



Hochschule für  
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# Digital Platform Strategy

## A Theory Primer with Selected Conceptual Add-ons

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# Digital Platform Strategy – A Theory Primer with Selected Conceptual Add-ons

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## Biographic Note

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## Executive Summary

This primer is intended to serve as a **background text** for a 'platform chapter' in Bachelor or Master level courses on Strategic Management. While the '**traditional firm**' can be described as a value-adding chain (Pipeline), **platform businesses** 'invert' production and consumption to the outside and in essence 'manufacture' transactions. The constitutive drivers of the platform competition and the platform economy are **network effects** which come in different types and varying geographic reach. There is a very wide variety of different types of platform businesses, however on a fundamental level it makes sense to distinguish **transaction** (exchange) and **innovation** (maker) platforms.

'**Platform strategy analysis**' is still at an early stage, it is focused on '**single platforms**', and it is still a 'moving target'. The **large dominant players** like *Google, Amazon, Microsoft, Apple* and others expand and defend their dominant positions through complex '**multi-platform strategies**'. Early-stage platform **Start-ups** on the other hand must overcome the '**chicken-or-egg**' problem with various strategies and tactics. In the **internationalization strategy of platforms** two archetypes, **country-by-country** (or multidomestic) and **global** (globally integrated) **strategies**, prevail in platform markets. There is a need for **platform regulation** by governments and the EU in five different domains: antitrust policy, publishing (hate speech, fake news), data ownership/privacy, labour market, tax avoidance.

## Zusammenfassung

Das Paper ist als **Hintergrundtext** für ein Plattformkapitel in Bachelor oder Masterkursen zu 'Strategischem Management' intendiert. Das '**traditionelle Unternehmen**' kann als Wertschöpfungskette (Pipeline) verstanden werden (mit Inputs, die über verschiedene Stufen zu Outputs verarbeitet werden). **Plattformunternehmen** dagegen externalisieren Produktion und Konsumtion und 'produzieren' vor allem Transaktionen. Konstitutive Treiber des Plattformwettbewerbs sind **Netzwerkeffekte** verschiedener Art und mit unterschiedlicher räumlich-geographischen Reichweiten. Es gibt eine große Vielfalt verschiedener Typen von Plattformunternehmen, ganz grundsätzlich kann man aber **Transaktions-** (Austausch-) und **Innovations-** (Produzierende-) Plattformen unterscheiden.

Die **Strategieanalyse von Plattformen** ist immer noch in einem frühen Stadium, sie ist fokussiert auf die isolierte Betrachtung **einzelner Plattformen** und unterliegt ständigen Veränderungen. Die großen Plattformspieler wie Google, Amazon, Microsoft, Apple und andere expandieren und verteidigen ihre dominante Position durch komplexe '**Multi-Plattformstrategien**'. Plattformen in der Start-Up Phase müssen das '**Henne-Ei-Problem**' mit verschiedenen Strategien und Taktiken überwinden. Hinsichtlich der **Internationalisierung** von Plattformunternehmen lassen sich zwei Archetypen unterscheiden, **Land-für-Land** (oder multilokale) und **globale** (global integrierte) Strategien. Notwendige **Regulierungsmaßnahmen** seitens der Regierungen und der EU betreffen fünf verschiedene Bereiche: Wettbewerb und Kartellrecht, Veröffentlichung und Medien (Hassrede, Falschnachrichten), Datenschutz, Arbeitsmarktregulierungen und Steuervermeidung- oder -hinterziehung.

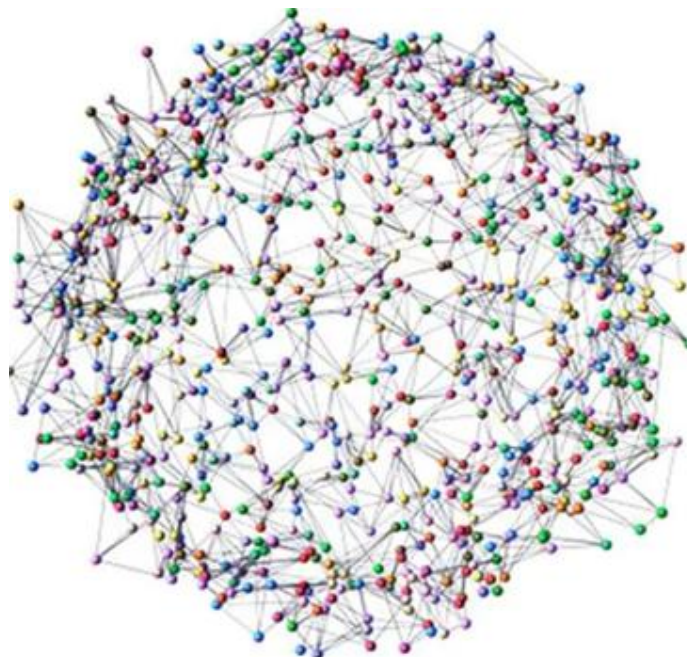
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## Executive Summary

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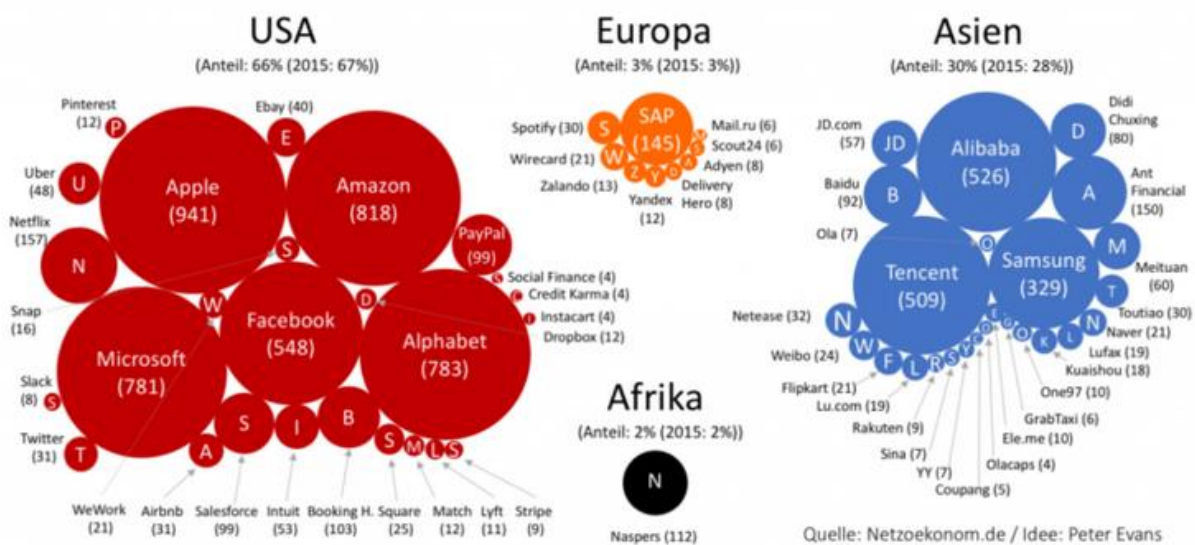
Source of Graphic: Voyles (2015)



# 1. Introduction: the ‘Platform Economy’

**“Platforms beat pipelines. Network Effects power platforms” (MIT 2022)**

In the last two decades digital platforms have become a dominant form of business often at the expense of the traditional forms of vertically integrated companies (‘pipelines’). This has given rise to the notion that we live in the age of the **‘platform economy’**. While platforms come in many different forms, shapes and geographic reach the **‘platformization’** of the world economy has been led by the United States and more recently by China whereas Europe



**Exhibit 1:** The World’s 60 most valuable platforms in bn USD, 2018. Source: Schmidt (2019)

lags very much behind (see exhibit 1).

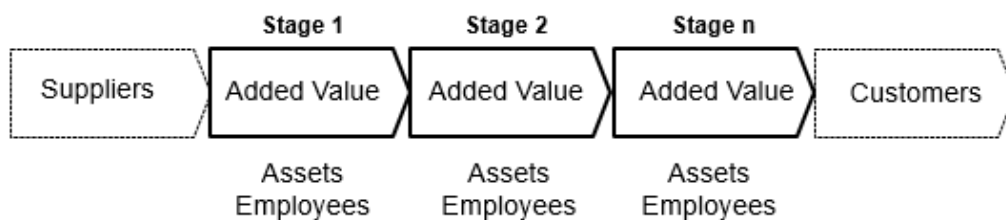
The huge variety and complexity of platform businesses comprises large ‘multi-platform’ players like *Apple*, *Amazon* or *Tencent*, a myriad of medium or small platform companies like the doctor’s appointment platform *Doctolib* which operate in one or in only few countries, and also platforms limited to only one city which are generally less well known. While most of these platforms operate in the **consumer space** (B2C), platformization in the **B2B** space has been ‘catching up’ in the last decade. Examples are *Microsoft* as an early platform player with a strong business focus, procurement platforms like *Mercateo*, or German IoT-platforms run by *SAP*, *Bosch* or *Axoom* to name only a few (Mauerer 2020).

There is a large body of literature on **‘Business and Corporate Strategy’** and of teaching material on **‘Strategic Management’** spanning over more than 60 years with the pivotal works of Michael Porter providing an outside-in and of Barney and many others an inside-out (resource-based) strategy perspective (Porter 1980, Barney 1991). Most of the analytical frameworks, models and tools of this ‘traditional’ strategy texts have as their underlying core model the **vertically integrated firm** which controls the value-adding stages of its value chain. The analytical models, frameworks and tools are often not applicable, need to be adapted or put in perspective in order to provide utility in the **strategy analysis of platform businesses**.

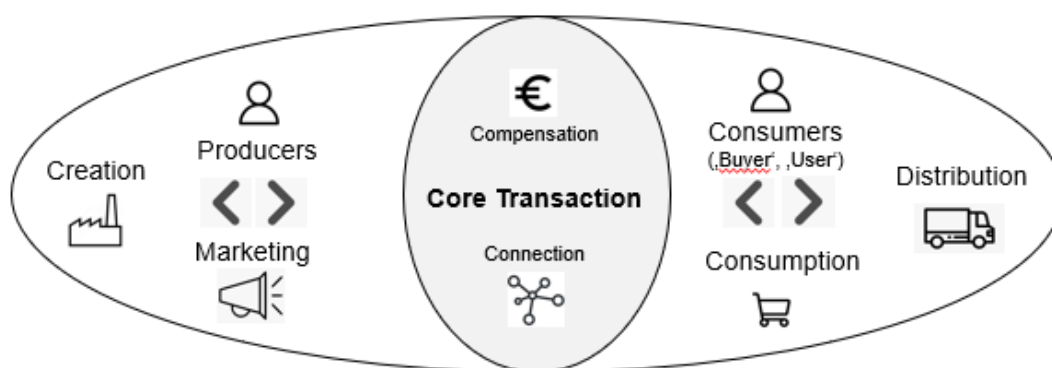
Although there is a growing body of literature, blogs and white papers on digitalization and **platform strategy** (e.g Cusumano et al 2019, Parker et al 2016), or on platform ecosystems seen as organizational forms between ‘hierarchy’ and ‘markets’ (Kretschmer et al 2020), the understanding of the changes in strategizing in both theory and practice is still in an early stage (Menz et al, 2021, 1706). The following primer does not aim to contribute to closing this research gap, but to provide selected fundamentals on platforms and strategy as well as some conceptual considerations as a basis for classroom discussions and for a deeper analytic investigation into concrete case studies.

## 2. Platforms versus Pipelines (‘Traditional Businesses’)

How do the business models of traditional companies and platform companies differ in a general perspective? The principal difference can be found in the way in which **value is created and captured**. The value creating and capturing process in **traditional business** is best represented as a value chain of integrated stages (Exhibit 2). The company buys inputs from suppliers and then adds value (increases the benefits of the product or service while incurring cost) in each stage of the value chain. Usually, it owns the means of production (assets) and employs the personnel needed for each step in the chain. At the end it offers a product or service which has a (perceived) value for the customer. The value capture by the focal company (‘profit’) is then dependent on the price it can charge and the overall costs it has incurred. If the company wants to expand, it has to add assets and employees which can then process the increased inputs it has procured.



**Exhibit 2:** The ‘classic’ value chain model of the firm: linear (‘pipeline’). Source: author



**Exhibit 3:** The principal features of platform businesses. Adapted from Diconium (2019), 5

A **digital platform company** usually does not own the (physical) assets which are exchanged at its platform and value arises principally from a ‘core transaction’, a **matching** between two parties (users among each other or users and producers), see exhibit 8. Platforms, one could say, ‘manufacture’ transactions. The matching is based on an information good regardless of



whether the whole consumption process is digital (as in the case of YouTube videos for instance) or whether it involves physical goods or services which are delivered outside of the platform (as for goods bought in *Amazon's Market Place* or flats rented via *Airbnb*).

Jiang, Parker and Alstynne coined the term '**inverted firm**' to reflect these particular properties of platform companies (Jiang et al 2017). By shifting innovation and production from inside the company ecosystem to partners these types of companies scale a lot faster than 'pipeline firms' as they just grow by adding partners, often in an automatised way through APIs. So, third parties perform the rides for Uber, create the web pages delivered by *Google*, create the posts on *Facebook* and the apps on Android or iOS. Whereas in pipeline businesses value (e.g., the value of your produced stock of goods) decreases through sales and use, the platform value proposition increases as more users are added and use the matching function. In a way platforms 'harness users as producers representing an external labour force' (Jiang et al 2017).

While there is a principal difference between the businesses model of pipelines versus digital platforms there is sometimes confusion as big platform companies often **combine** both models. *Amazon* started out as an **online retailer** (this part of its business is now called *Amazon Vendor*) and added a **platform business** later (*Amazon Marketplace*) as did for instance *Zalando* with the *Zalando Partner Programme* (see for an analysis for instance Dichtl (2021)). Another example for a **combination of pipeline and platform** is *Apple* whose handset business is essentially a pipeline. It is also a platform company as its App store provides a marketplace that connects app developers and iPhone owners (along with offering other platforms within the Apple eco-system).<sup>1</sup>

### 3. Some Basics on Platform Economics

#### 3.1 What are (digital) platforms?

The term '**platform**' has been used already a long time before the public Internet era, in the sense of physical platforms (as in a railway station), of ideological platforms or of product platforms. '**Product platforms**' achieve compatibility and interoperability of components in sophisticated and decentralized technical constructs through technical standards (Steinmüller 2017). An earlier application of '**platform strategy**' in the product platform sense has been pursued for example in the automotive industry with the standardization of different modules and technological inputs to build different car models on one or more platform(s). Volkswagen AG was one of the forerunners of this approach in the 1990s by combining a variety of customer facing features of automobiles with economies of scale in relevant common component inputs.

The direct forerunners of today's **digital platforms with network effects** (before the advent of the 'digital world' and of the Internet) are businesses based on networks where several parties are matched. Examples are for instance credit card companies, telephone networks or catalogue retailers. However, the 'digital transformation', the advent of the Internet and of mobile devices eventually provided the basis for the rise of '**Digital Platforms**' and their related ecosystems so that today they have become a dominant form of business organization and competition.

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<sup>1</sup> In the Apple case, in the case of Amazon and even more in cases of pipeline cum platform companies in the industrial sector the assumption that platform businesses are 'asset light' concerns only the platform itself, but not the whole company as they operate 'asset heavy' beyond their platforms (like for instance warehouses, design centres, component manufacturing and so on). See also the typology by Evans & Gawer (2016), 14

From the plethora of definitions of ‘**digital platforms**’ in a **business perspective** the following broad one by Parker et al is selected:

*“A [digital] platform is a business based on enabling value-creating interactions between external producers and consumers” (Parker et al 2019, 5; [...] added by GB).*

The term ‘producers’ should be understood in a broad sense (e.g., of videos, rental homes, services of all kinds, news, apps, but also of data), and companies or institutions as well as individual consumers are included under the ‘consumer’ term.

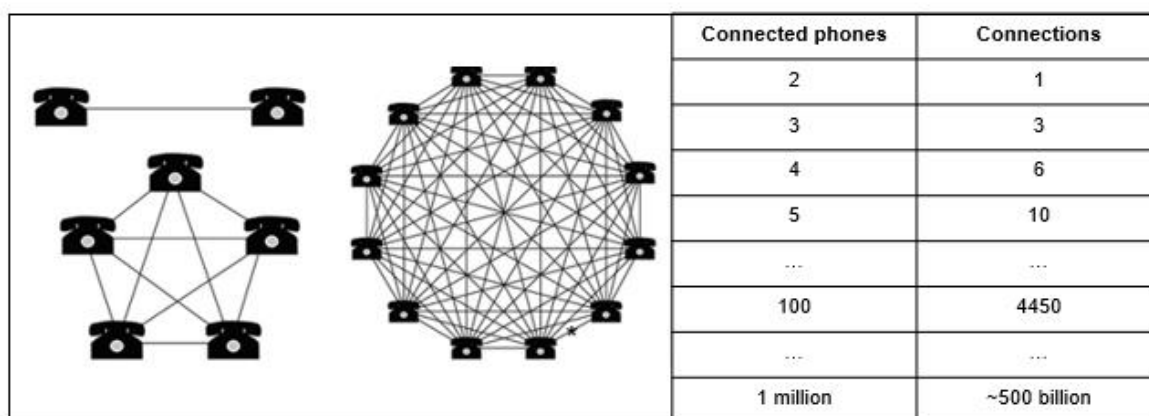
While digital platforms can exist as relatively simple transaction/exchange devices they usually form the foundation of complex **(platform-based) digital ecosystems**. The term ‘eco-system’ is borrowed from biology and ecology where it refers to physical and biological components of an environment considered in relation to each other as a unit. For the business sphere, based on a comprehensive synthesis of the literature, Hein et al. propose the following definition:

*“A digital platform ecosystem comprises a platform owner that implements governance mechanisms to facilitate value-creating mechanisms on a digital platform between the platform owner and an ecosystem of autonomous complementors and consumers” (Hein et al 2020, 90).*

### 3.2 The Network Effect in Principle

The main reason and driver for the fast expansion of the ‘platform economy’ is the **network effect**<sup>2</sup>. While network effects are not new the digital transformation and the advent of the Internet **facilitated the digitally enabled (frictionless) coordination and ‘orchestration’** of large numbers of participating actors and thus provided a new base for the rapid proliferation of businesses which grew on the back of exploiting network effects.

A network effect occurs when the value or utility of a product or service increases as the number of users grows. The simplest and most widely illustration of the concept is given by the network effects in a simple phone network.



**Exhibit 4:** A phone network – calculation based on ‘Metcalfe’s law’. Source: adapted from Wikipedia (n.d.)

The network effect was popularized by Robert Metcalfe (a co-inventor of the Ethernet and co-founder of the company 3Com) who formulated ‘Metcalfe’s law’<sup>3</sup> with the following equation for

<sup>2</sup> Economists often prefer to talk of (positive or negative) ‘network externalities’ (or demand side economies of scale) instead of ‘network effects’ which essentially all mean the same.

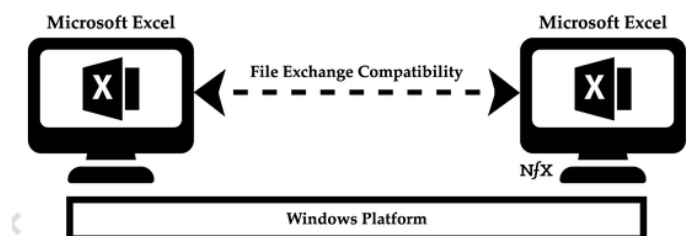
<sup>3</sup> There are different variants of network effect ‘laws’ e.g., as formulated by Sarnoff or Reed or Metcalfe. For the sake of simplicity, this paper sticks here to Metcalfe only.

a phone network:  $V=n(n-1)/2$ .  $V$  means value for the user (equated here with the number of potential connections) and  $n$  means the number of connected phones. It is obvious that the **value for the user** increases geometrically with the number of connected phones (but see for criticism of Metcalf's law for instance Briscoe et al 2006). Network effects can increase in a 'virtual circle' (positive network effects or **positive feedback**) as in the case of the increased value from increased number of phones, but they can also be **negative** which would result in a negative geometrical decrease. Network effects can and often will also change in strength over time or become obsolete for instance if underlying technologies are replaced by new technologies as for instance was the case for VHS-standard videocassettes by optical discs.

### 3.3 Three Types of Network Effects

In a broad sense three basic types of networks effects can be discerned.

(1) **Same side network effects** are **direct network effects** that occur on the same side of a multi-sided network. A well-known example is the *Windows* platform where the file exchange compatibility among window users creates a very strong direct network effect. The number of people you can share files with grows with the number of people using the same platform which make it more and more valuable.



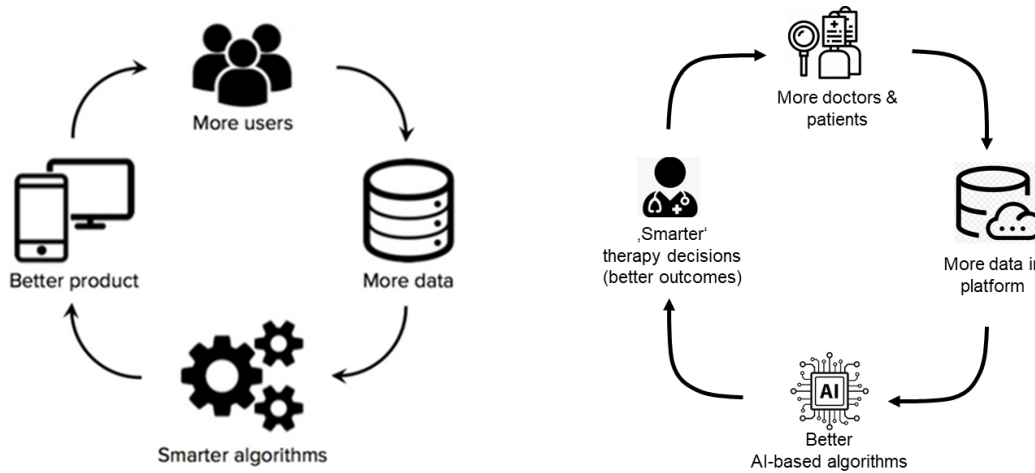
**Exhibit 5:** *Windows* as a platform with direct network effects (Source: Currier 2019)

Other examples of platforms with strong direct network effects among one side of users are for instance the various messenger services or *Facebook* and *LinkedIn*.

(2) **Two-sided** (or N-sided) **network effects** also called **indirect network effects** are between the two sides of a platform, e.g., between producers or suppliers and users. Examples are for instance *OpenTable* with network effects between restaurants and customers, or search users (supplying data) and advertisers on *Google* or App developers and users in *Apple's* App store. Obviously, many of the larger platforms combine direct and indirect network effects such as for instance *LinkedIn* when it connects professional among each other on the one side and offers job offer opportunities to companies on the other.

(3) **Data network effects** (DNEs) are a special (but highly relevant) form which is a more recent advancement of the theory of networks effects. Basically, the idea is that the more a platform or provider learns from the data it collects on its users, the more valuable the platform's services become for each user. In this concept it is not any more the size of the network as the only means of value creation, but the actor's scope for data driven learning (usually powered by machine learning) is crucial for value creation (see Haftor et al 2021 for a comprehensive discussion of this concept).

The concept has been popularized as the 'flywheel' (or 'reinforcing' effects) of the DNE (see Exhibit 6).

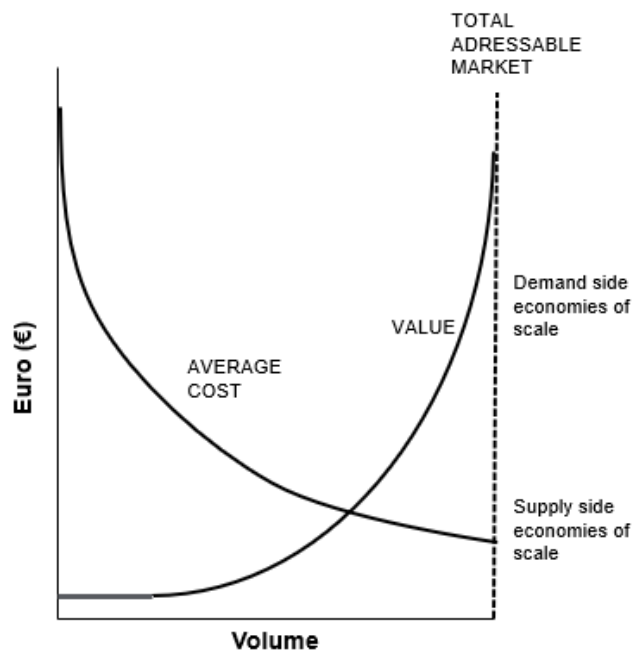


**Exhibit 6:** Data Network Effects – the ‘Flywheel’ in many B2C markets and principal DNE in the healthcare space (Source: CB Insights 2021, and own graphic)

As the platform gets more data its services can become ‘smarter’ through better predictions of user preferences, recommendations (*Amazon*: ‘products you’ll want to buy’, *Netflix*: ‘movies you’ll want to watch’ or *LinkedIn*: ‘people you’ll want to connect with’). DNE’s play also a growing role in more complex settings such as for instance in healthcare-related data platforms (see principal graphic above), in the automotive industry or in industry 4.0 settings.

### 3.4 Network Effects and Economies of Scale

Network effects are also called ‘**demand side economies of scale**’ as the **value** for the users increases with the number (‘scale’) of users. This must not be confused with the concept of **(supply side) economies of scale** where the average cost of a product falls with the increase in the number of products produced (see exhibit 7). While (supply side) economies of scale have been one of the drivers for the emergence of large multinational corporations in the last century, demand side economies of scale (or network effects) are responsible for the emergence and increasing dominance of the ‘platform economy’.



**Exhibit 7:** Demand side and supply side economies of scale. Source: author

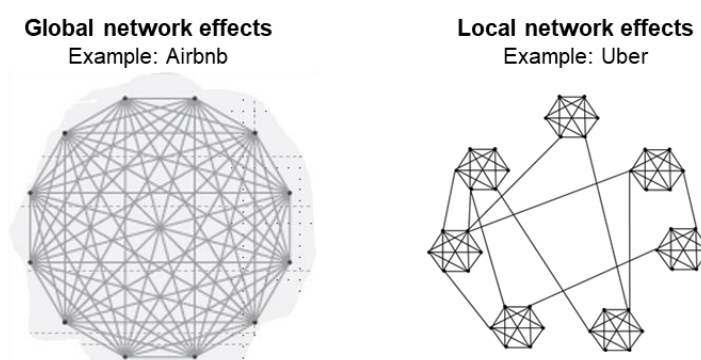
Large platform companies like *Google* or *Facebook* have certainly thrived based on network effects, but at the same time they also enjoy supply side economies of scale as for instance their infrastructure cost or investments in algorithm development is ‘amortized’ over its huge user and partner base (see the illustration in Exhibit 4). This dual advantage provides them with a dominant position which is one of the reasons for the attempts by regulatory authorities and antitrust authorities around the world to contain their market power.

### 3.5 The Geographical Scope of Network Effects

Network effects operate at different geographical levels: local, national, and global network effects, and in-between (see Guillén 2021, pp. 16-20).

**Local network effects** usually occur when co-location or proximity matters. Typical examples for these platforms can for instance be found in ride hailing (*Uber*), physician appointments (*Doctolib*), food delivery (*Just Eat Take Away*, *Delivery Hero*, *DoorDash*), dog walking (*Wag!*) or casual dating platforms (*Tinder*). It is obvious that the matching between passengers and drivers in ride hailing platforms or between restaurants and food buyers occurs at the level of individual cities or regions – so the platform owners have to achieve critical mass and ‘conquer’ the market **city by city** (there are still some effects beyond the city level as for instance users who have installed the respective apps will tend to use it when traveling to other cities – see the stylized example of Uber in exhibit 8).

**National network effects** are at work when users and/or platform partners see value in interacting on the same platform with users from the same country. This is for instance the case for the majority of interactions on job search platforms like *StepStone*, on used-item marketplaces or on telemedicine platforms which often rely on the payment of services by the insurance system of a country so that if a patient would consult with a (non-licensed) doctor from another country this would not be covered. Examples for the latter are *Teladoc* in the US, *Medongo* in India, *Teleclinic* in Germany or *Ping An Good Doctor* in China.



**Exhibit 8:** Global vs local (clustered) network effects. Source: Zhu & Iansiti (2019), 7

**Global network effects** occur in platforms for which distance between the users or users and producers does not play a direct role or is even constitutive as in the case of *Airbnb*, *booking.com*, *Tripadvisor* or *HolidayCheck* (see the stylized example of *Airbnb* in exhibit 8). Other examples are video conferencing (e.g., *Skype*, *Zoom*), messaging (*WhatsApp*, *Telegram*), social media (*Twitter*) or big B2B marketplaces such as *Mercateo*, *Global Sources* or the new industry marketplace *Xcelerator* of *Siemens* (Höpner 2022). Within these global platforms there are of course still regional, national, cultural and language clusters with stronger ‘in-cluster’ network effects.

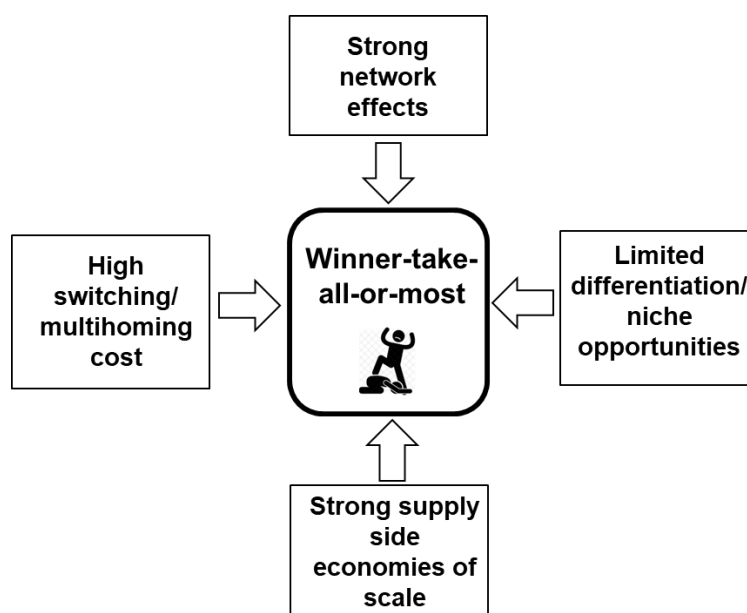
Finally, it should be mentioned that there are **no truly ‘global’** platforms in the sense that they include users from all countries in the world. For one thing there is the ‘Great Firewall’ which isolates the Chinese Internet from the ‘global’ Internet, a practice which is followed by Russia

and other authoritarian states. Therefore, even huge platforms like *Facebook* or *Amazon Marketplace* do not cover all countries in a comprehensive way. *Facebook* is blocked or banned in China, North Korea, Russia, and Iran permanently and in some 20+ countries it was or is being blocked temporarily; *Amazon* operates specific sites in only 13 countries, but ships to more than 100 countries. Therefore, the category of **‘global network effects’** generally means that they extend significantly beyond a single country.

### 3.6 Winner-Take-All Dynamics

Platform competition has often an inherent **winner-take-all (WTA)** dynamic. In the winner-take-all scenario a market tips eventually in favour of one platform which successfully locks-in customers and achieves a monopoly position. In reality, outcome of platform competition has often been ‘softened’ to a **‘winner-take-most’** scenario, or to an oligopolistic outcome. One important influence is **timing** as **early movers** (e.g., at an early stage of the emergence of the Internet) have capitalized on a window of opportunity to establish an early lead. Moreover, the geographic scale of network effects plays a role (see above) here as it is a big difference whether the WTA outcome is achieved locally, or on a regional or global scale.

In general platform markets have a higher likelihood to tip towards WTA and in consequence to very strong positions of incumbents if **four conditions** are given (for a more comprehensive discussion see Cusumano et al, 2019, chapter 2). First, the market in question should allow to exploit **strong network effects** – there are markets where this is more, or others where this is less the case. Here the geographic



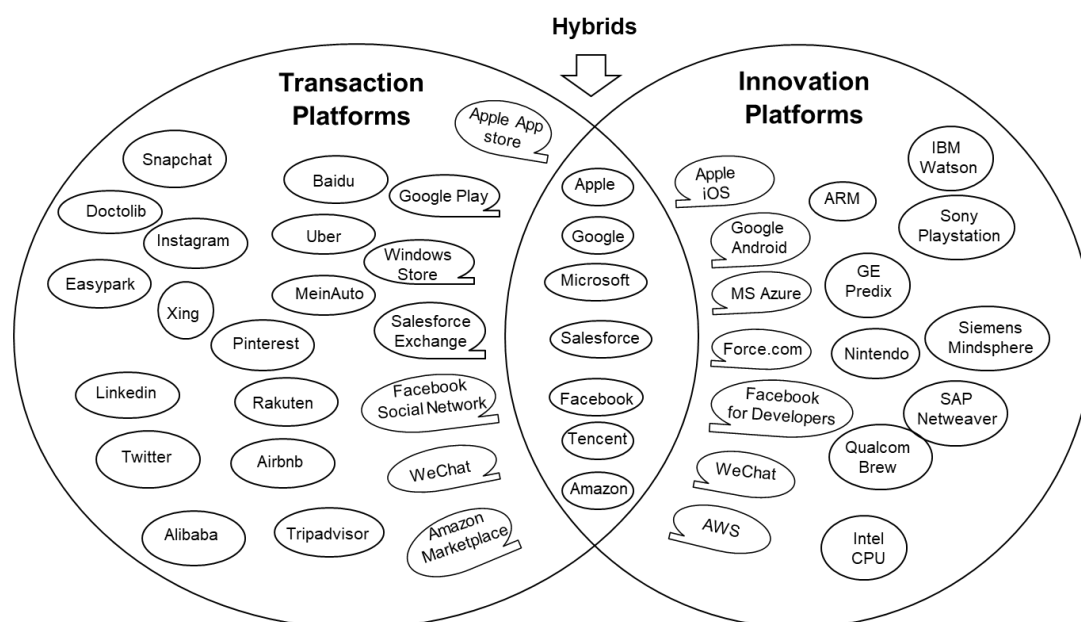
**Exhibit 9:** Characteristics which favour winner-take-all-or-most market outcomes (partly based on Cusumano et al. 2019, chapter 2)

reach of network effects plays an important role as for instance markets with local network effects can only be taken city-by-city and the WTA is limited to the locality whereas it will be difficult or impossible to achieve global or even only national dominance. Second, it should have **limited ‘differentiation and/or niche specialization opportunities’** as platforms specialising in niches may ‘eat away’ users or partners from the incumbent platform. As in the early phase of the Internet niche specialisation was not yet a strong threat early movers (like all the big platforms of today) had a better chance to profit from the WTA dynamic. Third, **High switching cost** e.g., high ‘multihoming costs’ for users form a barrier to user loss to

competitors, and fourth the possibility to realize significant **economies of scale** are supportive of WTA outcome.

## 4. Types of Platforms

There are numerous often quite complex typologies of platforms as for instance reflected in the 'Network Effects Bible' by Currier (2019). For the purpose of this primer, the categorization of platforms by Cusumano et al. (2019) is chosen who classify them by primary function into two types: **transaction** and **innovation platforms** (see exhibit 10). Most large platforms today are hybrids including features of transaction and innovation platforms.



**Exhibit 10:** Dual Platform typology suggested by Cusumano et al 2019, p.10 (slightly adapted)

**Transactions platforms** which are sometimes also summarized under the term '**Exchange Platforms**' (see Moazed et al 2016) enable people or organisations to share information (as for instance in *Twitter*) or to buy, sell or access a variety of goods and services. This is still a very broad categorization which includes **service marketplaces** like *Airbnb*, **product marketplaces** like *Amazon Marketplace*, the many **social networking platforms** and **payment platforms** like *Facebook*, *Paypal* or *Klarna* to name only a few.

In **Innovation Platforms**, sometimes also called '**Maker Platforms**' (ibid), the platform owner and eco-system partners share technology building blocks to create new complementary products ('**complements**') like for instance the availability of apps on *iOS* or *Android* available via their app stores. Here the platform becomes increasingly useful from the increasing number and utility of complements. Beyond the smartphone apps other examples are third party applications and services on *MS Windows*, on cloud services platforms like *Amazon Web Services* or on factory automation platforms like *Siemens Mindsphere*.

Most of the core platforms operated by *Amazon*, *Apple*, *Microsoft*, *Tencent* and others are **hybrids** in a multi-platform setting facilitating innovation through attracting app-developers as well as transactions for social exchanges, products or services.

## 5. Selected Issues of Platform Strategy

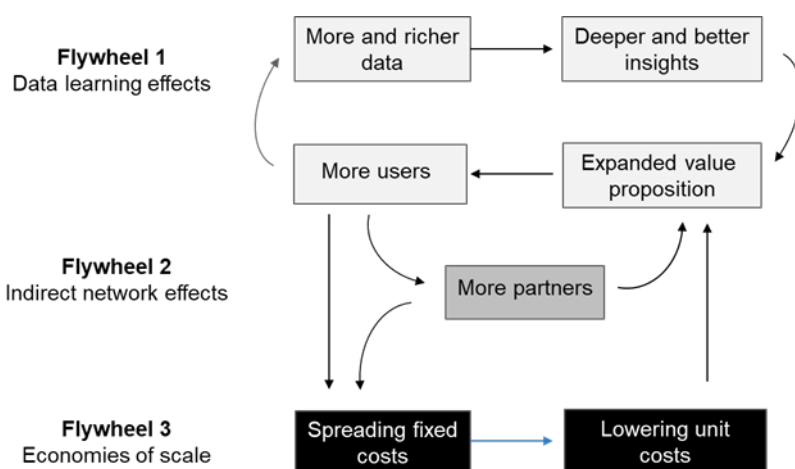
Three different aspects of platform strategy are briefly touched upon: first strategies by **‘dominant’ platforms to extend and defend** their leading position; second, strategies in **building a new platform business** from the start. And third some initial thoughts on the **internationalisation strategies** of platforms,

### 5.1 Extending and defending the winner positions

Many of today’s big platform businesses started their business in the later 1990s or early 2000s and were able to capitalize on **early mover advantages** as one of the favourable factors coupled with aggressive growth strategies to reach a dominant position in their category. For these successful early movers, the question during the last decade(s) has not been how to **build** a dominant position, but rather how to **expand, strengthen and defend** it in a rapidly changing environment. Three types of strategies shall be discussed here labelled as ‘Outpacing’, ‘Fortification’, and ‘Multi-Platform Strategy’.

**Outpacing.** In the last century Michael Porter developed his generic strategies, **differentiation** and **cost leadership** (both in niche and mass markets) (Porter 1980) which were inter alia criticised for being too static by Gilbert and Strebel (1987) who coined the term **‘outpacing strategy’**. Rather than going for EITHER differentiation OR cost leadership successful companies combined these two strategies sequentially, for instance by starting out with a differentiation strategy which leads then due to their success to significant economies of scale (i.e., low cost). The cost advantage if reinvested enhanced their differentiated position further (or allowed them to offer a better price-benefit proposition to customers). While this was principally thought of as a **‘staged’** approach, the **simultaneous** pursuance of differentiation and cost advantages (sometimes also called ‘hybrid’ strategy) has been proven to be a successful approach in many industries (see for example Jenner, T., 2000).

In the platform competitive scenario this general idea is usually pursued on the one hand through driving the network effect through adding users and partners and increasing the value proposition through data driven learning and additional lines of products. On the other hand, scale translates into cost advantages (supported by the mastery of managing huge numbers of transactions with automated processes) so that significant savings can be reinvested in maintaining the differentiation lead (see the example of *YouTube* in Exhibit 11).



**Exhibit 11:** Outpacing through mutually reinforcing positive feedback loops in an extended flywheel perspective, example: *YouTube*. Source: author



**Fortification (Moats).** One threat to the large platform businesses which usually pursue a ‘broad’ and hybrid strategy is the **competition from specialised, niche platforms** which ‘eat away’ at the broader platform’s user/partner base. An example is the advent of *Snapchat* which offered millennials a way to prevent longevity of their information and addressed with this offer a potential subgroup of *Facebook* users. Other examples are category-specialised marketplaces which address subgroups of users for instance of *Amazon*. The usual strategy of dominant platforms like *Amazon* or *Facebook* (if they perceive this as a threat or an opportunity) is to try to **acquire** the niche player/Start-up or to **imitate** it with an own specialised offering (a practice which is also widely used in traditional industries). *Facebook* attempted (but failed) to purchase *Snapchat* in 2013, then imitated it with *Poke*, and finally acquired *Instagram*. Such moves can be found with many big platform players as a look at the list of acquisitions for instance of *Amazon* and others and their imitative moves show (see also Cusumano et al 54-58).

While the aggregation of huge product eco-systems, valuable data and a huge customer base as a result of network effects produce already a ‘moat’ (a term for competitive advantage of large companies popularized by CB Insight 2021) there are additional direct defences against competition. One important challenge for established players is ‘**multihoming**’, i.e., consumers using different platforms with an identical or similar offering at the same time and switching back and forth between them (see Cusumano et al 2019, 42-44). Multihoming weakens the network effect and the attempt to limit multihoming is therefore a cardinal tactic of platform businesses.

‘**Multi- Platform Strategy**’. The focus of platform strategy research and practice-oriented blogs has been and still is on **single platforms**. However, many of the large platform players like *Apple*, *Facebook*, *Tencent*, *Microsoft* or *Google* are **multi-platform eco-systems (MPEs)** orchestrated by one core owner.<sup>4</sup> They are highly complex and difficult to understand in their inter- and intra-platform operations and network effects. The analysis of MPEs and of **multi-platform strategy (MPS)** is still work in progress (and complicated by rapid technological change).

One underlying driver for integrated MPEs is **technological convergence** – the tendency of originally unrelated technologies to become more closely integrated and even unified as they develop and advance (Kranz et al n.d.). A primary example is the **smartphone** which has become everything in one: a phone, a computer, a digital media player, a personal digital assistant, a video game machine, a handheld television among other functions. *Apple* for instance integrates all these different technical functionalities via its iOS, macOS, iPadOS and the central *Apple* ID in a tightly integrated multi-platform eco-system with many different services and transaction opportunities (Erwinkarim 2022); at the same time the company excludes competition through using its own proprietary standards. Other examples for digital convergence are home assistant devices that can be used as intercoms, alarms, and speakers or watches that can be used as fitness trackers, music players and communication devices.

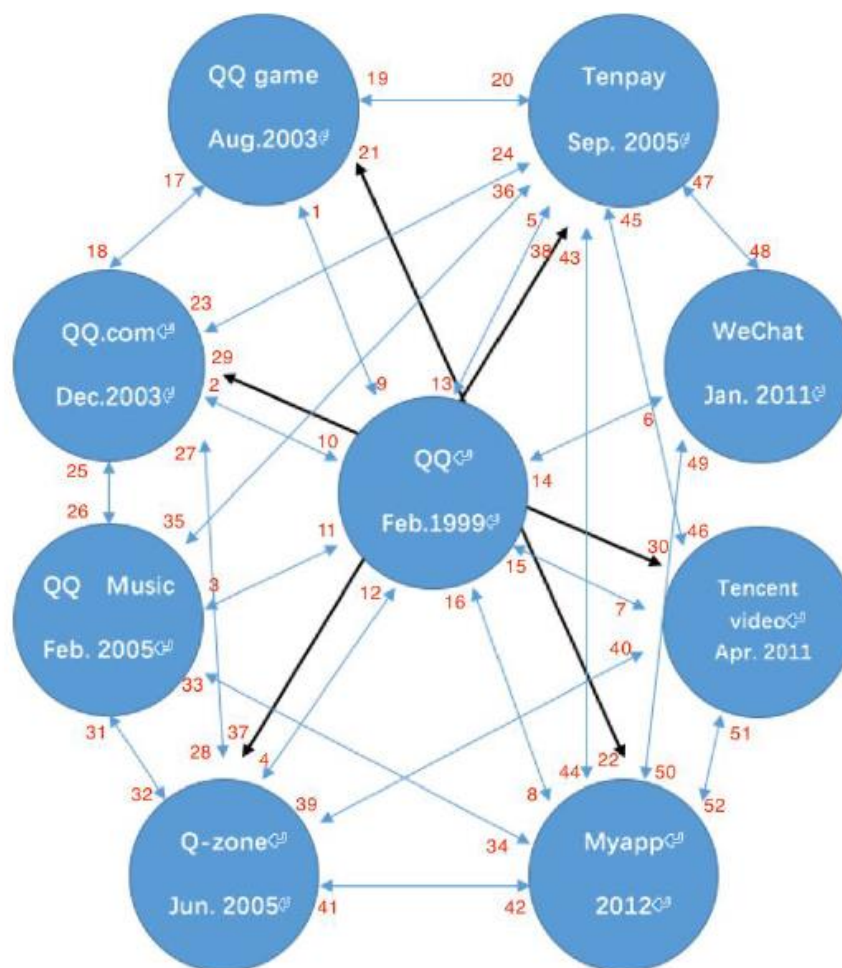
An important contribution to the analysis of (competitive) MPS has been provided by Eisenmann et al (2011). They coined the term ‘**platform envelopment**’ for a strategy in which “a provider in one platform market can enter another platform market, combining its own functionality with the targets’ in a multiplatform bundle that leverages shared user relationships” (Eisenmann et al 2011, 1271; see also Iyer 2021). ‘Platform envelopment’ has

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<sup>4</sup> Lang et al from Boston Consulting Group call these MPEs ‘Super Platforms’. See Lang et al (2019), 6

been a widely used strategy of large platforms to attack competing platforms, and to **extend the competitive advantages from one market to another**.<sup>5</sup>

An interesting case analysis of one of the world’s largest MPE, China’s *Tencent*, has been undertaken by Rong & Jiancheng (2015). They first focus on the central role of QQ<sup>6</sup>, China’s earliest social network which provides a login to all sites and products of *Tencent*, and then analyse the various ways of directing users and services within the overall system (see exhibit 12). Their analysis demonstrates how the interactions among the components increase user numbers and transactions (reenforcing network effects and driving demand for services) while at the same time decreasing cost.



**Exhibit 12:** Tencent’s Multi-Platform Ecosystem in 2015 (Rong 2015, 112)<sup>7</sup>

A recent more conceptual approach to MPS is provided by Klimmek et al (2021) who test their approach with a single comprehensive case study of *Google*. According to their concept the

<sup>5</sup> In traditional strategy analysis of ‘pipeline’ firms a large user-base has been seen as a ‘resource’ which facilitates entry in additional markets (resource-based view) or as a ‘related diversification’ where the firms exploited synergies from economies of scope (industry economics).

<sup>6</sup> QQ has currently some 800 million active users, its sister app WeChat originally created for mobile has around 1 billion active users. Both apps are still in use.

<sup>7</sup> The bold arrows represent QQ as the central login site/account, the other arrows and numbers refer to explanations on the type of channel services and mutual support functions. See article for details

overarching goal of MPS is to drive a **common core business**: *Google's* core business is **advertising** which accounted for 81% (US\$ 258 billion) of its revenues in 2021 (Global Data 2022).<sup>8</sup>

The core business is run via platforms with different 'strategic roles'. **Core platforms** generate a large share of the strategy's revenue, are usually the first major platforms from which the multi-platform strategy evolves and are the 'launch-pad' for new platforms through platform envelopment. The **core platform sides** are the groups which interact in the core business. In the case of *Google* core platforms are *Google Search*, *Google Maps* and *YouTube*; the platform sides are search users, publishers and advertisers.

Core platforms are defended and strengthened by **support platforms** and help the core business to function in changing industry environments. Klimmek et al list *Android*, *Chrome OS*, *Google Play*, *Chrome*, and *Google Assistant* under this platform function. (The shift from desktop to smartphones and voice assistants are examples of such industry shifts). The third strategic role is played by **growth platforms** which help exploiting new business opportunities related to the core business, in the case of *Google* *Google Shopping*, *News*, *YouTube Music* and *Stadia* (cloud gaming) are examples.

While *Google/Alphabet* extended the **arena** of their eco-system of different platforms with a view towards growth and maintenance of competitive advantage, the company **integrates** and **orchestrates** this intertwined network through various '**tying practices**' (like for instance bundling, virtual bundling and self-preferencing); the central *Google* account provides for the sign-up process into multiple platforms. One desideratum of Klimmek's conceptualisation and its application to the *Google* case is the lack of analysis of the important role of **data** as one or even 'the' key resource which is integrated and leveraged across platforms. Nevertheless, the paper reveals the limits of a mere 'single platform perspective', and the need of a deeper analysis based on a multi-platform strategy perspective to understand the strategies of the large platform players.

## 5.2 Building/launching new platforms (as Start-ups)

In order to set network effects (of a single platform) in motion a newly started digital platform must achieve a '**critical mass**' of users or in two-sided networks of users and partners. 'Critical mass' is the minimum number of users and/or producers at which the value of the network's services to users exceed the cost of joining for most users, and the growth of the network becomes self-sustaining. Or in other words, the number of participants needed to allow the platform to auto-generate its own growth. (It is obvious that in this context the geographic scope of network effects plays an important role and that to achieve critical mass in a global, a national or in a local-for-local context are entirely different games. In the latter case, however, a critical mass of localities may be needed in order to overcome diseconomies of insufficient scale.)

The key challenge in starting a new platform business, in achieving 'critical mass', and in setting the network effect in motion is usually framed as a '**Chicken-or-egg problem**': the value to potential buyers on a transaction platform such as a marketplace depends on a minimum number of sellers/offers on the platform and vice versa. Many (or even most) platform Start-ups do not reach the critical threshold which leads to failure (failed platform Start-ups are in the thousands every year but are usually not widely known; see for instance a selected list of 20 German failures – mostly platforms – in the first half of 2022: *Deutsche Start-ups 2022*).

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<sup>8</sup> The respective core businesses for GAFAM would be: e-commerce (Amazon), advertising (Facebook), premium technology products (Apple), business products and services (Microsoft)

There are various strategies which aim at overcoming the chicken-or-egg challenge for newly launched platforms (see for instance Parker et al, 2016, 84-105 or Cusumano et al 2019, 71-77). Three widely used strategies are discussed in the following.

**Leverage prior resources.** Many platforms have been started as a second move or phase in which the owners ‘capitalize’ on resources (a userbase, product inventory) created in a first phase. Examples are *Amazon* which created its marketplace model long after it had established a very large userbase as an online e-commerce company; with the ‘pull’ of its large existing userbase it could easily attract sellers to its marketplace and thereby exploit significant network effects right away. Similar strategies have been pursued by many other online retailers such as for instance *Zalando*. Another often mentioned example is *OpenTable* which started out as a provider of software for restaurant reservation systems and when it started including restaurant goers in a platform model, they could already rely on a substantive number of partner restaurants.

While this strategy assumes already a significant resource on at least one side of the future platform business another strategy is the **envelopment** of Start-up platforms by an already established successful platform (see above). An example is ‘piggybacking’ of *Paypal* to *eBay*’s existing platform.

**Micro-market strategy for beachhead creation.** The micro-market strategy can be found in the early phases of some of today’s leading platform companies and is a usually very sensible approach to get a network effect going. A famous example is *Facebook* which started out in the geographical and socially concentrated community of Harvard university, gained traction (overcame the ‘critical mass’ challenge), and then expanded in a concentric fashion thereby outcompeting eventually the social media platform *Myspace* which had been started earlier and was already well developed by the time of *Facebook*’s start.

Most new Start-Ups need to identify their **initial micro-markets** where they could establish ‘beachheads’ of network clusters before they can broaden their market reach. These micro-markets can be geographic clusters such as cities, particular types of users and/or partners, technology based, cultural clusters and so on as well as combinations of the above.

**Substitute/subsidize one side or both.** A whole range of tactics concerns the various ways in which platform Start-Ups try to bring users or partners on the platform before the network effect sets in, resp. to get it started. In innovation platforms like *Windows* or *Apple*’s iOS one strategy in their early days was to build the first batch of applications in-house (e.g., MS Word, PPT, Excel) before they could rely on external app developers. Another approach would be to analyse which side would attract the other side and then subsidize the ‘attractor side’. The forms in which this can take place are very varied ranging from no charge to be a user to providing services free of charge to gain attractive partners as was the case when *Airbnb* sent professional photographers to property renters for free. A widely used – though unethical – practice is to use fake accounts or links<sup>9</sup>. For instance, when dating services showcased attractive women to attract men to the platform or when *Reddit* was seeded with fake profiles posting links to the kind of content the founders wanted to see on the site over time (Parker et al 2016, 93).

### 5.3 Internationalizing platform businesses

The internationalization of platform businesses starts usually in the **home market** (and at the very beginning even in micro-markets, see above ch. 5.2). Obviously, there is a big difference between **large home markets** (US or China) and **small home markets** (e.g., Finland or

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<sup>9</sup> Facebook deletes every quarter some 1.5 billion fake accounts. It is estimated that the share of robots among all visitors in all platforms and web sites in the Internet is around 56%. (Kreye 2022)

Austria) in that the urge/need for early internationalisation is higher for the latter than for the former. As introduced already in chapter 3.5 above three network effects in terms of geographic scope can be discerned: 'local' (usually confined to a city), 'national' (or 'within country') and 'global' network effects; we group them for the purpose of our analysis into two: **local/national** and **global**. There may also be an influence on the internationalization and international operation of platform firms in terms of whether the relevant network effects are **one-sided** or **two-sided** (or multi-sided). Finally. An important difference should be made between '**software internationalization**'<sup>10</sup> and what can be called '**physical internationalization**', i.e., a local presence in operation countries which goes significantly beyond the purely digital operation (see below).

Exhibit 13 combines the dimensions and suggests some general archetypes of international strategies which platforms are likely to pursue.<sup>11</sup>

Type of Network effect	Geographical Scope of Network Effects	
	Local – National .....	Global
One-sided	<p><b>COUNTRY-BY-COUNTRY STRATEGY</b>                      Mostly based on city-by-city competition</p> <p>SOFTWARE INTERNATIONALIZATION , M&amp;A</p> <p>Ex.: <i>Tinder</i></p>	<p><b>GLOBAL STRATEGY</b>                      Based on worldwide competition</p> <p>SOFTWARE INTERNATIONALIZATION</p> <p>Ex.: <i>Skype, Zoom, WhatsApp</i></p>
Two-sided	<p><b>COUNTRY-BY-COUNTRY STRATEGY</b>                      Based on city-by-city or country-by-country competition</p> <p>SOFTWARE and PHYSICAL INTERNATIONALIZATION, M&amp;A</p> <p>Ex.: <i>Uber, Just Eat Takeaway, Doctolib, Amazon</i></p>	<p><b>GLOBAL STRATEGY</b>                      Based on worldwide competition</p> <p>SOFTWARE INTERNATIONALIZATION, degree of PHYSICAL INTERNATIONALIZATION contingent upon need</p> <p>Ex.: <i>Windows, Google / Android, Facebook, Booking.com, Airbnb, Apple</i></p>

**Exhibit 13:** Geographical scope, network effects, and principal strategies. Source: author

**Local & national network effects: Country-by-Country Strategy.** In markets with **local network effects** platform firms can reach critical mass and set the network effect in motion only in each location and ideally get a 'winner-take-all-or-most' position at city level. The city-by-city competition of platform companies is usually run as a **country-by-country strategy**

<sup>10</sup> For software developers and engineers 'software internationalization' means the design and development of a product, application, or document content so that it can be localized for target audiences that vary in culture, region, or language. See Bodrow-Krukowski (2021)

<sup>11</sup> It is not suggested that these dimensions are the only relevant drivers of the various forms of internationalisation and international integration strategy. In practice platform firms come in a very wide variety and international strategy is contingent upon a multitude of other often very specific factors.

contest among the market players as ‘single city platforms’ would not be viable as businesses and there are synergies in terms of national multi-city campaigns. In the case of **national network effects**, the market entry and coverage strategy is from the outset addressing the whole country which is for instance the case for many **marketplaces** in the ecommerce domain.

Is there a difference in international operations of platforms which thrive on local/national network effects if these are **one- or two-sided**? One possible difference lies in whether the internationalization is largely based on ‘**software internationalization**’ (multilanguage availability, some cultural adaptation of the app, see note 10 on previous page) or requires ‘**physical internationalization**’ (i.e. more extensive local operations on the ground in each country). While one-sided platforms with local network effects tend to rely largely on software internationalization, **two-sided national network** tend to require more often than not complementary ‘physical internationalisation’. *Tinder* as a casual dating app (with one-sided local network effects) will – in addition to language adaptation – reflect cultural features and peculiarities in their local app versions (a case of software internationalisation). On the other hand, *Uber* for instance needs to recruit and vet drivers locally and respond to local and national regulations, *OpenTable* needs to recruit restaurants through local marketing campaigns and software services, *Just Eat Takeaway* needs to recruit and run local drivers and obtain restaurant partners. B2C marketplaces like *Amazon* need to complement their software internationalization with a localization in its product offering (direct sales and its marketplace), and usually also needs to build its logistics fulfilment centres in each country/region where it wants to establish a strong presence.

Platform companies which thrive on local or national network effects tend to consider **each country market on its own merits** although the **sequence of international market entries** may be influenced (apart from market size) by various types of ‘proximity’ considerations<sup>12</sup>. They are managed as **multi-local players** with a diverse cluster of country operations and subsidiaries under one central headquarter. Subsidiaries may have significant local autonomy. Market entry into a country is often achieved by acquiring local leaders (M&A). They often do not pursue a strict global brand strategy but work under different (acquired) brands. In platform markets with multi-local strategies even the largest players usually succeed in a limited number of countries only or are just focused on one region. Even *Uber* for instance which operates in 850 cities in some 80 countries, lost to *Didi* in China, *Ola* in India, *Grab* in Southeast Asia, *Easy Taxi* in Latin America, and so on (See Guillén 2021, 22-24). *Just Eat Take Away* operates in some 20 countries with differing brands (e.g. *Lieferando* in Germany) based on a large number of acquisitions. *Doctolib* just covers Germany, France and Italy while *Amazon* is not as global as many think (Ivey 2020).

**Global network effects: Global Strategy.** The ‘global’ dimension of exhibit 13 includes platforms which rely in their advanced stage on **global network effects**. Companies in this category – after having conquered their home market – prioritize large national markets interconnected with existing markets and get additional ‘tail wind’ through the global connections between these clusters (Guillén 2021, 22). They all rely first and foremost on **software internationalisation** as their fundamental internationalisation method. Examples of platforms with global **one-sided network effects** are *WhatsApp* or *Skype* which compete on an (almost) global scale with no limits except the cases in which authoritarian regimes suspend or bloc their operation. When it comes to platforms based on **global two-sided network effects** like *Windows*, *Google/Android* or *Airbnb* the determinants of internationalization and

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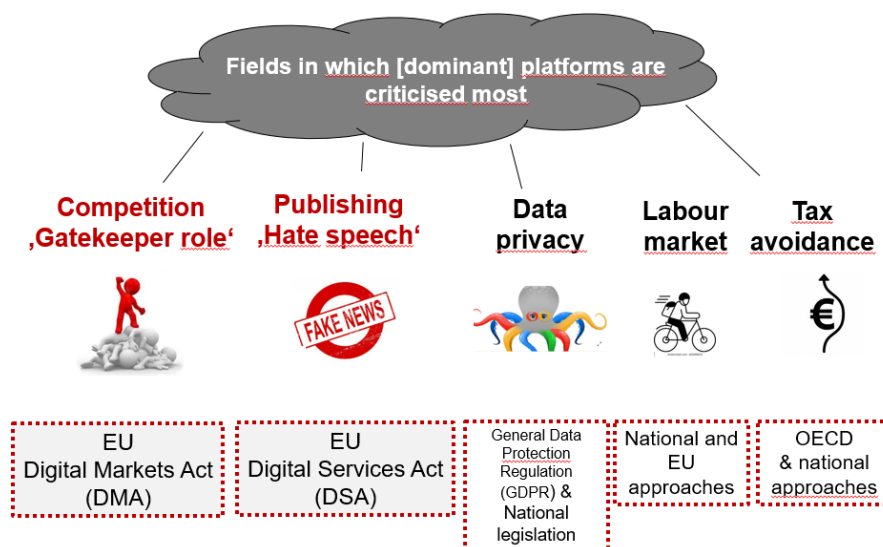
<sup>12</sup> A suitable analytical framework for analysing the observable internationalisation path of these platforms may be the CAGE distance model (cultural, administrative, geographical and economic) proposed by Ghemavat (2001).

worldwide management strategy are similar to the one-sided case, but the needed degree of physical internationalisation may be more contingent on the specific circumstances of the respective type of platform and also on the initial timing (e.g. *Microsoft* internationalized already in the pre-Internet era whereas *Google* and *Google's Android* are 'creatures' of the Internet era). A large share of platforms in this category are innovation (or 'maker') platforms, see ch. 4 above), essentially software players with less need for physical internationalisation. Holiday rental platforms like *Airbnb* on the other hand – international players already by business purpose – require more extensive physical presence in the various countries to support their hosts (see for a detailed analysis of *Airbnb's* internationalization Guillén 2021, 52-63).

Despite many differences all these companies pursue '**global strategies**', build and nurture their **global brands** and try to standardize their worldwide service with software internationalization in the core. It is also in this arena that (almost) **global leaders** with dominant positions such as *Google*, *Facebook*, *Microsoft/Windows*<sup>13</sup> have emerged.

## A Final Note: The Need for Platform Regulation

The leading platform companies dominate more and more markets, shape the communication and social cohesion in our societies and affect also more labour markets around the world. In view of the increasing power of these platforms and their influence on our way of life governments, international organisations, civil rights groups and parliaments demand transparency, their regulation and supervision by public authorities.



**Exhibit 14:** Regulatory areas of platform regulation and EU initiatives (own graphic)

Exhibit 14 shows five principal areas of platform regulation with relevant EU initiatives. In the antitrust field for instance various practices are under investigation such as using platform partner data by Amazon to compete with own offers, refusal to deal on *Alibaba* or self-preferencing in *Google* search rankings. Other fields of concern range from election interference (like in 2016 in the US), data leakages, and hate speech, and related attempts for regulation like for instance Germany's *Netzwerkdurchsetzungsgesetz* (Bundesministerium der Justiz 2022).

<sup>13</sup> As Apple's global strategy is very much underpinned by its (physical) handset business this should be treated as a special case (although its platform strategy, e.g., its app store, as such thrives on global network effects).

There are similar activities in other regions and countries under way such as for instance in the US the *American Innovation and Choice Online Act* (still in parliamentary discussions), in the UK, in Australia and Japan. Even China has recently started to regulate its leading platforms, on the one hand with a clear antitrust approach, on the other hand with the obvious attempt to maintain control over media and public information to secure the leadership of the Communist Party of China (see on the economic aspects Huang 2022).

In view of the ever-increasing dominance of platforms in the economy and in the political sphere the need for a (democratically controlled) platform regulation is obvious and is one of the most important projects for the future of our modern societies.



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