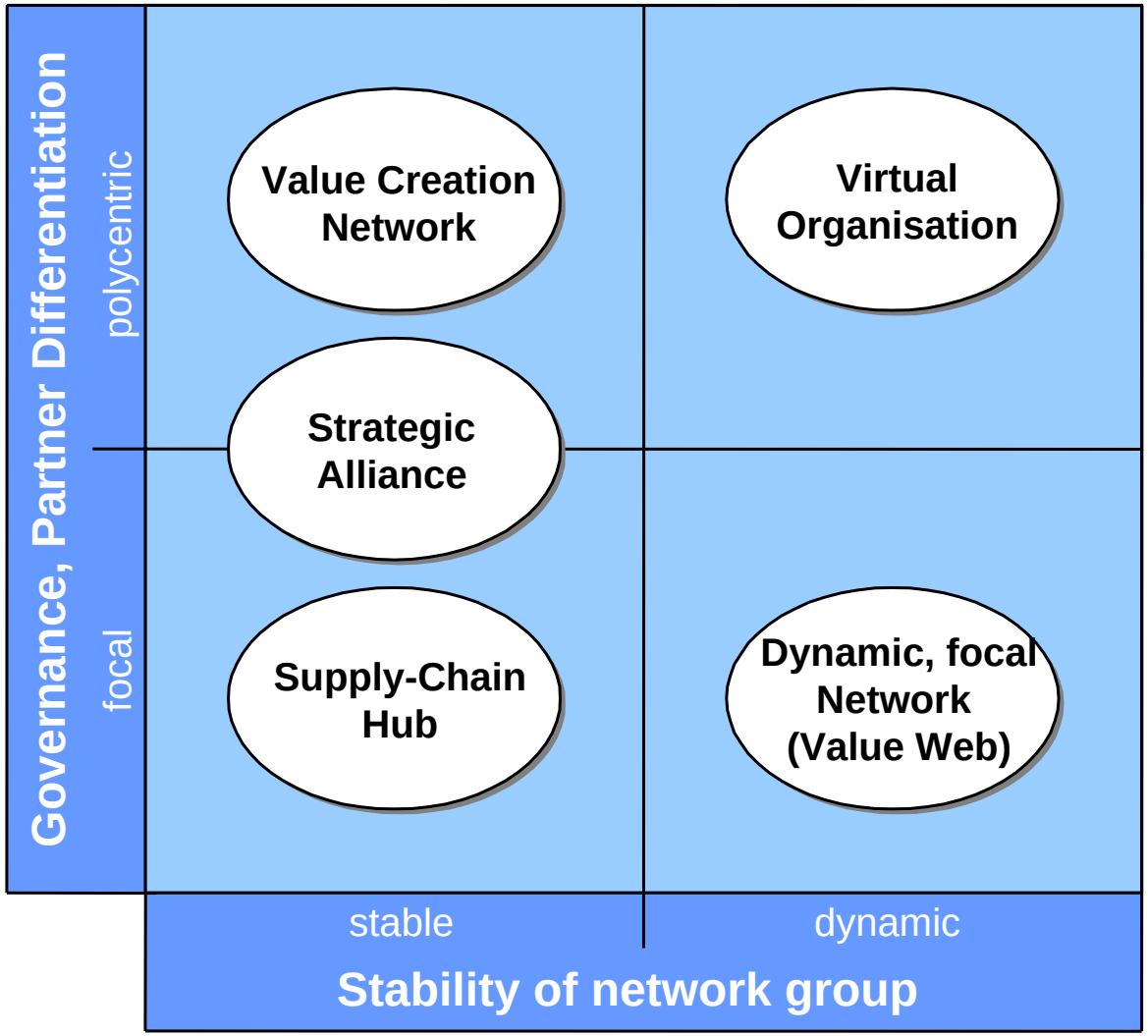
Redefine/innovate:
New products,
new services,
new processes,
new business ideas

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

Typology based on the AGIL schema



Classification of generic network types



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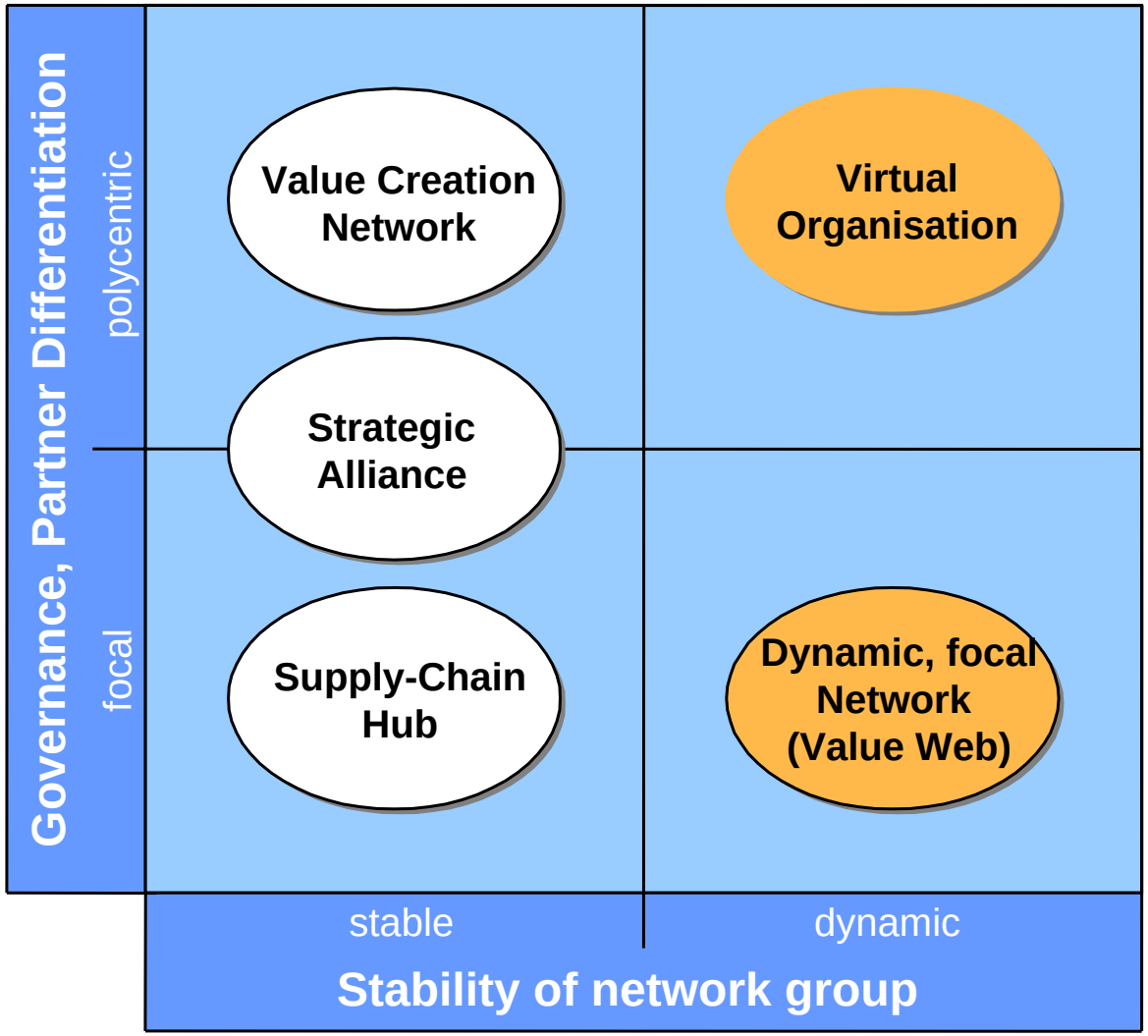
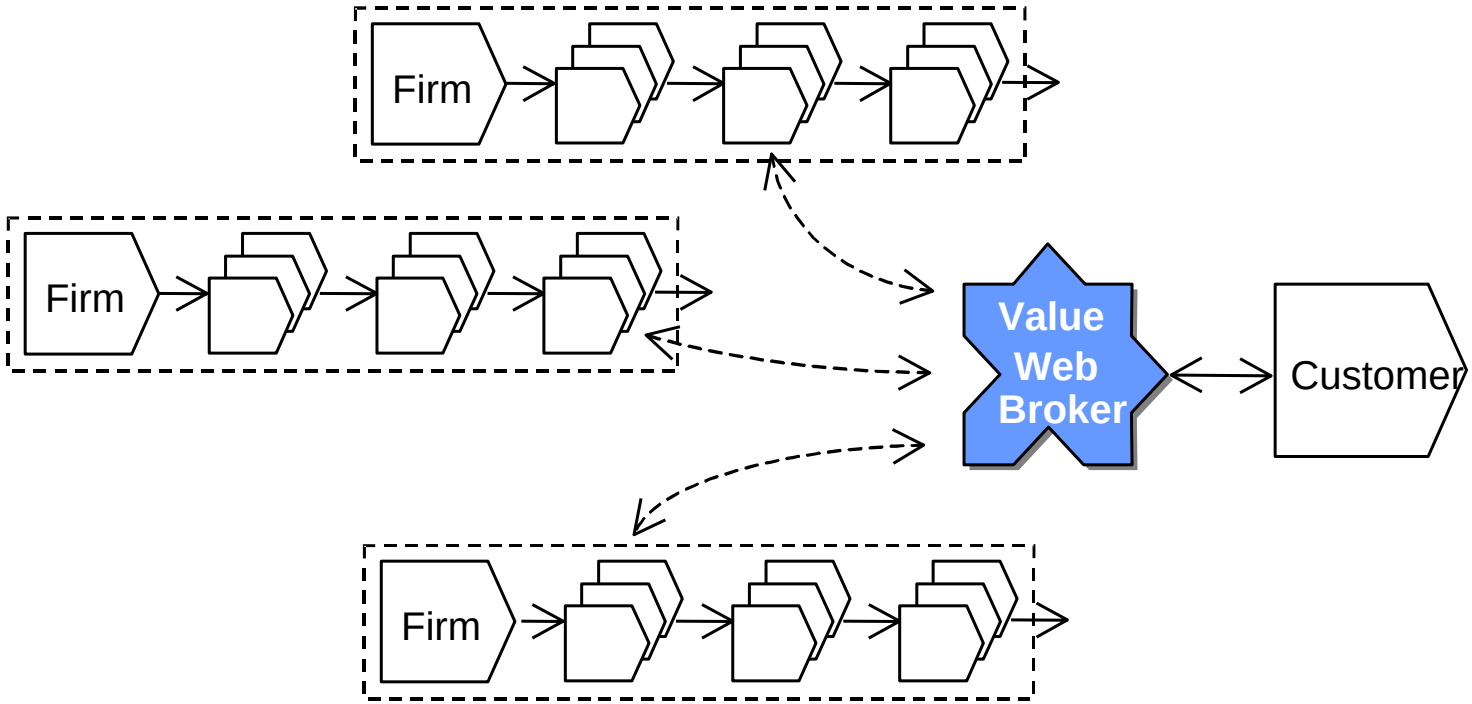
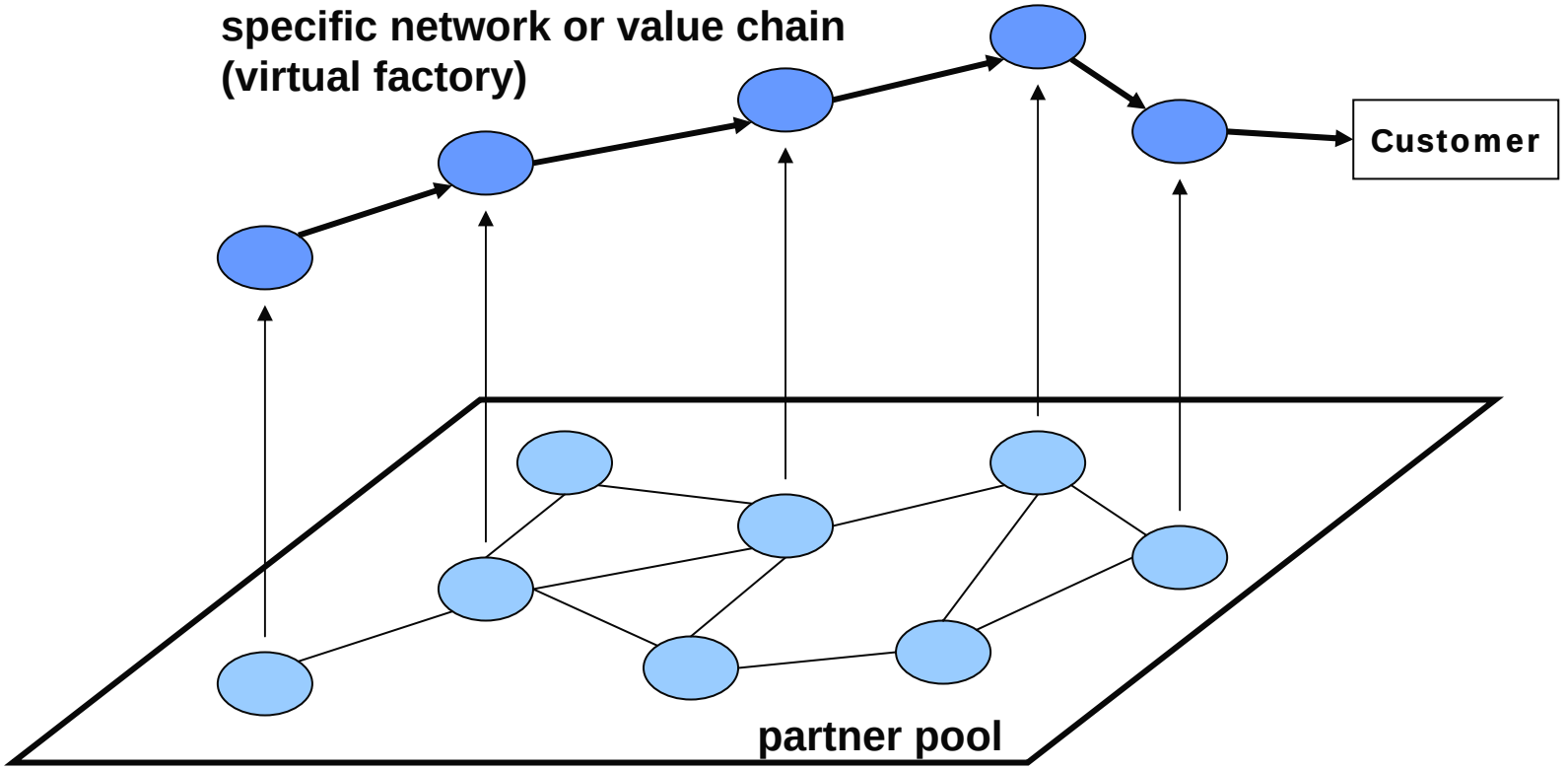


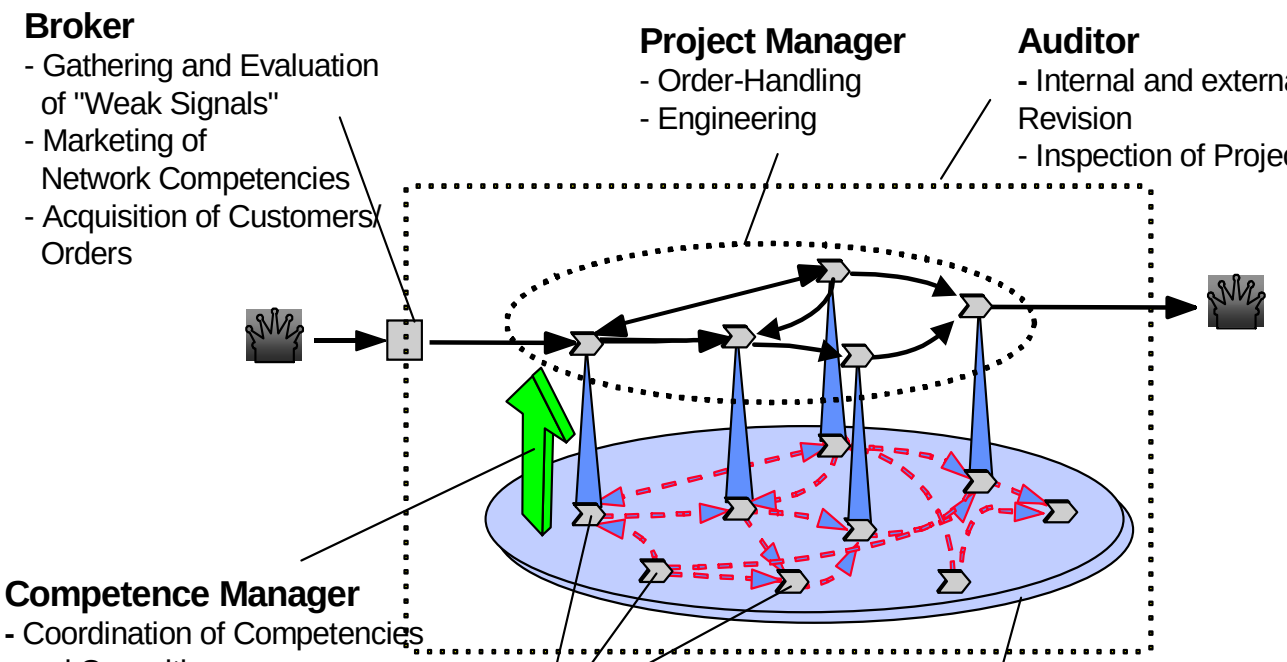
Value Web Model



Virtual Organisation Model



Roles in the Virtual Factory Network



Broker
- Gathering and Evaluation of "Weak Signals"
- Marketing of Network Competencies
- Acquisition of Customers/ Orders

Project Manager
- Order-Handling
- Engineering

Auditor
- Internal and external Revision
- Inspection of Projects

Competence Manager
- Coordination of Competencies and Capacities
- Communication with Customers

In-/ Outsourcing Manager
- Coordination of Internal Production
- Network Communication

Network-Coach
- Enhancement and Support of Infrastructure
- Acquisition of New Partners
- Conflict Management

Source: (Göransson, Schuh 1997)

‚B-Web‘ Typologie nach Tapscott et al.

- „In b-webs, internetworked, fluid sets of contributors come together to create value for customers and wealth for their shareholders“.
- „Business webs are inventing new value propositions, transforming the rules of competition, and mobilizing people and resources to unprecedented levels of performance.“
- „Three primary structures of the b-web universe are internetworked enterprises, teams, and individuals, b-webs themselves, and the industry environment“

Tapscott et al.: Digital Capital, 2000, p. 17

B-Web Features (1)

Feature	Description
Internet Infrastructure	B-webs use the Internet as their primary infrastructure for business communications and transaction.
Value Proposition Innovation	A b-web delivers a unique, new value proposition that renders the old way of doing things obsolete
Multienterprise capability machine	A b-web marshals the contributions of many participating enterprises. B-web leaders rely on partners to maximize returng on invested capital.

Tapscott et al.: Digital Capital, 2000, p. 17

B-Web Features (2)
Feature: Five classes of participants

- A typical b-web structure includes five types – or ”classes” – of value contributors:

1. Customers, who not only receive but also contribute value to the b-web.
2. Context providers, the interface between the customer and the b-web. A context provider leads the choreography, value realization, and rule-making activities of the system.
3. Content providers design, make, and deliver the ”intrinsic” forms of value – goods, services, or information – that satisfy customer needs.
4. Commerce service providers enable the flow of business, including transactions and financial management, security and privacy, information and knowledge management, logistics and delivery, and regulatory services.
5. Infrastructure providers deliver communications and computing, electronic and physical records, roads, building, offices, and the like

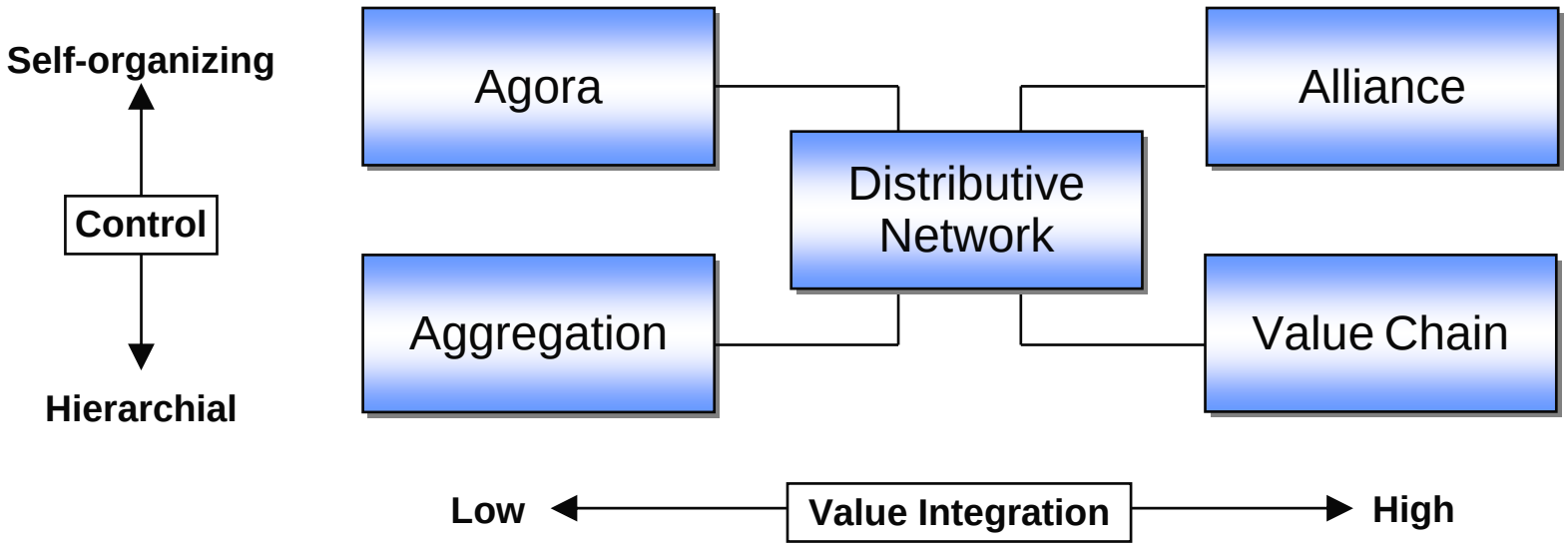
Tapscott et al.: Digital Capital, 2000, p. 17

B-Web Features (3)

Feature	Description
Coopetition	B-web participants cooperate and compete with one another.
Customer-centricity	B-webs focus on customer value. They build mutual relationships and respond to individual customers at the point of need.
Context reigns	The context provider manages customer relationship and choreographs the value-creating activities of the entire system. Such b-web leaders get the captain's share of the spoils.
Rules and standard	Key participants know and adhere to the b-web's rules of engagement
Bathed in knowledge	B-web participants exchange a variety of data, information, and knowledge

Tapscott et al.: Digital Capital, 2000, p. 17

‚B-Web‘ Typologie



Tapscott et al.: Digital Capital, 2000

B-Webs: Charakteristika

	Agora	Aggregation	Value Chain	Alliance	Distributive Network
Main theme	• Dynamic pricing	• Selection and convenience	• Process integration	• Creativity	• Allocation/ distribution
Value proposition	• Liquidity—converting goods into a desirable price	• Optimization of selection, organization, price, convenience, matching, and fulfillment	• Design and delivery of an integrated product or service that meets a specific set of customer needs	• Creative collaboration in aid of a goal shared across a community of contributors	• Facilitate the exchange and delivery of information, goods, and services
Customer role	• Market player	• Buyer	• Value driver	• Contributor	• Sender/ recipient
Knowledge focus	• Timing • Market intelligence	• Market segmentation • Supplier offerings • Fulfillment	• Innovation • Supply-chain management	• Community • Creativity • Standards and roles	• Network optimization • Visibility and transparency
Key process	• Price discovery	• Needs matching	• Product design • Supply-chain management	• Innovation	• Distribution
Examples	• Yahoo! classifieds • eBay • Priceline • AdAuction • NASDAQ • MetalSite • FreeMarkets	• Amazon.com • Chemdex • HomeAdvisor • Webvan • E*Trade • Travelocity • WSJI	• Cisco Systems • Dell Computer • General Motors • Celestica • Bidcom	• America Online • NetNoir • Linux • MP3 • Wintel	• Enron • UPS • AT&T • Wells Fargo • Internet

Tapscott et al.: Digital Capital, 2000, p. 30

Summary

- Definition: ... relations matter! The diversity of networks is difficult to capture in a definition, hence it may be helpful (easier?) to position network arrangements.
- Between hierarchies and markets: networks are hybrid arrangements trying to combine the benefits of the ideal types hierarchies and markets
- The diversity of networks and network characteristics calls for classification. Classifications can only represent subsets of network properties.