# Digital Business Models

Lecturer:
Prof. Dr. Andreas Krüger

# Agenda – Digital Business Models - *preliminary*

Understand the potentials and risks of a digital business model and of digital markets

Understand how to implement a new business model

Understand how to strategically run a business

- Introduction & Kick-off
- What is a „digital" Business Model?
- Deep dive: Digital markets and digital value creation
- Deep dive: Digital goods and their special market dynamics
- Deep dive: Network goods and network effects
- Alternative market models
- Digitization and startup management
  - Developing a digital business model
  - Lean Startup methodology
  - Competitive strategies
  - Pricing strategies
  - Business Planning
- Fundamentals of (Strategic) Management
  - Understanding central business KPIs
  - Business Model Innovation

Case Study / Exercise

# Agenda – Digital Business Models - *preliminary*

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Wednesdays
9:45 – 11:15
A3.13

Understand the potentials and risks of a digital business model and of digital markets

Understand how to start a business model

Understand how to strategically run a business

Full-day workshops
22/23/29 April

Case Study / Exercise

Written exam in July 22

# What is a business model?


„The history of innovation is littered with companies that had a disruptive technology within their grasp but failed to commercialise it successfully, because they did not couple it with a disruptive business model.“

C. Christensen (Harvard University)

# The importance of business models

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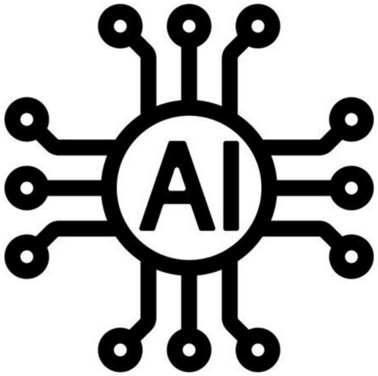
A tool is useless without an idea about what to do with it!




How can you
use AI to generate
business value?

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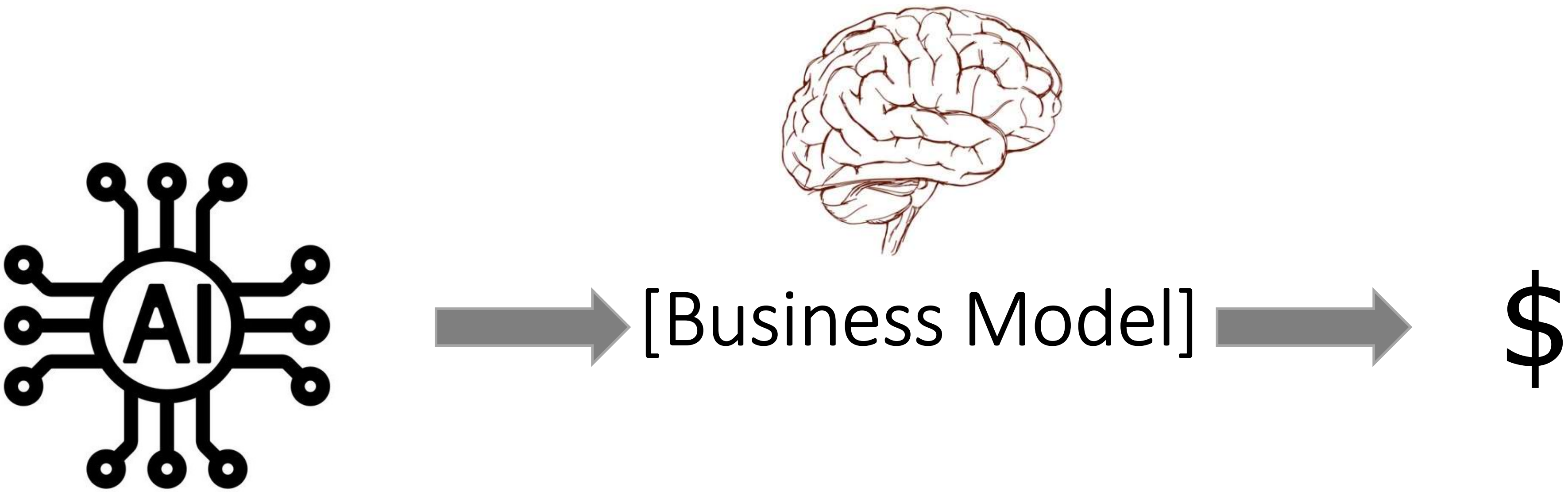
# The importance of business models



# Terminology: Our understand of „Business“

- ⇨ Exchange relationship between parties (“transaction”)
- ⇨ Transactions aim at generating a commercial value
- ⇨ Transactions must be intended
- ⇨ Transactions must be repetitive / not one-time



Quelle: Hoffmeister, 2017

# Terminology: „Model“

- ⇨ Simplified reflection of reality
- ⇨ Works with assumptions
- ⇨ Shows cause-effect-relationships and interdependencies
- ⇨ Can deliver solutions to known problems
- ⇨ Visualizes relationships between elements of a system (= architecture)



Quelle: Hoffmeister, 2017

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Peter Drucker, management consultant, educator, and author, wrote an article about the „Theory of a business" in 1994:

> Every organization, whether a business or not, has a theory of the business. Indeed, a valid theory that is clear, consistent, and focused is extraordinarily powerful.
>
> These are the assumptions that shape any organization's behavior, dictate its decisions about what to do and what not to do, and define what the organization considers meaningful results. These assumptions are about markets. They are about identifying customers and competitors, their values and behavior. They are about technology and its dynamics, about a company's strengths and weaknesses. These assumptions are about what a company gets paid for. They are what I call a company's theory of the business.

Quelle: www.pinterest.com

Peter Drucker, management consultant, educator, and author, wrote an article about the „Theory of a business“ in 1994:

The theory of the business must be known and understood by management, but also in the organization

The theory about the environment, mission of the company and the competencies of the company must fit reality.

The assumptions need to be tested regularly.

> **What underlies the malaise of so many large and successful organizations worldwide is that their theory of the business no longer works.**

Quelle: www.pinterest.com

Boston Consulting Group:

„In the last 50 years the average lifetime of a business model has decreased from 15 years to less than 5 years. As a consequence the ability to innovate the business model has become vital."

Quelle: www.bcg.com/de-de/capabilities/strategy/business-model-innovation.aspx

What does that mean?

# What‘s the business model / theory of the business?

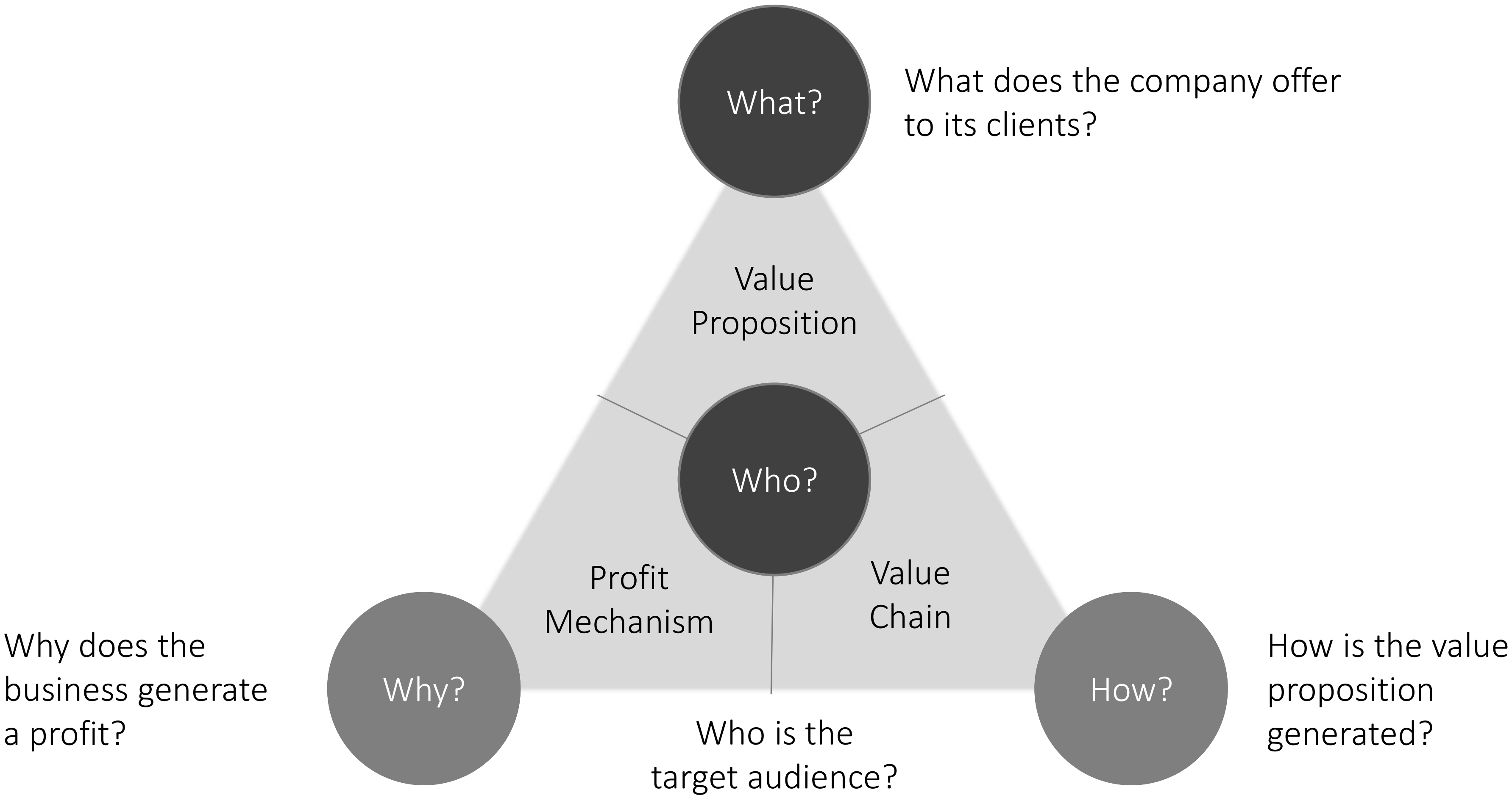


Uber

airbnb

# Elements of a business model

The following elements help to describe and explain a business model in a structured and comprehensive way:




Quelle: GFC, S. 7

# Definition of a business model

Who – What – How - Why

A business model describes who our customers are, what we sell to them, how we produce the things we sell, and why we earn money when doing that.

Quelle: GFC, S. 7

# Fractal Enterprises / Business Models



A company may follow more than one business model. Many of the major digital companies test and develop new business models while trying to re-use as many of their core competencies and assets as possible. This is what we call fractal enterpise models / business models.

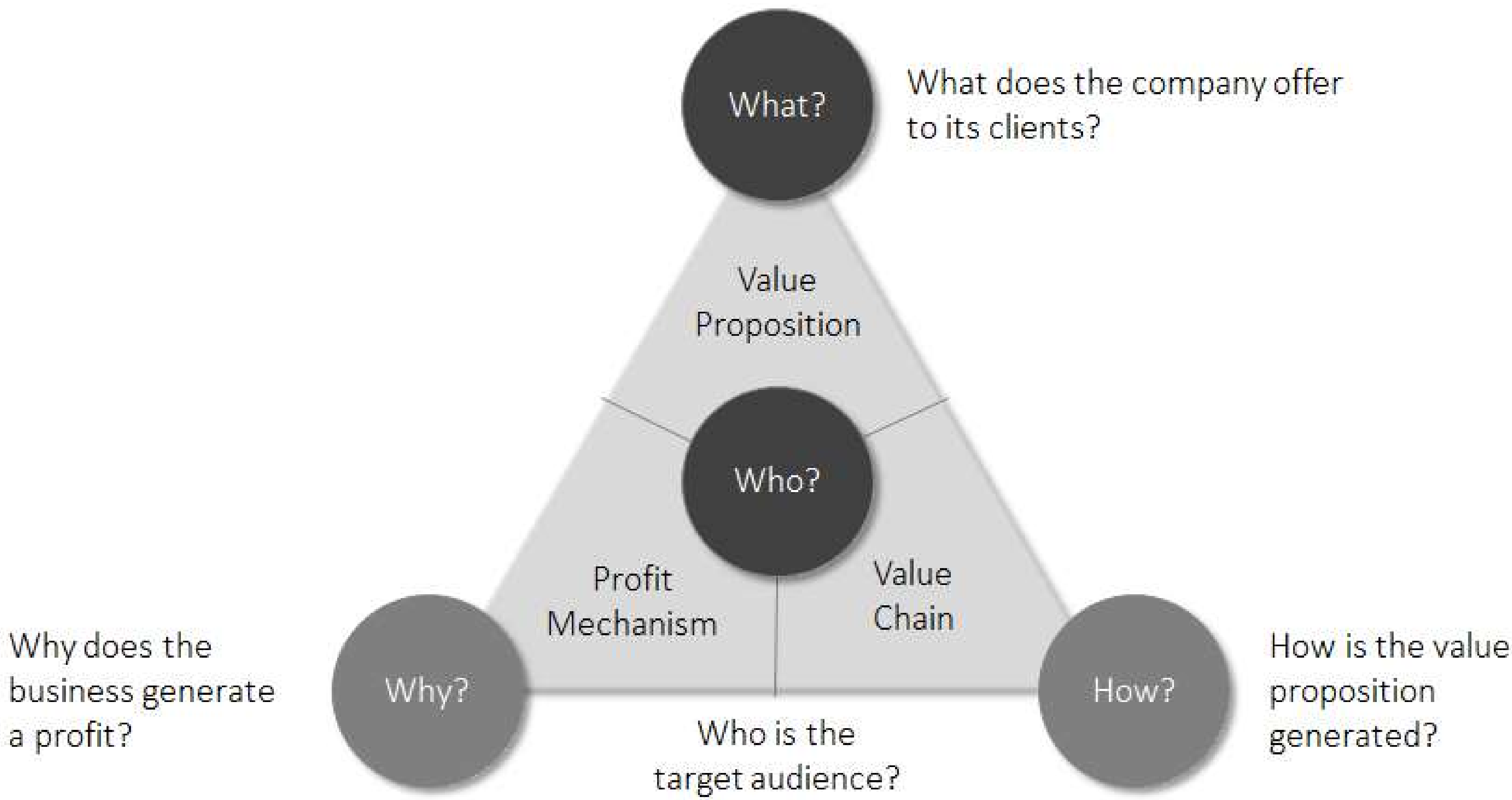
Uber Eats

Uber

JUMP


# Let‘s try it:

Describe a business model of a company you currently work for / worked for in the past:



# What is a DIGITAL business model?

# Terminology: What does „Digital“ in a business model context mean?

⇨ Customer value is being created by utilizing information and communication technology

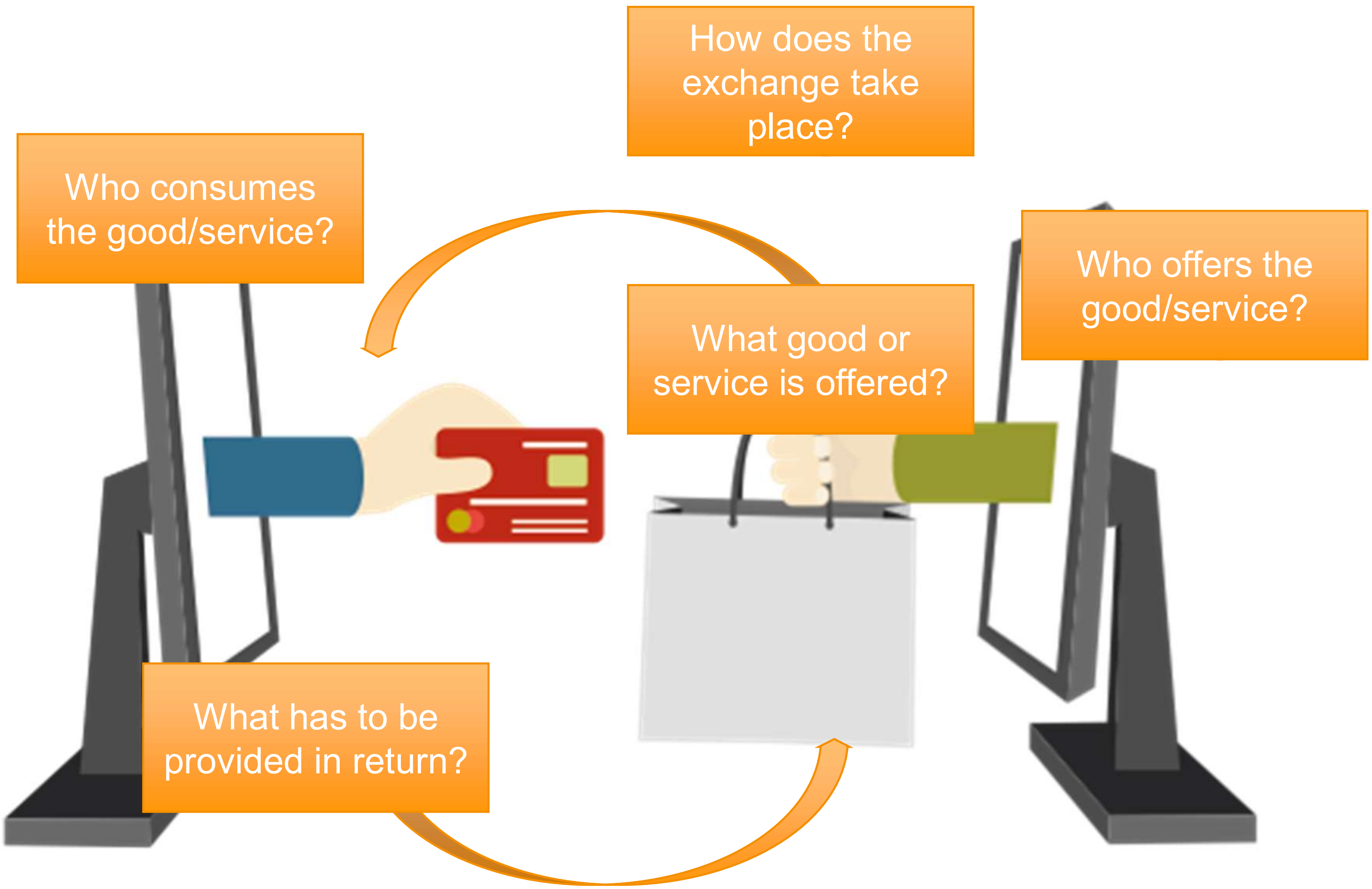
⇨ Immaterial goods and services represented by “bits & bytes”

⇨ Quantifiable transactions, usable by provider of the business model



Quelle: Hoffmeister, 2017

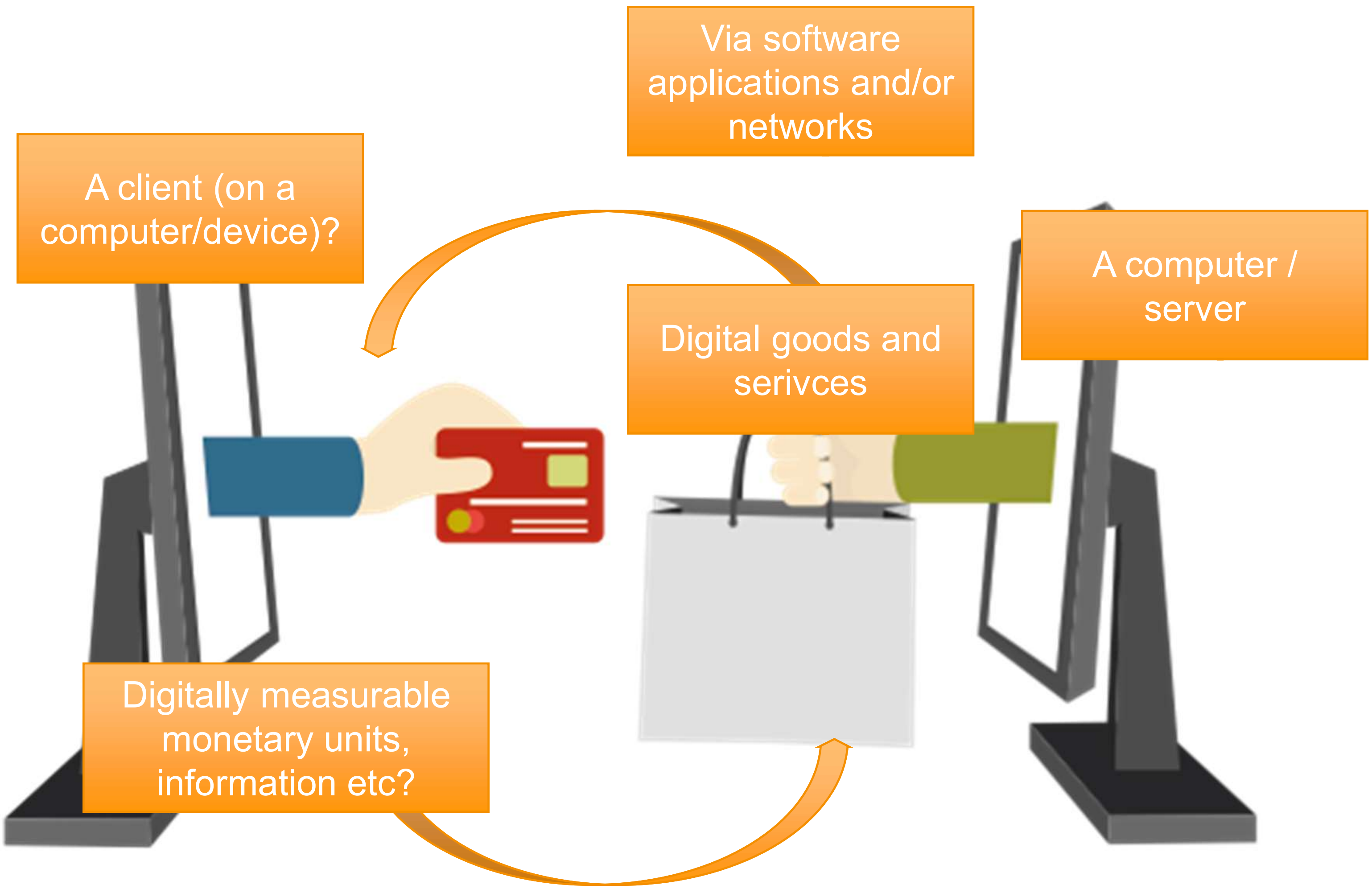
# „Digital" can refer to different parts of a business model






Quelle: Hoffmeister, 2017

# „Digital“ can refer to different parts of a business model






Quelle: Hoffmeister, 2017

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# Buzzword

"… a word or a phrase which has become popular or fashionable, or sounds technical or important and is used to impress people."

Digital Goods

Digital Strategy

Digital Technology

Digital Business Models

Digitization



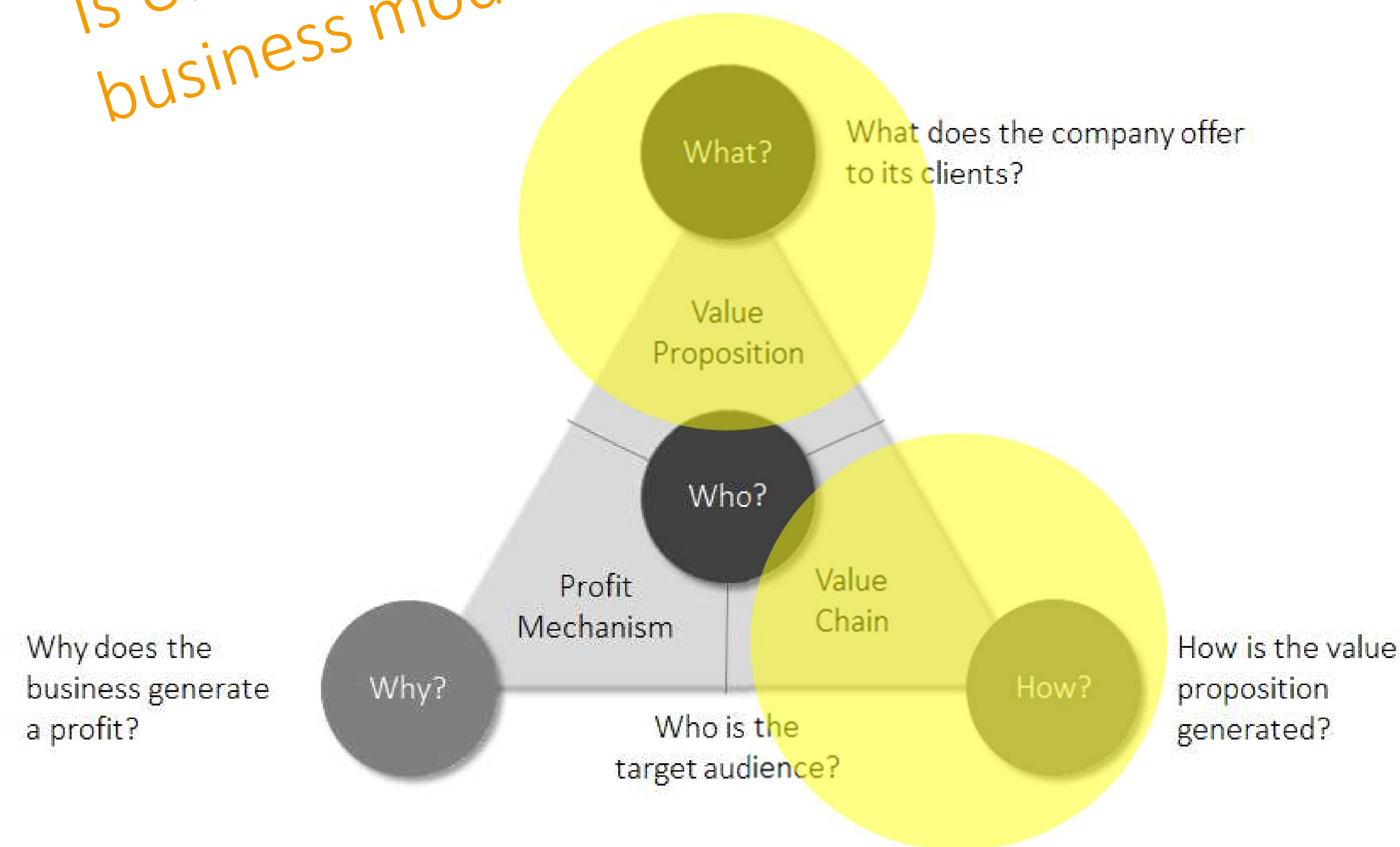
Quelle: Hoffmeister, 2017

# Distinction from other terms and concepts

| Digital Technology | Digital Goods | Digital Strategy | Digital Business Model |
|---|---|---|---|
| Hardware, Software and Network Components as a basis for data generation, consumption and exchange. | Goods and services that are partly or fully based on digital technologies to generate customer value. | Target-driven plan of activites that intend to achieve a company's long-term goals by utilizing digital goods and/or services. | Theory of a company in which the central value creation process is fundamentally based on digital technologies. |

Not every company that uses digital technologies has a digital strategy or even a digital business model!

Is Uber a digital business model?




| Digital Business Model |
| --- |
| Theory of a company in which the central value creation process is fundamentally based on digital technologies.<br><br>At least the value proposition and the value chain are based on digital technologies. |

# Distinction from other terms and concepts

| Digital Technology | Digital Goods | Digital Strategy | Digital Business Model |
|---|---|---|---|
| • Micro-Controllers<br>• Network protocols<br>• Data compression technologies | • Smartphone<br>• E-Book<br>• Software application<br>• Digital movie files | • Pricing strategy for a streaming service<br>• Online-Service-strategy for a hardware manufacturer | • Spotify<br>• Netflix<br>• Tinder<br>• Uber |

Digital Technology

Technology itself does not create commercial value!

However:

- Technological innovations enable business models that were not possible in the past. This can create completely new value propositions, new markets / Blue Ocean Strategies. (Example: Shazam)
- Technological innocations can allow Disruptions of known market mechanisms:
  The previously known rules of the market are fundamentally changed, leading to a massive change of competition and market allocation. (Example: Uber, myTaxi)

Digital Business Model

# Digital markets

# Basics about Markets

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- A market is a place where buyers and sellers can meet to facilitate the exchange or transaction of goods and services.

- Markets can be physical like a food market or a retail outlet, or virtual like an e-retailer.

amazon marketplace

- Markets establish the prices of goods and services that are determined by supply and demand.

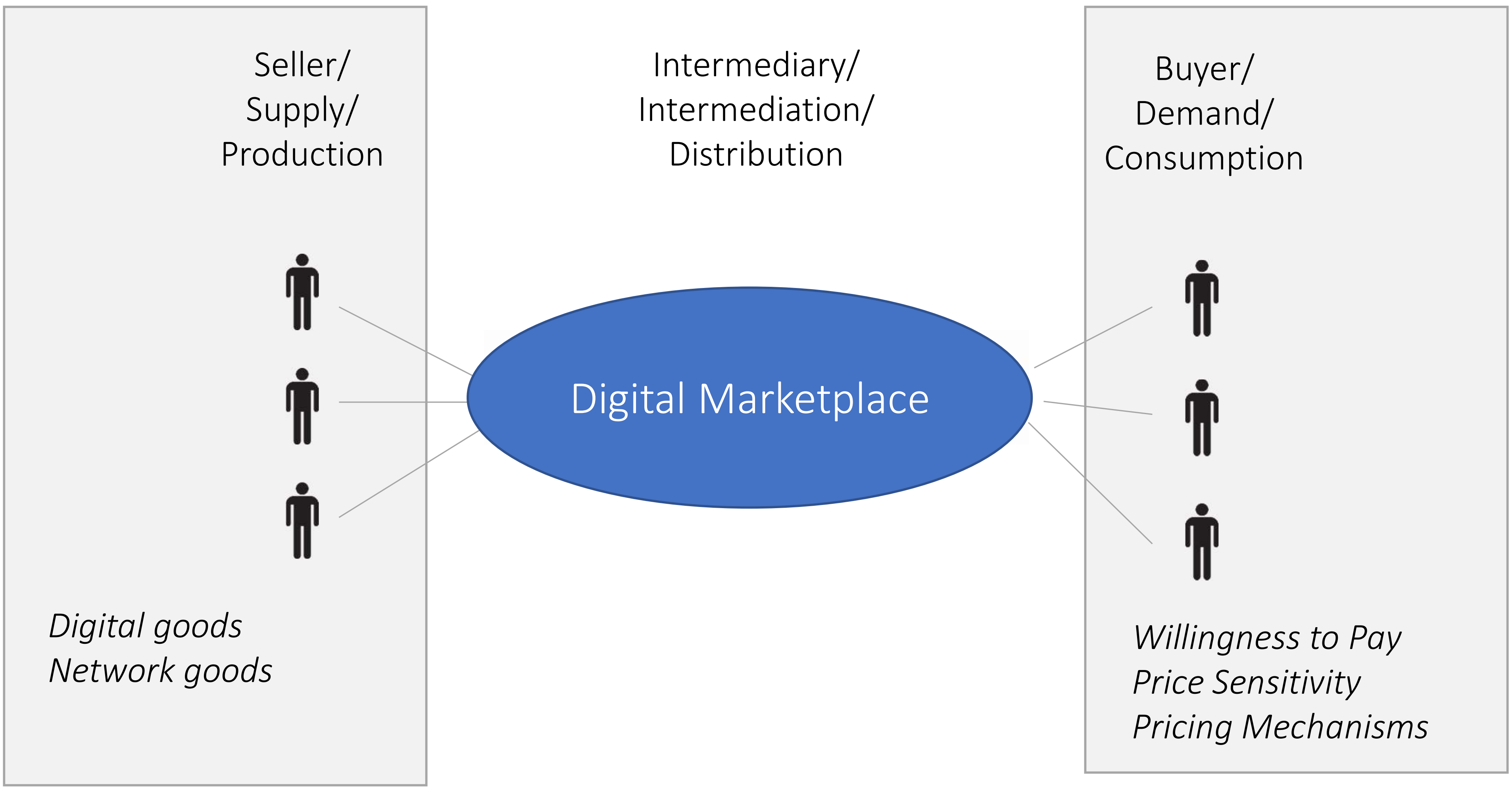
- In some markets, the transactions between buyer and seller take place directly. No intermediation is required.

- In other markets, it is inefficient or impossible for suppliers to get into contact with individual buyers. This gap is bridged by intermediaries.


- Virtual markets that are based on digital technology are called digital markets.

# Basics about Markets

Digital markets typically require an intermediation of some sort. The digital marketplace acts as a platform on which supply meets demand. Other than in physical markets, the intermediary can be virtual / technological as well:



What advantages of digital markets do you see over physical markets?

# Perfect market – perfect competition

Many economic theories work with the idealistic model of a perfect market (aka perfect competition).

These markets have a range of assumptions that are hardly met in practice.

The perfect market model is used to explain market mechanism (e.g. price equilibrium).

In addition, it can be analyzed what effects happen in imperfect markets.

Are digital markets perfect markets according to that definition?

- ✓ Large number of buyers and sellers
- ✓ No participant can manipulate the market
- ✓ All participants act rationally: they chose what increases their economic utility, there are no regional or personal preferences
- ✓ Supply and demand meet realtime = sellers can provide immediately, buyers buy immediately.
- ✓ Perfect information for all participants: All prices offered by all sellers are known and transparent
- ✓ Homogeneous products: Each product can subsitute the other products, they offer equal value
- ✓ No anti-competitive activities
- ✓ No entry or exit barriers

# Effects of digital markets

| Communication Effect | Middlemen Effect | Integration Effect |
| --- | --- | --- |
| Information is spread much faster and broader while at the same time reducing the cost of communication. Example: Price or availability alerts. | Electronic media allow a direct link between seller and buyer. The role of the intermediary is taken over by technology and frequently highly automated. Example: auction systems. | Previously separated transactions can be bundled. This allows efficient cross-selling. Example: elektronic booking systems combine hotel, rental car and flight bookings. |



vgl. Picot et al. 2009, S. 340 f.

# How to distinguish different types of digital markets

**Market attributes**

| | |
|---|---|
| What | Market participants |
| | Activities |
| | Goods and services |
| How | Market coordination |
| | Operators |
| | Functionalities |
| | Entry restrictions |
| For whom | Pricing mechanism |
| | Revenue mechanism |
| | Utility |

A company is an active participant on a market. This is where it tries to sell its products and services.

One key success factor for existing and new companies is to know the market mechanisms.

# Market attributes – 1. Participants

| Demand<br>Supply | Consumer | Business | Administration |
|---|---|---|---|
| Consumer | C2C: | C2B: | C2A: |
| Business | B2C: | B2B: | B2A: |
| Administration | A2C: | A2B: | A2A: |

Companies (B: Business), Private consumers (C: Consumer), Public institutions (A: Administration)

# Market attributes – 1. Participants

| Demand / Supply | Consumer | Business | Administration |
|---|---|---|---|
| Consumer | C2C:<br>eBay | C2B:<br>myHammer auction | C2A:<br>Online tax declaration |
| Business | B2C:<br>Online-Shop | B2B:<br>Procurement portals | B2A:<br>Online tax declaration |
| Administration | A2C:<br>Car registration | A2B:<br>Public tenders for projects | A2A:<br>Interchange between public institutions |

Companies (B: Business), Private consumers (C: Consumer), Public institutions (A: Administration)

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**Market attributes**

What
- Market participants: B2B | B2C | C2C | B2A | …
- Activities: Trade | Purchasing | Sharing | Supply Chain Management | …
- Goods and services

How
- Market coordination
- Operators
- Functionalities
- Entry restrictions

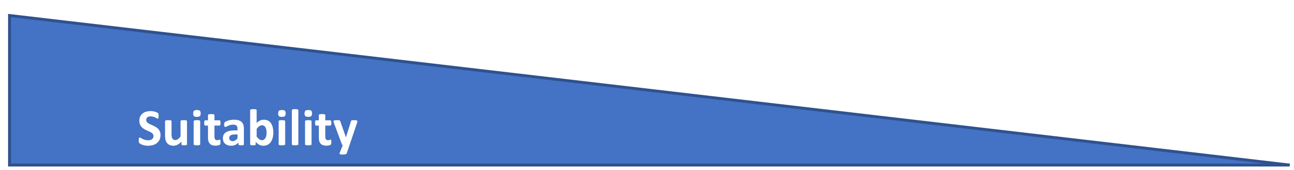
For whom
- Pricing mechanism
- Revenue mechanism
- Utility

# Market attributes – 3. Goods and services

A purchasing transaction runs through different phases. Before the purchase, the buyer is trying to assess the quality of the offered goods. If it is difficult to judge the functionality of the provided goods or services, experience and/or trust are required.

Therefore not all goods and services are equally suitable for digital markets:

| **Criterion** | **Attribute** | | |
|---|---|---|---|
| Assessment of product before purchase | Good | Limited | Difficult |
| Support/Consulting requirements | Low | Limited | High |
| Possibility to specify exact requirement | Good | Limited | Difficult |



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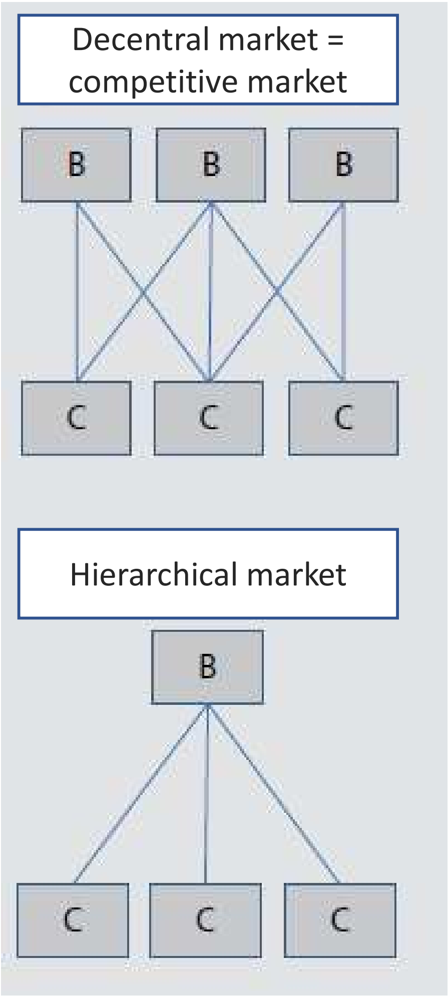
| **Market attributes** | | | | | | |
|---|---|---|---|---|---|---|
| What | Market participants | B2B | B2C | C2C | B2A | … |
| | Activities | Trade | Purchasing | Sharing | Supply Chain Management | … |
| | Goods and services | Search attributes | Experience attributes | Trust attributes | | |
| How | Market coordination | | | | | |
| | Operators | | | | | |
| | Functionalities | | | | | |
| | Entry restrictions | | | | | |
| For whom | Pricing mechanism | | | | | |
| | Revenue mechanism | | | | | |
| | Utility | | | | | |

# Market attributes – 4. Coordination mechanism




- **Competition**: many buyers – many suppliers without a central coordination instance

- **Hierarchies:** Power not equaly balanced. Subordination of participants. Example: Electronic purchasing systems in automotive industry.

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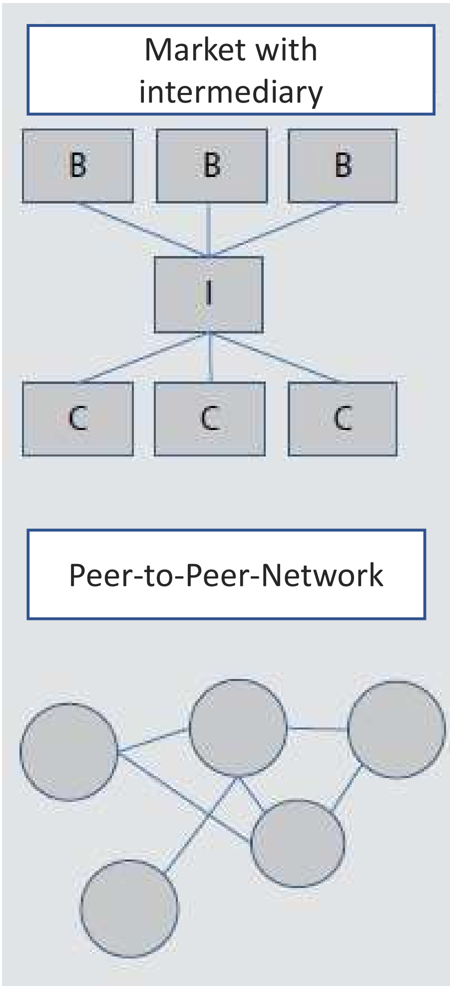


- **Intermediary**: very common in digital markets. Intermediaries support the structured search, quality assessment etc. They can act as trusted third parties.

- **P-2-P**: Direct interaction between participants, e.g. in sharing apps. A platform can be the technical basis, but does not act as intermediary.

**Market attributes**

| | | | | | | |
|---|---|---|---|---|---|---|
| What | Market participants | B2B | B2C | C2C | B2A | … |
| | Activities | Trade | Purchasing | Sharing | Supply Chain Management | … |
| | Goods and services | Search attributes | Experience attributes | Trust attributes | | |
| How | Market coordination | Competition | Hierarchy | P2P-Network | Inter-mediary | |
| | Operators | | | | | |
| | Functionalities | | | | | |
| | Entry restrictions | | | | | |
| For whom | Pricing mechanism | | | | | |
| | Revenue mechanism | | | | | |
| | Utility | | | | | |

# Market attributes – 5. Operators

- Neutral plattforms (*broker model*): many buyers are brought together with many sellers by an independent third party (intermediary) who runs the market (e.g. eBay).
- Sell-sided market: one or few suppliers operate a digital market to focus the demand on them and to allow an efficient customer relationship management (e.g. amazon).
- Buy-sided market: one or few strong buyers operate the market to realize cost advantages. Frequently the supply side is fragmented in these markets.

# Market attributes – 5. Operators

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**Market attributes**

| | | | | | | |
|---|---|---|---|---|---|---|
| What | Market participants | B2B | B2C | C2C | B2A | … |
| | Activities | Trade | Purchasing | Sharing | Supply Chain Management | … |
| | Goods and services | Search attributes | Experience attributes | Trust attributes | | |
| How | Market coordination | Competition | Hierarchy | P2P-Network | Inter-mediary | |
| | Operators | Buy-sided | Sell-sided | neutral | | |
| | Functionalities | | | | | |
| | Entry restrictions | | | | | |
| For whom | Pricing mechanism | | | | | |
| | Revenue mechanism | | | | | |
| | Utility | | | | | |

# Market attributes – 6. Functionalities of the market

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**Market attributes**

| | | | | | | |
|---|---|---|---|---|---|---|
| What | Market participants | B2B | B2C | C2C | B2A | … |
| | Activities | Trade | Purchasing | Sharing | Supply Chain Management | … |
| | Goods and services | Search attributes | Experience attributes | Trust attributes | | |
| How | Market coordination | Competition | Hierarchy | P2P-Network | Inter-mediary | |
| | Operators | Buy-sided | Sell-sided | neutral | | |
| | Functionalities | Product Information | Payment | Auction | Process Integration | … |
| | Entry restrictions | | | | | |
| For whom | Pricing mechanism | | | | | |
| | Revenue mechanism | | | | | |
| | Utility | | | | | |

# Market attributes – 7. Entry restrictions

The term „market“ suggests a free access. However, for various reasons there are markets that limit access to participants of a specific industry or group:

Vertical market
(Highly specialized industry focus)

Horizontal market
(same product sold cross-industry)

B2B

Closed market
(Access only for specific participants)

Open market
(Access for all)

B2C

# Market attributes – 7. Entry restrictions

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**Market attributes**

| | | |
|---|---|---|
| What | Market participants | B2B, B2C, C2C, B2A, … |
| | Activities | Trade, Purchasing, Sharing, Supply Chain Management, … |
| | Goods and services | Search attributes, Experience attributes, Trust attributes |
| How | Market coordination | Competition, Hierarchy, P2P-Network, Inter-mediary |
| | Operators | Buy-sided, Sell-sided, neutral |
| | Functionalities | Product Information, Payment, Auction, Process Integration, … |
| | Entry restrictions | technological, legal, financial |
| For whom | Pricing mechanism | |
| | Revenue mechanism | |
| | Utility | |

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| | | How a price is determined | |
|---|---|---|---|
| | | **Static** | **Dynamic** |
| ***Who influences the price determination*** | *Supplier* | Catalogue | Dynamic Pricing |
| | *Buyer* | Price limits | Auctions |
| | *Both* | Negotiation (general) | Individual negotiations, exchange |

# Market attributes – 9. Revenue mechanism

One advantage of digital business models is that the pricing mechanism can be decoupled from the revenue generation mechanism. In real markets pricing usually comes first.

**1. Source of revenue**

- Product (Book purchase)
- Contact (Marketing)
- Information (Selling user information)

**2. Revenue partner**

- Buyer
- Seller
- Third Party

**3. Pricing model**

| | | How a price is determined | |
|---|---|---|---|
| | | **Static** | **Dynamic** |
| ***Who influences the price determination*** | *Supplier* | Catalogue | Dynamic Pricing |
| | *Buyer* | Price limits | Auctions |
| | *Both* | Negotiation (general) | Individual negotiations, exchange |

## Direct and indirect forms of revenue

The main source of revenue often is the core product or service. Next to that, there are other sources of income. Sometimes, they are even the primary source.

- Singular-Principle: sold core product is the only source of income.
- Plural-Principle: there is a paid core product, but revenue is also generated from other products and services (e.g. selling usage data).
- Symbiosis-Principal: the core product is mostly for free or without profit in order to generate indirect revenue in other areas.

# Market attributes – 9. Revenue mechanism

| | Direct Revenues | Indirect Revenues |
|---|---|---|
| Transaction-based | | |
| Not transaction-based | | |

## Utility generation in digital markets according to the 4C-Business-Net-Typology

| | Content | Commerce | Context | Connection |
|---|---|---|---|---|
| Content | Collection, selection, compilation and provision of content | Initiate, negotiate and execute business transactions | Classification and systematisation of available information | Establish an information exchange between users |
| Goal | Provide user-focused personalized content online | Substitute or complement traditional transactions | Reduce complexity, make navigation easier | Commercial or communicative relationships in networks |
| Revenue | Indirect (primarily advertising) | Transaction depending, direct or indirect | Indirect | Direct or indirect |

# Market attributes – Summary



**Market attributes**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| What | Market participants | B2B | B2C | C2C | B2A | … | |
| | Activities | Trade | Purchasing | Sharing | Supply Chain Management | … | |
| | Goods and services | Search attributes | Experience attributes | Trust attributes | | | |
| How | Market coordination | Competition | Hierarchy | P2P-Network | Inter-mediary | | |
| | Operators | Buy-sided | Sell-sided | neutral | | | |
| | Functionalities | Product Information | Payment | Auction | Process Integration | … | |
| | Entry restrictions | technological | legal | financial | | | |
| For whom | Pricing mechanism | static | dynamic | Static/dynamic | | | |
| | Revenue mechanism | Provision | Fees | Licence | Advertising | | |
| | Utility | Content | Commerce | Context | Connection | | |