

Lecture 6

Economic Basics II:
Market Structure and Value Creation

Mobile Business I (WS 2024/25)

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- Mobile Communications Market
 - Market Players
 - Market Structure
- Value Creation
- Mobile Internet Market

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- Players:
 - Device manufacturers
 - Infrastructure manufacturers
 - Network operators
 - Mobile virtual network operators
 - Service providers
 - Content providers
 - Customers

* One possible segmentation!

- Mobile device manufacturers
 - Manufacture and distribute mobile terminals
 - Examples: Apple, Microsoft Mobile, Sony Ericsson, Samsung, HTC, RIM, ...; earlier Nokia, Siemens, ...



- Mobile device manufacturers
 - Frequently in partnerships (e.g. distribution via mobile network-operator, i.e. operator branded (SIM-locked or individualized) devices)
 - Almost all mobile device manufacturers are global organisations.
 - Originally manufacturers used their own operating systems, ...
 - Additional features for diverse target groups like special designs and high resolution cameras enforced competence or buy-in beyond telecommunications capabilities.

- Infrastructure manufacturers/providers
 - Produce and provide infrastructure, necessary for network operation, such as GSM base stations.
 - Examples: Nokia Networks, Lenovo (Motorola), Ericsson, ZTE, Huawei, ...



- Infrastructure manufacturers/providers
 - Important interaction between infrastructure and terminals.
 - Currently new business because of 5G

- Network operators
 - Operate mobile networks and provide access
 - E.g. Deutsche Telekom, Vodafone, Telefónica, Orange, 1&1 AG, ...
 - Competition on national and international level



Definition:

A **mobile virtual network operator (MVNO)** is a company that does not own a licensed frequency spectrum and wireless infrastructure, but resells wireless services under their own brand name, using the network of another mobile network operator.

Explanation:

- An MVNO's roles and relationship to the network operator vary by market.
- In general, an MVNO is an entity or company that works independently of the operator and can set its own tariff structures.

Based on [Wikipedia2013]

- Network perspective:
An MVNO is an entity providing a mobile service without owning its own mobile spectrum licence, and not necessarily owning all, or indeed any, of the elements of a mobile network infrastructure.
- Customer or business perspective:
An MVNO is an entity that the customer believes is its mobile operator, but does not necessarily have to own or manage all or part of the underlying physical network.

Motivations for mobile operators (MO) to allow MVNOs on their networks:

- **Segmentation-driven strategies:** MOs often find it difficult to succeed in all customer segments. MVNOs are a way to implement a more specific marketing mix, whether alone or with partners and they can help attack specific, targeted segments.
- **Network utilisation-driven strategies:** Many MOs have capacity, product and segment needs. An MVNO strategy can generate economies of scale for better network utilisation.
- **Product-driven strategies:** MVNOs can help MOs target customers with specialised service requirements and get to customer niches that MOs cannot get to.

- Lower operational costs for mobile operators (billing, sales, customer service, marketing).
- Growth of average revenue per user by providing new applications and tariff plans.
- Help with difficult issues like how to deal with fixed-mobile convergence by allowing MVNOs to try out more experimental projects and applications.

1. **Subsidiary companies**, especially by an established network operator
2. **OEM/Branding-products**, that use the name and the marketing channels of already established brands to address their client base
3. **Resellers** offer contracts without owning a network infrastructure but to a large degree they provide the services of the value chain on their own (e.g. the integration of services, the billing, order processing and customer care services).
4. **Full MVNOs**: operate parts of the network infrastructure, e.g. HLRs.

1. Subsidiary company:

- congstar GmbH (Deutsche Telekom)
- Simyo GmbH (E-Plus, later Telefónica, till 2015-06-30)



2. OEM/Branding-products:

- ALDI TALK (Telefónica)
- BildMobil (Vodafone)
- ja!mobil (Deutsche Telekom)
- Lidl Connect (Vodafone)
- Tchibo mobil (Tchibo+Telefónica)



3. Resellers:

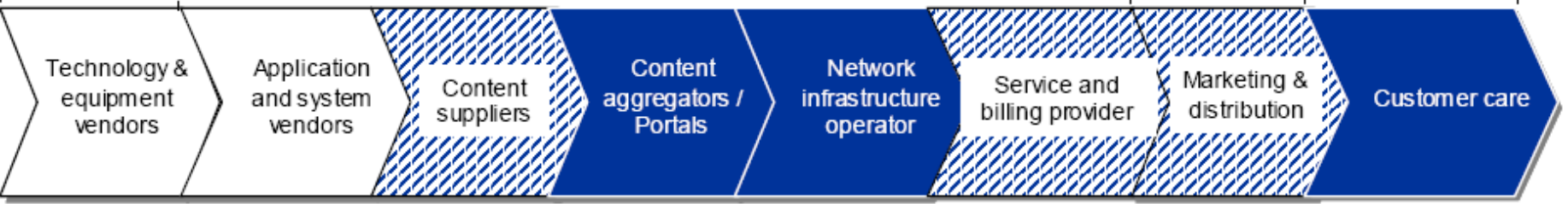
- klarmobil.de
- mobilcom debitel
- simply






TRADITIONAL VALUE CHAIN OF MOBILE SERVICE DELIVERY



EMERGING MOBILE OPERATOR VALUE CHAIN



| | | | | | |
|---|----------------------------------|---|------------------|---|-------------------------------|
|  | Primary opportunity for operator |  | Some opportunity |  | Opportunity through alliances |
|---|----------------------------------|---|------------------|---|-------------------------------|

4. Full MVNOs:

- Lycamobile MVNO Platform, Lycamobile Germany GmbH (using Vodafone Germany access network)
- CALLAX MVNO Platform, CALLAX Telecom Holding GmbH, “ring” brand (was using E-Plus access network)



Resellers vs. Full MVNOs:

- In contrast to resellers all incoming and outgoing calls are handled by Full MVNOs' own mobile switching infrastructure.
- Full MVNOs receive revenues from incoming calls, the so-called interconnection fees (per minute), and not only for outgoing calls, as compared to the resellers.

[Teltarif2013]

Special role of MVNOs:

- Innovative pricing
- Some value-added services
- Different customer care provision

- Provide different kinds of services, e.g.
 - Billing and customer management
 - Acquisition of customers
 - Advertising campaigns
 - Server-hosting
 - Communication management
 - ...
- Term rarely used since MVNOs came up.

- Content providers

Examples

- Banks
- Shops
- Media-companies
- Game Provider
- Netflix
- Amazon Prime
- Apple TV+
- ...



- Use...

- infrastructure,
- network,
- devices,
- service and
- information

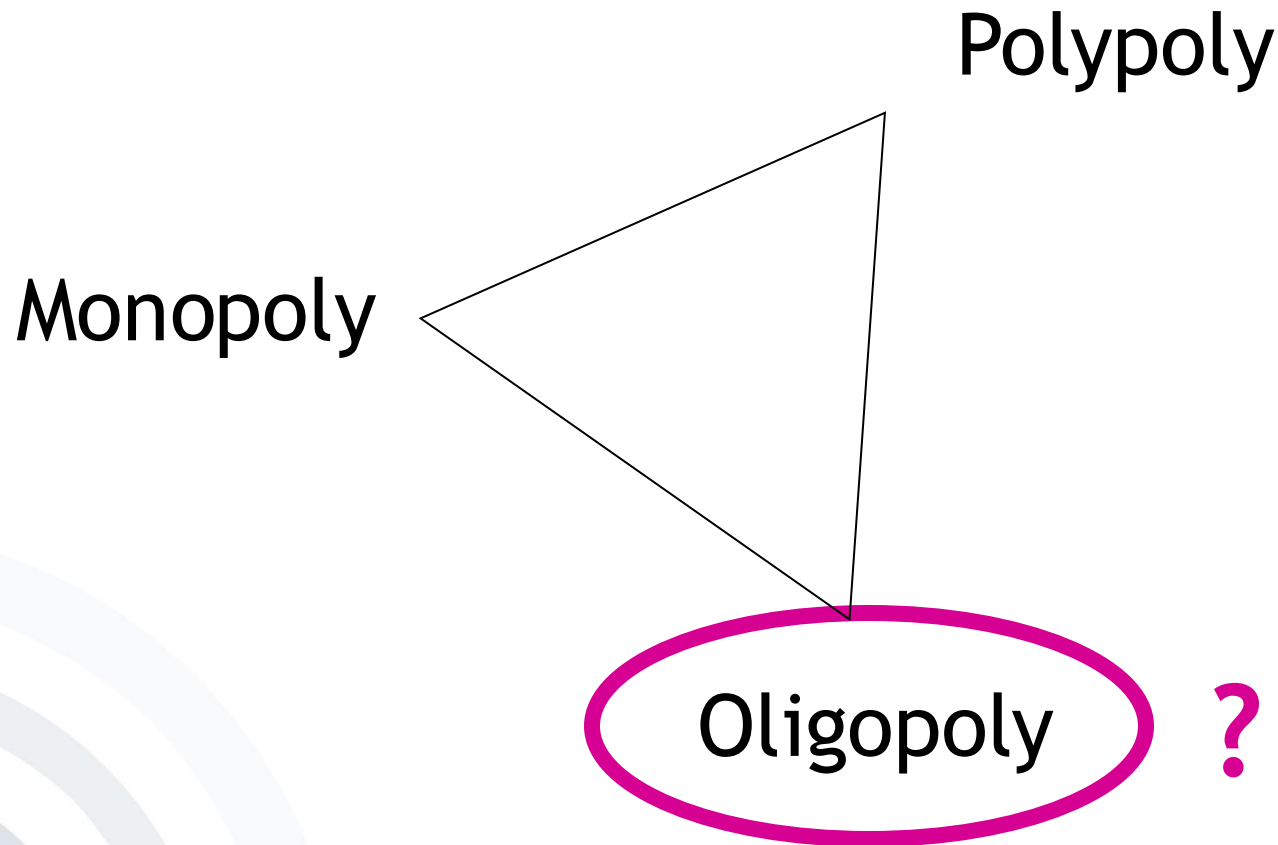


- High market power because of full market penetration [Bundesnetzag2013]

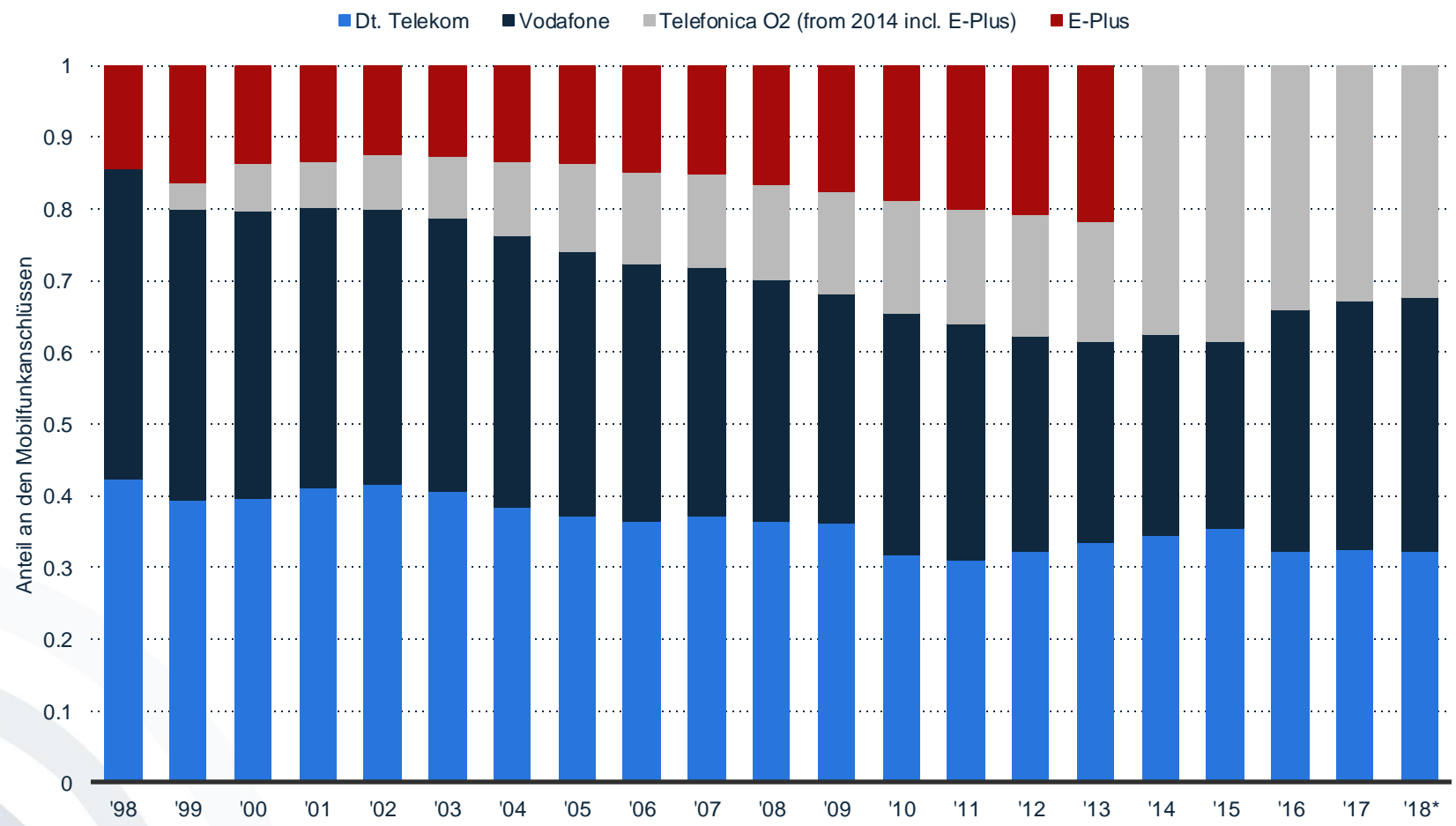
- Customers are...

- Private customers
- Corporate customers

- Mobile Communications Market
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Market share (subscribers) of mobile network operators in Germany

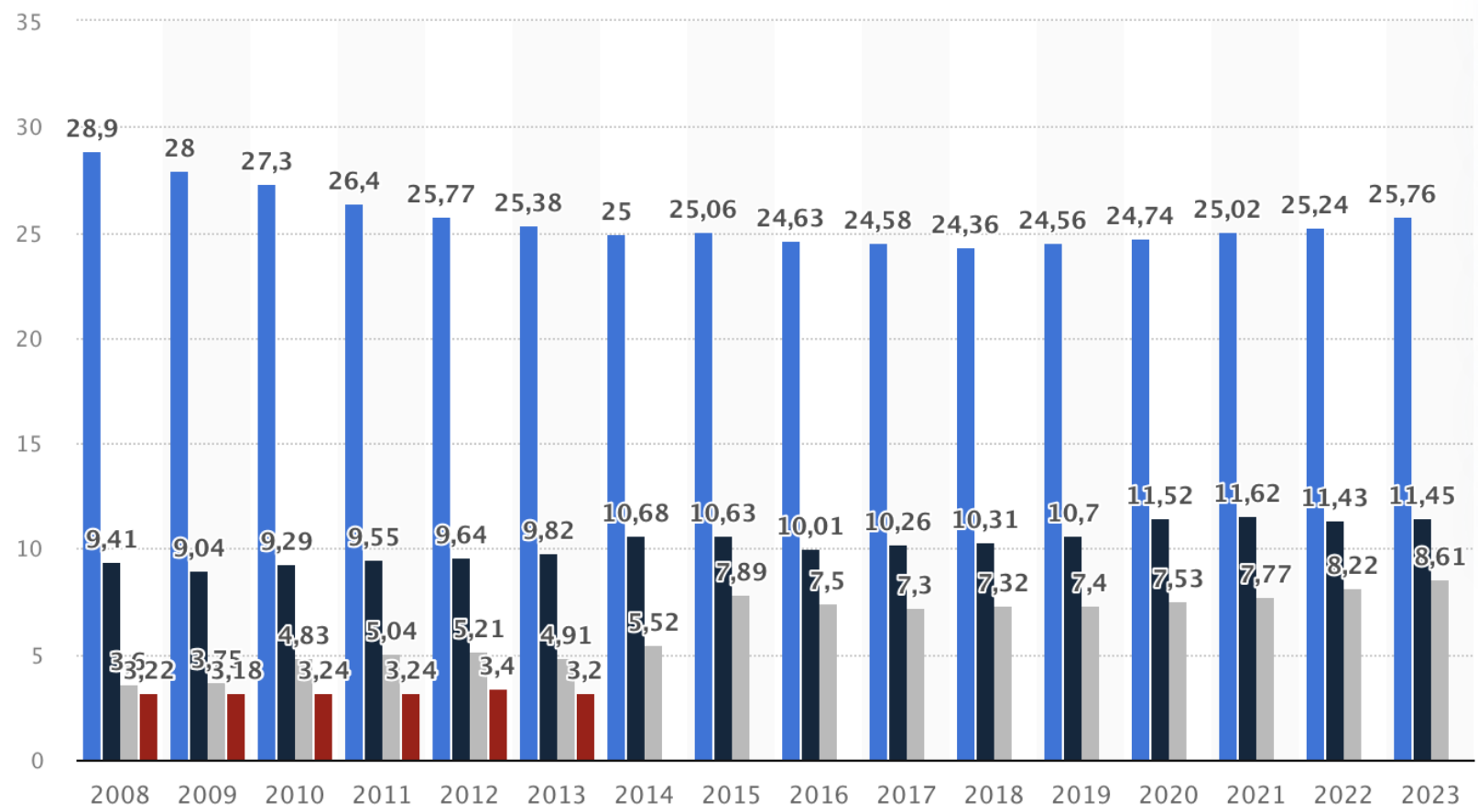


*Data for 2018 are estimated

[Statista2018]

Revenue of Mobile Network Operators

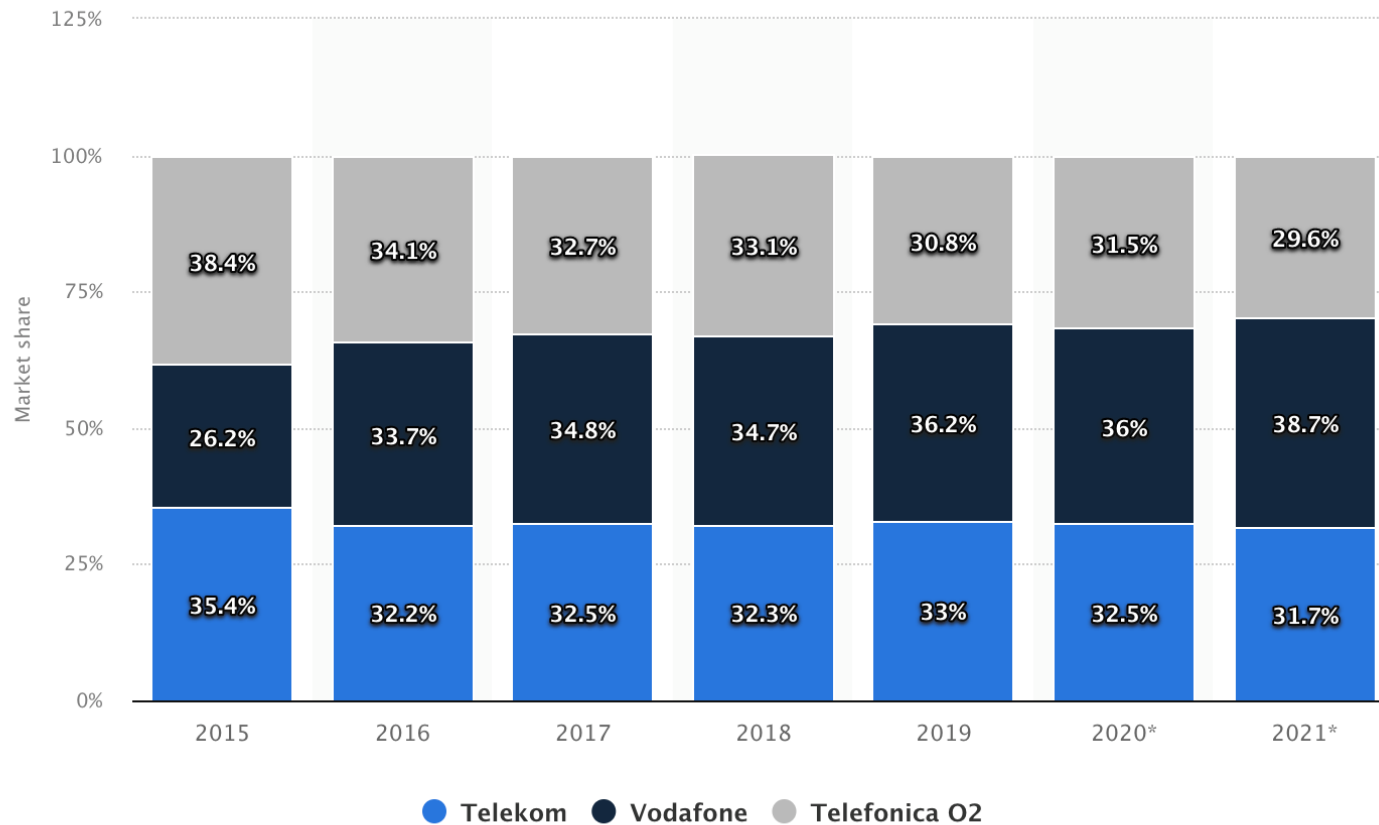
Revenue of mobile network operators in Germany in € billion, as of 05.2024



● Deutsche Telekom
 ● Vodafone Deutschland*
 ● Telefonica Deutschland
 ● E-Plus Gruppe

[Statista2024]

Market share held by mobile network providers in Germany from 2015 to 2021

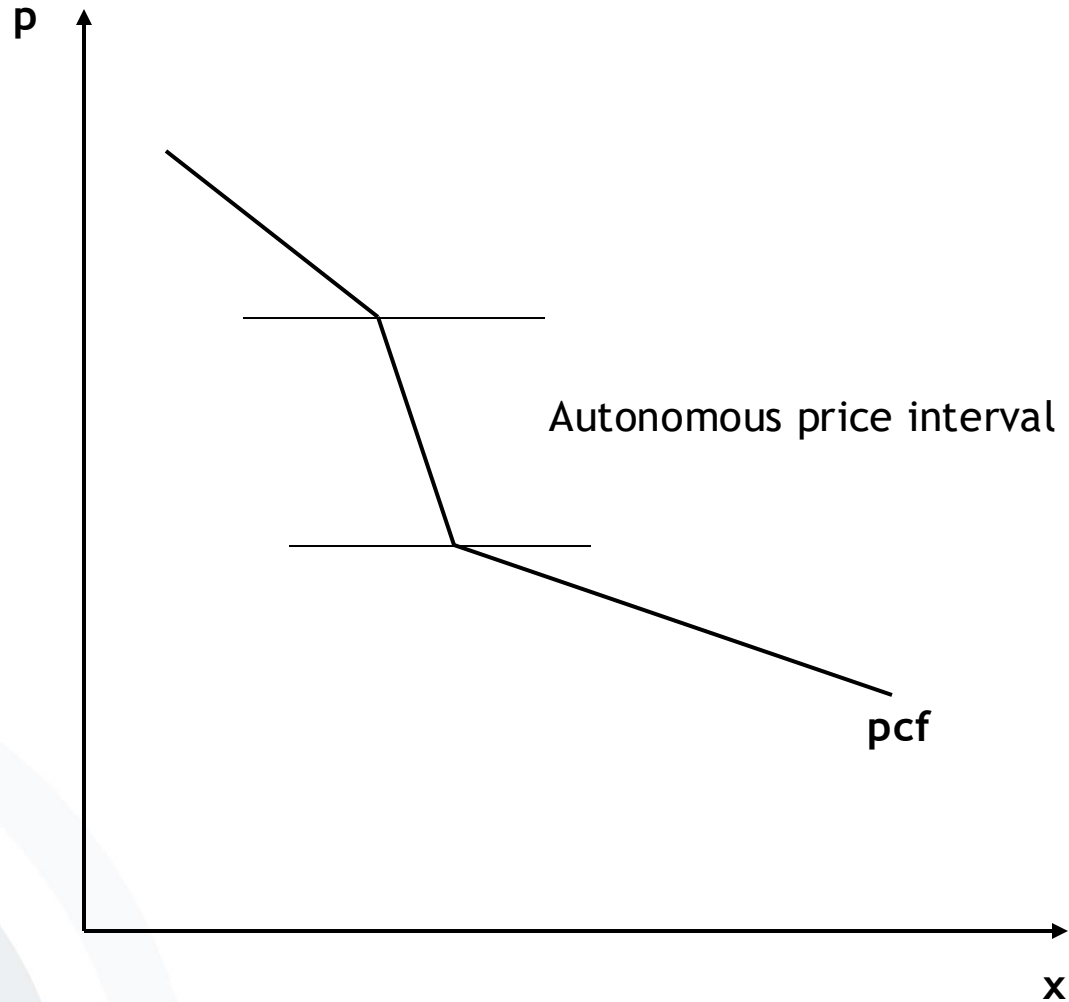


- ➔ Few mobile network operators, many customers

- Heterogeneous oligopoly (Gutenberg)
 - A heterogeneous oligopoly is a market form, in which a market or industry is dominated by a small number of middle-sized sellers with heterogeneous products
 - Many (small-sized) customers

- Heterogeneous oligopoly (Gutenberg)
 - Autonomous price interval, in which the respective organisation (operator) can operate...
 - without losing customers to the business competition due to rise in price
 - without acquiring customers from business competition due to cut in price
 - Within price interval only latent increase and loss of demand, e.g. because of switching costs

Price-consumption function in a heterogeneous oligopoly (Gutenberg)



- Heterogeneous oligopoly (Gutenberg)
 - Leaving this price interval leads to migration of customers:
 - Prices above price barrier lead to latent and fluctuating loss in demand
 - Reduction in price below the barrier lead to latent increase in demand
- ... as long as competitors do not change prices

⇒ Partial interdependency

- **Till 2005**

The mobile market had few network operators (MNOs):
T-Mobile, Vodafone, Telefonica O2 and E-Plus



- **Since 2005**

By the market entry of MVNOs, the mobile market has changed:

- Few middle-sized providers (four MNOs)
- Many small providers, e.g. Tchibo mobil, ALDI TALK, simyo, klarmobil, blau.de



- **Since 2009**

Convergence of mobile providers and fixed-line providers

- **Since 2014**

Only three MNOs left



- **Now and since 2019**

Four MNOs since 5G auction with 1&1 Drillisch



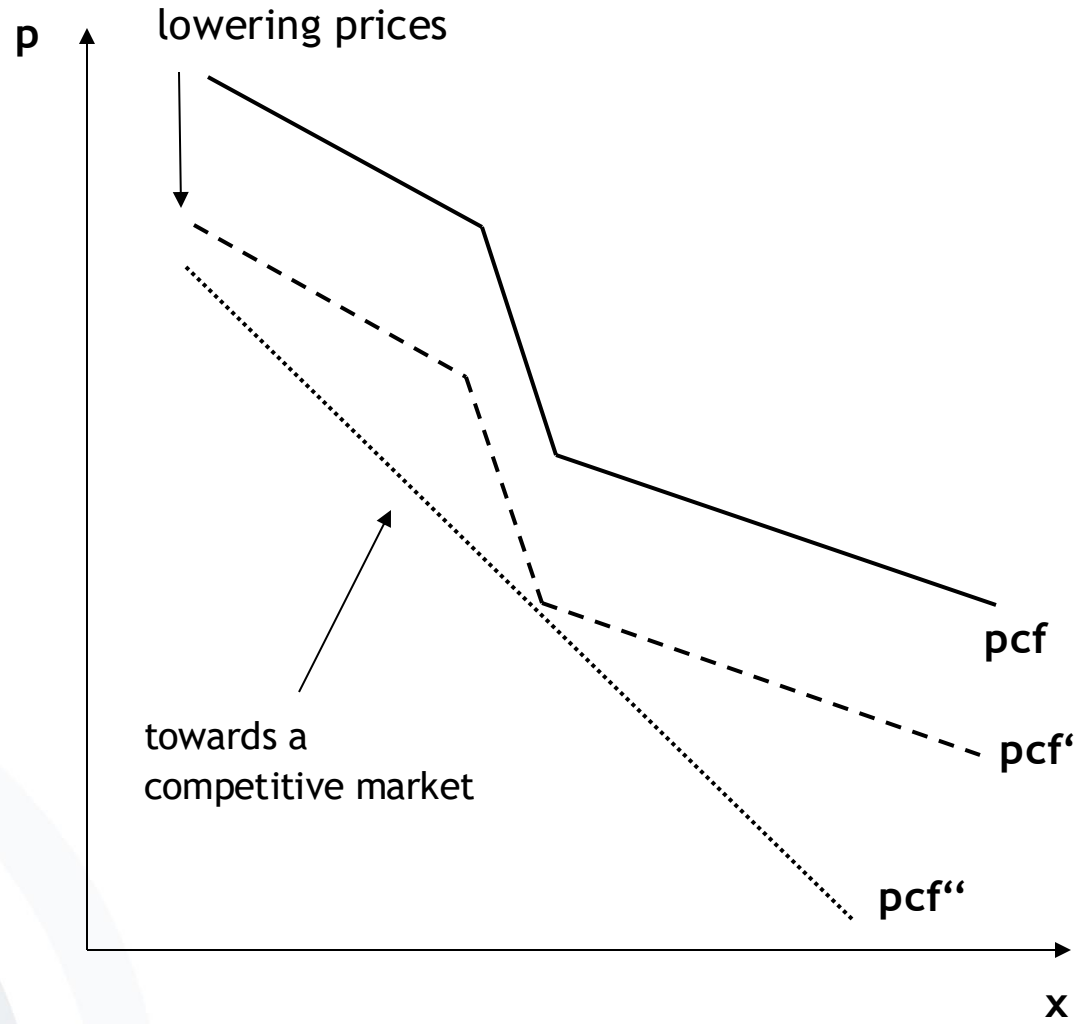
Telefonica Deutschland's E-Plus takeover faced a legal challenge

- 8.6bn € deal announced July 2014
- Set to create one of Germany's largest mobile networks by customer base (not revenue).
- National and pan-European regulatory authorities were worried that consolidation in the market would lead to higher prices and reduced competition to the detriment of German consumers.
- Telefonica had to agree to initially sell 20 percent of the combined network's capacity to Drillisch (German MVNO). Drillisch is able to acquire a further 10 percent in the future.
- The concessions are seen as a way to restore competition, giving smaller network carriers the chance to balance the market.
- German regional wireless operator Airdata has challenged the EU's approval of Telefonica Deutschland's acquisition of E-Plus, saying concessions offered to allay competition concerns did not go far enough.
- The European Commission, which cleared the deal, said it would defend its decision in court. The last successful appeal against a merger finding was in 2002.
- E-Plus LTE network was disabled June 2016.



- Price effect:
 - Increasing number of sellers (i.e. network operators, MVNOs) in an oligopolistic market
➔ causes tendency towards competitive market:
 - The price converges to the marginal costs.
 - The output converges to the economically efficient level.
 - Lower MVNO prices due to lower service costs of MVNOs

MVNO driven change of price-consumption function

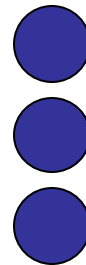
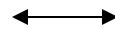


- Also many providers in the second row (e.g. content providers)

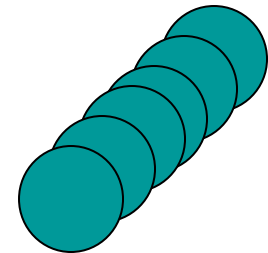
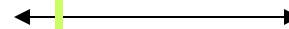
Considered oligopolistic market



Many
customers



Few (mobile)
network
providers

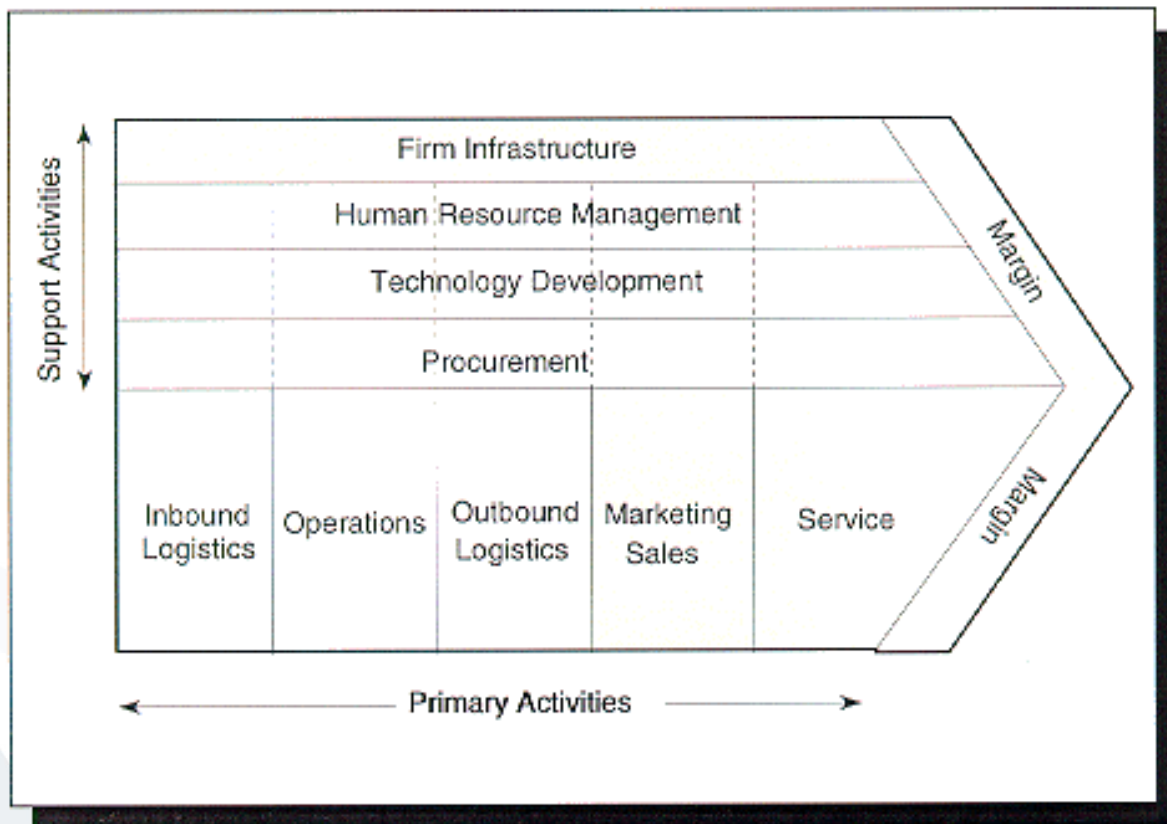


Many content
providers

- Interesting disintegration of 1st-tier-, 2nd-tier-structure
- Increasing contact between 2nd-tier and customer
- “Diversification” of MNO market now?

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- Classical value chain (Porter 1985)

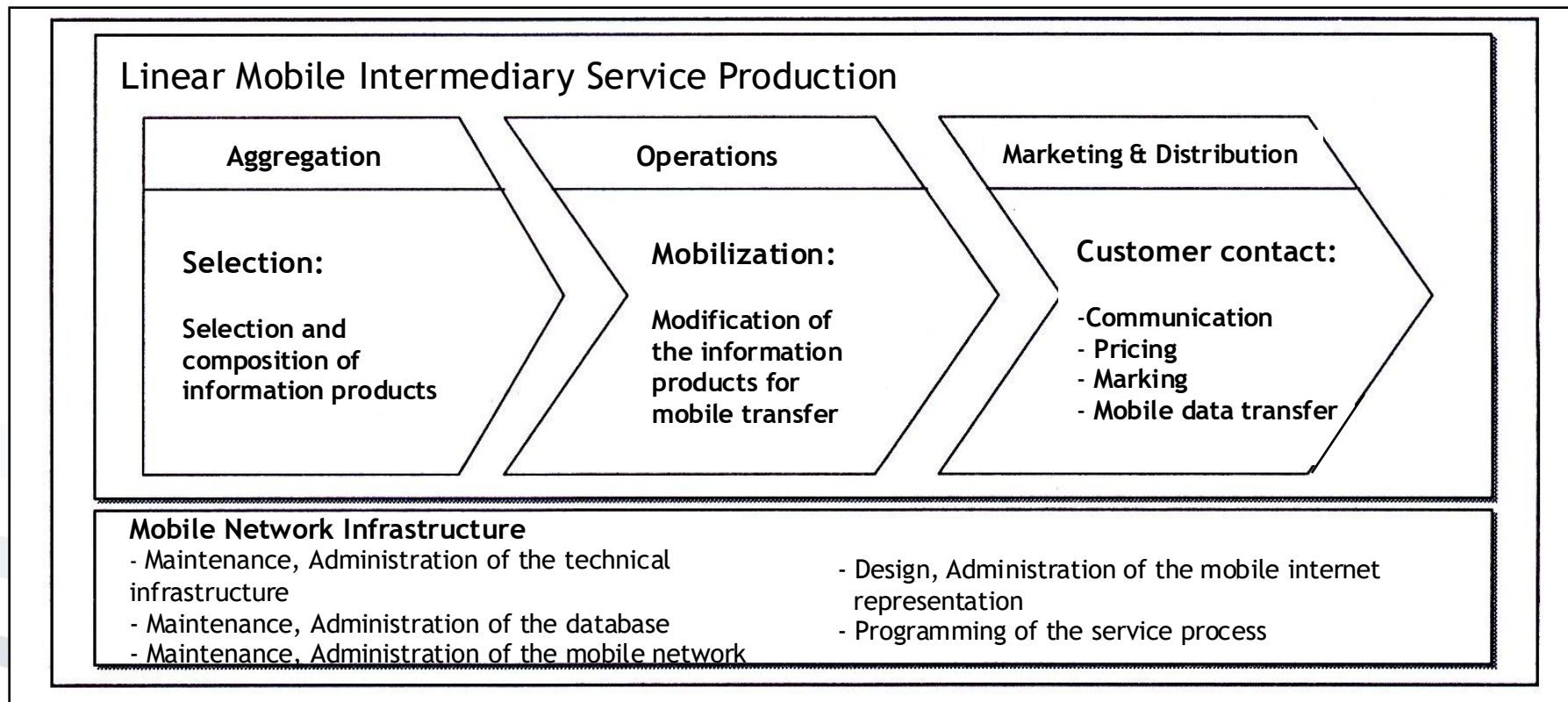


[Porter1985]

- Suitable for illustrating value-adding activities
- Input-output-orientation of the different value chain elements
- Applicable to services? (criticism)
- Mobile segment: Only for linear mobile services (procurement, preparation, sales)

➔ Modification of the value chain

■ Modified value chain



- Suitable for illustrating *linear mobile services*.
- Example:



- However, it is not applicable to networked intermediary service settings
- ➔ “Value creation network” or “value network”

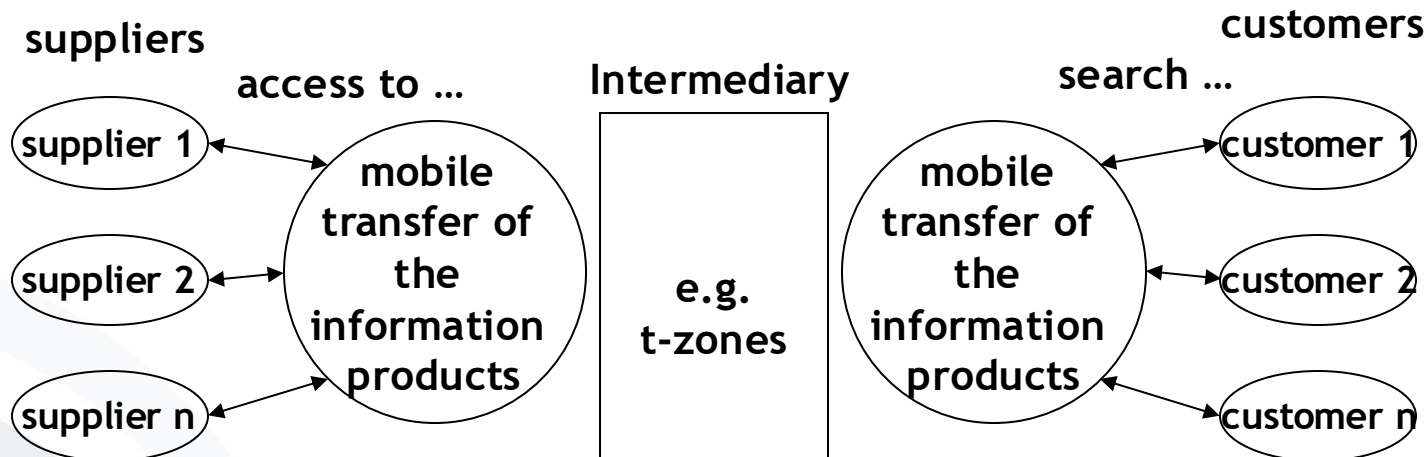
Value network

[ReicMeieFrem2002]

Network Marketing

- Acquisition of network members (information product customers and suppliers)
- Promotional activities
- Charging

Networked Mobile Intermediary Service Production



Mobile Network Infrastructure

- Maintenance, administration of the technical infrastructure
- Maintenance, administration of the database
- Maintenance, administration of the mobile network
- Design, administration of the mobile internet presentation
- Programming of the service process

- Example: Community-approaches, dating, ...



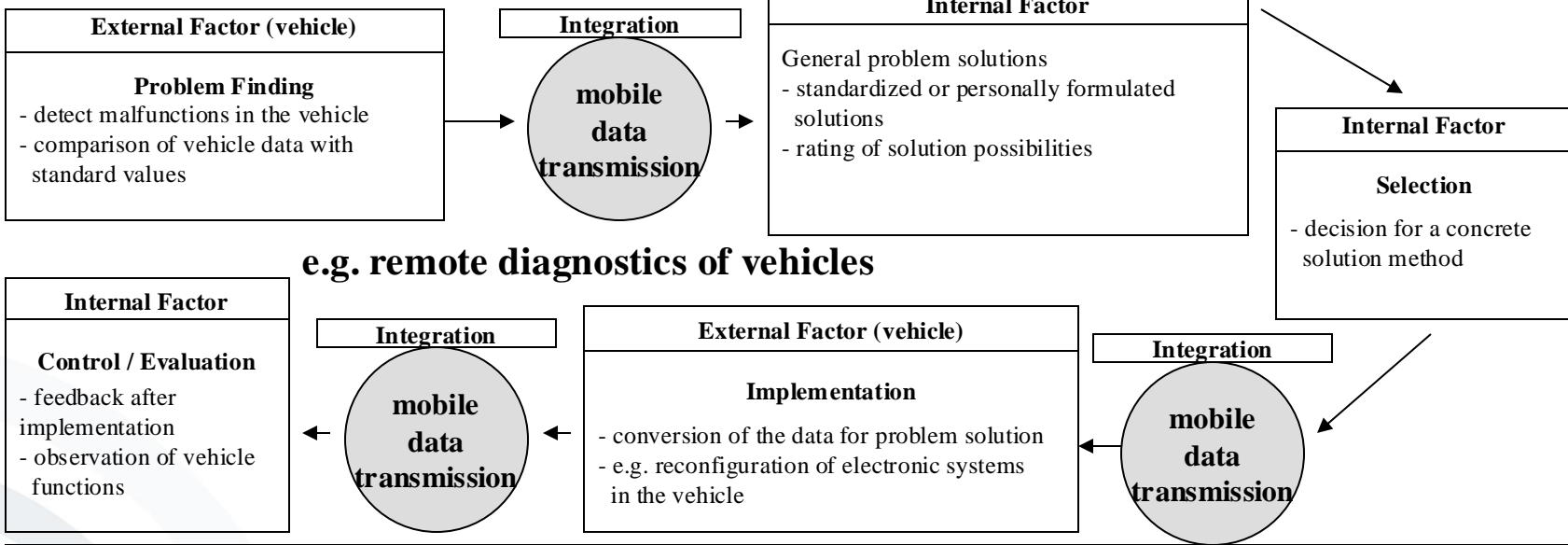
- One of the unique benefits of taking Match.com's dating services mobile is **the ability to match members based on their physical location**. Initially, matches will be made based on the user profile zip code but in coming months, the service will be enhanced with location-based technology. This means match.com users can locate their matches within an approximate geographical location automatically **using their mobile device**.

Value added shop [ReicMeieFrem2002]

Network Marketing

- Acquisition of network members (information product customers and suppliers)
- Promotional activities
- Charging

Mobile Service Production

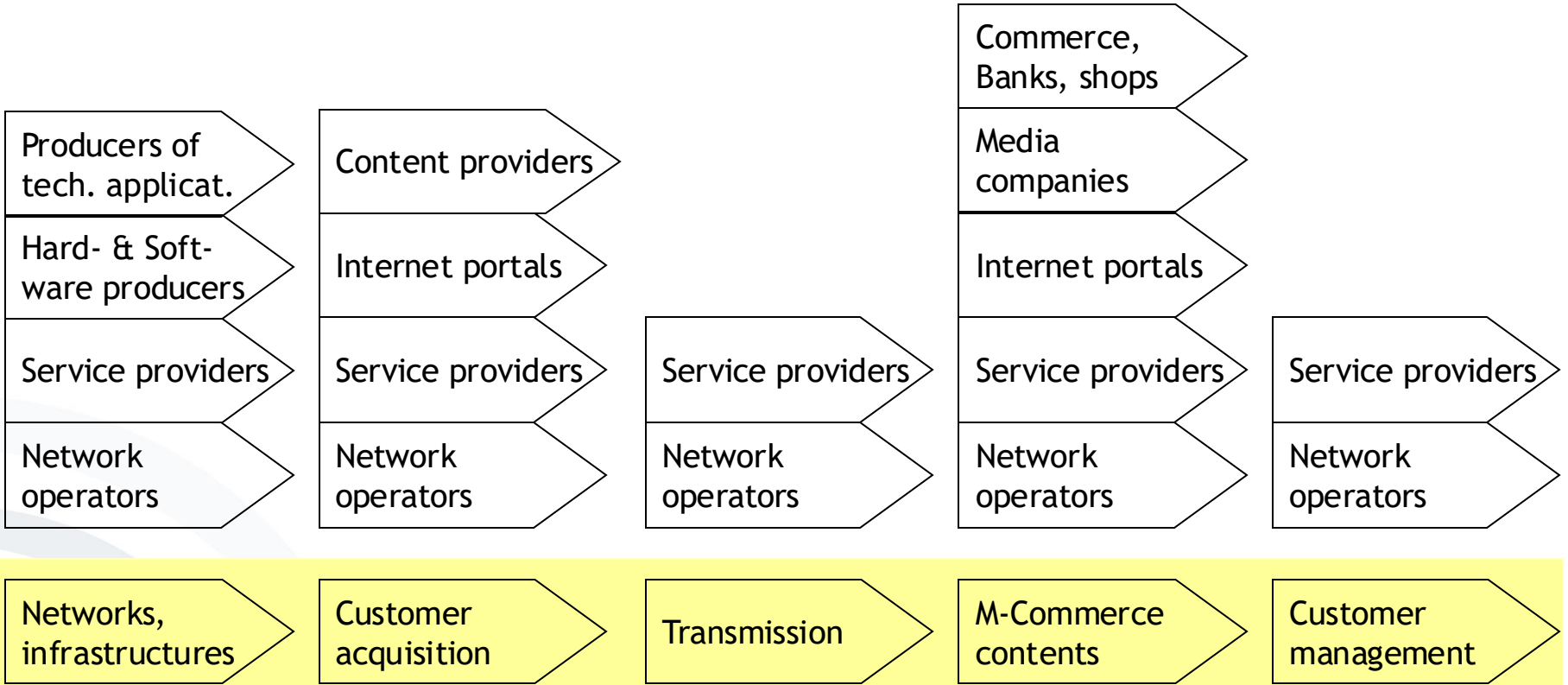


Mobile Network Infrastructure

- Maintenance, administration of the technical infrastructure
- Maintenance, administration of the database
- Maintenance, administration of the mobile network
- Design, administration of the mobile internet appearance
- Programming of the service process

- The presented classification is just **one possibility**
- Further example:
Mobile value chain [PicotNeuburg2002]

- M-value chain



[PicotNeuburg2002]

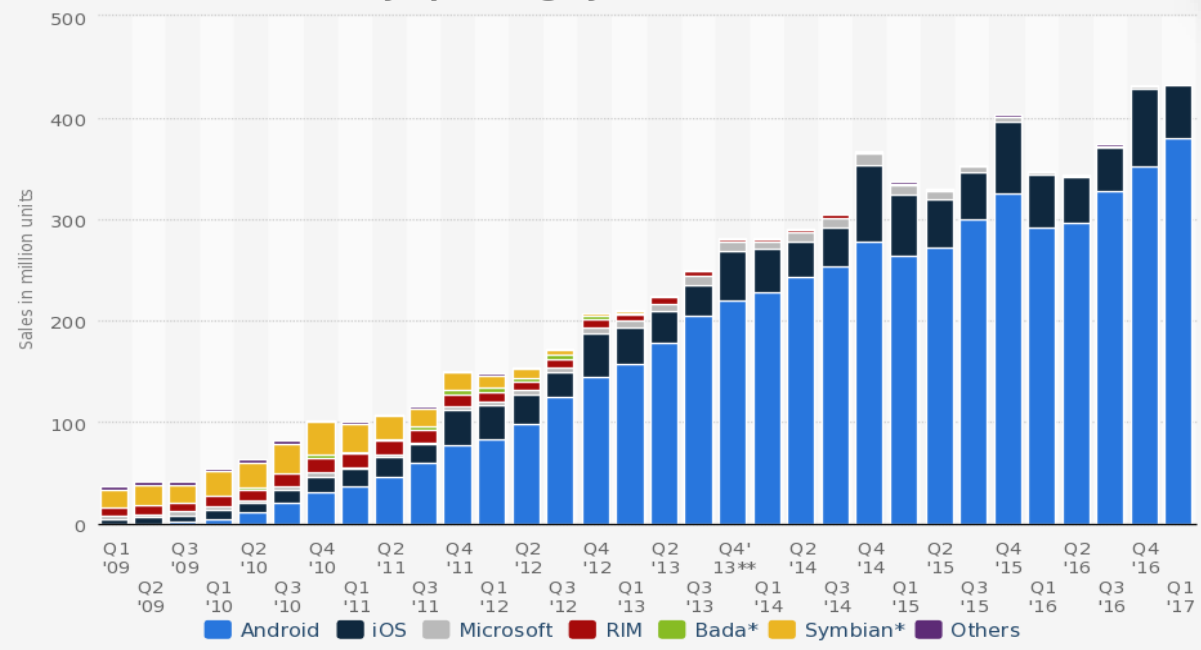
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Mobile Internet Market Android vs. iOS Market Share

- Android market share increased rapidly.
- Android has overtaken iOS already in Q2'10
- Global sales keep increasing in 2016



Global smartphone sales to end users from 1st quarter 2009 to 1st quarter 2017, by operating system (in million units)

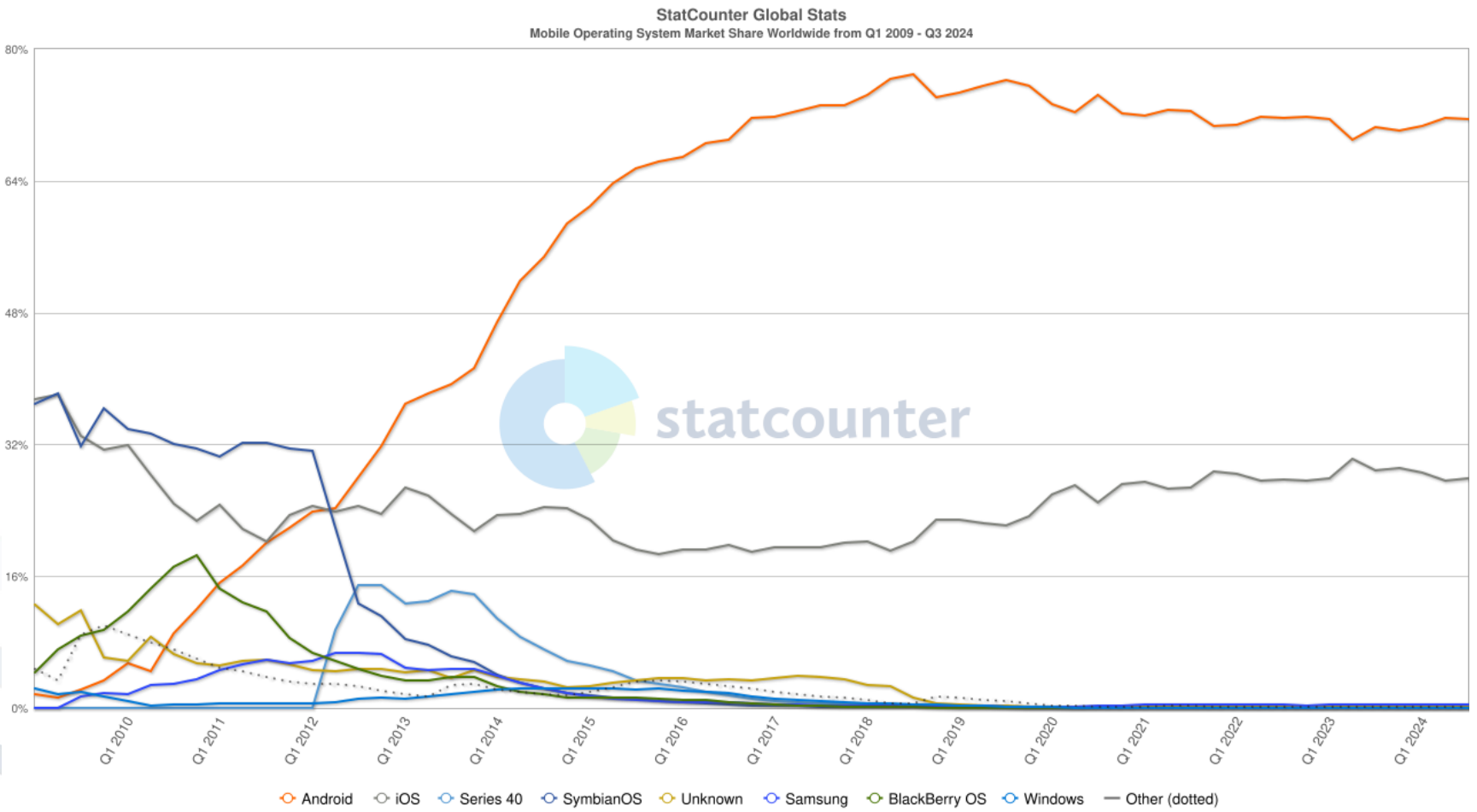


Source: Gartner © Statista 2017

Additional Information: Worldwide; Gartner; 1st quarter 2009 to 1st quarter 2017

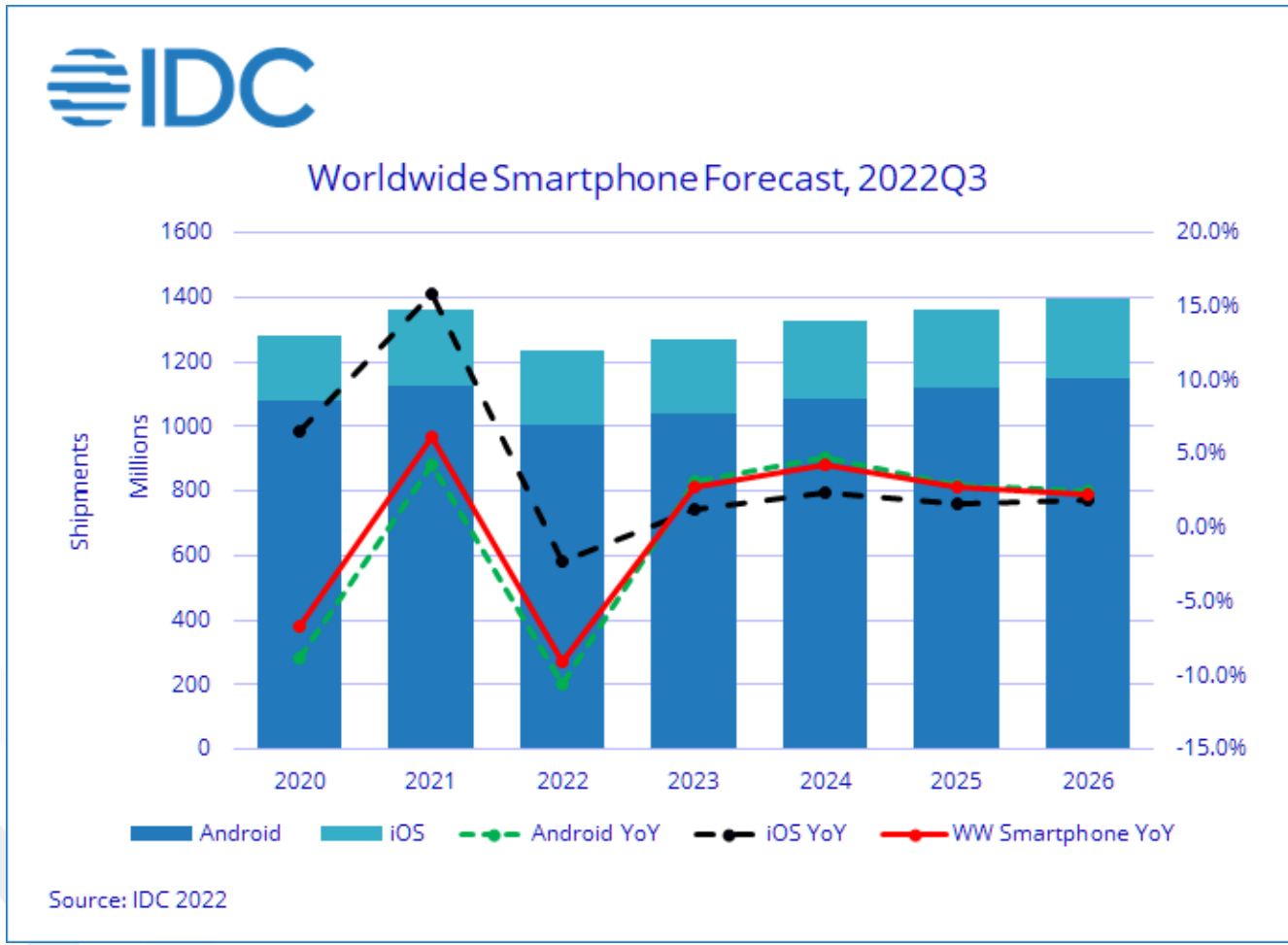


Worldwide Smartphone Sales to End Users by Operating System (2010-2024)



Mobile Internet Market Forecast

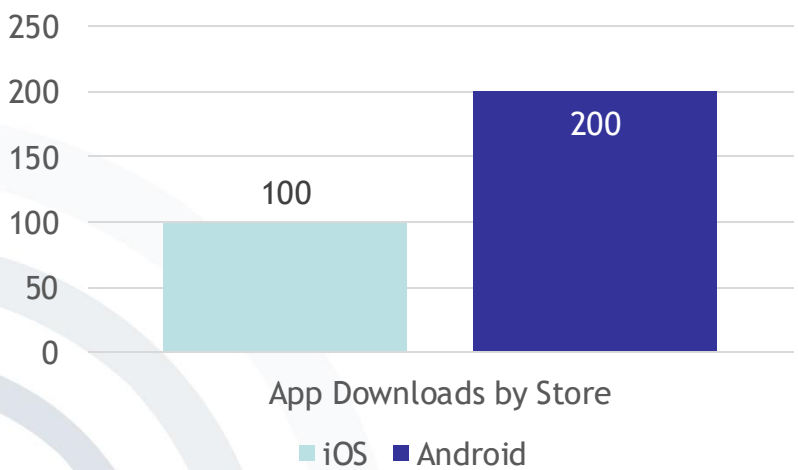
Android vs. iOS Market Share



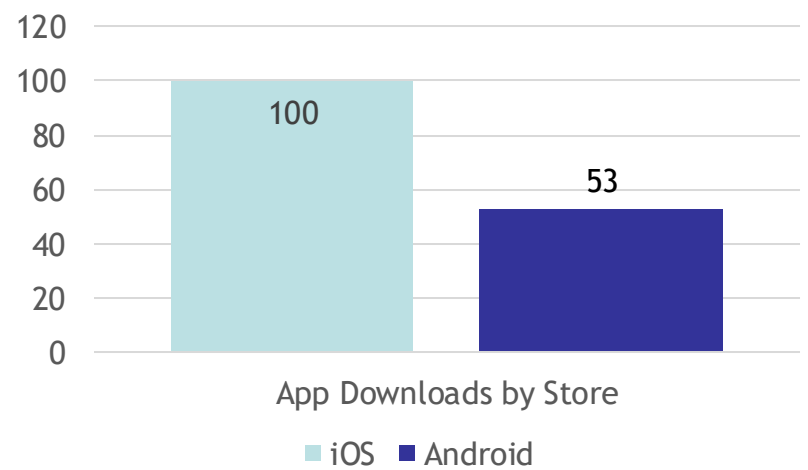
But: iOS is still ahead in App Revenues

- Google Play has more app downloads
 - 100% more than Apple Store in Q1 2016
- Apple Store generates more revenue
 - 90% higher than Google Play in Q1 2016

Indexed App Downloads by Store
Q1 2016



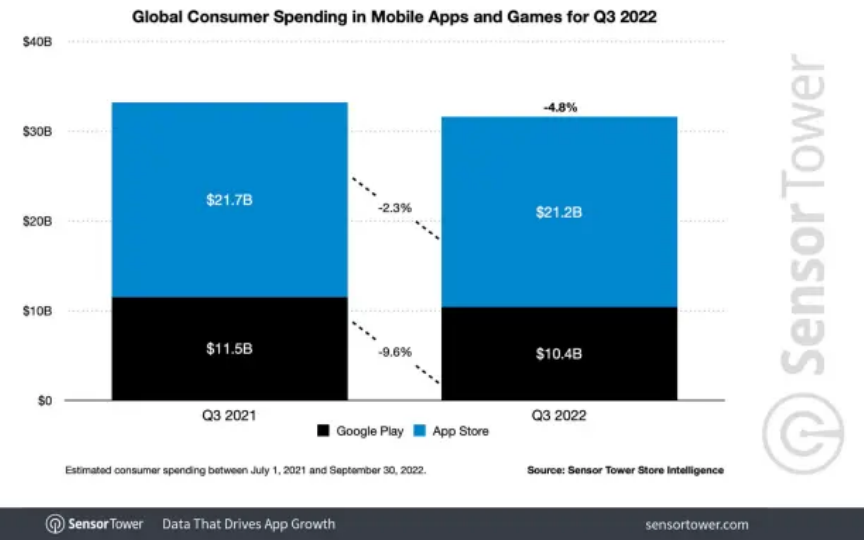
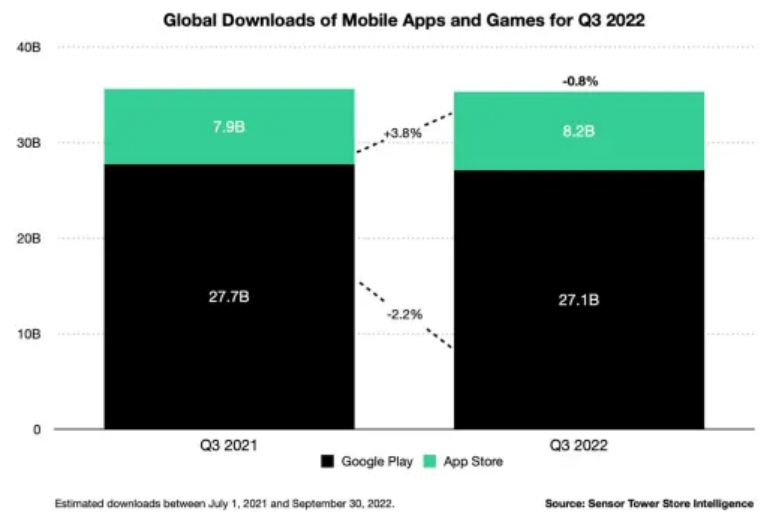
Indexed App Revenue by Store
Q1 2016



Source: App Annie Index™ Market Q1 2016

But: iOS is still ahead in App Revenues by Q3 2021/22

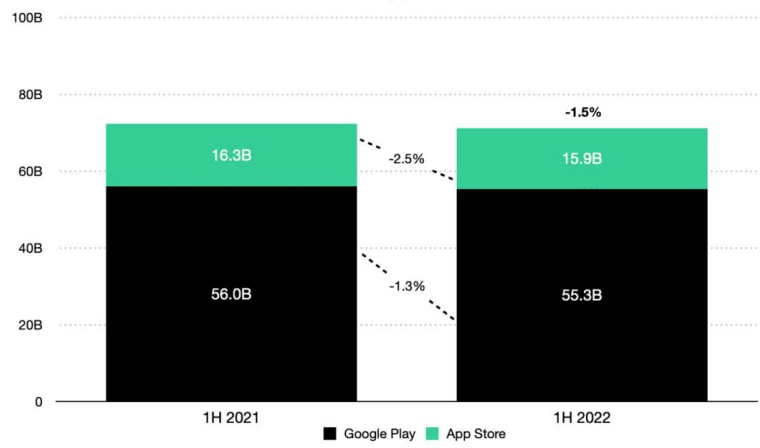
- Google Play has more app downloads
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But: iOS is still ahead in App Revenues by 1H 2021/22

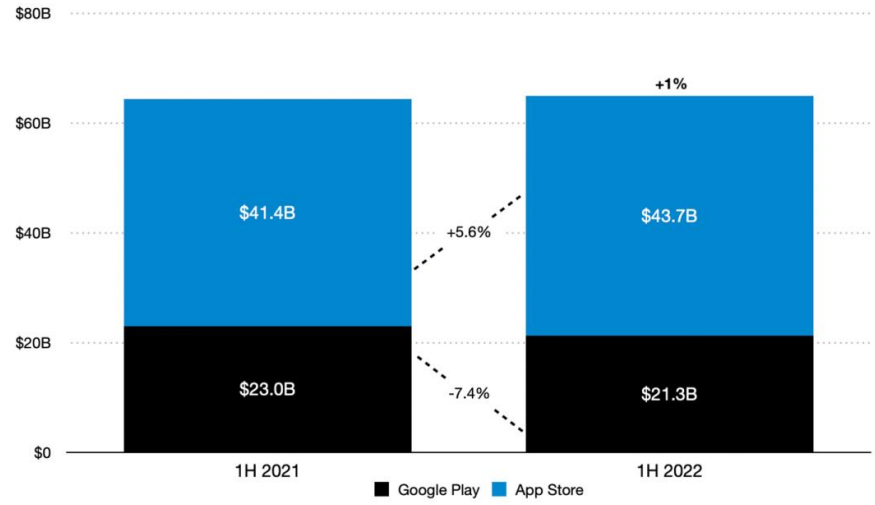
- Google Play has more app downloads
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Global Downloads of Mobile Apps and Games for First-Half 2022



Estimated downloads between January 1, 2021 and June 30, 2022. Source: Sensor Tower Store Intelligence

Global Consumer Spending in Mobile Apps and Games for First-Half 2022



Estimated consumer spending between January 1, 2021 and June 30, 2022. Source: Sensor Tower Store Intelligence



- Mobile platform for selling content, services (Apps) and hardware
- Offering channels against the *everything is free* culture of the internet
- Tried entering advertising market with iAd (discontinued 2016)

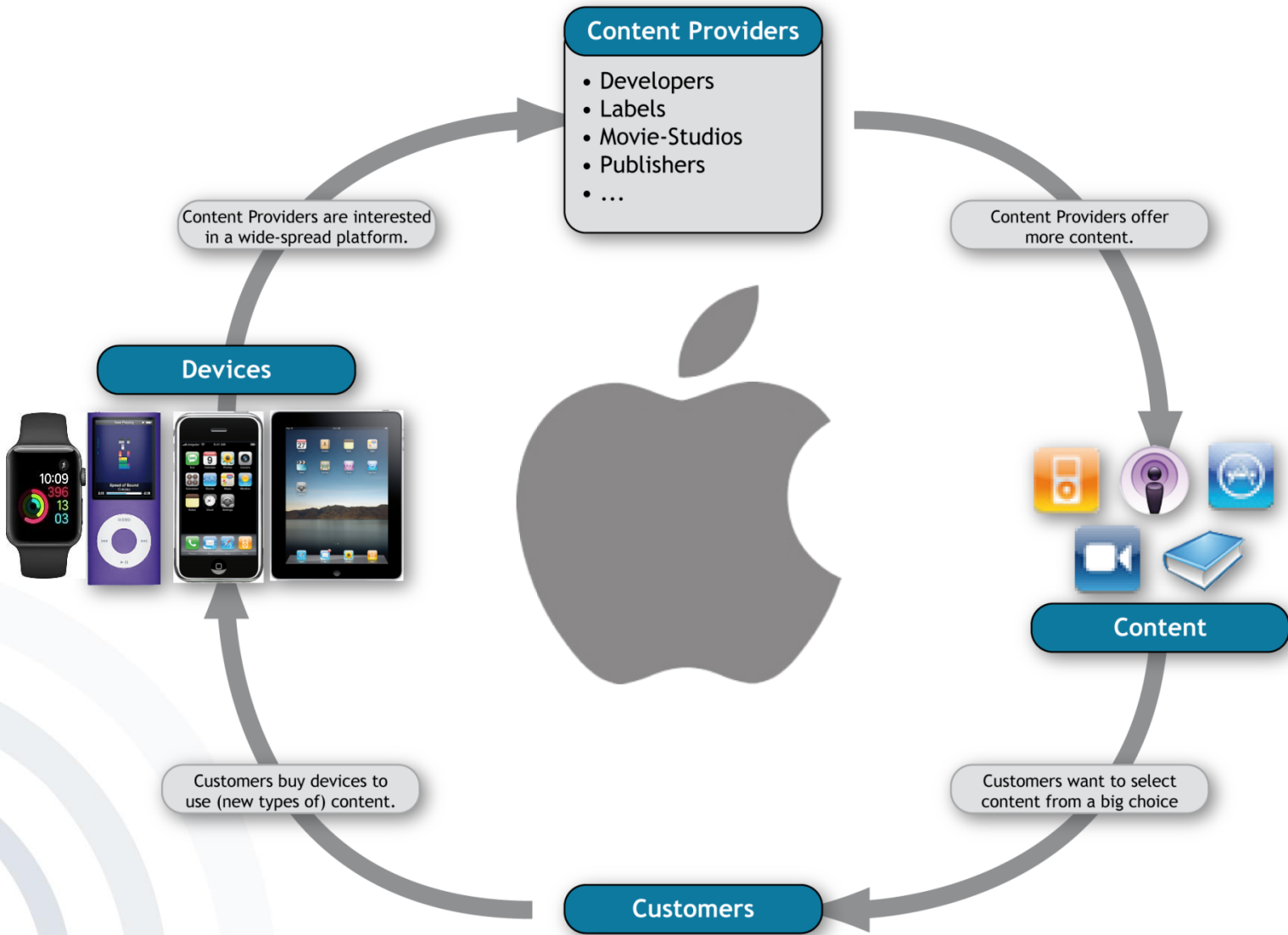
Mobile strategy of Apple and Google (1)



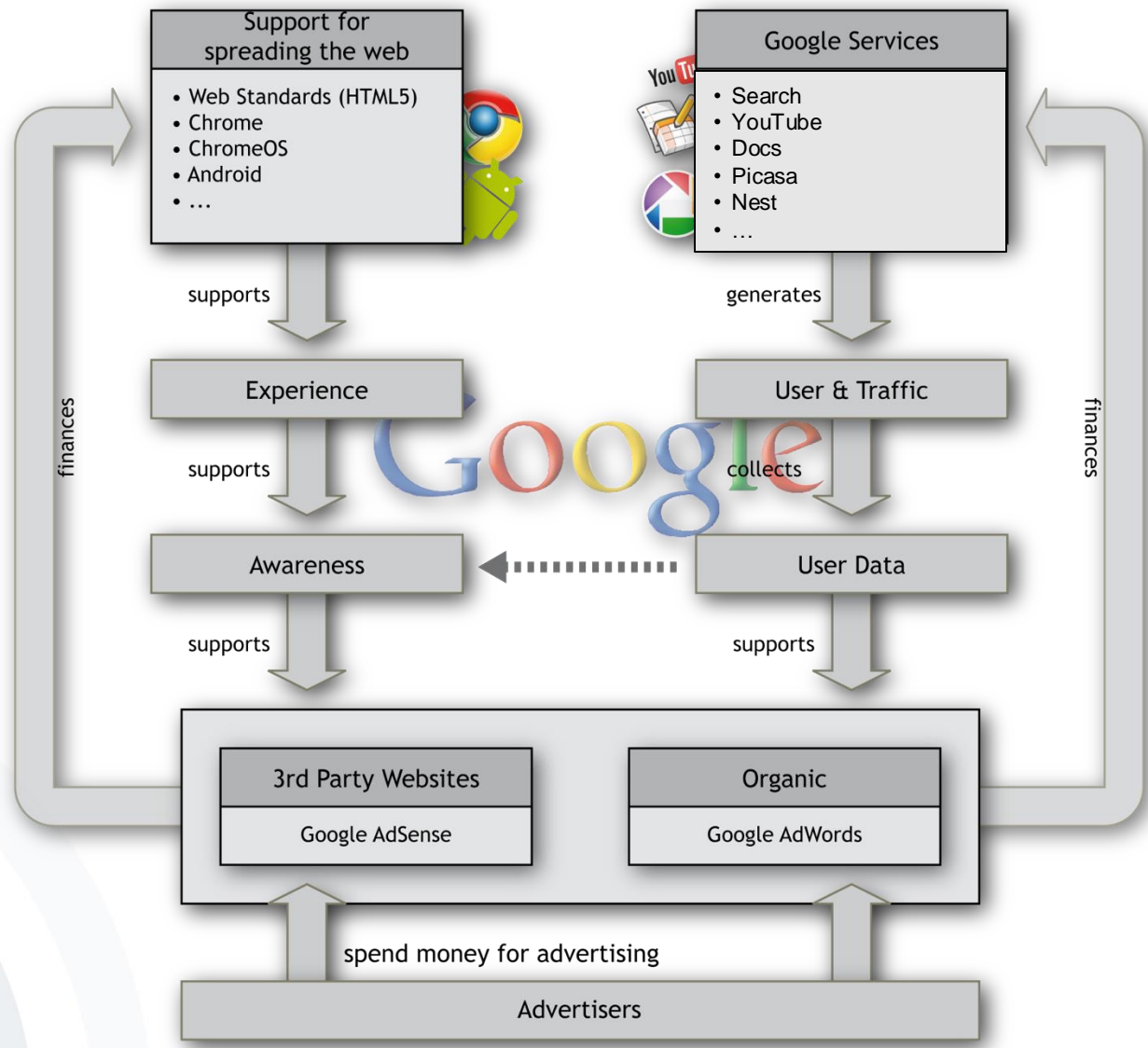
- „*Mobile First*“
 - Eric Schmidt, CEO Google
- Having control over which Search Engine is used on mobile devices
- Making the mobile web attractive to build new *advertising pillars*

- Like Microsoft for desktop computers Android as a rather non-restrictive platform will become a major player on the mobile market.
- Android can profit from Apple's restrictive strategy, but can also be affected by Google's bad image.
- There will not be a monopoly or duopoly on the mobile OS market.
- With the rising complexity of mobiles the challenge will be recognizable trustworthiness.

Apple's economic cycle



Google's economic cycle



Future of Mobile (Web) Apps

- Mobile Browsers are likely to gain access to more OS core functionality (e.g. 3D graphics processing; location API already available).
- The trio HTML 5, CSS, JavaScript is expected to further improve the graphical user interfaces (GUIs) towards native mobile apps as well as to provide more platform independence.
- Consequently, it is likely that Mobile Web Apps will be the future dominating application type in the mobile ecosystem.
- Possible consequences for the mobile ecosystem
 - Specific mobile platforms and app markets become less relevant in the mobile market.
 - Reduced market power of app market operators such as Apple
- However, other devices like smartwatches contribute to the dominance of mobile apps.
- How would/will Apple, Google & Co. react to this scenario?

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