

Information, Organization, and Management

Unit 3: Transaction Costs: How ICT Changes the Rules of the Game

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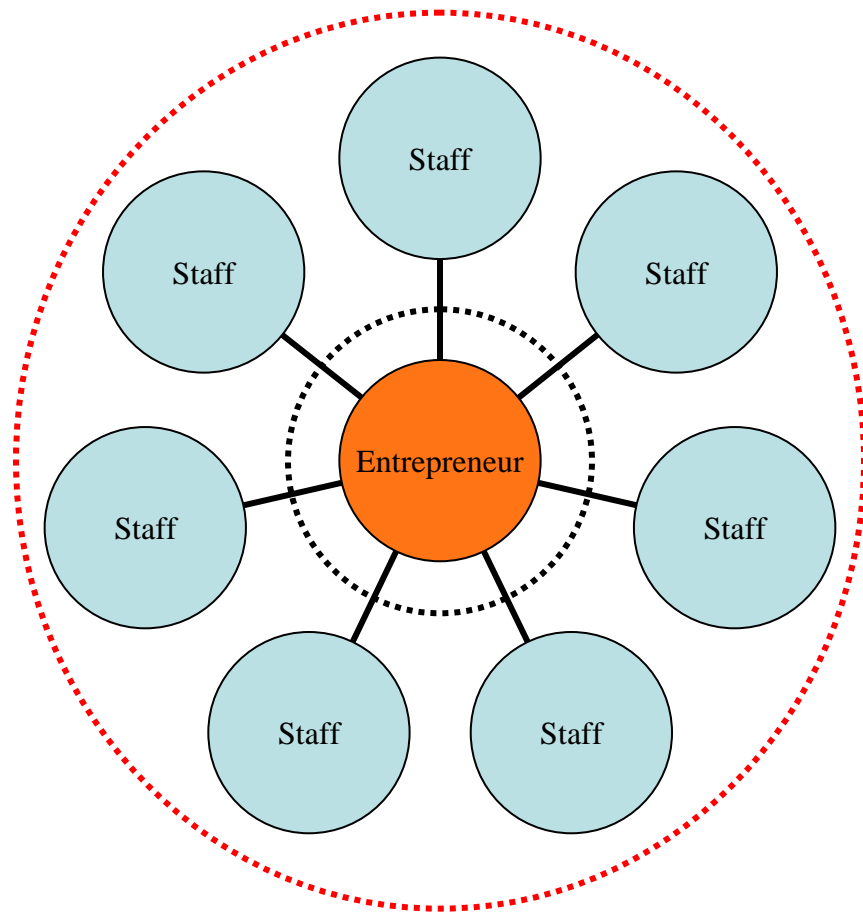
Textbook: Wigand/Picot/Reichwald: *Information, Organization and Management*, John Wiley & Sons, 1997

Overview

- Coase: The Nature of the Firm
- *Williamson*: The Economics of Organization
- *Wallis and North*: Measuring the Transaction Sector in the American Economy
- *Read*: I, Pencil. My Family Tree as told to Leonard E. Read
- Efficient Division of Labor
- Specificity of Goods
- *Malone et al*: Electronic Markets
- *Sampson*: The Myth of Diminishing Firms
- *Cordella*: Does information technology always lead to lower transaction costs?
- *Wigand, Picot, and Reichwald*: Factors Influencing the Level of Transaction Costs

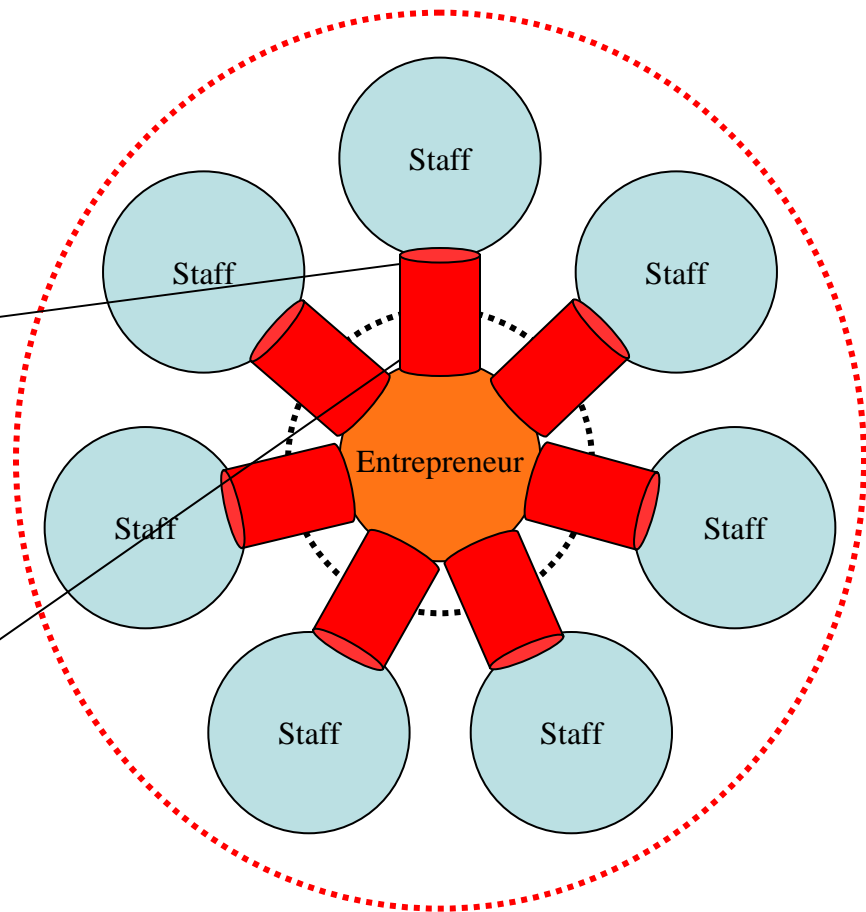
Coase: The Nature of the Firm

- **Starting Point:** Why do firms exist? At first sight, there is no reason to hire staff or engage in long-term commitments with regard to other resources.



Coase: The Nature of the Firm

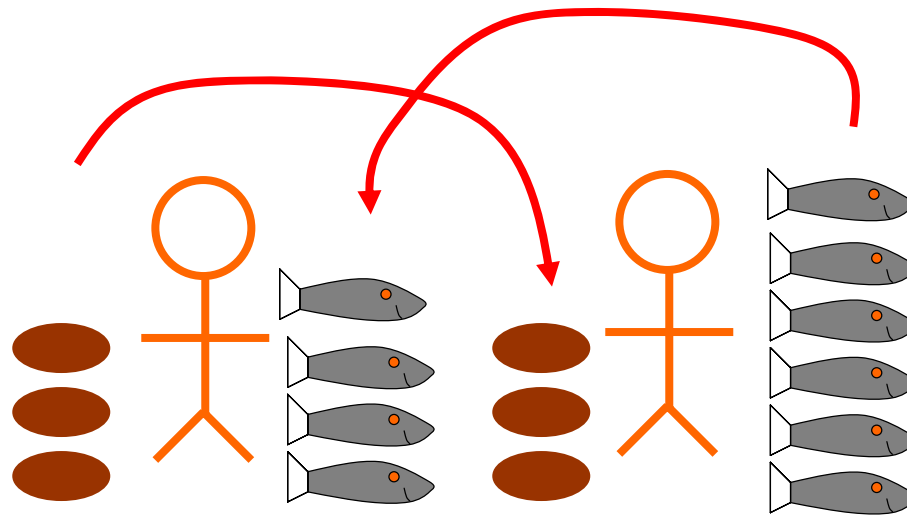
- **Explanation:** Using the price mechanism (market) consumes resources



Coordination of Economic Activity



search – select – negotiate – set-up contract – exchange – supervise - enforce

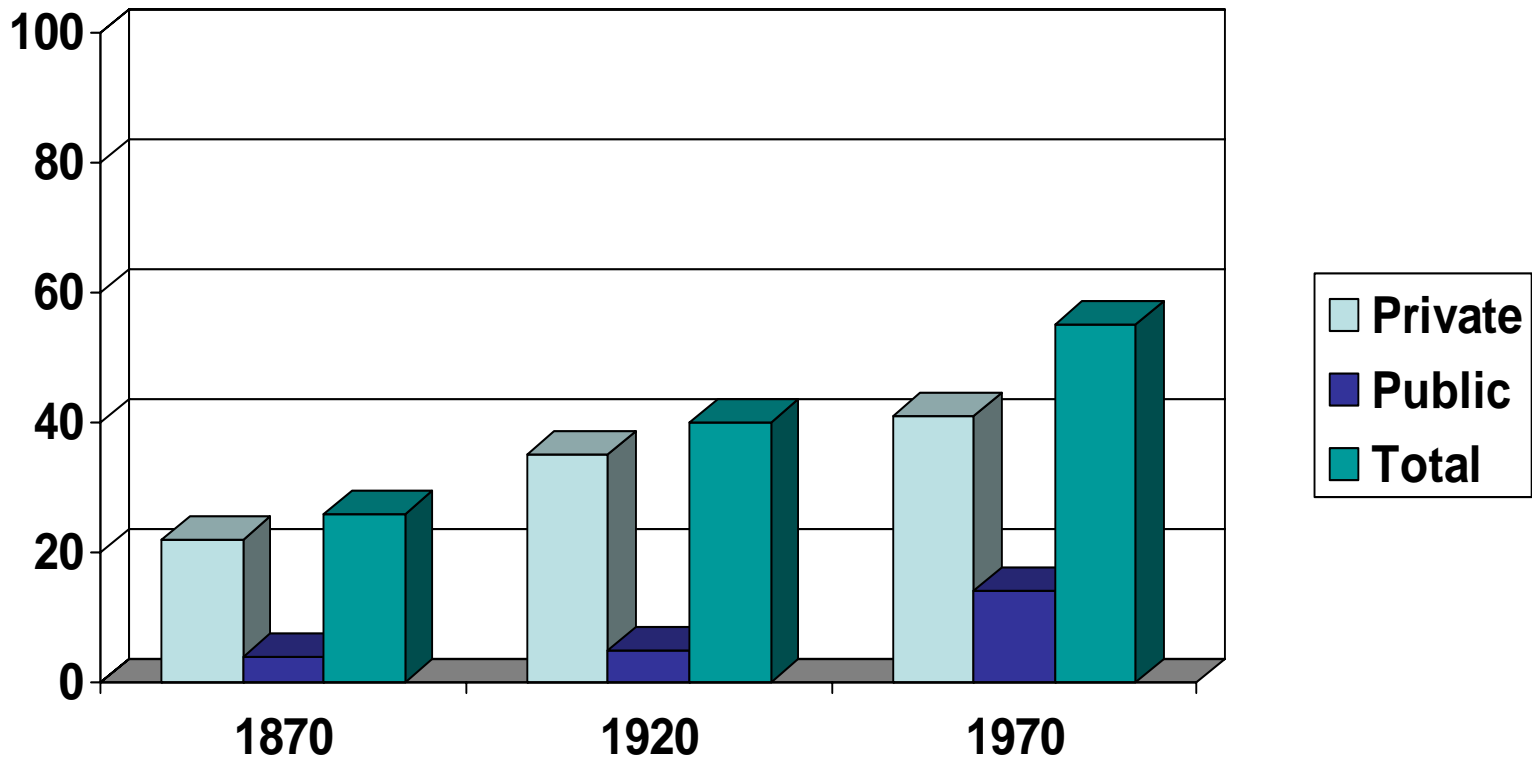


Tasks in their own rights that consume resources, too!

Williamson: The Economics of Organization

- Transaction costs:
„Friction“ ... „ when a good or service is transferred across a technologically separable interface“
- Can be used to explain
 - the determination of efficient boundaries of the firm,
 - the organisation of internal transactions

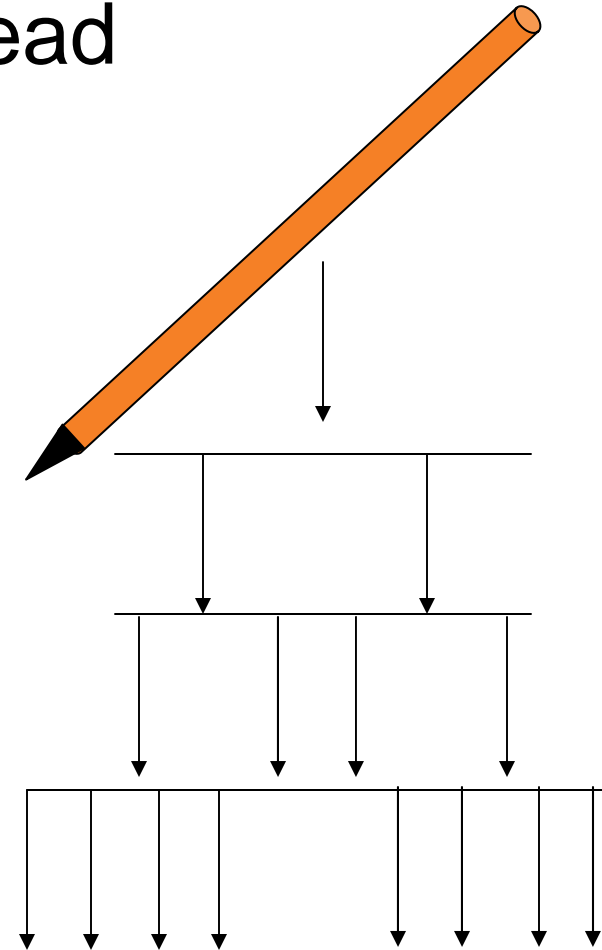
Wallis/North: Empirical Findings Percentage of Transaction Costs on GNP



simplified from Wallis/North (1986);
cf. Wigand/Picot/Reichwald (1997)

Read: I, Pencil. My Family Tree as told to Leonard E. Read

- Example of how even trivial consumables require complex interaction between many individuals



Division of Labor and Specialization

- Mutually dependent
- Division of Labor
 - Breakdown of complex transformation processes into individual tasks and assigning dedicated workforce for single tasks or small sets of tasks
- Specialization
 - One individual is involved in only a very small task of the overall transformation
- Motivation:
 - Cognitive and temporal limitations of humans
 - Productivity gains: Specific knowledge, processes, skills

cf. Wigand/Picot/Reichwald (1997)

Coordination

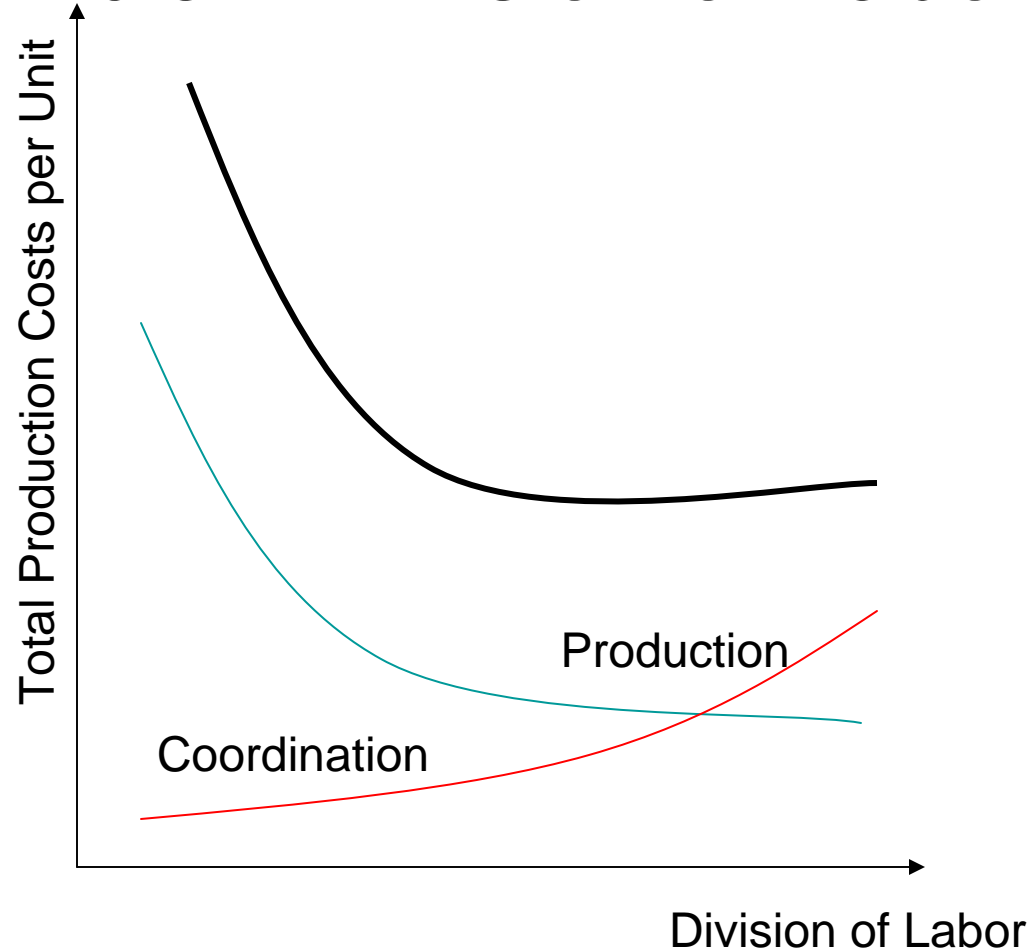
- Division of labor increases the problem of coordination:
 - who shall produce what in which quantity by when using which resources (...) ?
- Coordination does not happen automatically, but is a task in its own right
 - Exchanges must be initiated, negotiated, observed
 - also consumes resources
 - „Management“
- Ignored in neo-classical models
 - Determining prices etc. free of cost

Trade-off: Specialization Gains vs. Cost of Coordination

- Further increase in specialization is limited by level of transaction costs (cost of coordination)
- Thus, technology and methodologies for reducing transaction costs are of utmost importance for future economic development.

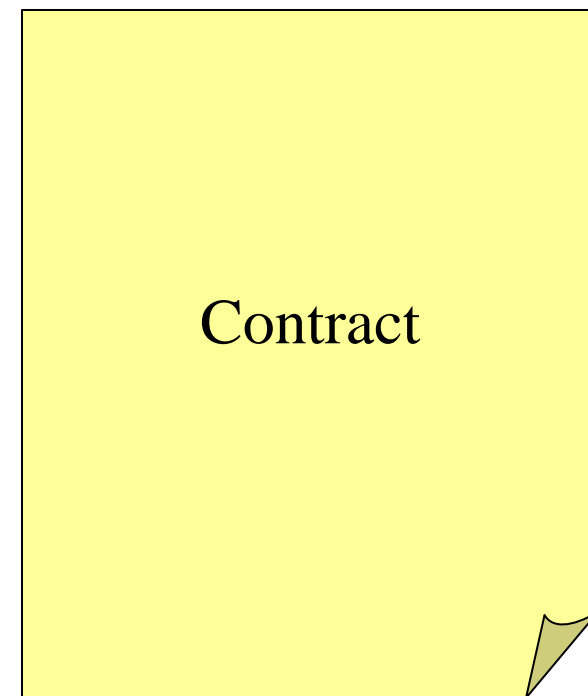
cf. Wigand/Picot/Reichwald (1997)

Efficient Division of Labor



Williamson: The Economics of Organization (2)

- Complex contracts are costly to write and enforce.
- Humans have limited abilities in collecting and processing information
- Can be used to explain
 - the determination of efficient boundaries of the firm,
 - the organisation of internal transactions



Williamson: Asset Specificity

- **Specificity:** A good's decrease in value if used for the second best purpose
- *„the most important dimension for describing transactions and the most neglected attribute in prior studies of organization“*
- **Drivers:**
 - Nature of the resource
 - Location
 - Logistics

[Will1981], [WiPR1997]

Specificity

- Value reduction of a good when used not for the originally intended purpose but the second best alternative.
- Sources
 - Location
 - Time
 - Logistics

Asset Specificity



IMG - Unit 2

Asset Specificity (2)



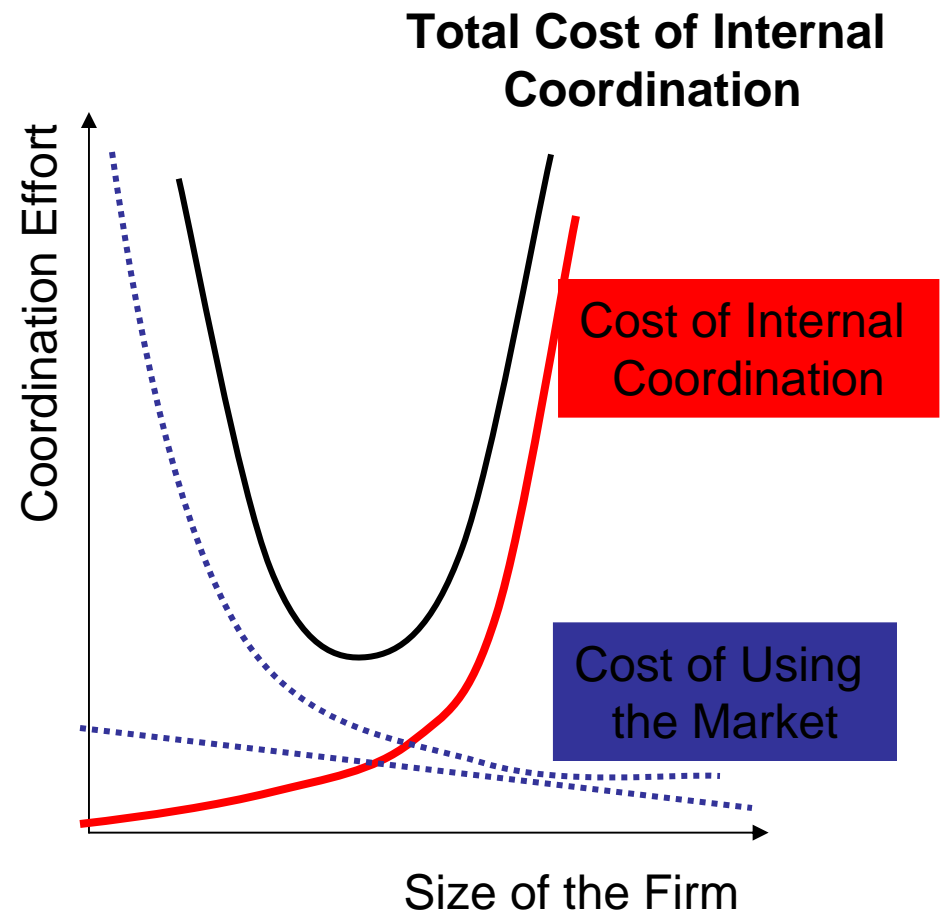
- 27 Elektro-, Automatisierungs- und Prozessleittechnik
- 27-23 Prozessleitsystem (PLS)
- 27-23-02 PLS-Komponenten (Teile)
- SML** 27-23-02-39 Ex-Terminal (PC-Remote-Terminal)

Klassifikation:	27-23-02-39 [AGZ135005]
Definition:	Ex-Terminal (PC-Remote-Terminal)
Schlagworte:	
Merkmaliste:	
	BAE155001 - Ablesewinkel
	BAE168001 - Anschlussraum
	BAE302001 - Anzahl der Erweiterungsports
	BAE591001 - Anzahl der Farben
	BAE348001 - Art der Hilfsenergie der Maus
	BAE349001 - Art der Hilfsenergie der Tastatur
	BAE346001 - Art der Hilfsenergie des Displays
	BAE347001 - Art der Hilfsenergie des Lesegerätes
	BAE351001 - Art der Hilfsenergie des Trackballs
	BAA059001 - Artikelnummer
	BAE304001 - Ausführung der Ex
	Barcode-/Magnetcardlesegerät-Schnittstelle
	BAE325001 - Ausführung der Funktionstasten
	BAB444001 - Ausführung der Tastatur
	BAB454001 - Ausführung des Netzwekanschlusses
	BAD975001 - AWG-Nummer
	BAB263001 - Beständigkeit
	BAE488001 - Betriebsspannung im Ex-Bereich
	BAB251001 - Betriebssystem
	BAB419001 - Bildschirmdiagonale
	BAA019001 - Breite
	BAB411001 - Breite des Ausschnittmaßes
	BAB421001 - Display-Typ
	BAA271001 - EAN Code
	BAA269001 - Ex-Zone

Complexity of Describing a Good

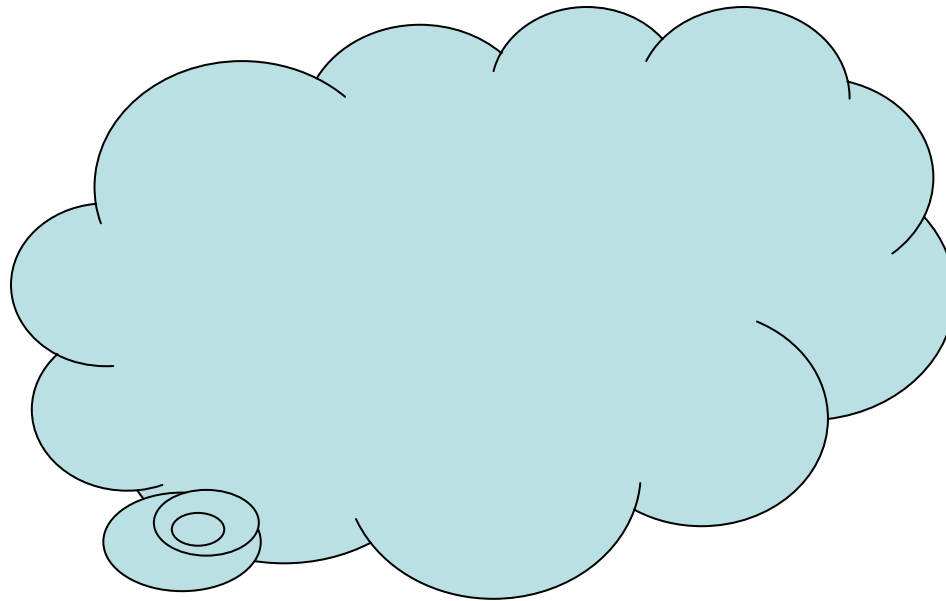
Coase et al.: Efficient Size of the Firm

- The size of a firm is determined by the trade-off between
 - costs of internal coordination and
 - costs of using the market mechanism



Market and Hierarchy: A Continuum in between

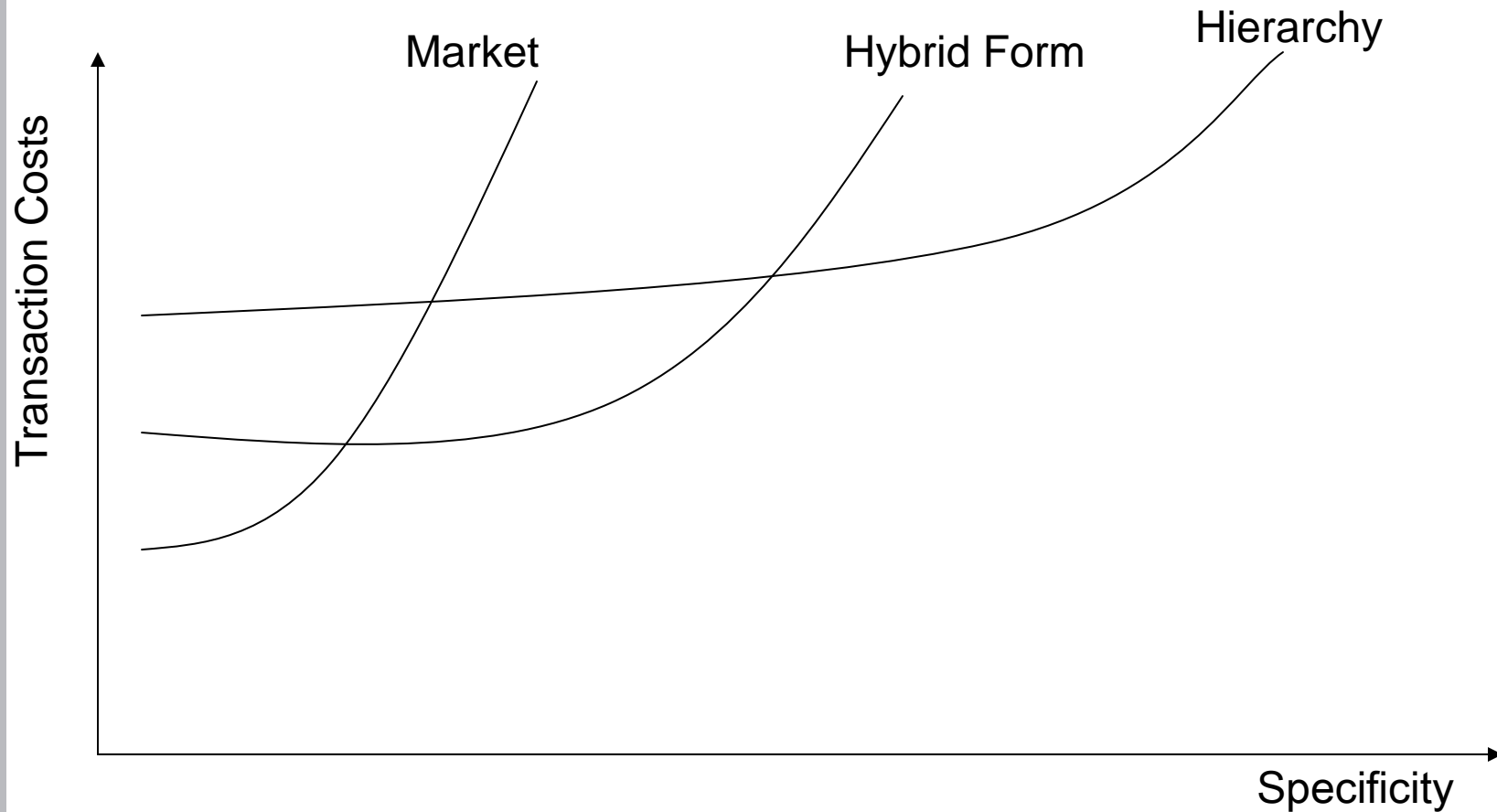
Hierarchy



Only Individuals
Acting on Markets

cf. Wigand/Picot/Reichwald (1997)

Coordination Forms and Specificity



cf. Wigand/Picot/Reichwald (1997)

ICT promises to reduce Transaction Costs

- Froogle vs. printed yellow pages
- Communication by e-mail, IRC, Skype vs. TTY
- ERP Systems
- eBay vs. Flea Market
- etc.

From “Make” to “Buy”

- Malone/Yates/Benjamin in (1987): “Electronic Markets and Electronic Hierarchies”
 - Computer-based trade processes reduce the transaction costs and trigger a shift towards the usage of markets.



Malone et al: Electronic Markets

- ICT will reduce transaction costs by automating the processing of information in the various stages
- This will cause a shift towards markets over other forms of organization.

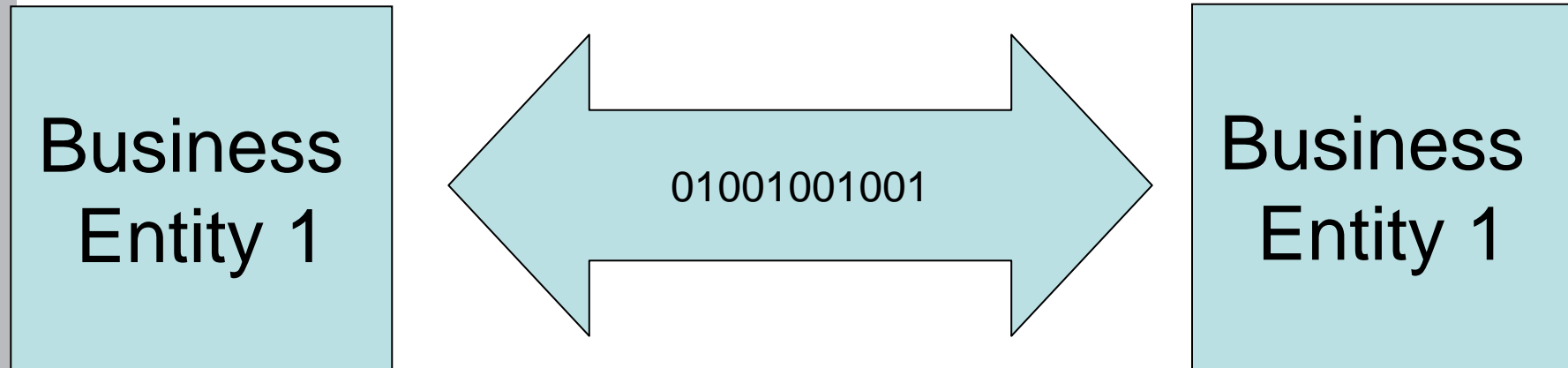
Reduced Transaction Costs – Increased Market Volume



The screenshot shows an eBay product page for a 'COMPAQ 281234-001 Li-Ion Battery Evo N800'. Overlaid on the page are the following statistics:

- Active Users:** 34.1 million
- Gross Merchandise Sales (GMS):** \$5.6 billion in Q2-03
- Walmart Inc.:** \$ 62.1 billion in Q2-03

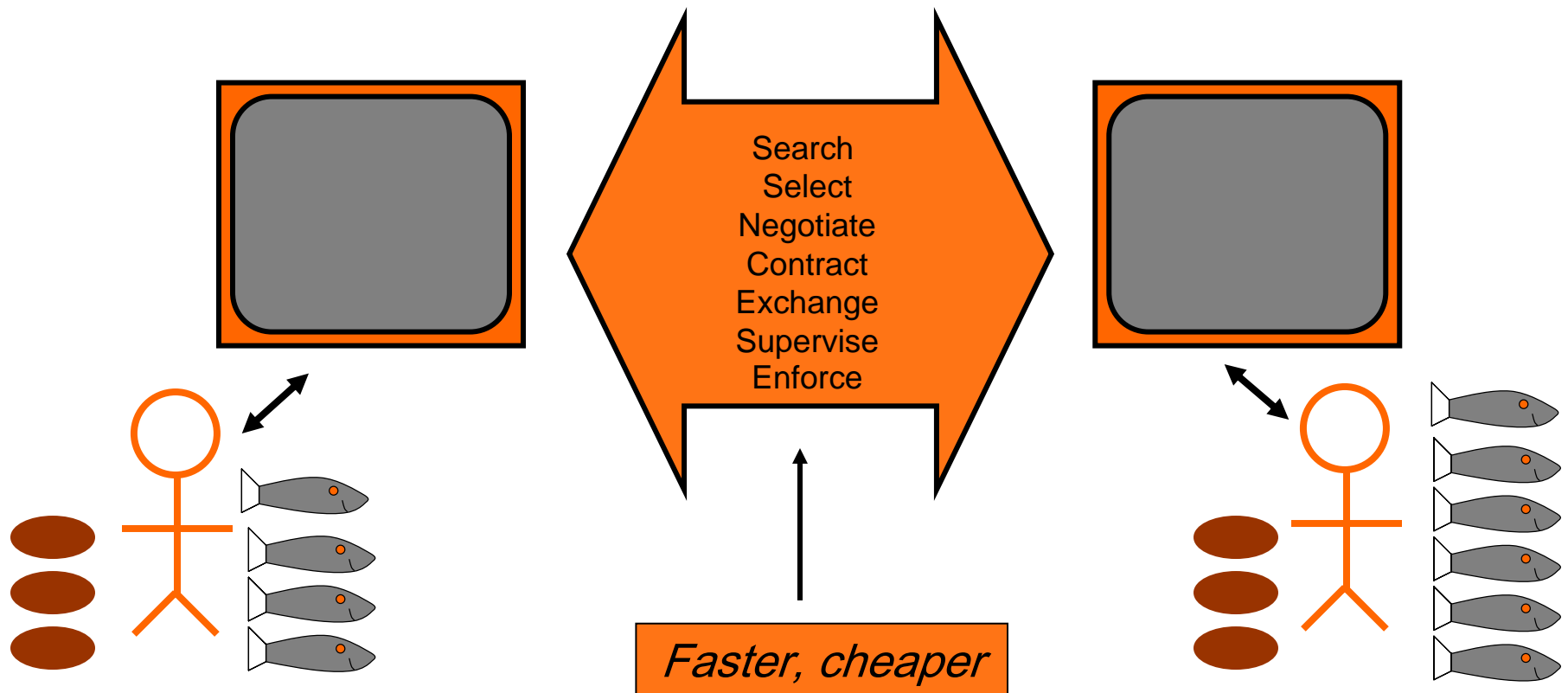
What is E-Business?



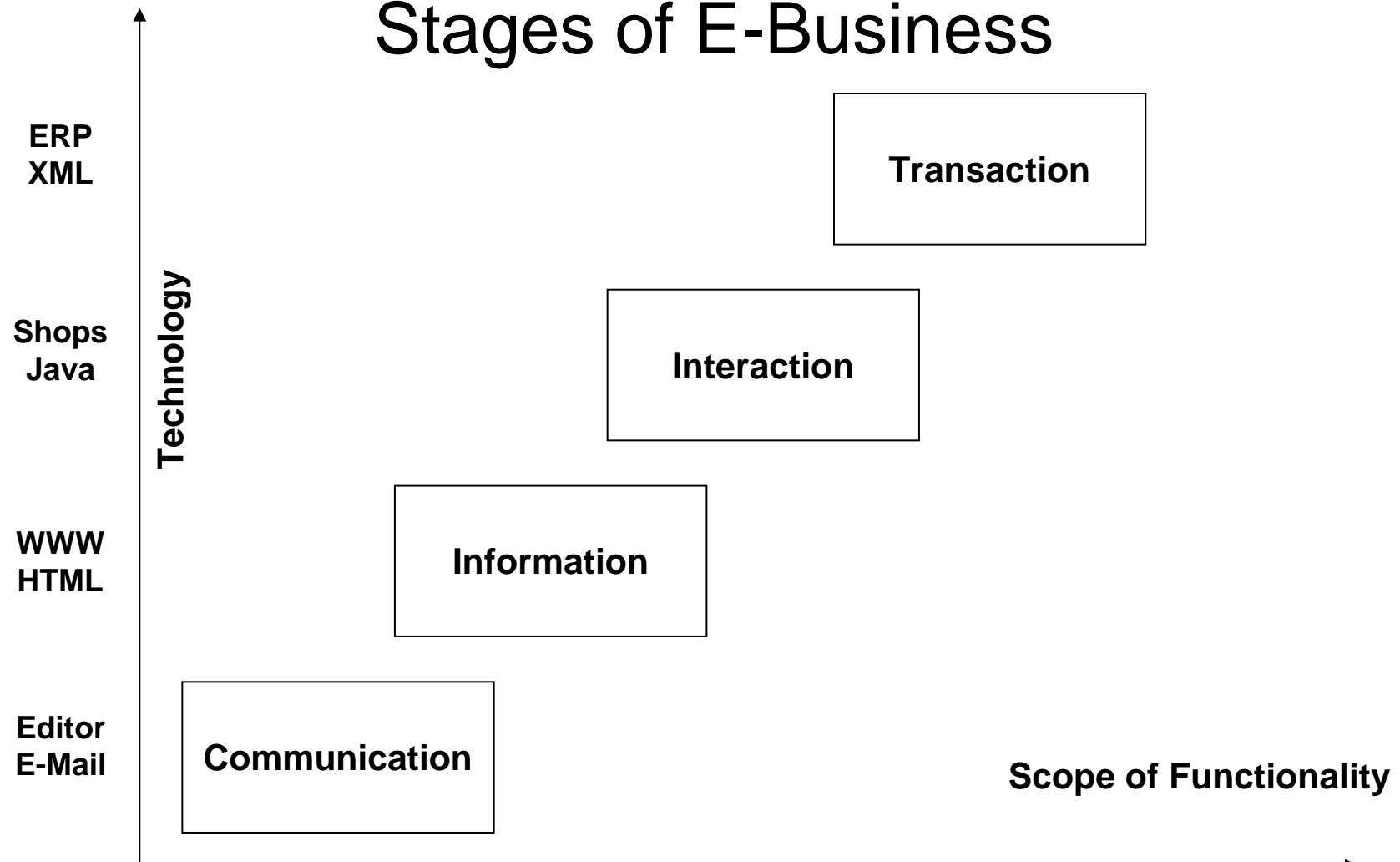
- **Any** form of business operations between **any** two parties using **digital** communication **over open networks**, especially the Internet.

cf. e.g. Thome/Schinzer/Hepp (2005)

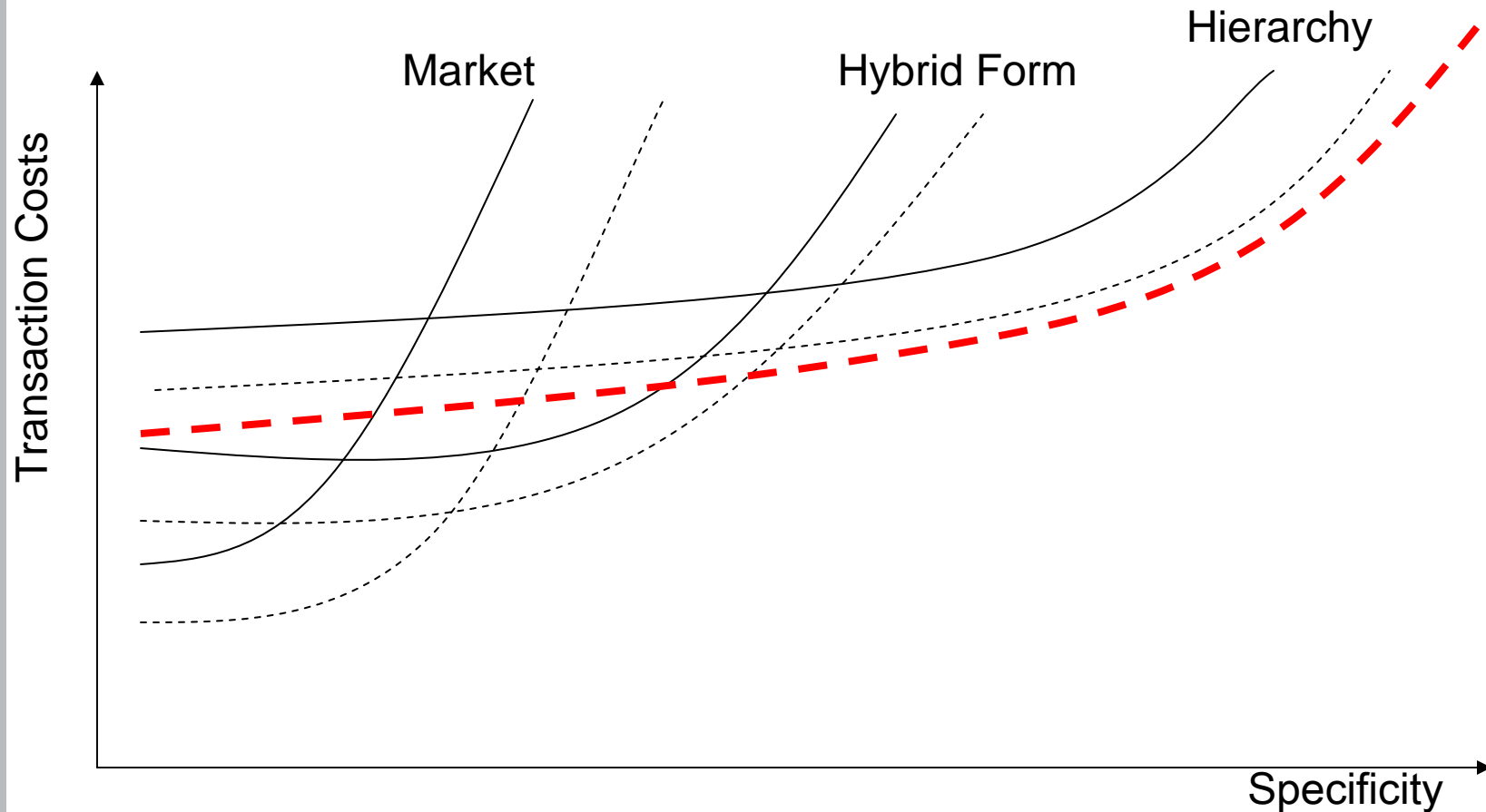
Computer-supported Coordination of Economic Activity



Stages of E-Business



Impact of ICT on Market Structures and Organizations



Original version: Wigand/Picot/Reichwald (1997)

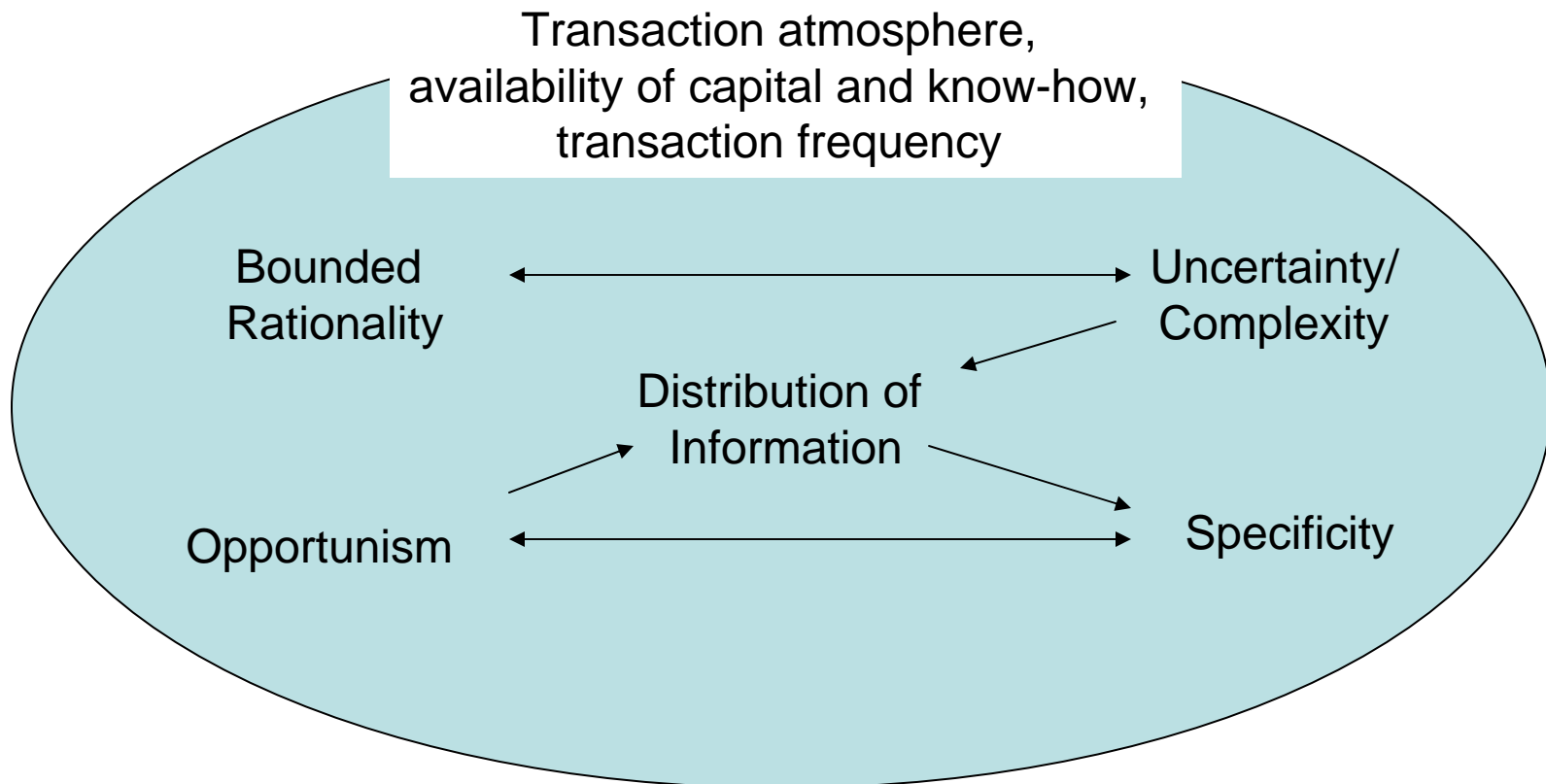
Criticism on Malone et al.

- *Sampson*: The Myth of Diminishing Firms
- *Cordella*: Does information technology always lead to lower transaction costs?

Factors Influencing Transaction Costs

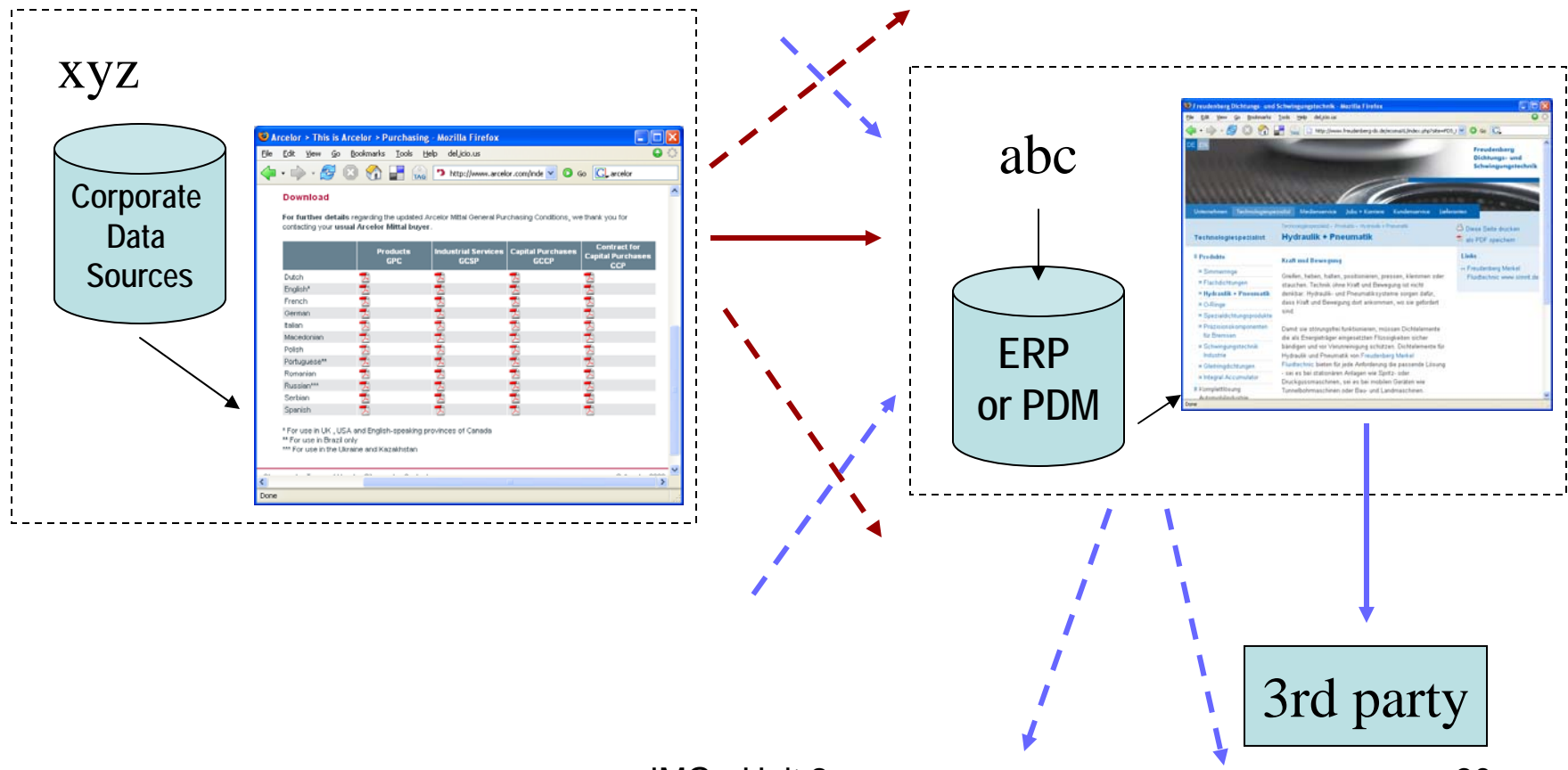
Behavioral Assumptions

Environmental Factors

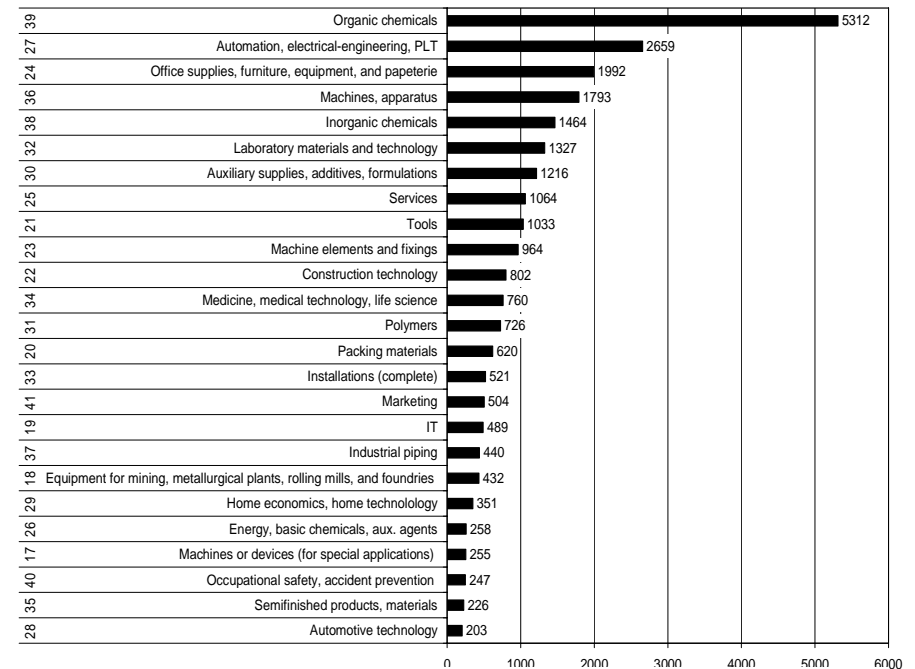
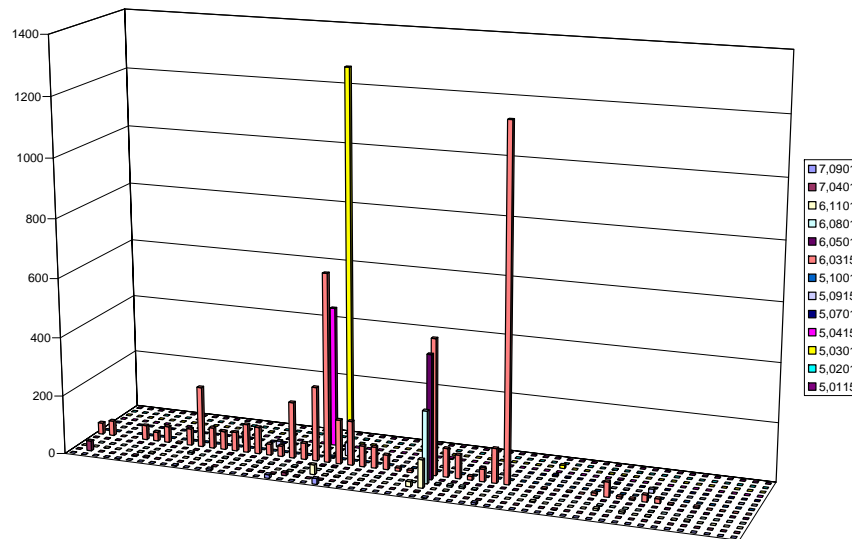


cf. Wigand/Picot/Reichwald (1997)

Limitation 1: Media Breaks in the Current Web



Limitation 2: Building and Maintaining Machine-feasible Vocabularies



Q: M. Hepp, J. Leukel, V. Schmitz: [A Quantitative Analysis of Product Categorization Standards: Content, Coverage, and Maintenance of eCl@ss, UNSPSC, eOTD, and the RosettaNet Technical Dictionary](#)
 in: Knowledge and Information Systems (KAIS), Springer, 2007.

Thank you!

The slides of today's class will be available
at <http://www.heppnetz.de/teaching/img/>
shortly.