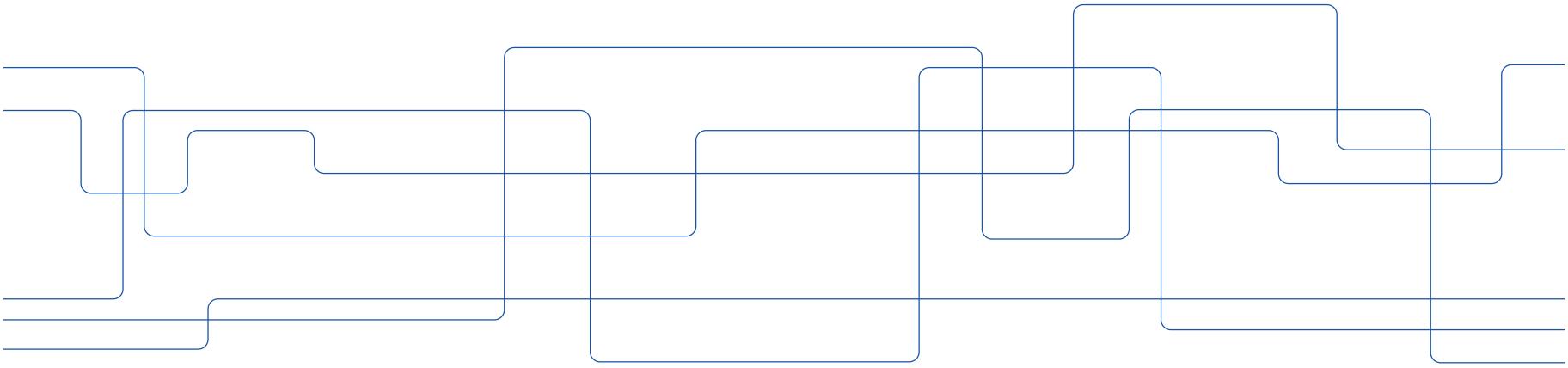




# ID2216 Lecture Mobile Ecosystems

February 24, 2021

Jan Markendahl, Associate Professor Communication systems





# Lectures 24/2 Mobile Ecosystems and 1/3 IoT

- The lectures are about different topics but they are similar in many aspects;
  - They will both provide an overall picture of different services using a market and business perspective
  - They will include business ecosystem aspects, different types of businesses, the involved actors, their relations and the business networks they can form
- Exam problems and learning objectives
  - You should be able to make a high level ecosystem and business analysis of mobile and IoT type of service
  - This will be the topic for one or more exam problems



# Lecture about Mobile Ecosystems

- Focus
  - Mobile services for consumers
  - Types of businesses and involved actors
    - > *Hand set vendors, Application developers, Service providers*
    - > *Network vendors, Mobile network operators*
- Agenda
  - Intro and some examples of mobile ecosystems
  - The Mobile ecosystem concept
  - Analysis of some Mobile ecosystems
  - Analysis of some mobile services



# Lecture about Internet of things

- Focus
  - IoT services for consumers, companies and public actors
  - Types of businesses and involved actors
    - > *Connectivity providers, Device manufacturers, Platform providers, IoT service providers*
    - > *"Smart" manufacturing, smart houses, smart cities, transportation*
- Agenda
  - Intro and some examples of IoT services
  - Components of an IoT system or services
  - Analysis of some IoT services and related ecosystems



# About Jan

- Teacher, researcher and project manager at KTH from 2003
  - Associate Professor 2012 in Wireless Infrastructure deployment & economics
- Before KTH, more than 20 years of experience from industry
  - Ericsson, Nokia, Telia and consultancy companies Communicator and Framfab
- Main research areas:
  - Mobile communication networks and services, spectrum, 5G, IoT, smart cities
  - Techno-economic analysis, business models, telecom regulation



# Research topics of my PhD students

- Coopetition for Mobile Service Provisioning:  
Is it about infrastructures, services or both? (2016)
- On the Incorporation of Quality of Experience (QoE) in Mobile Networks:  
A technical, regulatory and business analysis (2017)
- The Internet of Things in Health, Social Care, and Wellbeing (2017)
- Towards Affordable Provisioning Strategies for Local Mobile Services in Dense Urban Areas: A techno-economic study (2017)
- Opportunities and challenges of mobile payment services:  
The perspective of service providers (2018)
- Cellular-Internet-of-Things Enablers:  
A techno-economic study of wide area networks connectivity & platform solutions (2019)



# Agenda today

- Examples of ecosystems related to mobile services
- General about business ecosystems
  - Structure and key components
  - Models and methods for business analysis
- Analysis of Mobile ecosystems
  - The connectivity business and mobile networks
  - Smartphones and mobile apps
- Analysis of two mobile services
  - Mobile payments
  - Mobile parking

# MOBILE ECO SYSTEM

MOBILE USER

MOBILE MANUFACTURERS

OTHERS

DEVICES

MOBILE CLOUD

NETWORK

CARRIER

MOBILE AD COMPANIES

MOBILE APPS STORES

OPERATING SYSTEM

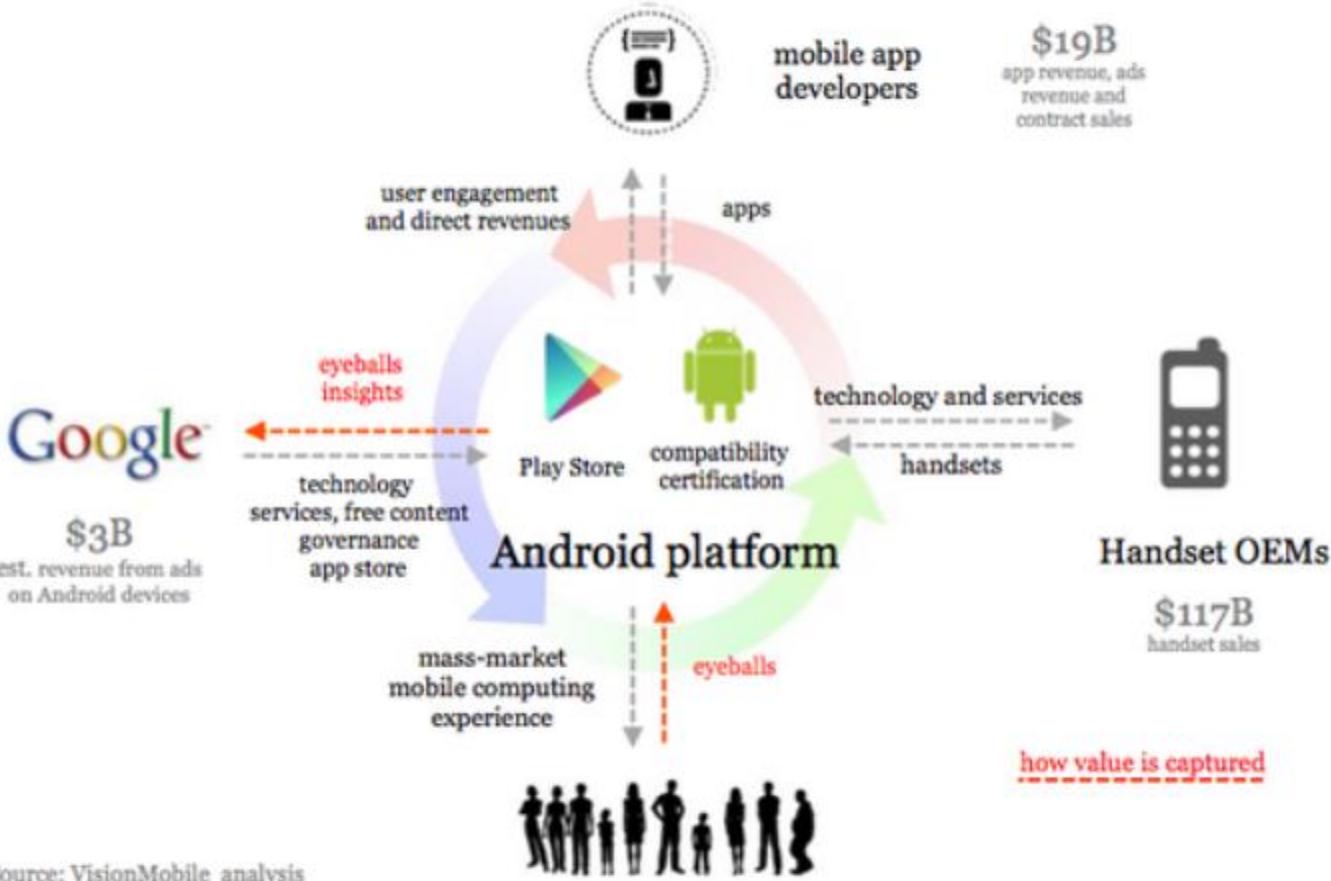
MOBILE APPS, MOBILE  
WEBSITE, TESTING  
DEVELOPING TOOLS

MOBILE APPS, MOBILE  
WEBSITES DEVELOPMENT  
COMPANIES



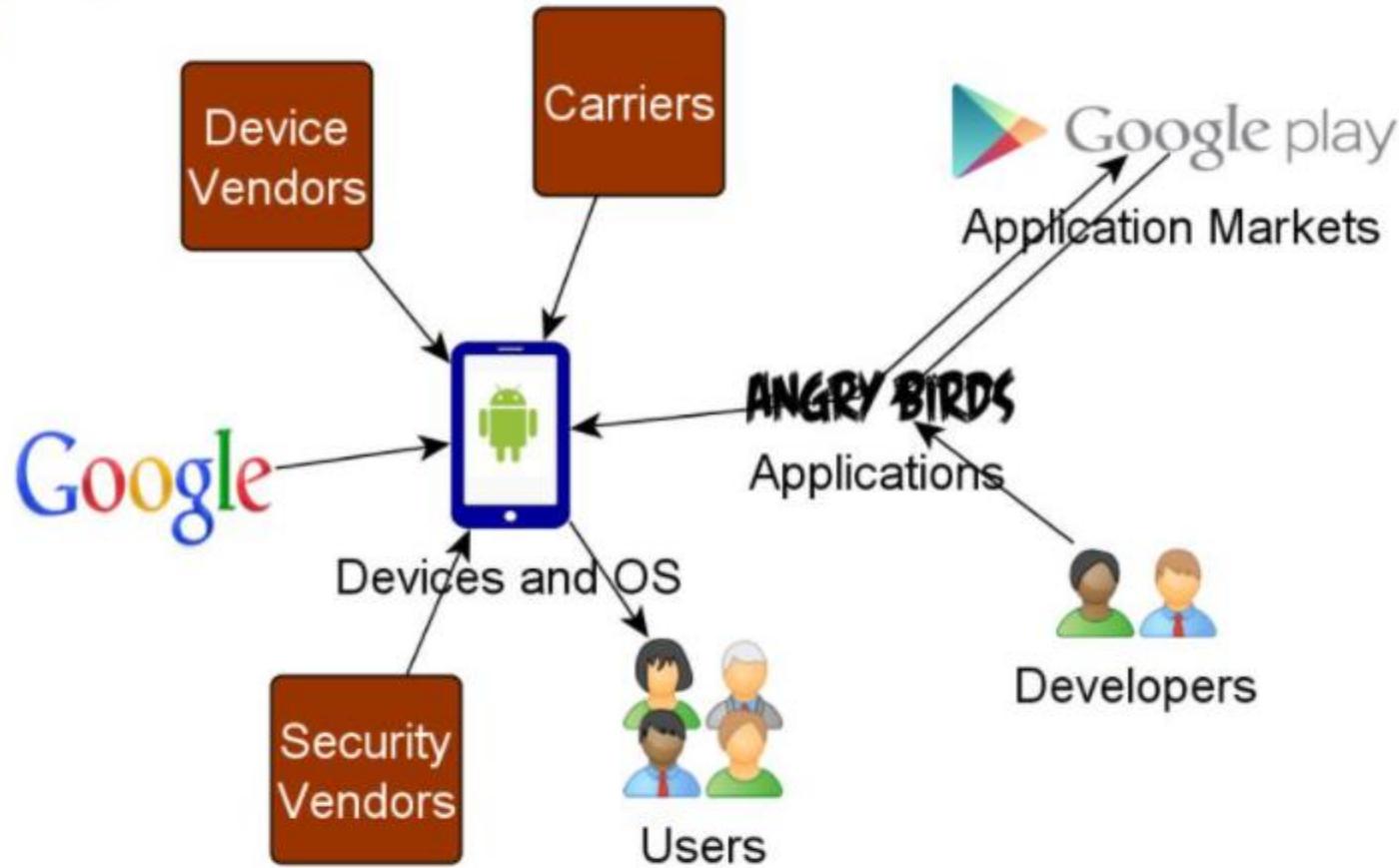
# THE ANDROID GDP: AN ECOSYSTEM VALUED AT \$149B

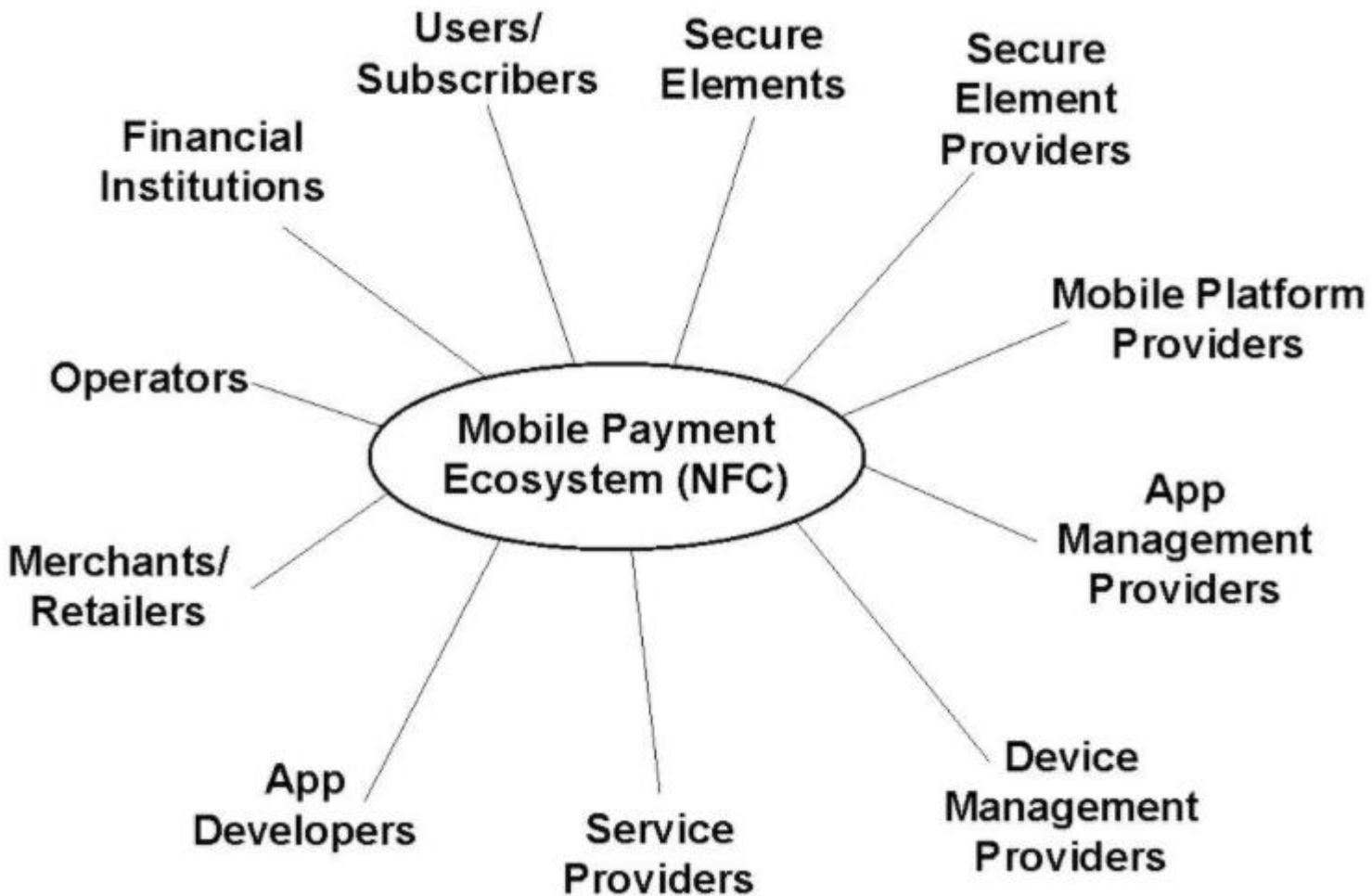
Enormous defensive value for Google's core business, but little direct value capture





# Android Ecosystem







# Agenda today

- Examples of ecosystems related to mobile services
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# Ecosystems

## – what we remember from school



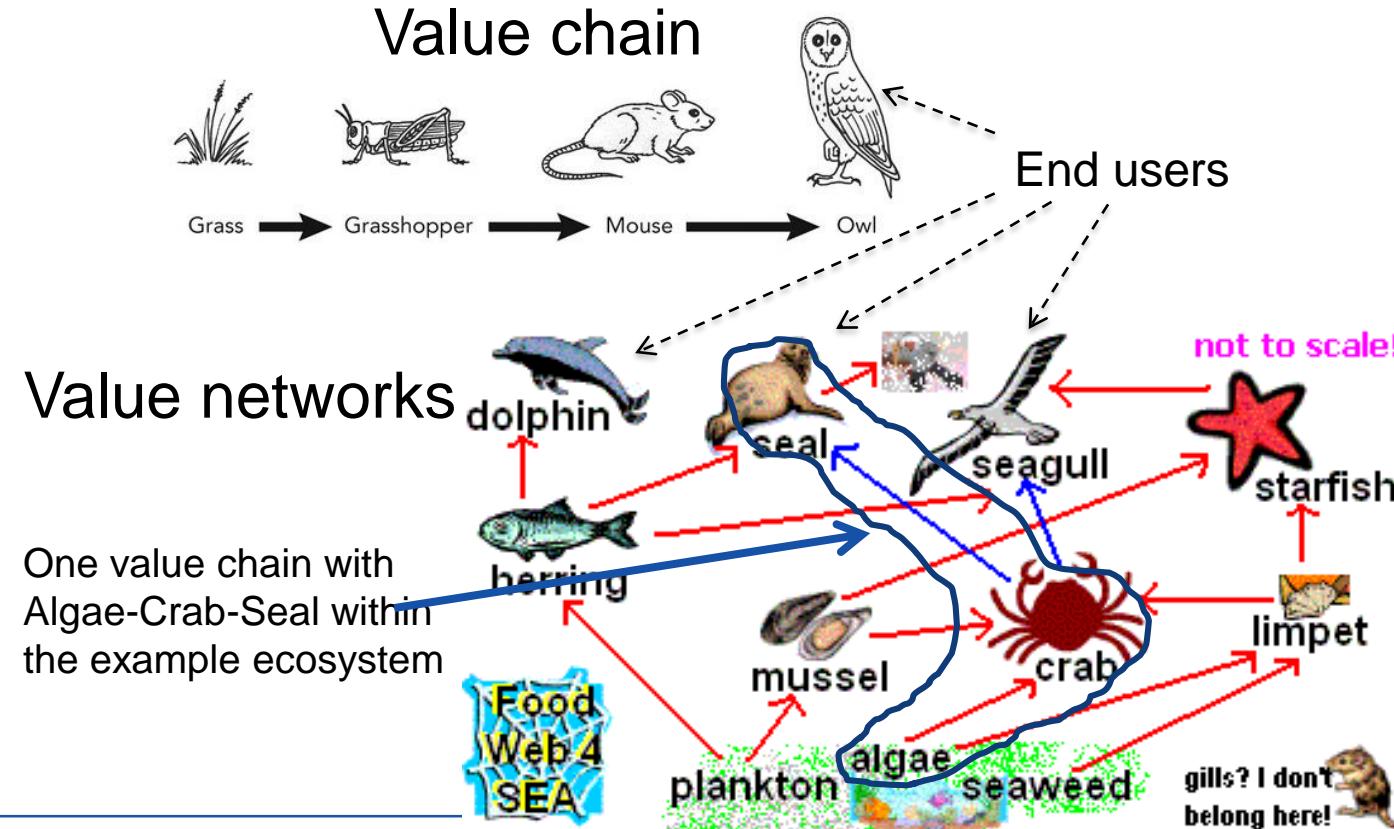
Lake ecosystem; Source: Georgia Department of Natural Resources



# Components of a biological ecosystem

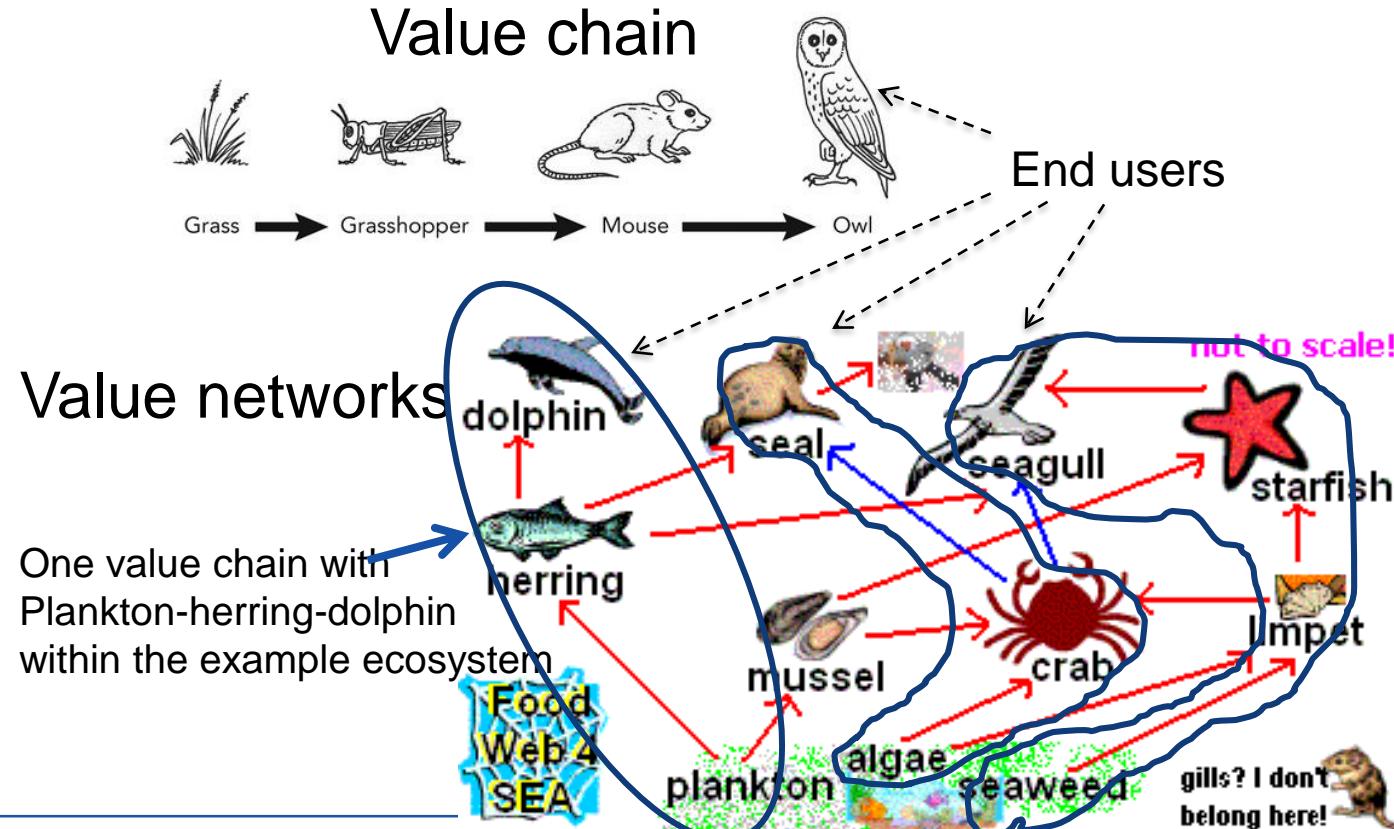
- The actors
  - Birds, Fishes, worms, bugs, plants
- The conditions
  - Size, isolation or not, temperature, pH value, level of pollution
- Interaction
  - How different actors/creatures interact under given conditions
  - Who eats whom? What animals compete for specific food?

# Ecosystems vs services and businesses



lk1332 VT2021 Market-based approaches to ecosystem services and study

# Ecosystems vs services and businesses





## Business Ecosystem

- In the early 1990s James F. Moore originated the strategic planning concept of a **business ecosystem**, now widely adopted in the high tech community.
- The basic definition comes from Moore's book “The Death of Competition: Leadership and Strategy in the Age of Business Ecosystems”
- The concept first appeared in Harvard Business Review in May/June 1993,



# Business Ecosystem

- Moore defined "business ecosystem" as:

"An economic community supported by a foundation of interacting organizations and individuals—the organisms of the business world.

The economic community produces goods and services of value to customers, who are themselves members of the ecosystem.

...And more

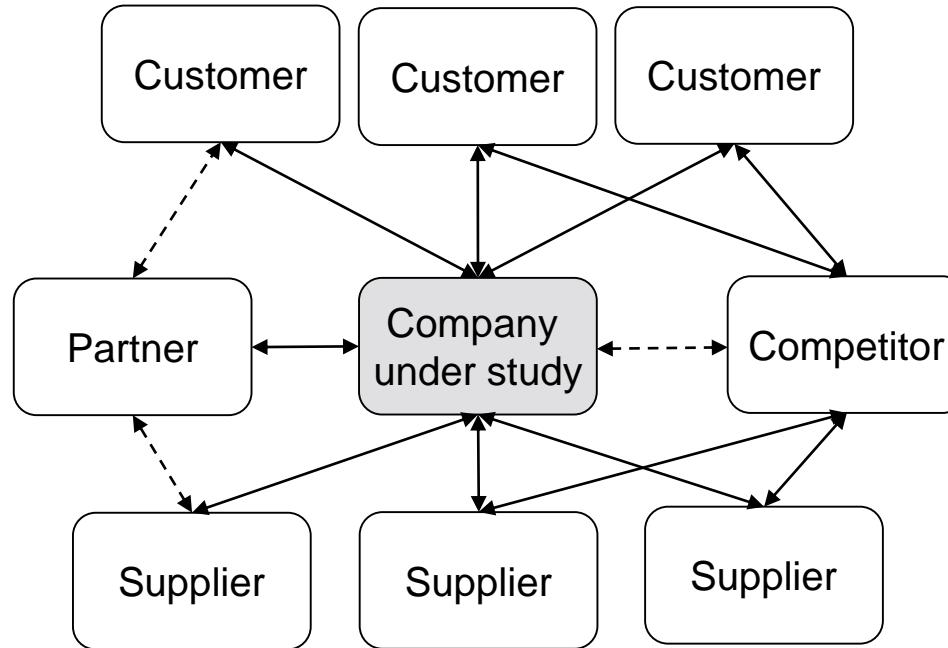


# Components of a business ecosystem

- The actors
  - End users, providers, sellers and buyers, partners, competitors
- The conditions
  - The market structure and size, number and size of key actors
  - Level of competition, regulation, "politics"
- Interaction
  - How different actors interact under given conditions
  - Business networks, Value chains/Networks

# Market map – actor under study

Solid lines represent different business





# Agenda today

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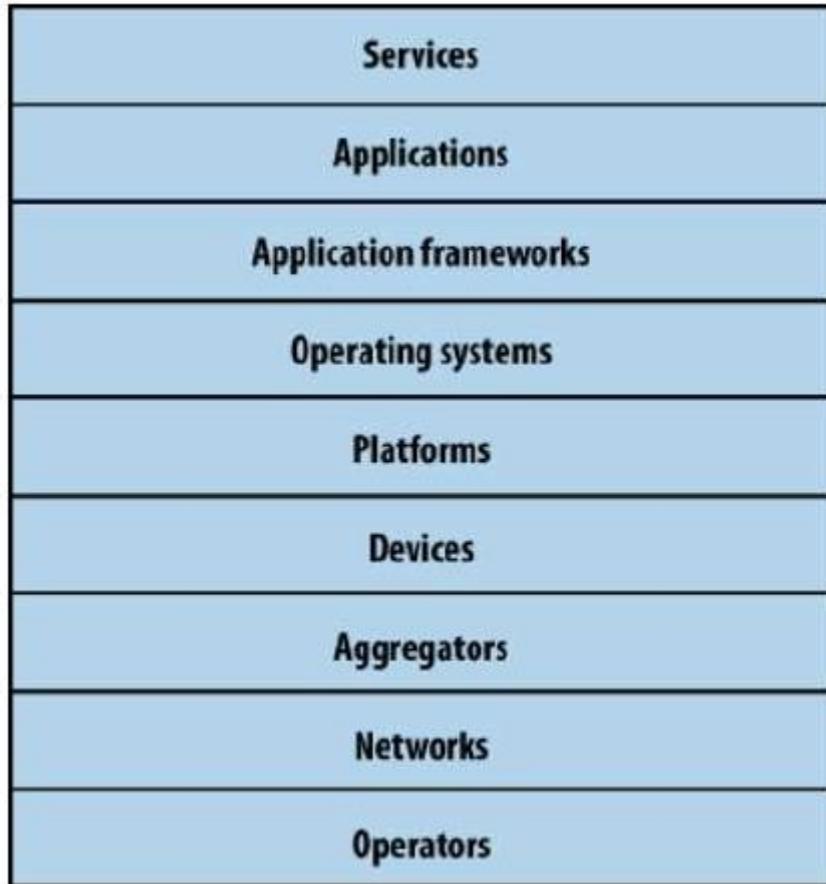




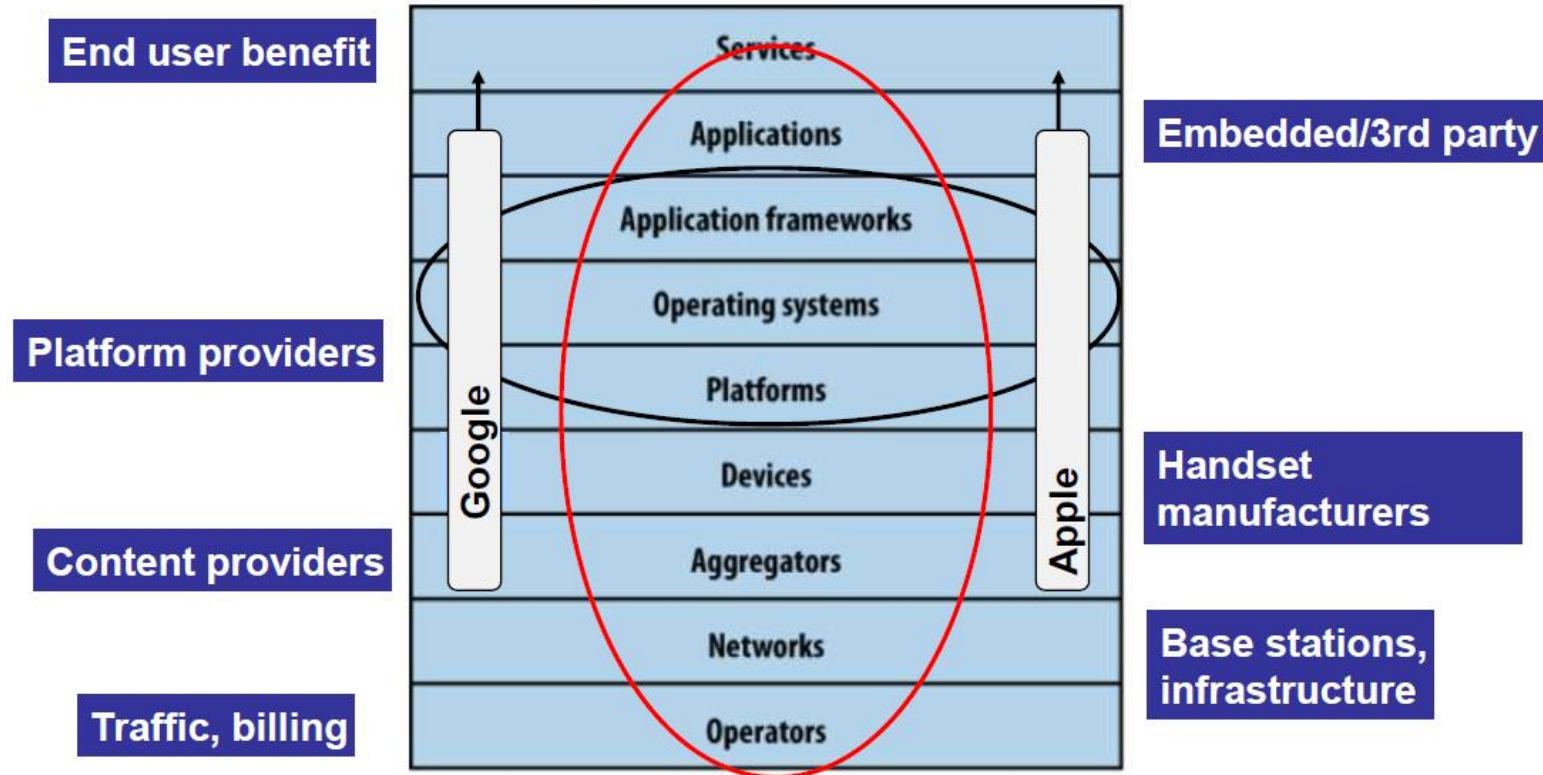
# Key concepts

- Market actor
  - A business entity providing or using services and/or products
- Business model
  - The way an actor provides value to their customers and make money
- Business ecosystem
  - A number of actors in a business sector or market
- Business network
  - A number of actors with described business interaction
- Value chain and value network
  - How actors contribute with value when producing a service or product

# Is this a mobile ecosystem?



# To show what actors do or where to contribute to value network?





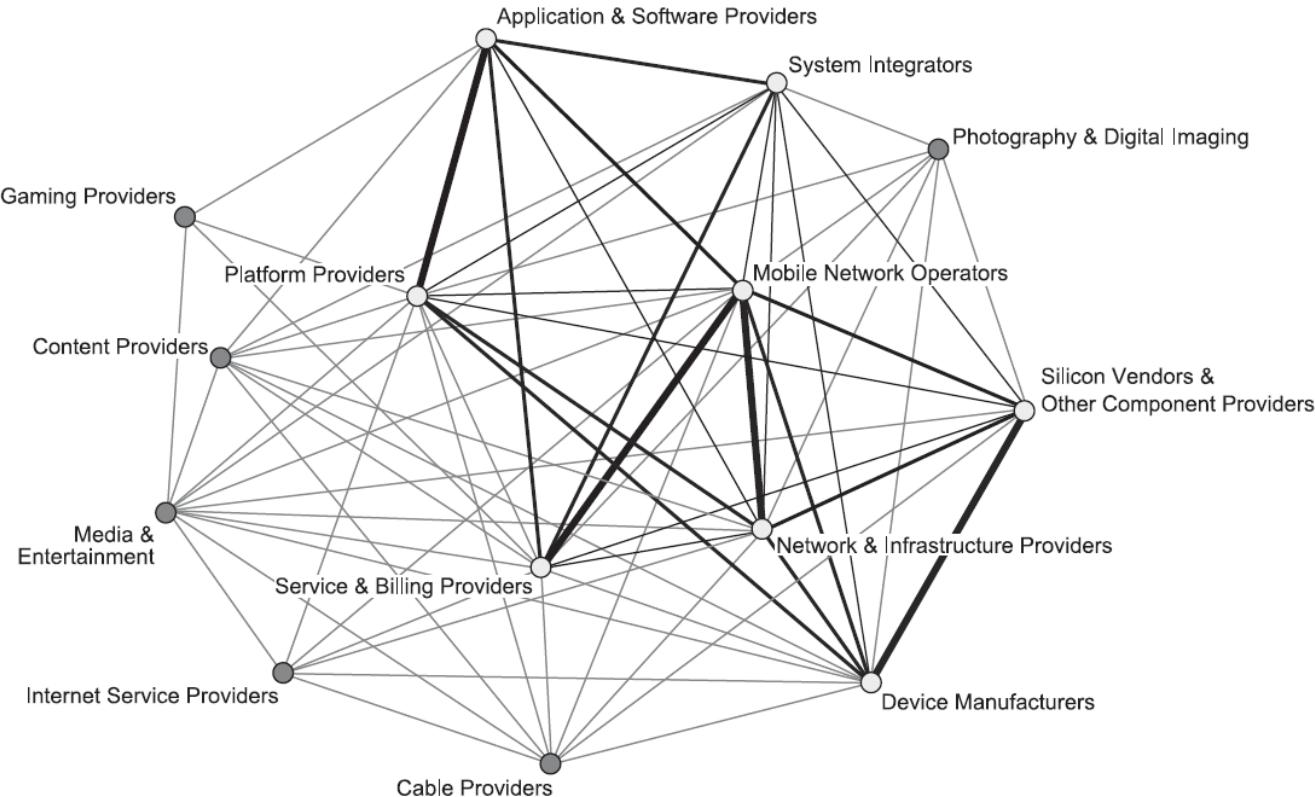
# From Basole (2009)

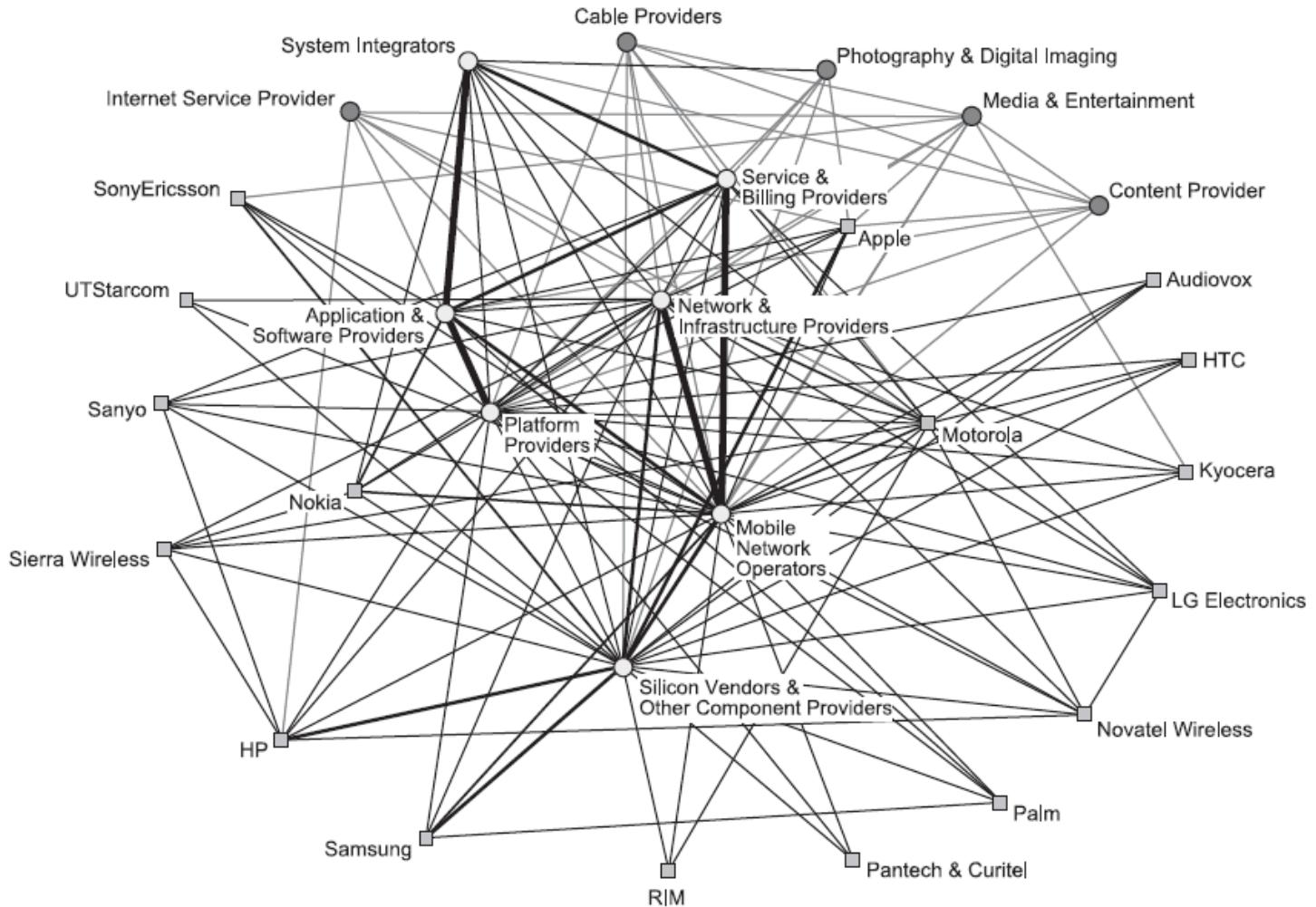
## Type of actors in the mobile ecosystem

Table 3 Segment characteristics

No.	Segment	No. of firms	Percentage of converging mobile ecosystem (%)
1	Mobile network operators	134	1.9
2	System integrators	157	2.3
3	Service and billing provider	89	1.3
4	Application and software providers	1835	26.5
5	Platform provider	53	0.8
6	Network and infrastructure provider	2016	29.1
7	Device manufacturer	136	2.0
8	Silicon vendors and other component providers	1453	21.0
9	Content providers	579	8.4
10	Media and entertainment	108	1.6
11	Photography and digital imaging	162	2.3
12	Cable providers	34	0.5
13	Gaming providers	69	1.0
14	Internet service providers	104	1.5
Total		6929	100

# From Basole (2009) Relation between current and emerging segments in the mobile ecosystem



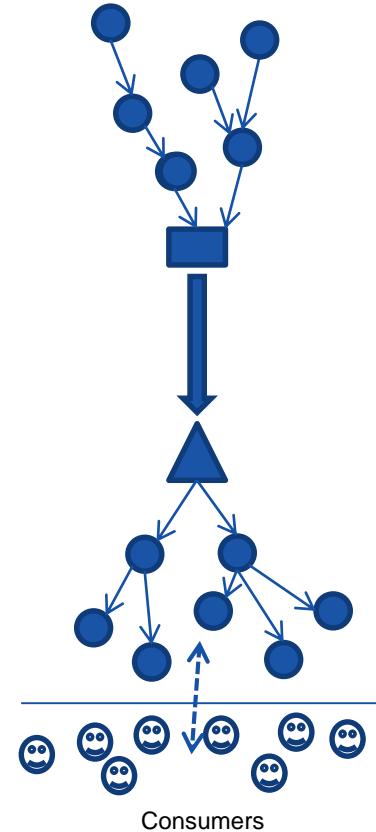
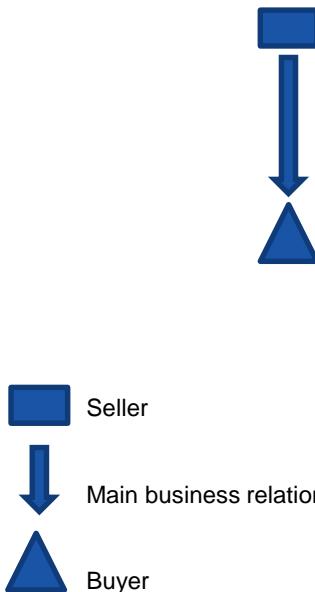


**Figure 5** Contextual view of device manufacturer segment.

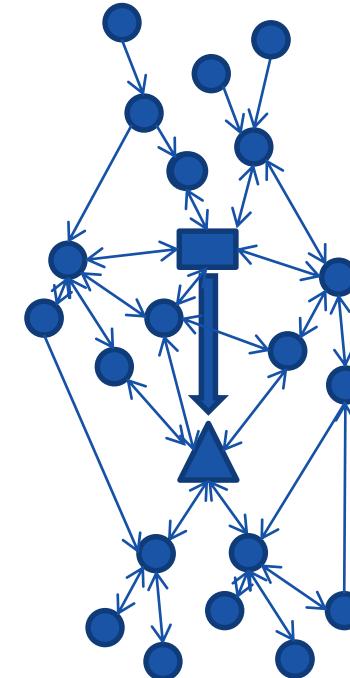
# Buyer–Seller with Supply chain and Distribution networks

Business network

Basic  
Buyer–Seller  
relation



\*\*





# What to do?

- Standalone chains, stacks or maps maybe confusing
  - Do not tell the whole story, they may tell the wrong story or provide too much info
- We need some structured approaches to describe and analyze businesses
- Now About business models



# About Business Models

- Some definitions found at the web
  - The plan a company uses to generate revenue
  - A business model describes the rationale of how an organization creates, delivers, and captures value
  - The particular way in which a business organization ensures that it generates income, one that includes the choice of offerings, strategies, infrastructure, organizational structures, trading practices, and operational processes and policies



# About Business Models

There is a multitude of definitions of how to model “business models” and a large number of papers .

- The Business Model Ontology (BMO)
- The Business Blueprint Method (BBM)
- The e3value ontology
- The approach by Chesbrough & Rosenboom 2002



## Elements in the BM definition by

Chesbrough and Roosenbloom (C & R)

- **Value proposition.**
- Market segment.
- **Firm organisation and value chain**
- Cost structure and profit potential.
- Competitive Strategy
- **Firm in the value network**



## **Chesbrough and Roosenbloom (C & R)**

- *Value proposition.*
  - What can our product offer that is new and unique compared to what's available on the market today?
- *Firm organisation and value chain*
  - What additional assets and functions will the firm need, in order to provide the service?
- *Firm in the value network.*
  - How is the firm positioned in the network of other players in the industry?

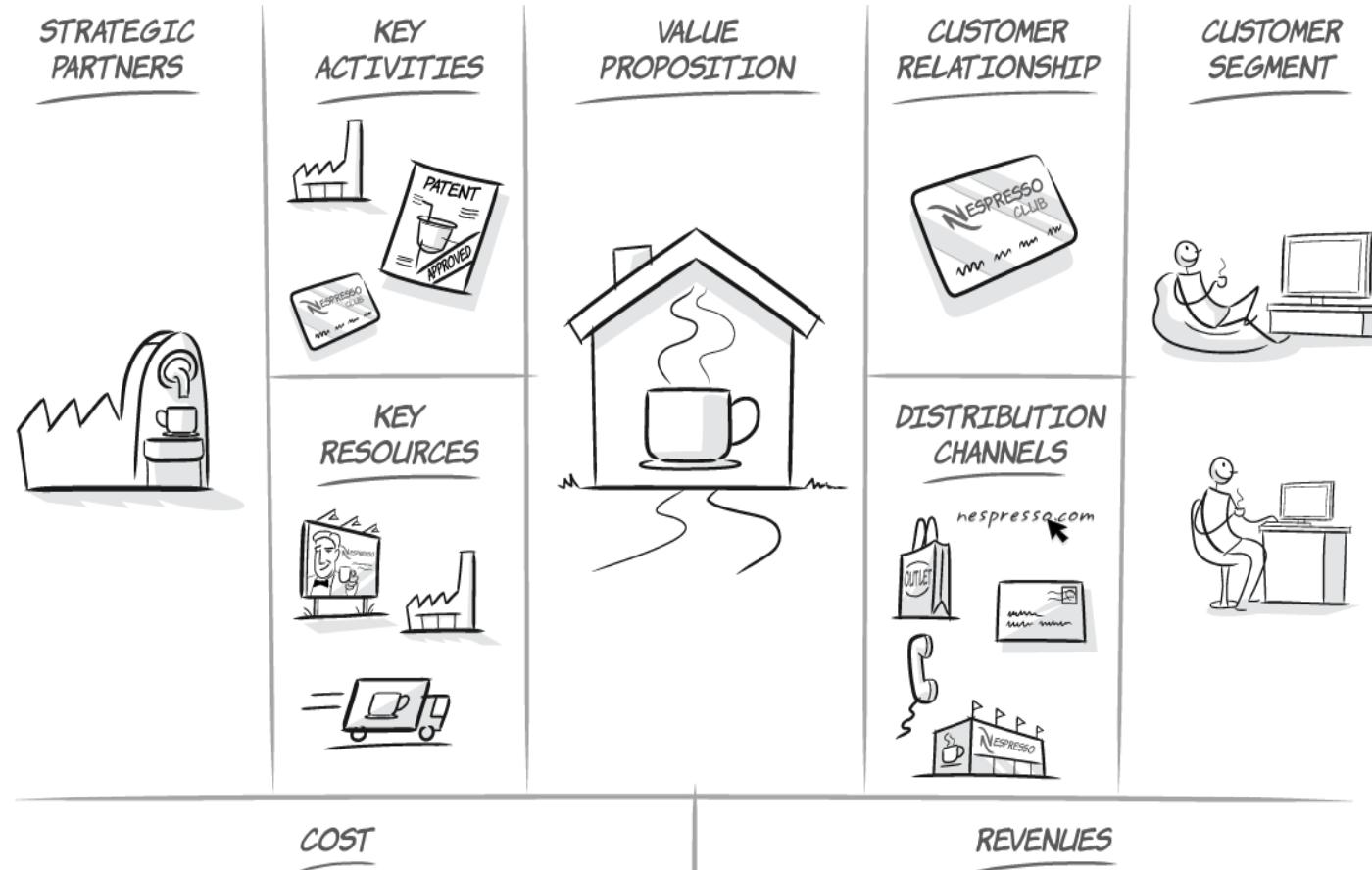


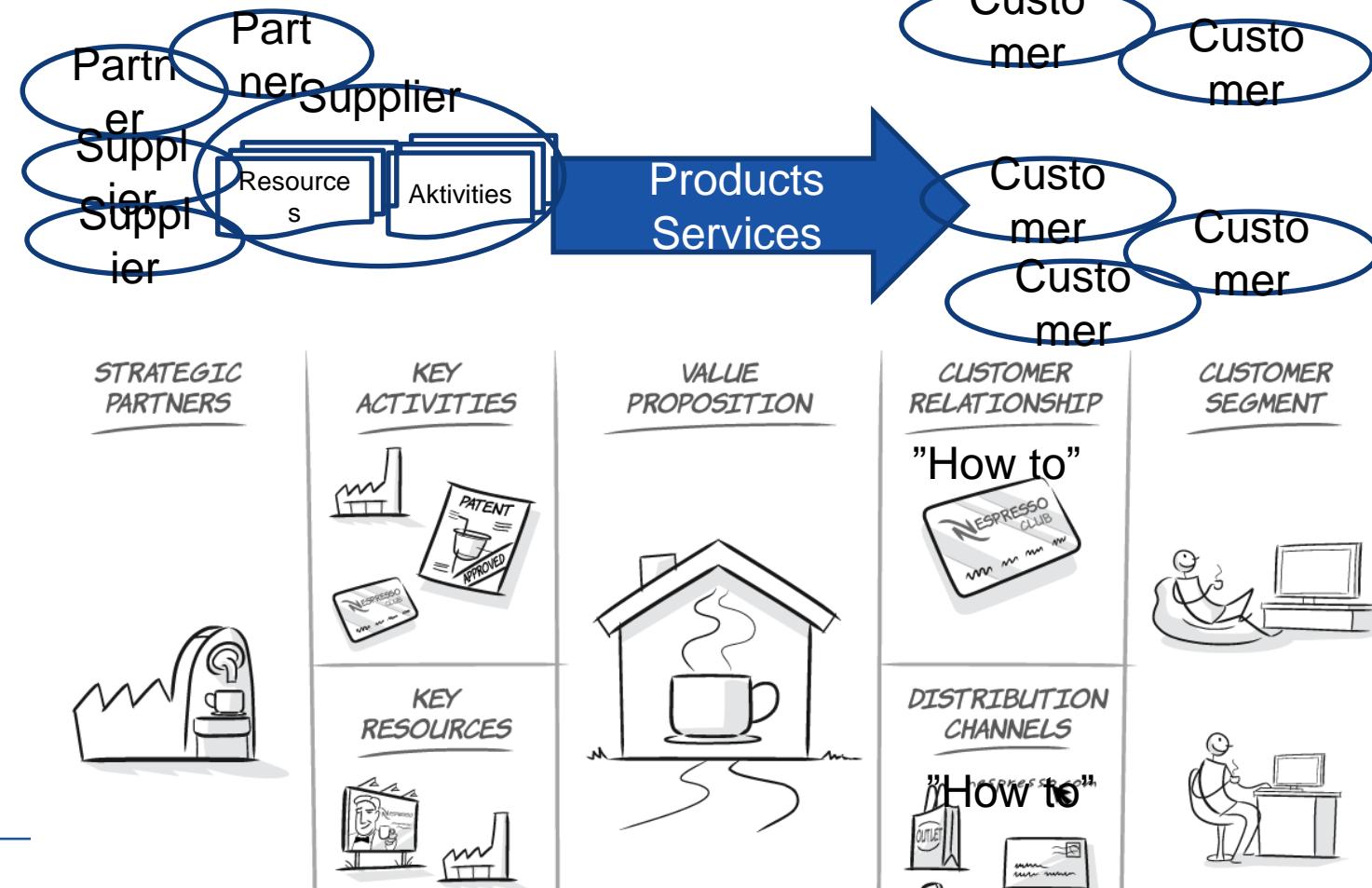
## Elements in the BM definition by C & R

- *Market segment.*
  - For what market segment is the service useful or of interest?
- *Cost structure and profit potential.*
  - Estimate the cost structure and profit potential of producing the service offering given the value constellations under study.
- *Competitive Strategy*
  - How is the position in relation to other competing firms?



# Osterwalder business model canvas





# Key aspects of value network analysis

- To Identify
  - To what industry sector(s) does the product/service belong?
  - Who can provide the service?
  - Who is a typical customer?
- Actors in the value network
  - Who is doing what?
  - What actors have contacts with the end-user?
  - Who has the business contract?
  - Who organizes the value network and the business?
  - Is there a main actor "captain"?



# Agenda today

- Examples of ecosystems related to mobile services
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  - – The connectivity business and mobile networks
  - Smartphones and mobile apps
- Analysis of two mobile services
  - Mobile payments
  - Mobile parking



# Components of a business ecosystem

- The actors
  - End users, providers, sellers and buyers, partners, competitors
- The conditions
  - The market structure and size, number and size of key actors
  - Level of competition, regulation, "politics"
- Interaction
  - How different actors interact under given conditions
  - Business networks, Value chains/Networks



# Examples of actors

- Users
  - Consumers, business users, companies
- Equipment vendors
  - Networks, subsystems, handsets, laptops
- Operators
  - Fixed and Mobile, Broadband, MVNO's
- Providers of applications and services
- Regulating authorities
- Standardization bodies (3GPP, IETF, IEEE)



# Market Actors

Network  
vendors

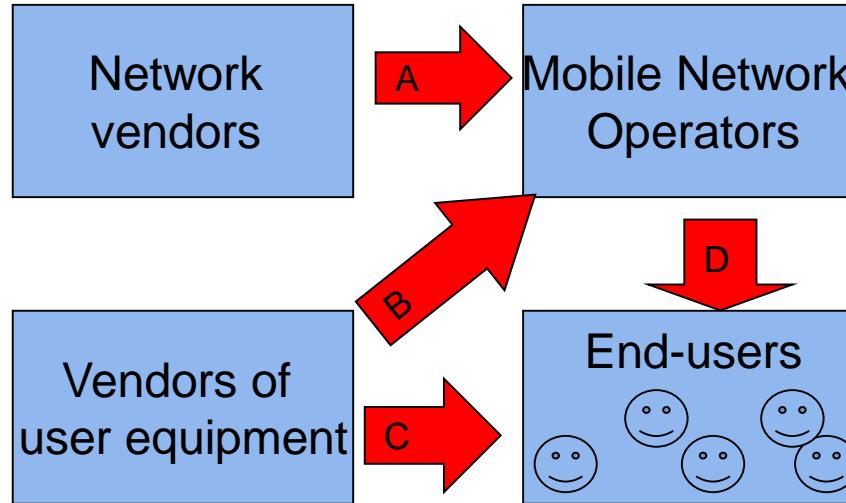
Mobile Network  
Operators

Vendors of  
user equipment

End-users



# Market Actors and different types of business

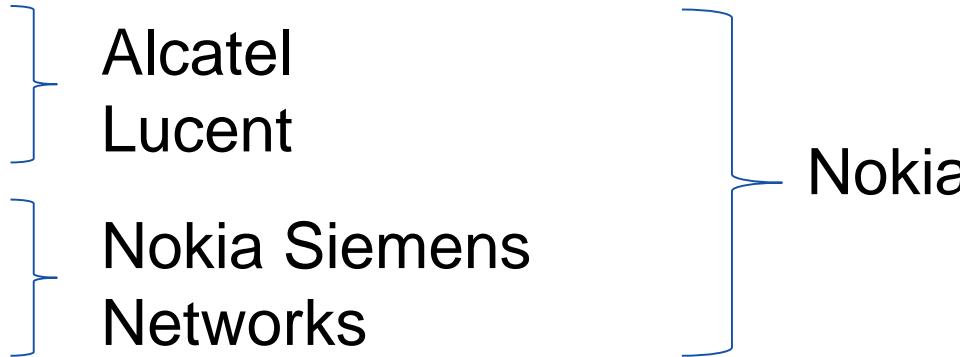




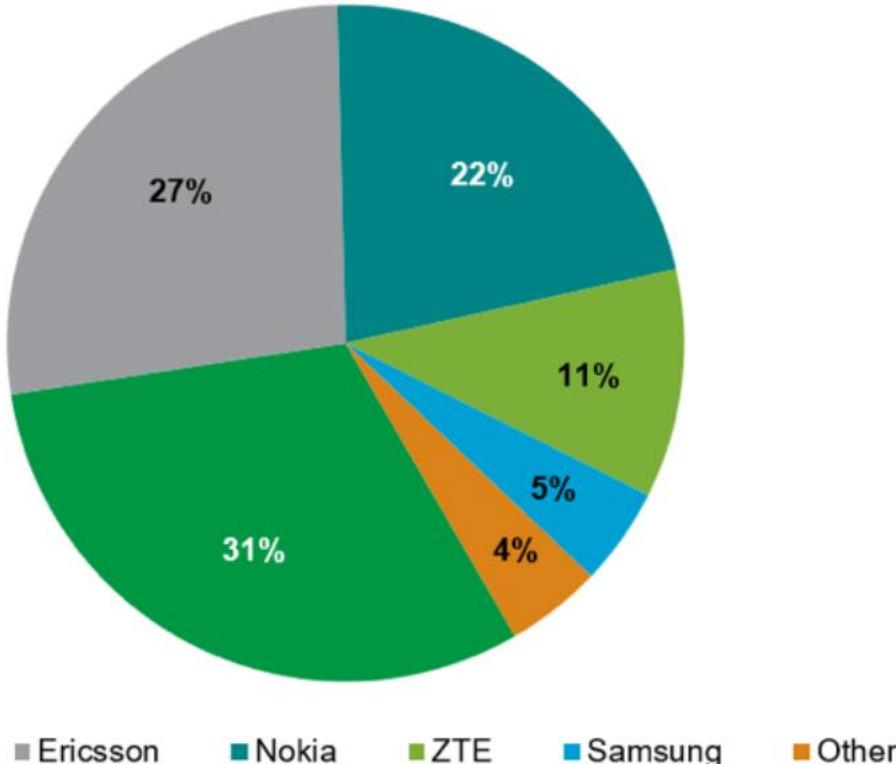
# Mobile network vendors – before year 2000

- Motorola
- Qualcomm
- Lucent
- Alcatel
- Siemens
- Nokia
- Ericsson

# Mobile network vendors – Mergers & acquisitions

- Motorola
  - Qualcomm
  - Lucent
  - Alcatel
  - Siemens
  - Nokia
  - Ericsson
- 
- The diagram illustrates the evolution of mobile network vendors through mergers and acquisitions. It shows a vertical list of companies on the left, with brackets on the right grouping them into larger entities. The companies listed are: Motorola, Qualcomm, Lucent, Alcatel, Siemens, Nokia, and Ericsson. Brackets group Alcatel, Lucent, and Nokia Siemens Networks under the label "Nokia".
- Alcatel
  - Lucent
  - Nokia Siemens Networks
  - Nokia

## 2G/3G/LTE mobile infrastructure market share 2018

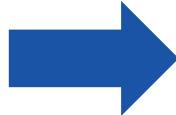


Source: IHS Markit

© 2019 IHS Markit



# Components of a business ecosystem



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# Ecosystem conditions – network examples

- Sweden: Merger of Tele2 and ComHem
- Sweden: Telia acquires Bonnier media incl TV4
- US: US bans Huawei as network vendor
- UK: Huawei and 5G
- Sweden: Huawei and ZTE and 5G auction
- OpenRAN innovation: Implications of ecosystems of open interfaces

COMHEM  
- Broadband  
- TV distribution

5 NOV, 2018, 08:50

## The merger between Tele2 and Com Hem is completed

Stockholm – The Swedish Companies Registration Office (“SCRO”) has today registered the merger between Tele2 AB (publ) (“Tele2”) (Nasdaq Stockholm: TEL2 A and TEL2 B) and Com Hem Holding AB (publ) (“Com Hem Holding”). The merger between Tele2 and Com Hem Holding is thereby completed and Com Hem Holding has been dissolved.

SCRO’s registration of the merger completes the merger process from a legal perspective and all of Com Hem Holding’s assets and liabilities have been transferred to Tele2. The merged entity will maintain the company name Tele2 AB (publ) and will continue to have its registered office in Stockholm, Sweden.

# TELIA COMPANY ACQUIRES BONNIER BROADCASTING

We are combining Telia Company's leading mobile and fixed network with one of the most successful commercial media houses in the Nordics.

Telia Company announced the acquisition of Bonnier Broadcasting, including TV4, C More and Finnish MTV, in July 2018.

Telia Company announced the acquisition of Bonnier Broadcasting, including TV4, C More and Finnish MTV, in July 2018. The deal has been subject to review by the EU Competition Authorities. On November 12 the European Commission declared that the review has been finalized and that the transaction is approved. The transaction was completed on December 2, 2019 which means that we can start working on bringing together the companies.

# Donald Trump extends Huawei ban through May 2021

President Donald Trump has extended [his executive order](#) banning US companies from working with or buying telecommunications equipment from companies deemed a national security risk until May 2021, [via Reuters](#).

While the ban doesn't explicitly call out specific companies, it's been used to virtually shut down US operations with Chinese companies like Huawei, which can no longer sell products in the US or work with companies like Google or ARM for critical software and licenses.

The White House issued its [original executive order](#) almost a year ago, barring US companies from doing business with Huawei [due to national security concerns](#) about the Chinese firm supplying equipment for network infrastructure (particularly as the US undergoes its ongoing rollout for 5G).



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## Huawei ban: UK to impose early end to use of new 5G kit

⌚ 30 November 2020



**Telecoms providers must stop installing Huawei equipment in the UK's 5G mobile network from September, the government has said.**

The announcement came ahead of a law being unveiled this afternoon, which bans the Chinese firm from the network.

Digital Secretary Oliver Dowden said he was pushing for the "complete removal of high-risk vendors" from 5G networks.

The new deadline falls earlier than expected, although maintaining old equipment will still be allowed.

Networks will now have to adjust their schedules for deployment of the reserves of Huawei 5G kit they have built up.

Previously, BT's EE division, Vodafone and Three UK would have had until 2027 to install any such equipment acquired before the end of this year - when a purchase ban comes into effect.

# Sweden bans Huawei, ZTE from upcoming 5G networks

PUBLISHED TUE, OCT 20 2020 3:55 AM EDT | UPDATED TUE, OCT 20 2020 10:19 AM EDT



SHARE



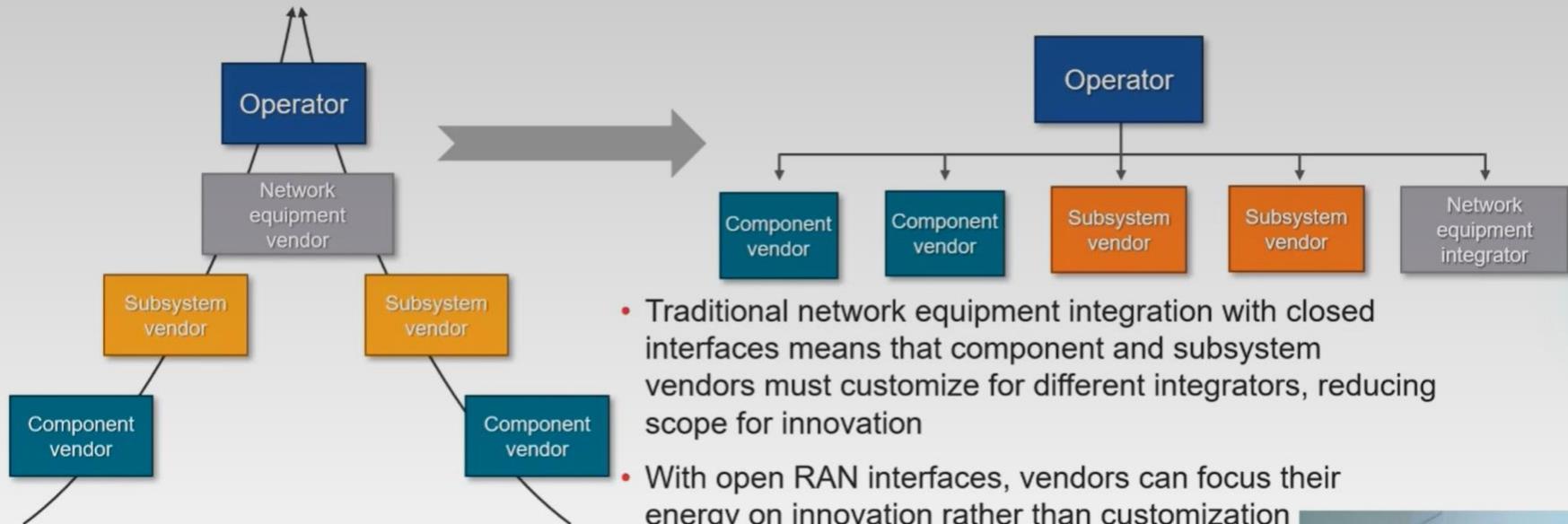
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## KEY POINTS

- European governments have been reviewing the role of Chinese companies in building their networks following pressure from the United States.
- Sweden's security service called China "one of the biggest threats" against the country.

# Enabling Innovation

## FLATTENING THE PYRAMID



# Enabling Innovation

## PULLING IN THE ‘OUTSIDERS’



3G.IP Membership List

Original 3GPP membership  
from August 2000

### Vendors

Alcatel  
Compaq  
Gemplus  
Ericsson  
Lucent  
Motorola  
Nokia  
Nortel Networks  
Siemens



## ORAN Membership, February 2021

### Artificial intelligence

### Wireless infrastructure vendors

### Routing, switching

### Compute servers



### Security

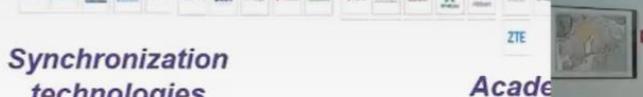


### Chip vendors

### Micro devices



### Cloud solutions



### Operating systems applications

### Synchronization technologies



- The open RAN revolution promises to attract many technology sectors that have traditionally not been thought of as ‘telecom’
- New ideas and innovation are likely to result from this influx
- Cross-pollination is key
  - Compute server vendors become wireless aware, and radio experts understand artificial intelligence (AI)

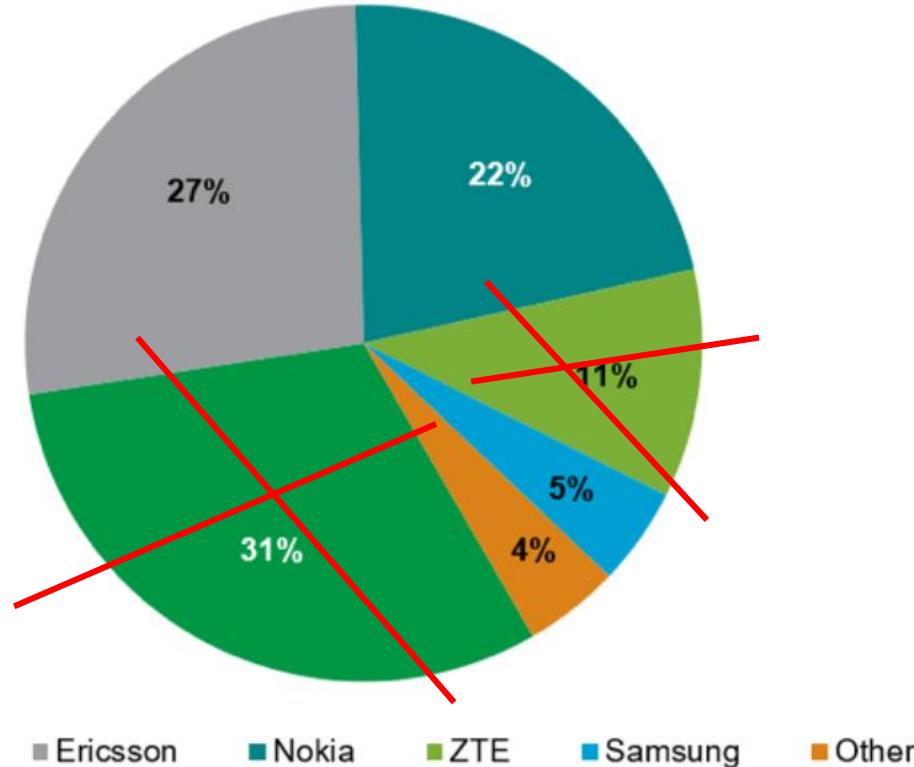


# Ecosystem conditions – network examples

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- US: US bans Huawei as network vendor
- UK: Huawei and 5G
- Sweden: Huawei and ZTE and 5G auction
- OpenRAN innovation: Implications of ecosystems of open interfaces

## 2G/3G/LTE mobile infrastructure market share 2018

- Reactions from actors
  - Ericsson
  - Operator Tre
  - Governments

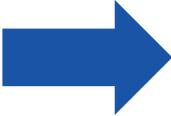


Source: IHS Markit

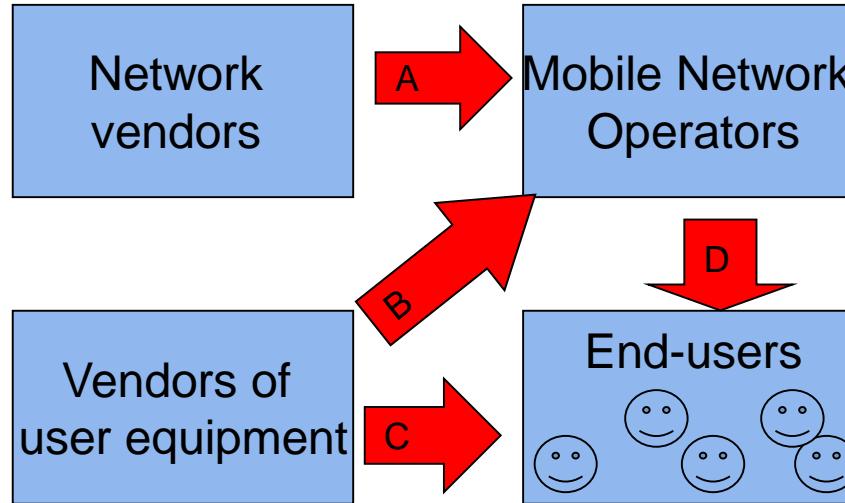
© 2019 IHS Markit

# Components of a business ecosystem

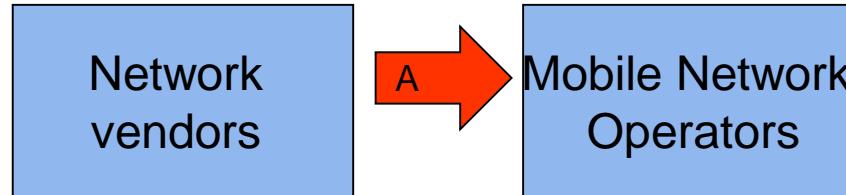
- The actors
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- The conditions
  - The market structure and size, number and size of key actors
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# Market Actors and different types of business



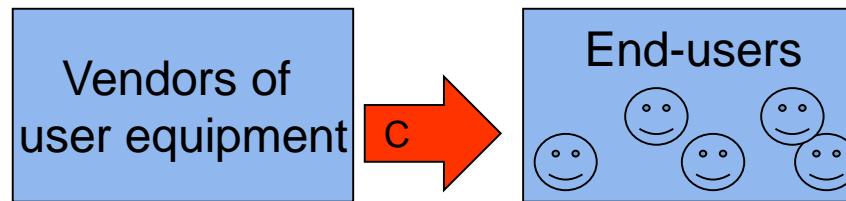
# Market Actors and different types of business



Business to Business (B2B)  
Few network vendors sell to few big actors  
Complex/large systems, long term  
Like railroads, aircrafts, defense systems

# Market Actors and different types of business

A consumer product  
Many individual users buying  
one or few handsets, laptops  
Like home electronics, clothes, shampoo



# Market Actors and different types of business

Consumer service (B2C)  
or to companies (B2B)  
Many individual users

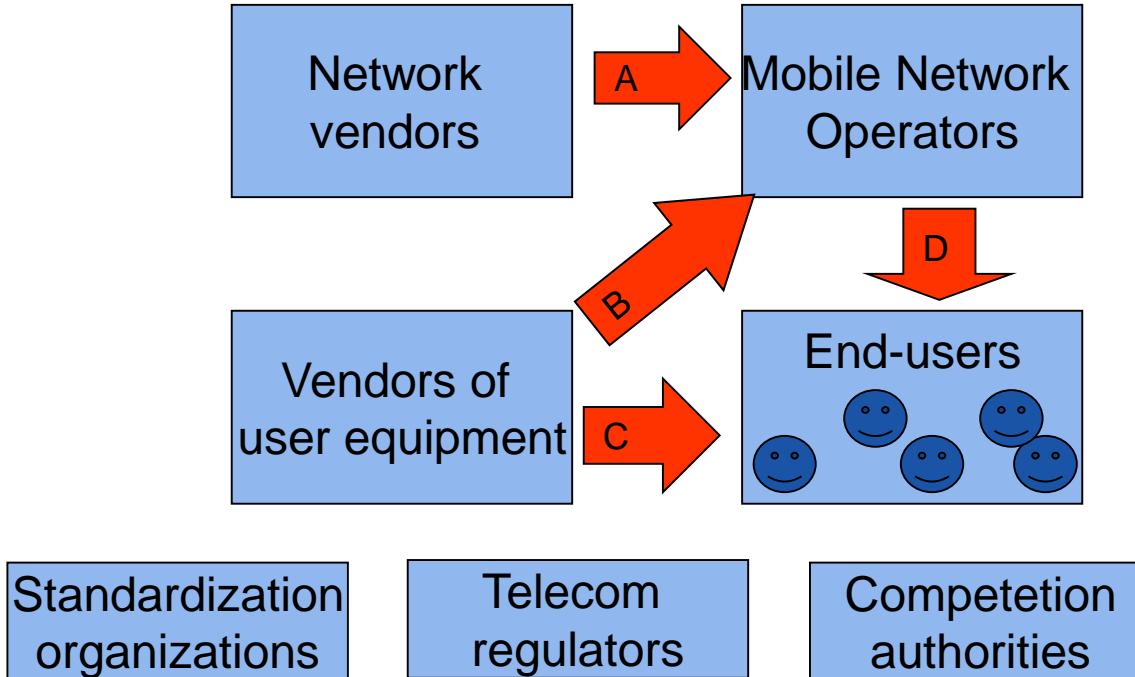
Like a public utility  
Compare electric power  
public transportation,  
Banking services

Mobile Network Operators

End-users  




# Other actors in the connectivity ecosystem

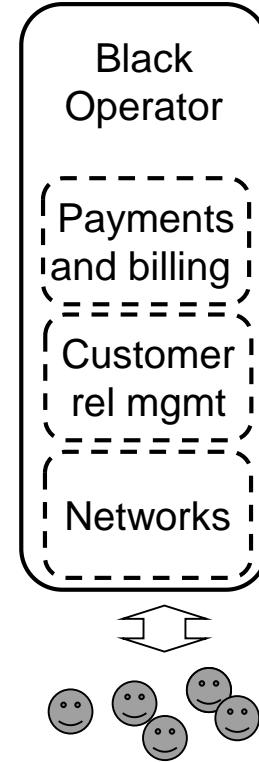


# Key aspects of value network analysis

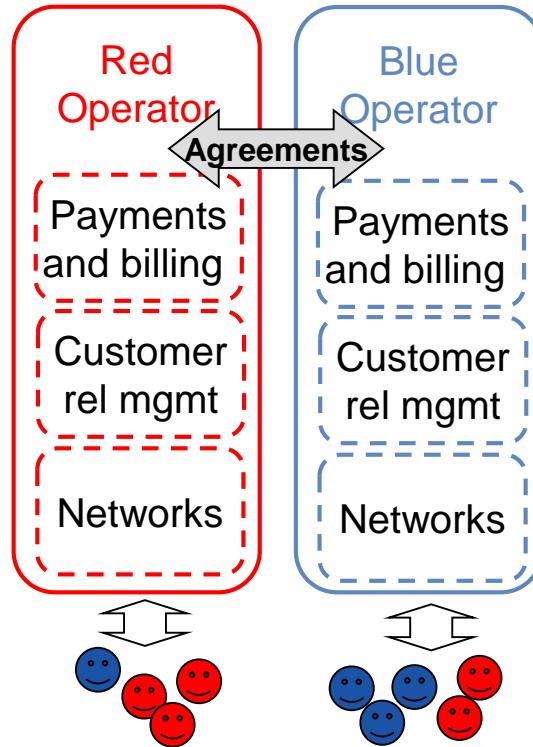
- Value chain vs value network
- ARA (Actor, Resources, Activities)
  - What kind of resources each actor control
  - What kind of activities are performed by whom
- Network aspects
  - How different activities/actors interact
  - How the network is configured
- Market position and role
  - What position does different actors take?
  - Who has the main customer contact?
  - Is there a main actor? A Captain?

# Mobile Network Operators (MNOs)

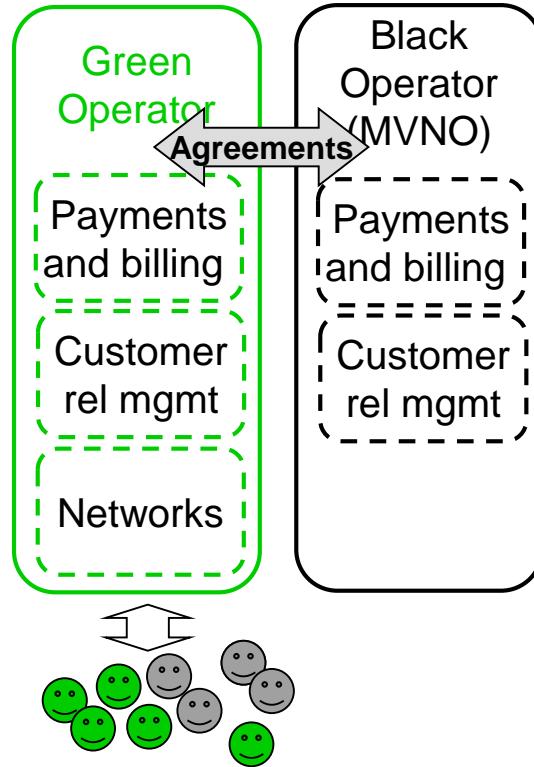
- MNOs have different resources (capabilities) and functionality to control the resources
  - Networks
  - Customer relation management
  - Billing and payment platforms



# National roaming

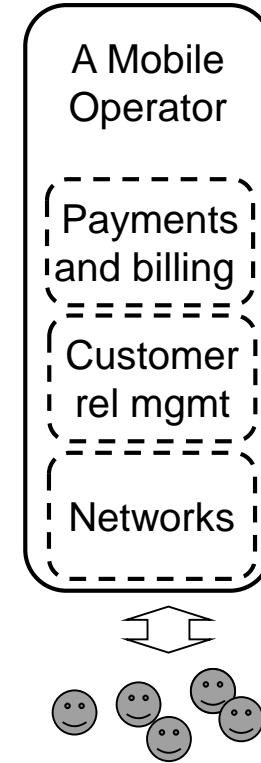


# Mobile virtual network operator (MVNO)



# Value chain – Mobile operator

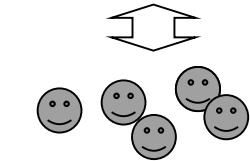
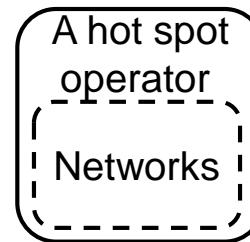
- Traditionally mobile operators have been responsible for all or most of the resources (a vertically integrated value chain)
  - No need to cooperate



# Value chain – WiFi access

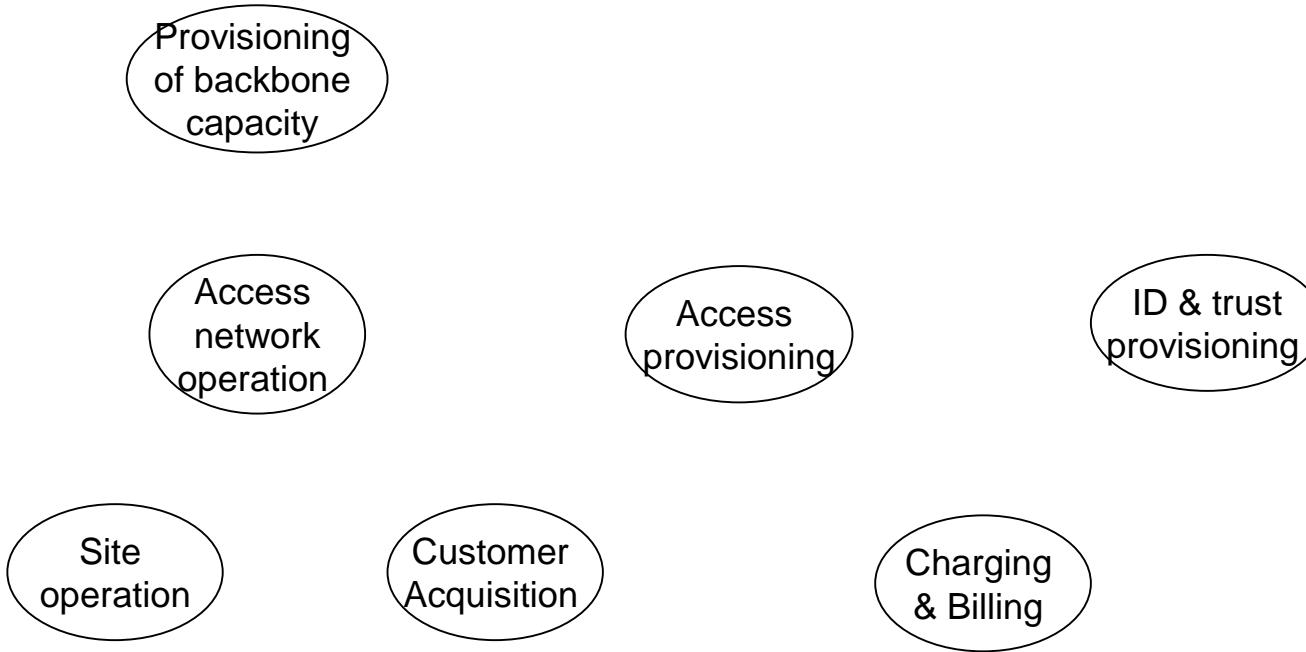
- The vertically integrated value chain is "opened up" and the activities and resources can be controlled by different actors

An example  
WLAN access

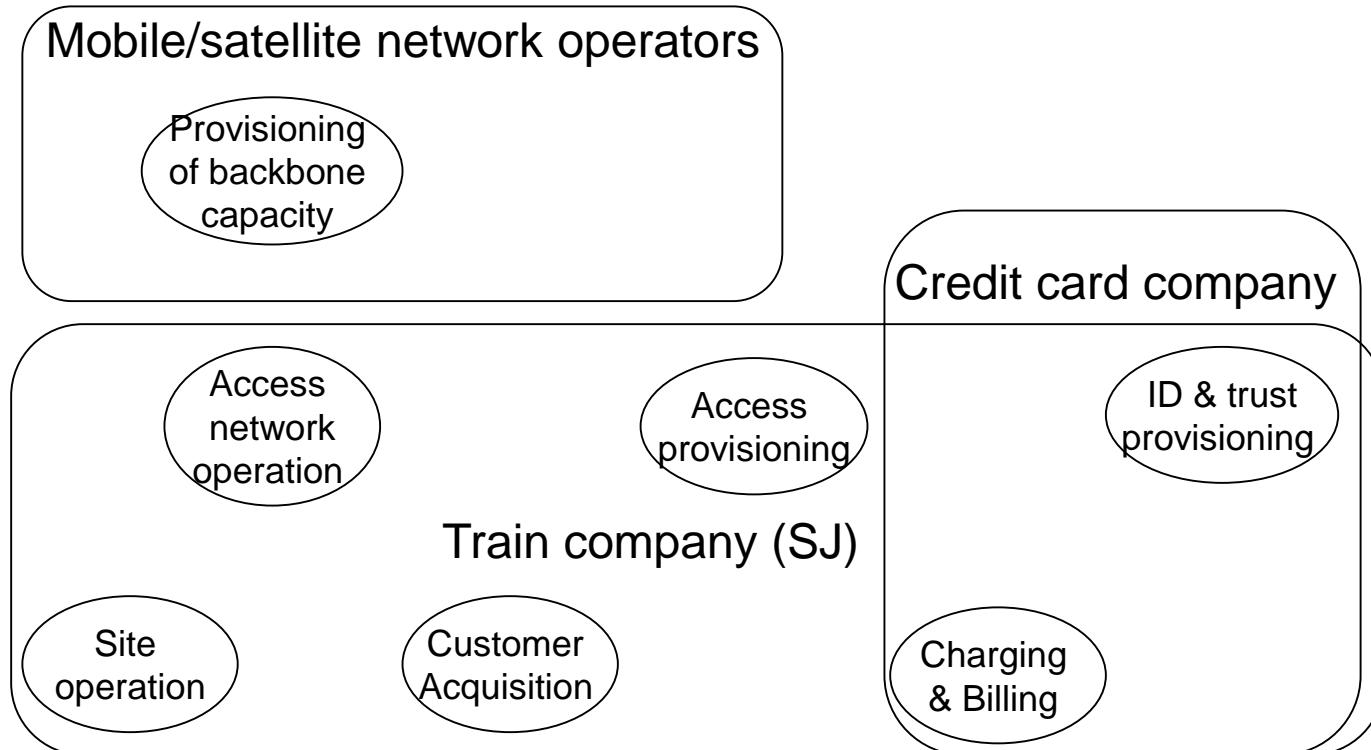


# The example of WiFi business

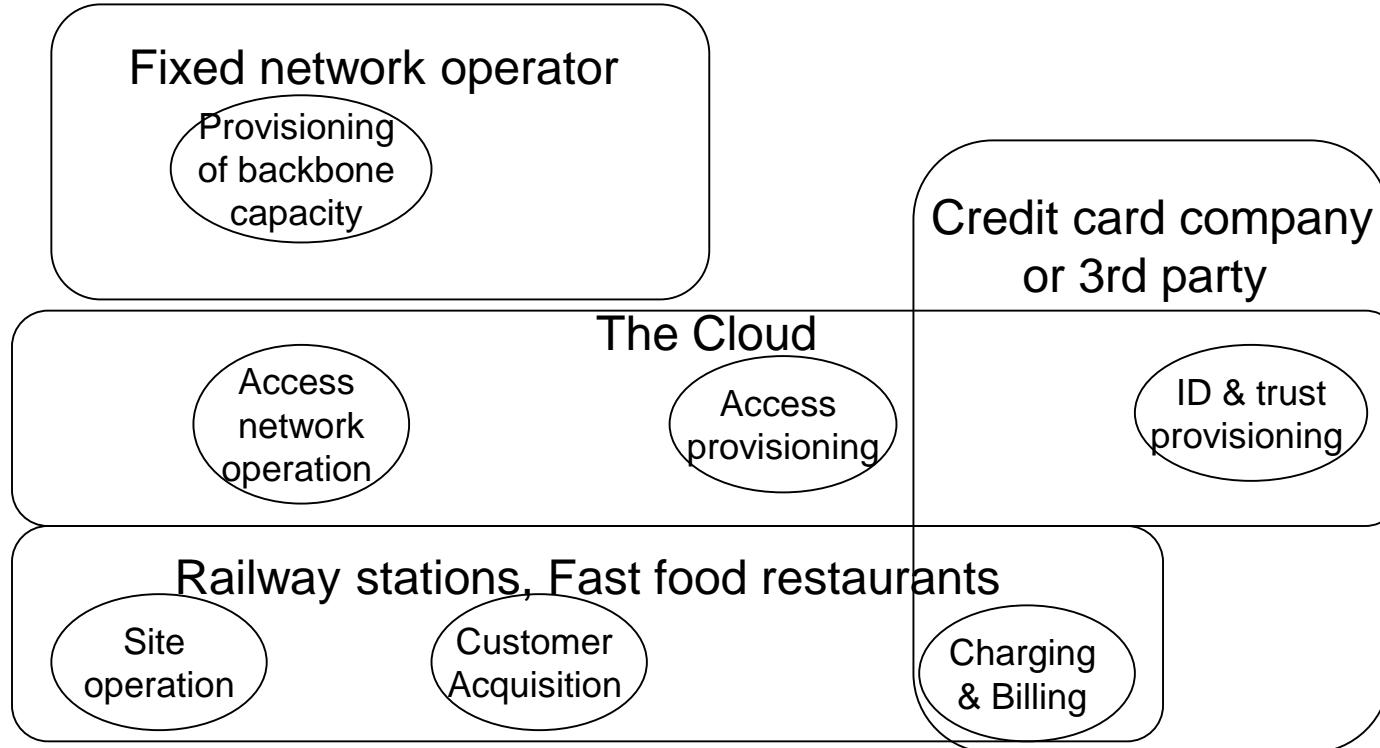
## Business roles and value networks



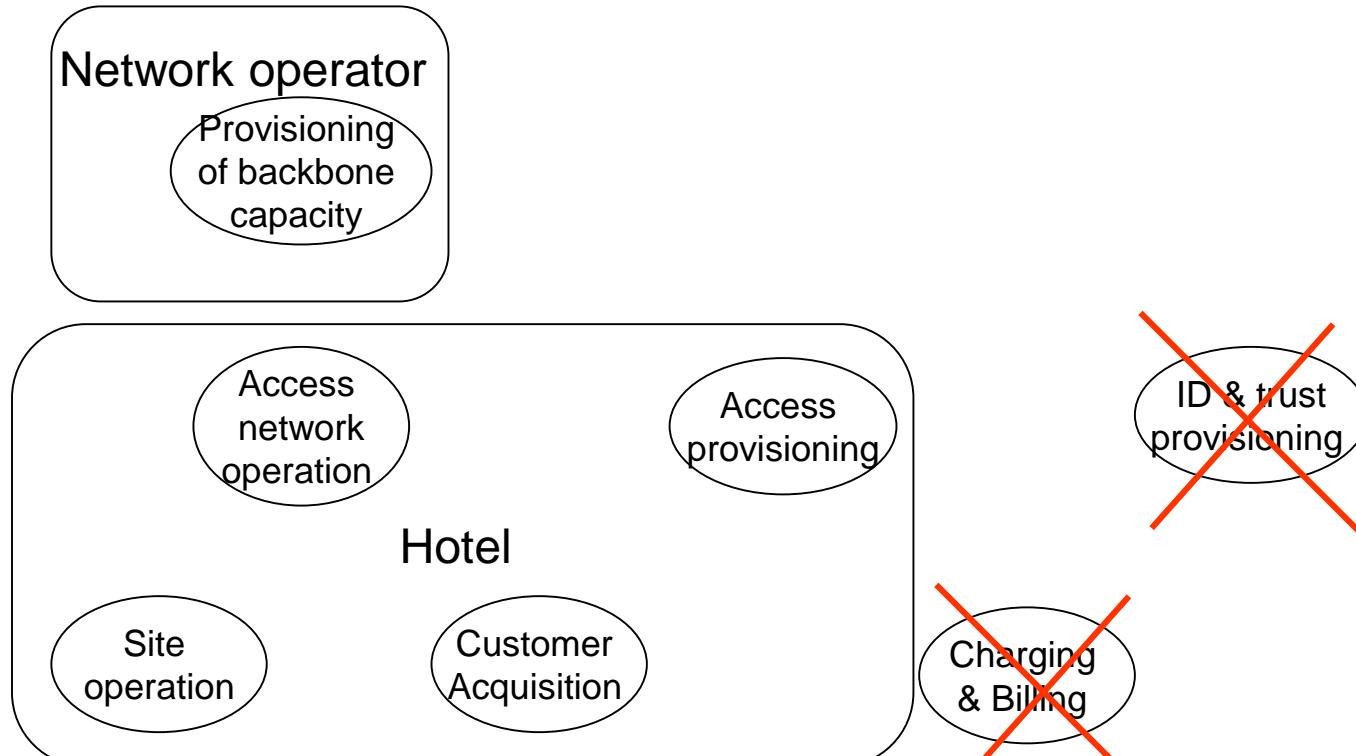
# The site owner takes most business roles



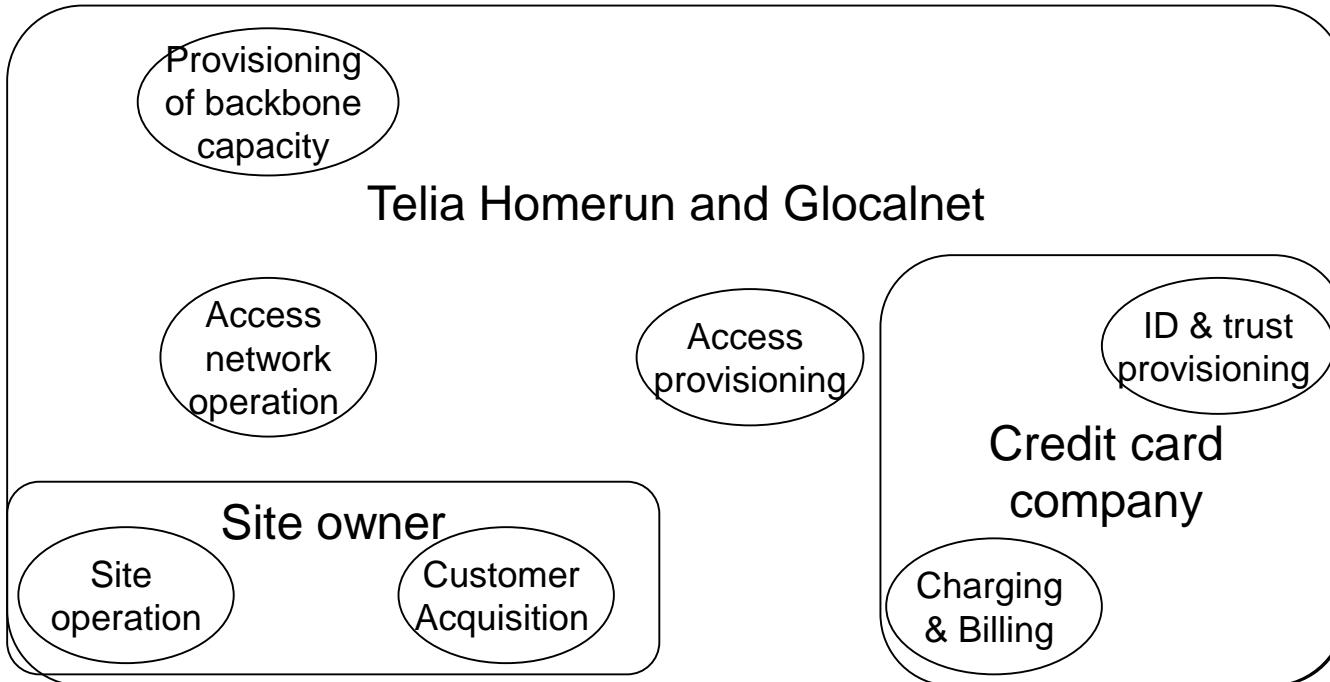
# Shared responsibility between the site owner and the network operator



# Open access provided by the site owner



# Network operator takes most business roles





# Drivers and Mechanisms

- Drivers
    - To support the core business of “site owners”
      - > *Food, Travels, Hotel nights, Broadband subscriptions*
    - To make money on the access service “itself”
    - The “principle” of open and free wireless access
      - > *Sharing of resources or as public utility*
  - Beneficial “Mechanisms”
    - Different parts of the value network must work smoothly together, one bundled offer to the customer
    - Different payment options should be possible
    - Re-use of existing trust or billing relations
- Note! Connectivity can “be” the “real service”  
but it can also be an enabler or support for the “real service”



# Agenda today

- Examples of ecosystems related to mobile services
- General about business ecosystems
  - Structure and key components
  - Models and methods for business analysis
- Analysis of Mobile ecosystems
  - The connectivity business and mobile networks
  - Smartphones and mobile apps
- Analysis of two mobile services
  - Mobile payments
  - Mobile parking



# Components of a business ecosystem

- 
- The actors
    - End users, providers, sellers and buyers, partners, competitors
  - The conditions
    - The market structure and size, number and size of key actors
    - Level of competition, regulation, "politics"
  - Interaction
    - How different actors interact under given conditions
    - Business networks, Value chains/Networks

## Mobile ecosystems: Recomposition of ecosystems thanks to application stores

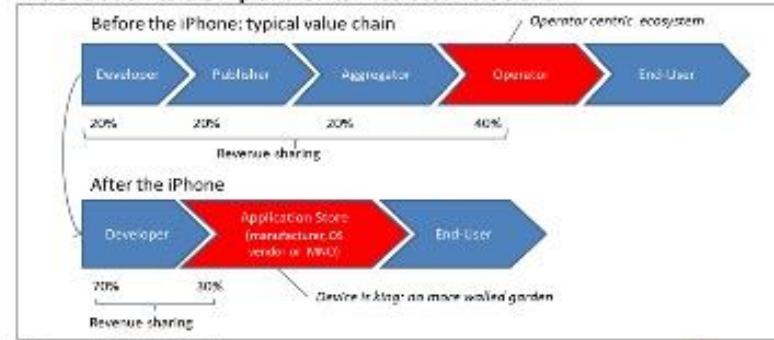
### More attractive for developers

- More revenues, more flexibility

#### Mobile industry simplified value chain



#### The evolution to a simpler disintermediated value chain



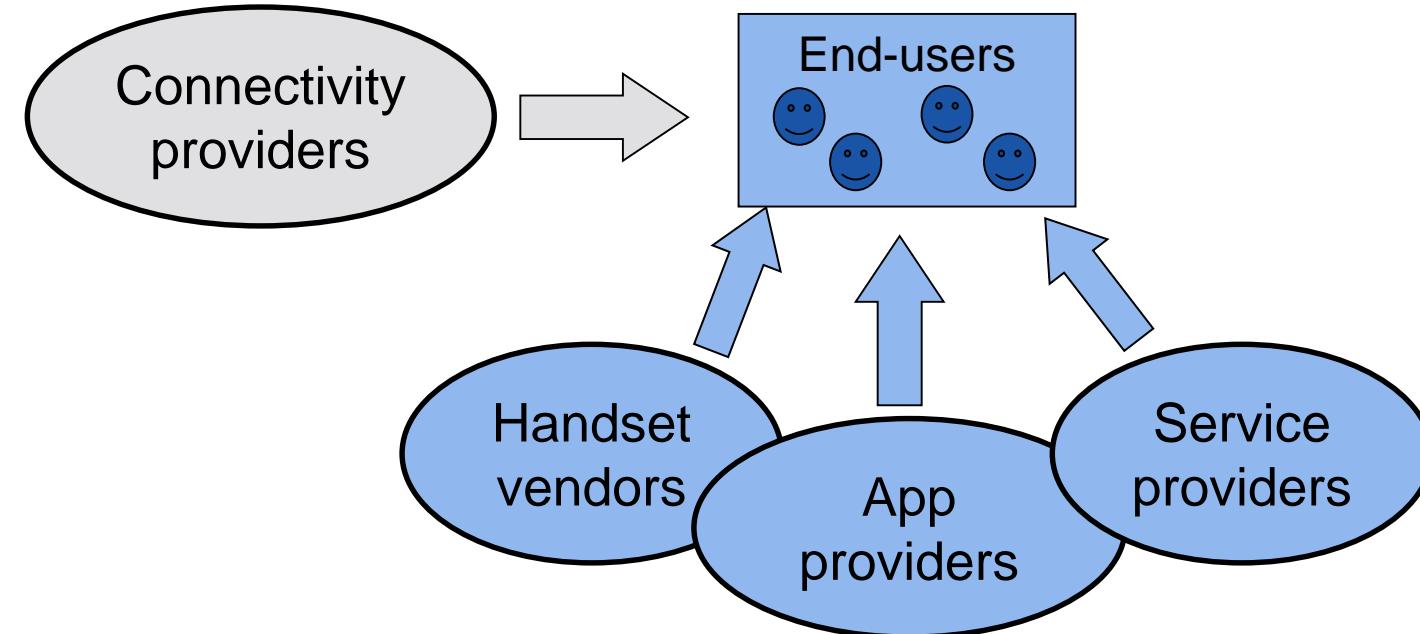
Source: IDATE DigiWorld

[www.idate.org](http://www.idate.org) © IDATE DigiWorld 2016 – p. 5

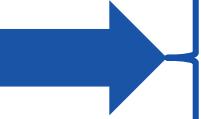
### Mobile industry simplified value chain



# Smartphone, app and service providers

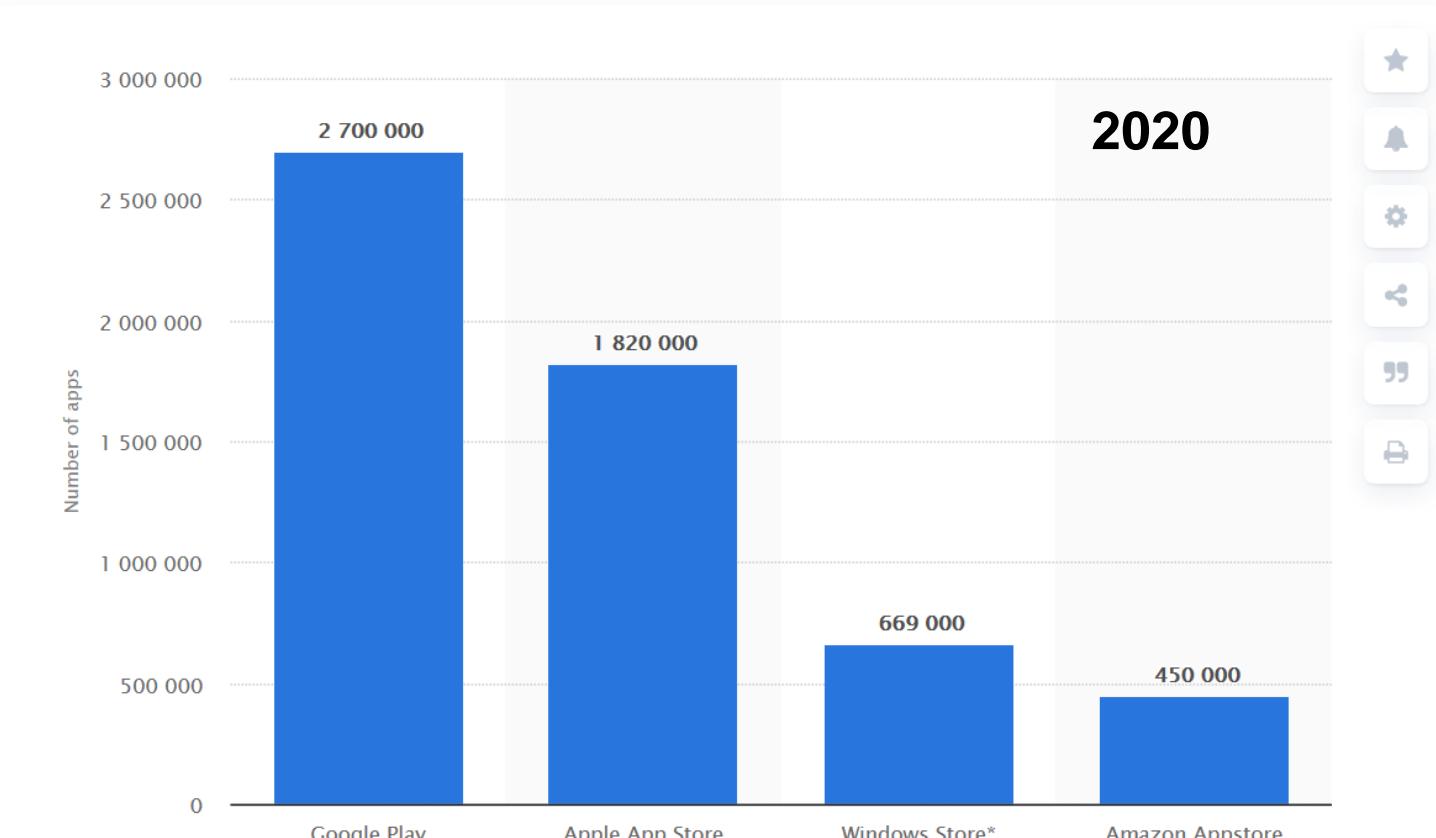


# Components of a business ecosystem

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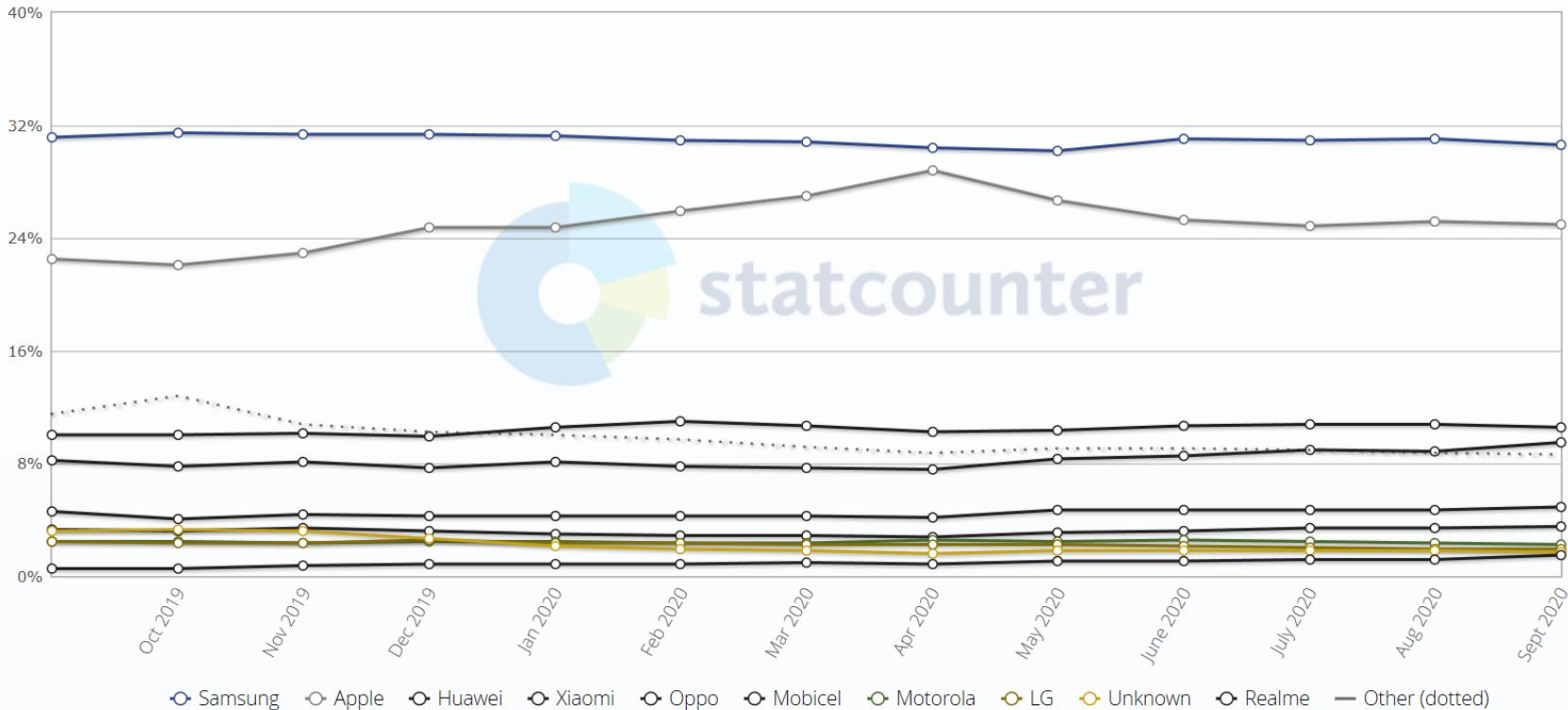
# Number of apps available in leading app stores as of 2nd quart



# Mobile Vendor Market Share Worldwide

Sept 2019 - Sept 2020

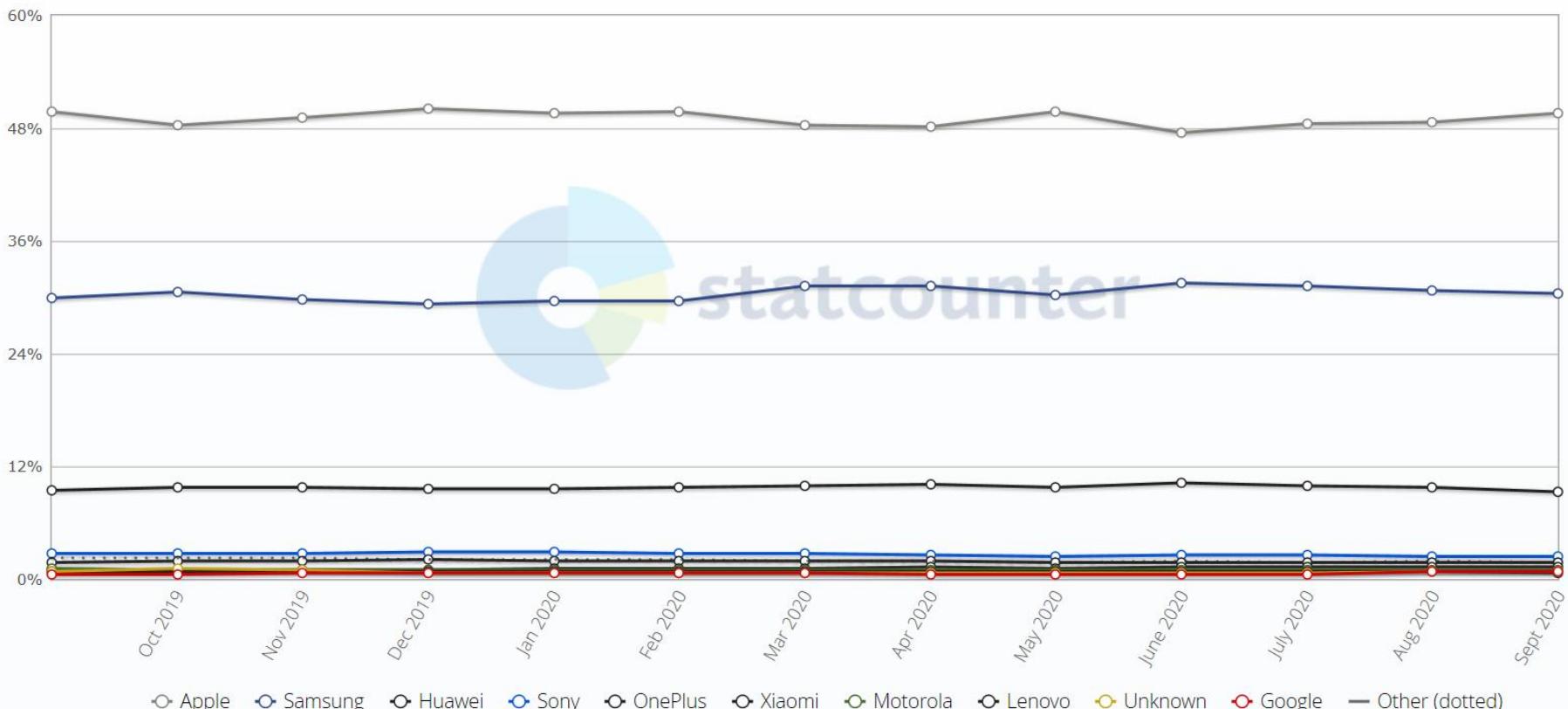
Edit Chart Data



# Mobile Vendor Market Share Sweden

[Edit Chart Data](#)

Sept 2019 - Sept 2020

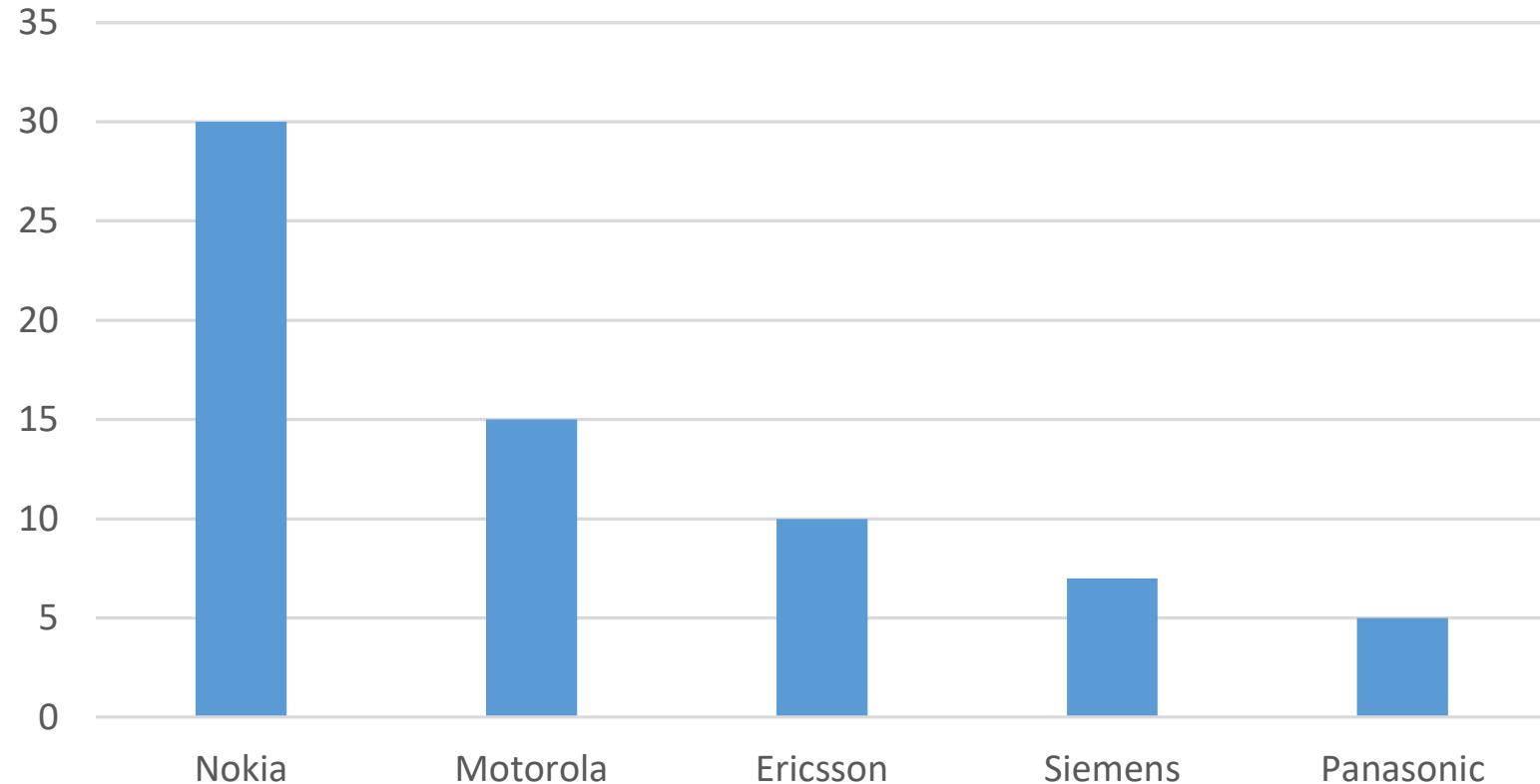


# Market shares - Handset vendors 2010

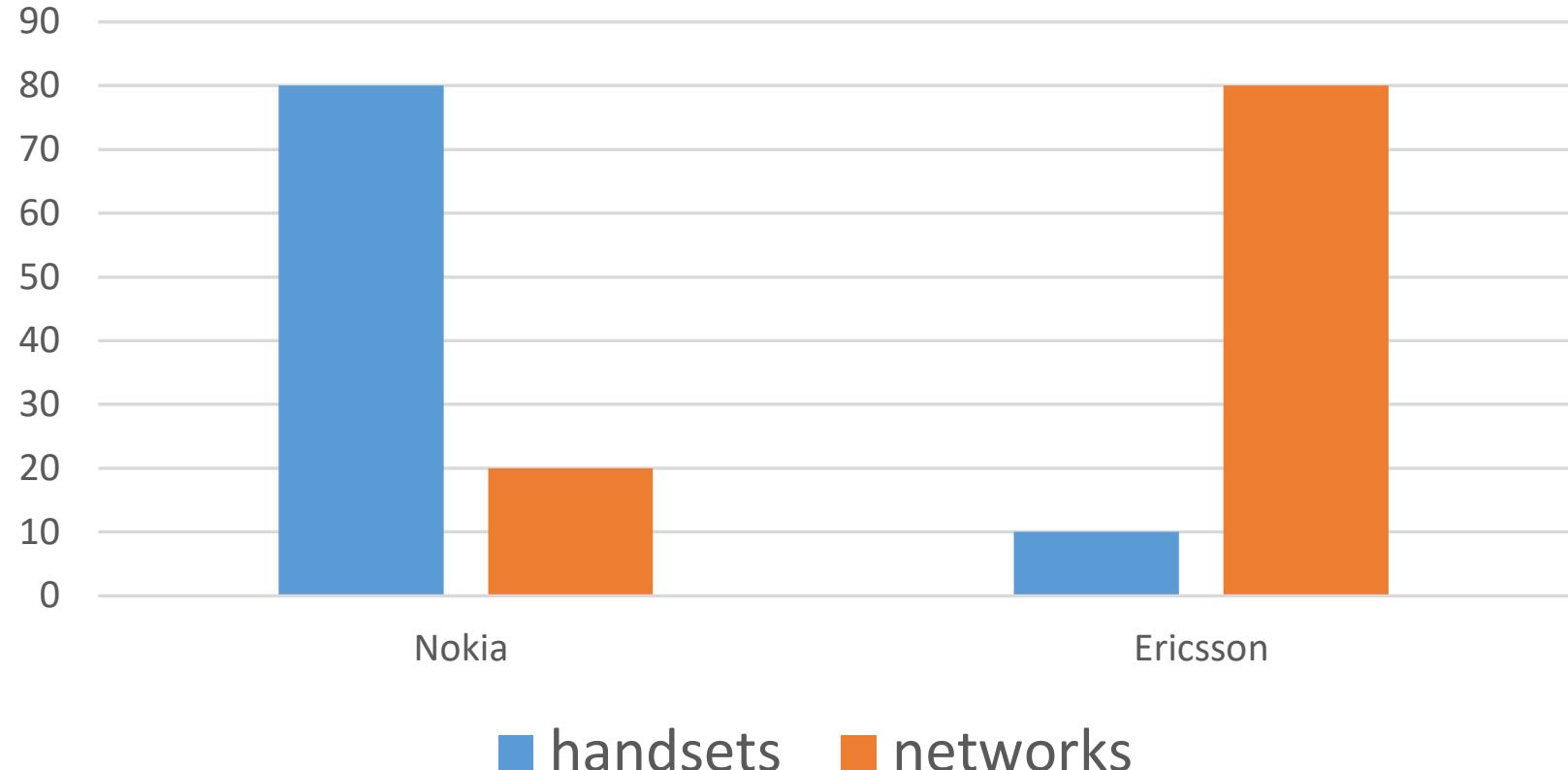
Nokia, which is revamping its smart phone strategy, is still a market leader with 32.4% market share in shipments. Sony Ericsson has dropped from the top 5 list. It has shipped 10.2 million handsets. Samsung and LG occupied second and third positions respectively.

Vendor	3Q10 Unit Shipments	3Q10 Market Share	3Q09 Unit Shipments	3Q09 Market Share	3Q10/3Q09 Change
Nokia	110.4	32.40%	108.5	36.50%	1.80%
Samsung	71.4	21.00%	60.2	20.30%	18.60%
LG Electronics	28.4	8.30%	31.6	10.60%	-10.10%
Apple	14.1	4.10%	7.4	2.50%	90.50%
R.I.M.	12.4	3.60%	8.5	2.90%	45.90%
Others	103.8	30.50%	80.9	27.20%	28.30%
Total	340.5	100.00%	297.1	100.00%	14.60%

## Market share handsets 2000



# Size of business 2000 (Internal relations)



# Nokia

- Nokia is now a networking company
- Nokia did not see or react "enough" when smartphones did appear
- Nokia handset market shares decreased after 2010
- The handset business was acquired by Microsoft 2013

Apple iPhone 2007



# Mobile network vendors – Mergers & acquisitions

- Motorola
- Qualcomm
- Lucent
- Alcatel
- Siemens
- Nokia
- Ericsson

Alcatel

Lucent

**Nokia Siemens  
Networks**

**Nokia**

- Facebook (FB)
- Amazon (AMZN)
- Apple (AAPL)
- Netflix (NFLX)
- Alphabet (GOOG)



FAANG company	Market Cap, Sept. 2	Market Cap, Sept. 4	Market value lost
<b>Facebook</b> ( <a href="#">NASDAQ:FB</a> )	\$862 billion	\$828 billion	\$34 billion
<b>Apple</b> ( <a href="#">NASDAQ:AAPL</a> )	\$2.25 trillion	\$2.07 trillion	\$177 billion
<b>Amazon.com</b> ( <a href="#">NASDAQ:AMZN</a> )	\$1.77 trillion	\$1.69 trillion	\$83 billion
<b>Netflix</b> ( <a href="#">NASDAQ:NFLX</a> )	\$244 billion	\$233 billion	\$11 billion
<b>Google</b> parent <b>Alphabet</b> ( <a href="#">NASDAQ:GOOG</a> ) ( <a href="#">NASDAQ:GOOGL</a> )	\$1.18 trillion	\$1.13 trillion	\$49 billion

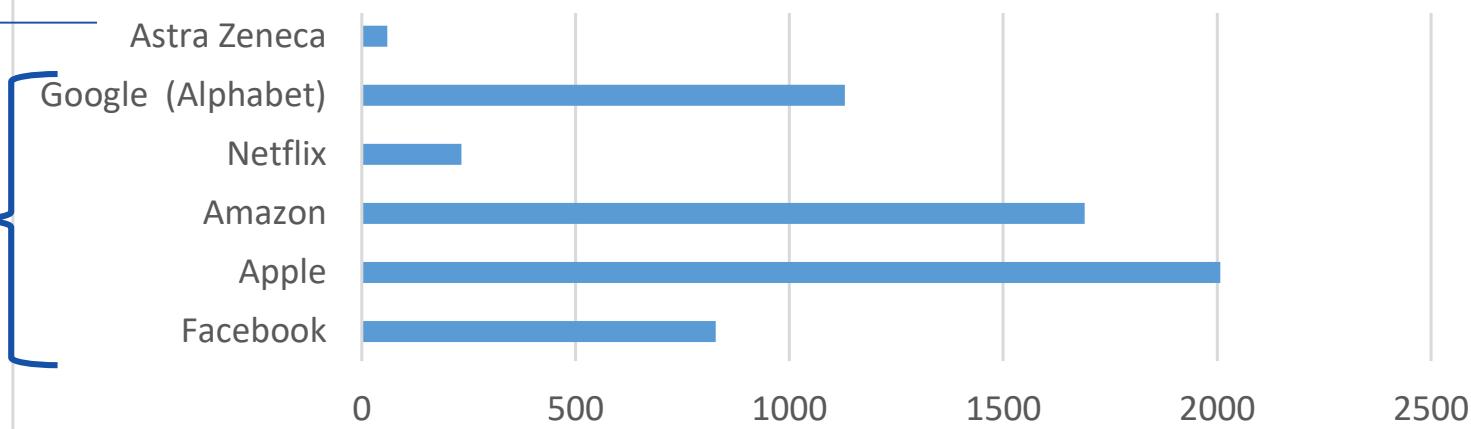
< DATA SOURCES: YCHARTS AND FINVIZ.COM. >



## Stock value Fall 2020 (\$ B)

"Largest" company  
at Stockholm  
stock exchange

"FAANG"



## Stock value Fall 2020 (\$ B)

Telecom  
operators  
& vendors

"Largest" company  
at Stockholm  
stock exchange

"FAANG"





# Questions to you

In relation to the FAANG business,  
please estimate the overall global size of business for

- A. Mobile infrastructure vendors?
- B. Mobile network operators ?

# Questions to you

In relation to the FAANG business,  
please estimate the overall global size of business for

A. Mobile infrastructure vendors?

Ericsson value is roughly 25%

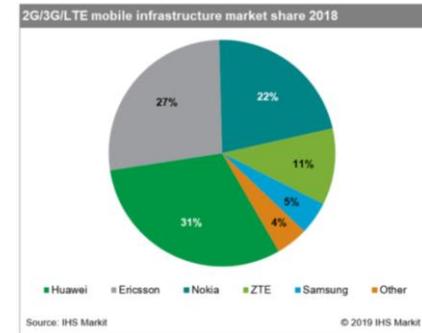
$$\begin{aligned} \Rightarrow \text{Global vendor value} &= 4 * \$30\text{B} \\ &= 120 \$\text{B} \end{aligned}$$

B. Mobile network operators ?

Assume that there are 100 or 200 Telia Companies

$$\Rightarrow 100-200 * \$20\text{B} = \$2000-4000\text{B}$$

the same order of magnitude as FAANG





# BUT

- In order to estimate "the real" size of a business you need to look into annual turnover, revenues and profit
- Stock value is not only dependent on profitability, it also depends a lot on "market expectations"

# Components of a business ecosystem

- The actors
  - End users, providers, sellers and buyers, partners, competitors
- The conditions
  - The market structure and size, number and size of key actors
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- Interaction
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# Conditions – examples for phones and apps

- US: Huawei Android ban
- Australia: Google and new legislation
- Australia: Facebook and new legislation
- EU: About Facebook proposal for regulation:  
"It's not for us to adapt to this company, it's for this company to adapt to us"



# Huawei Android ban: everything you need to know

Joe Svetlik - 28 May 2019 Last updated: 17 July 2020

Chinese smartphone maker Huawei is in hot water with western governments. The powers that be have accused the second biggest mobile maker in the world of spying and having close ties with the Chinese government, something Huawei strongly denies.

As a result, the US has effectively banned American companies from using the firm's equipment in its telecommunications infrastructure. This has led to Google cutting off Huawei's license to use Android, the world's most popular mobile operating system.

# Why has Google banned Huawei from Android?

Following this executive order, Google cut off Huawei's license to use Android. Google says it's just complying with the executive order and is "reviewing the implications".

In other words, Google will stop providing Huawei with technical support and collaborative efforts for Android and Google services.

That means Huawei has now been restricted to using the Android Open Source Project (AOSP). Huawei phones will still run Android, but they won't be able to access mainstay Google apps and services that you would expect to see on an Android phone.

It also impacts on the phones' security. Huawei will only be able to release security updates for Android once they're available in AOSP. Typically, these come much later to AOSP, which could be worrying when it comes to security updates. However, Huawei has confirmed that its devices will remain safe from malware and security bugs.



# Huawei reportedly expecting a 60% fall in smartphone shipments



Written by [Scott Bicheno](#) | 4 days ago

Orders put into the smartphone component supply chain indicate Huawei going to make a lot fewer devices this year due to US sanctions.



The insight comes courtesy of Nikkei Asia, which has been [chatting](#) to people in the supply chain. They apparently told it that Huawei has put in orders for 70-80 million smartphones this year, after [shifting](#) 187.7 million in 2020, which could amount to a 62% year-on-year decline. Huawei's 2020 total itself represented a 22% decline, albeit in an overall market that was down 10%.

It's not at all surprising that Huawei is expecting a rubbish year for its smartphone business, given the US embargo in its purchasing of key components, especially chips, and access to Google's mobile ecosystem. Even shifting 80 million under those circumstances would be remarkable, although we assume the vast majority of those would be within China. It should also be noted that these figures [no longer include](#) Honor branded phones.

So long as the US restrictions [remain in place](#) the decline of Huawei's smartphone business seems certain to continue. Even loyal Chinese punters will surely balk at buying a phone with substandard components and a [defeated](#) version of Android. Huawei is likely to be most compromised in the higher tiers, so most of those 70-80 million devices shipped will probably sell for a couple of hundred dollars at most.

# Google threatens to shut down in Australia over proposed tech law

BY HALEY OTT

JANUARY 22, 2021 / 12:47 PM / CBS NEWS



*London* – Google has threatened to shut down its search engine in Australia if the government there passes a new law to force big tech companies to pay local news producers for use of their content. The proposed Australian legislation, known as the News Media Bargaining Code, is the first of its kind in the world, and it's being seen as a test case of the power governments have to regulate big tech firms.

"If the Code were to become law in its current form, we would have no real choice but to stop making Google Search available in Australia," Mel Silva, managing director of Google Australia, said in a statement.

# Facebook will ban Australian users from sharing or viewing news

PUBLISHED WED, FEB 17 2021 1:56 PM EST | UPDATED WED, FEB 17 2021 3:15 PM EST



Salvador Rodriguez  
@SAL19

SHARE



---

## KEY POINTS

- Facebook announced that it will no longer allow publishers and users in Australia to share or view news content.
- Facebook's decision to ban Australian news stories from its service comes in stark contrast to Google, which struck a revenue-sharing agreement with News Corp. in accordance with the new law.

# EU won't let Facebook tell it how to regulate tech giants

EU officials dismissed Facebook's regulation recommendations.



C. Fisher | 02.17.20

The European Union won't let Facebook tell it how to regulate Big Tech. Today, EU industry commissioner Thierry Breton said Facebook will have to adapt to the EU's standards, not the other way around, [Reuters](#) reports.

This comes as Facebook is promoting its "[Charting a Way Forward: Online Content Regulation](#)" white paper, which offers guidelines for future regulations. Breton dismissed the guidelines proposed in Facebook's white paper as insufficient. He noted that Facebook didn't mention its own market dominance or clearly outline its responsibilities.

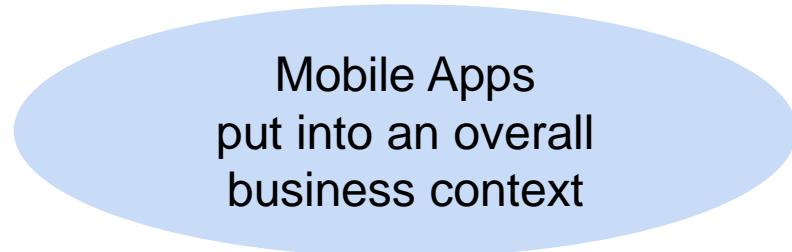


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# Agenda today

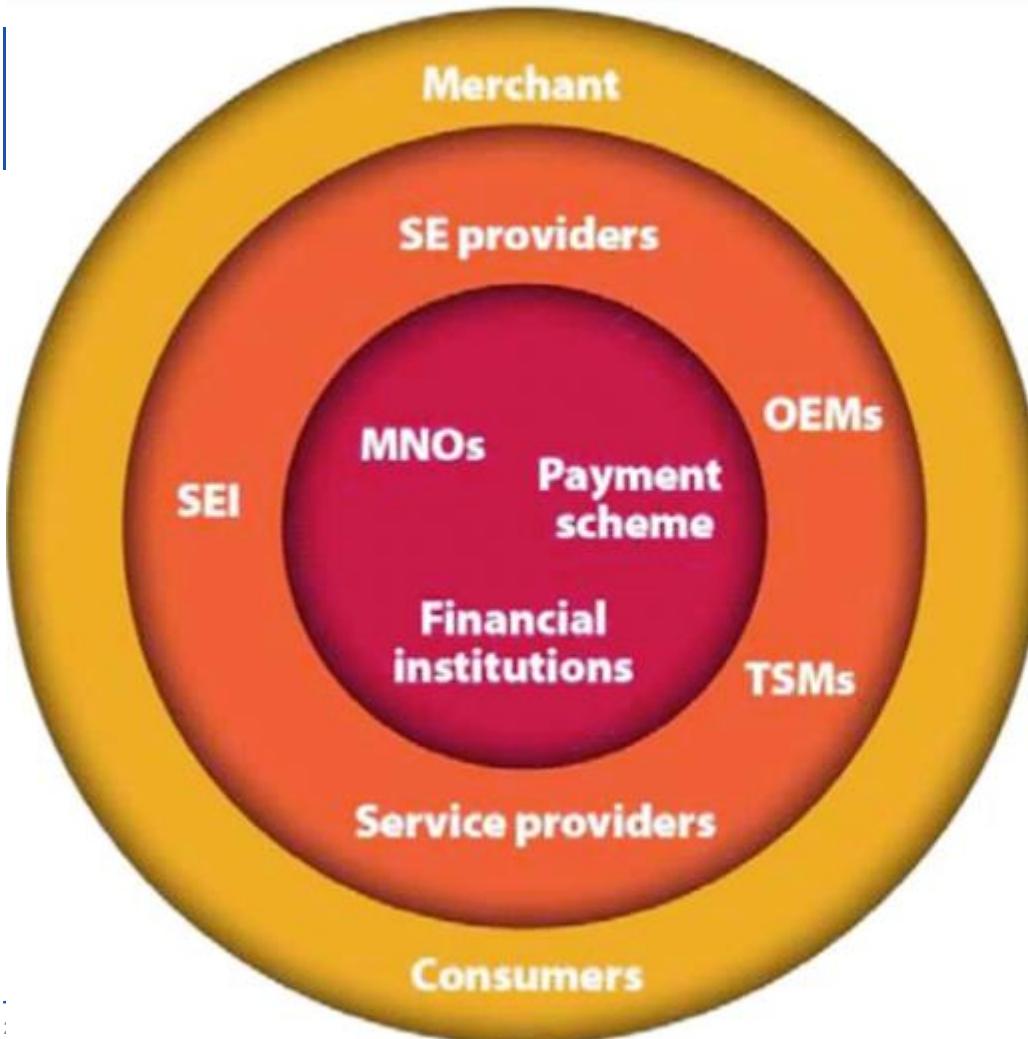
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  - Mobile payments
  - Mobile parking





# Mobile payments and mobile parking

- Some ecosystem descriptions
- Examples of "new" payment services
  - GSMA pay by mobile approach
  - Swedish initiatives (that disappeared)
- Examples from development of mobile parking

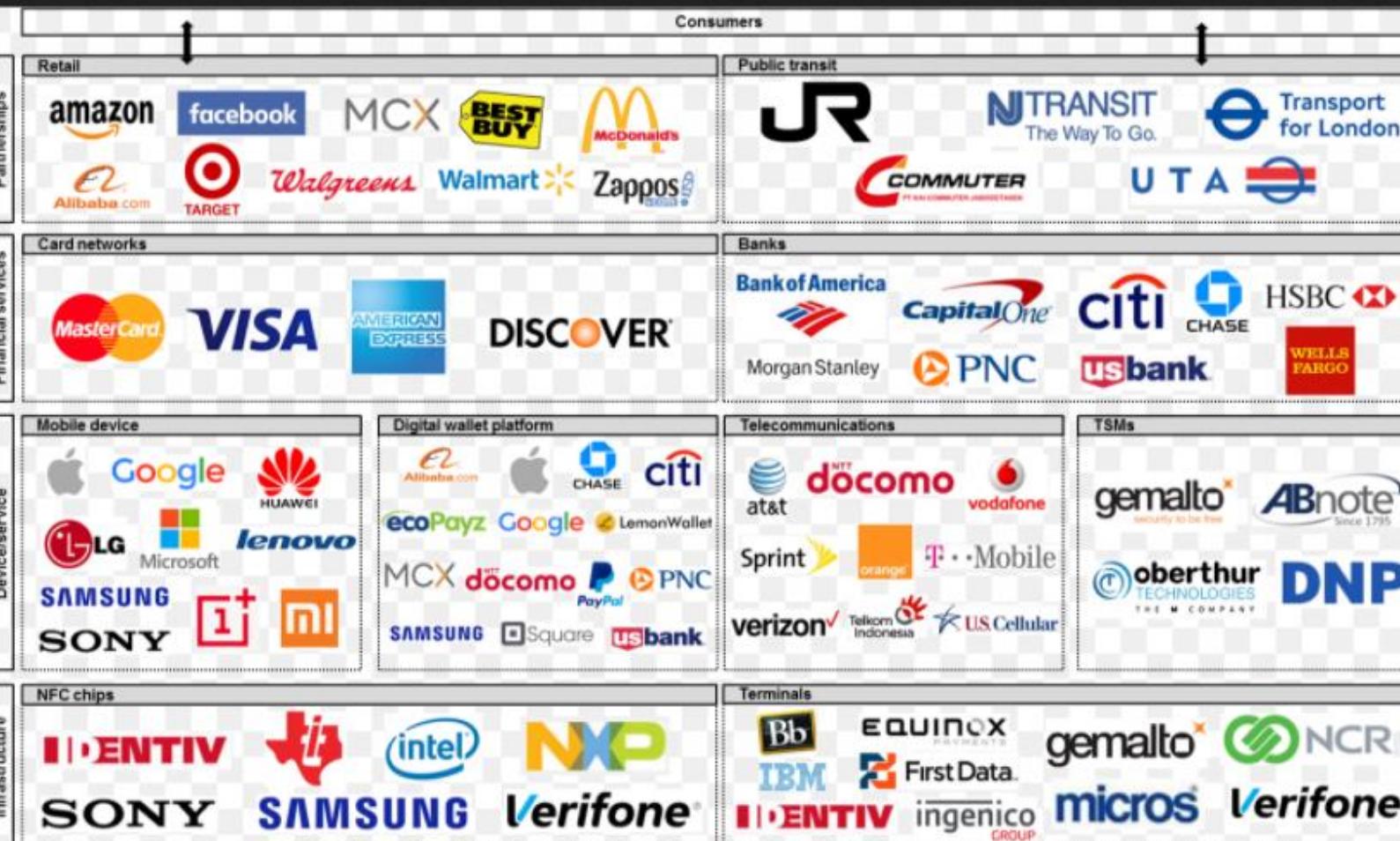


- Providers of the mobile payment service
- NFC technology providers
- Demand side

## DIGITAL PAYMENTS ECOSYSTEM



# Mobile payment ecosystem



# Mobile Payment Ecosystems

## Financial Ecosystem

Issuing Bank

Payment Networks

Acquiring Bank

## Mobile Ecosystem

NFC Chip Makers

Handset OEMs

Mobile Carriers

## Retail Ecosystem

POS Providers

Merchants

## Advertising Ecosystem

Ad Insertion

Rewards

Location-Based Offers

Contextual Awareness

Customer

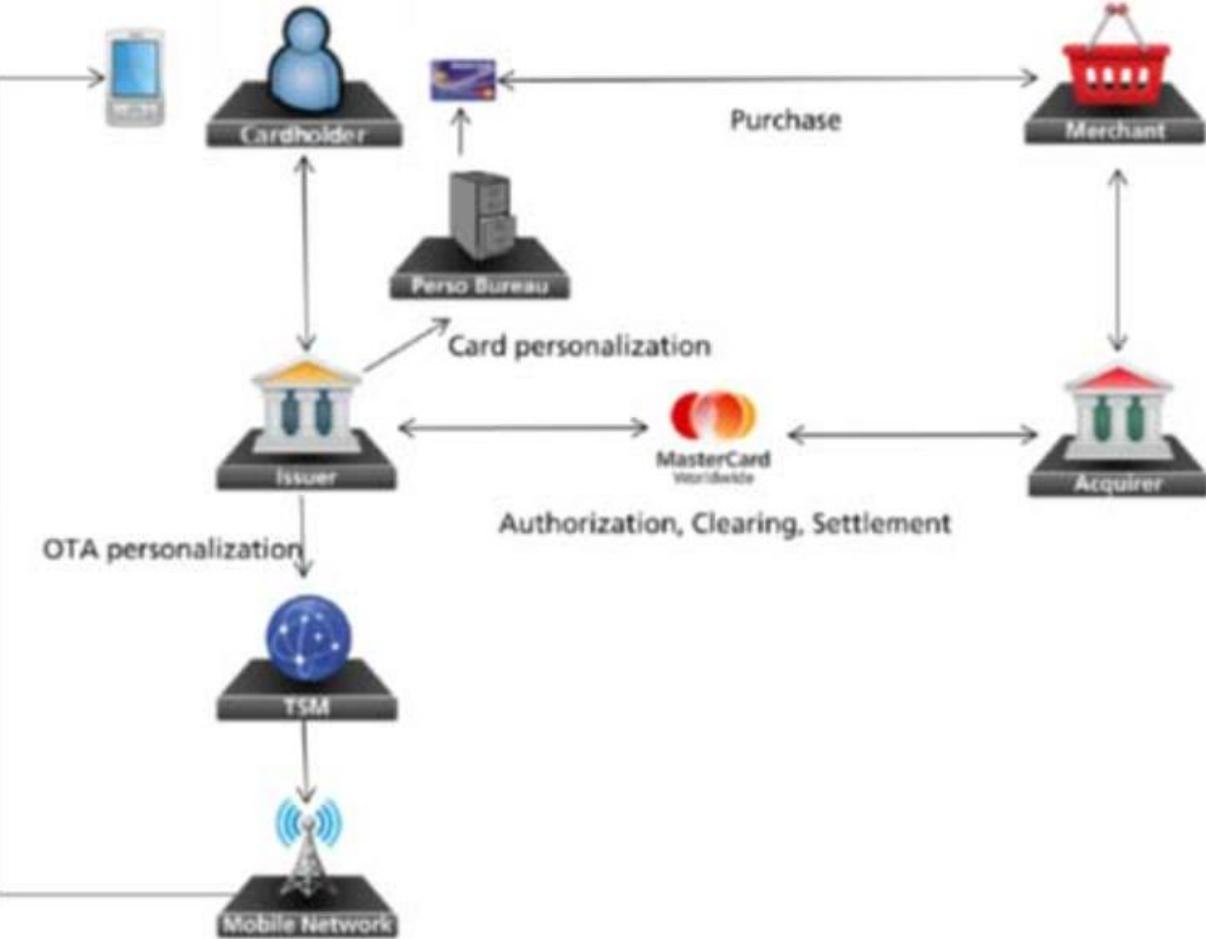


Client Applications



Merchant





# Mobile payments and mobile parking

- Some ecosystem descriptions
- Examples of "new" payment services
  - GSMA pay by mobile approach
  - Swedish initiatives (that disappeared)
    - > *Startups 2005-2015: PayAir, PayEx, SEQR*
    - > *Swedbank: BART*
    - > *Joint venture for all mobile operators: WyWallet*
  - Swedish succes story: Swish
- Examples from development of mobile parking

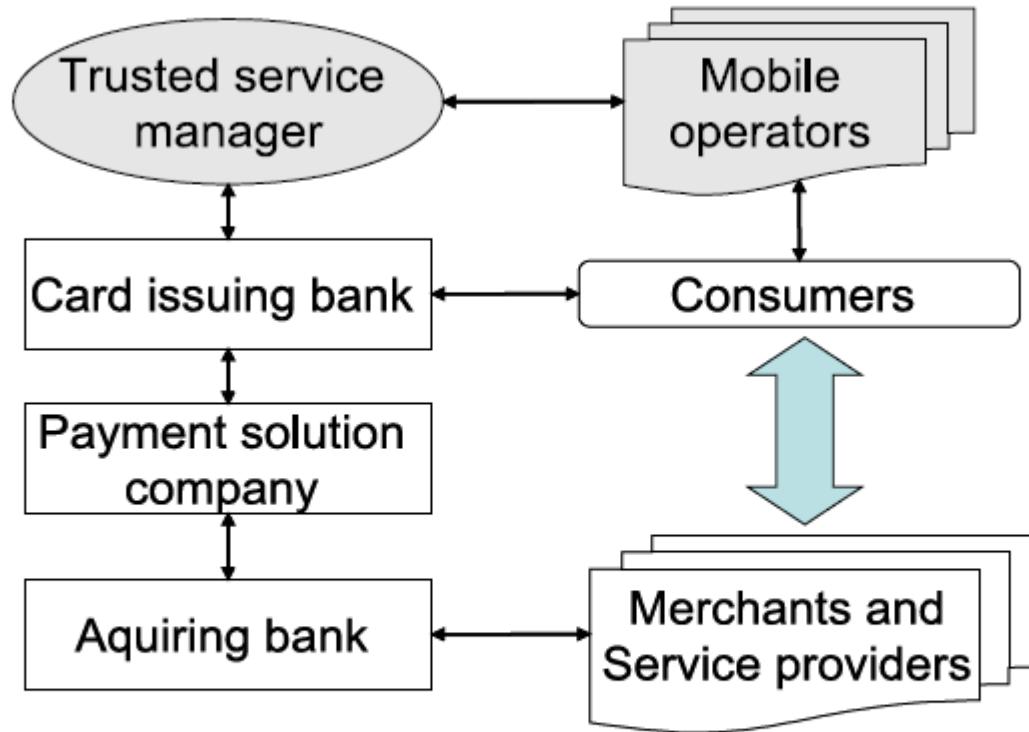


Figure 5.3: The Pay-Buy-mobile ecosystem proposed by GSMA. Actors in a credit card based system are complemented with mobile operators and a TSM (in grey)

# Mobile payments and mobile parking

- Some ecosystem descriptions
- Examples of "new" payment services
  - GSMA pay by mobile approach
  - Swedish initiatives (that disappeared)
    - > Startups 2005-2015: *PayAir, PayEx, SEQR*
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    - Swedish success story: Swish My analysis
  - Examples from development of mobile parking
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- Connecting existing business ecosystems
  - No end-user fees
  - Using a general security solution (Bank ID)

# Mobile payments and mobile parking

- Some ecosystem descriptions
  - Examples of "new" payment services
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- Introducing NEW actors in the ecosystem
    - New agreements
    - Additional fees
    - Unclear values
  - Special security solutions
  - More solution oriented than customer oriented

# Mobile payments and mobile parking

- Some ecosystem descriptions
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- Examples from development of mobile parking

# Mobile parking payment solutions – 10 years ago



# Mobile parking payment solutions – 10 years ago

Parking  
subscriptions



SMS  
parking



# Mobile parking today

## Multiple Apps and providers

The image shows a collage of mobile parking app interfaces from various providers:

- UPPSALA PARKERINGS AB**: A blue banner at the top with the text "Områdeskod 18200". Below it is a sign that says "Ladda ned EasyPark-appen" and "BETALA PARKERINGEN VIA MOBILEN". It also features a smartphone icon with a large letter "P" and a QR code.
- e: easy:PARK**: An orange banner with the text "BETALA ENKELT MED MOBILEN" and "PARKERA MED APP". It includes steps: 1. Ladda ner appen ePARK, 2. Ange regnr och välj zon, 3. Köp biljett. It also has a "PARKERA MED SMS" section with steps: 1. Starta parkering (SMS:a ZONKOD REGNR PERSONNR till 0736 - 30 40 50), 2. Avsluta parkering (SMS:a AVSLUTA till 0736 - 30 40 50).
- Inteleon SMS PARK**: A white banner with the text "INGEN FÖRREGISTERING KRÄVS" and "STARTA PARKERING". It shows a phone icon with "SMS:a Zon Regnr Personnr till 0700-404040" and "Ex: 18XXX ABC123 ÅÅMMDDXXXX".
- ParkMan**: A green banner with the text "STARTA DIN PARKERING PÅ 3 SEKUNDER". It features a smartphone icon with a green diamond shape containing a white "P". The URL "www.parkman.se" is at the bottom.
- Parkster**: A green banner with the text "Parker med app" and "Inga extra kostnader". It shows a smartphone icon with a green diamond shape containing a white "P". The URL "www.parkster.se" is at the bottom.

At the bottom of the collage, there is small text about electronic invoices and a note about the service being available in Sweden.

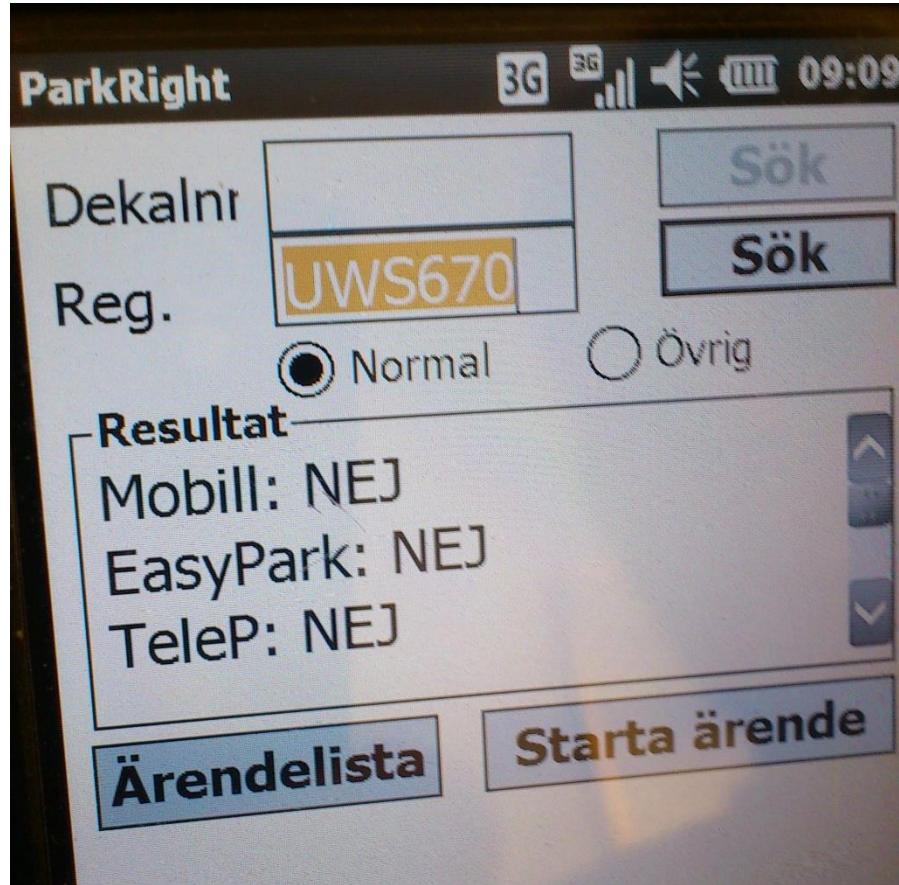


# Development of parking payment solutions

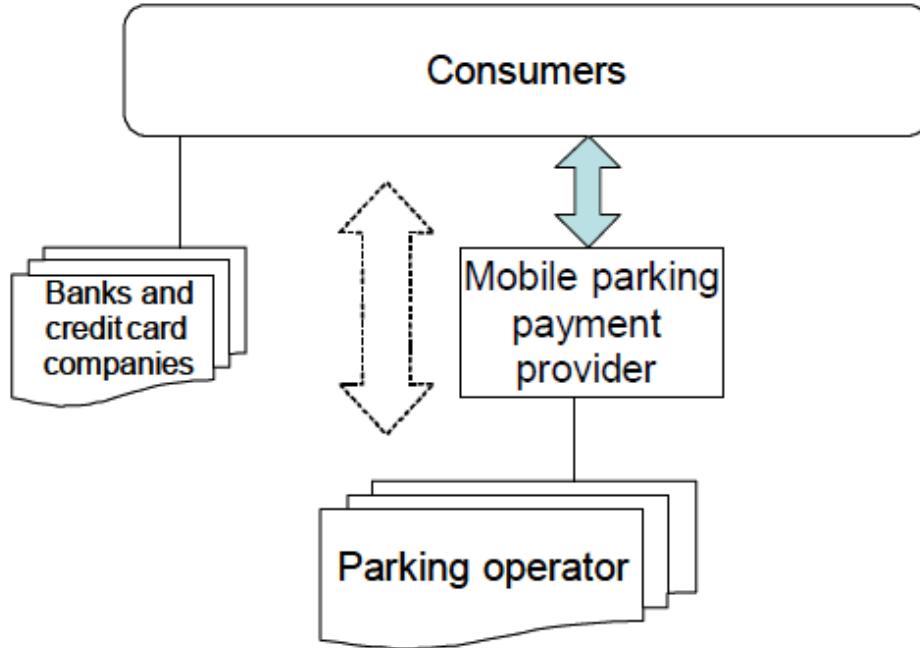
- In the beginning!
  - Coins and cards, ticket machines and paper tickets
  - No mobile parking solutions
- 5-15 years ago
  - Coins-> cards, ticket machines and paper tickets
  - Parking subscriptions, separate monthly bill, "ticket" in a data base
  - SMS parking; Parking included in (an operator) bill, "ticket" in a data base
- "Now"
  - Few ticket machines where you can pay with card -> mobile apps
  - Ticket machines make use of "ticket in a data base", enter reg. number
  - Mobile parking apps is the preferred solution

# Ticket in a database

Parking staff checks  
if there is an ongoing  
Parking session



# Parking subscriptions



*Actors and relations for mobile parking subscriptions, the blue arrow indicates “billing relation” and the lines indicate other types of business relations*

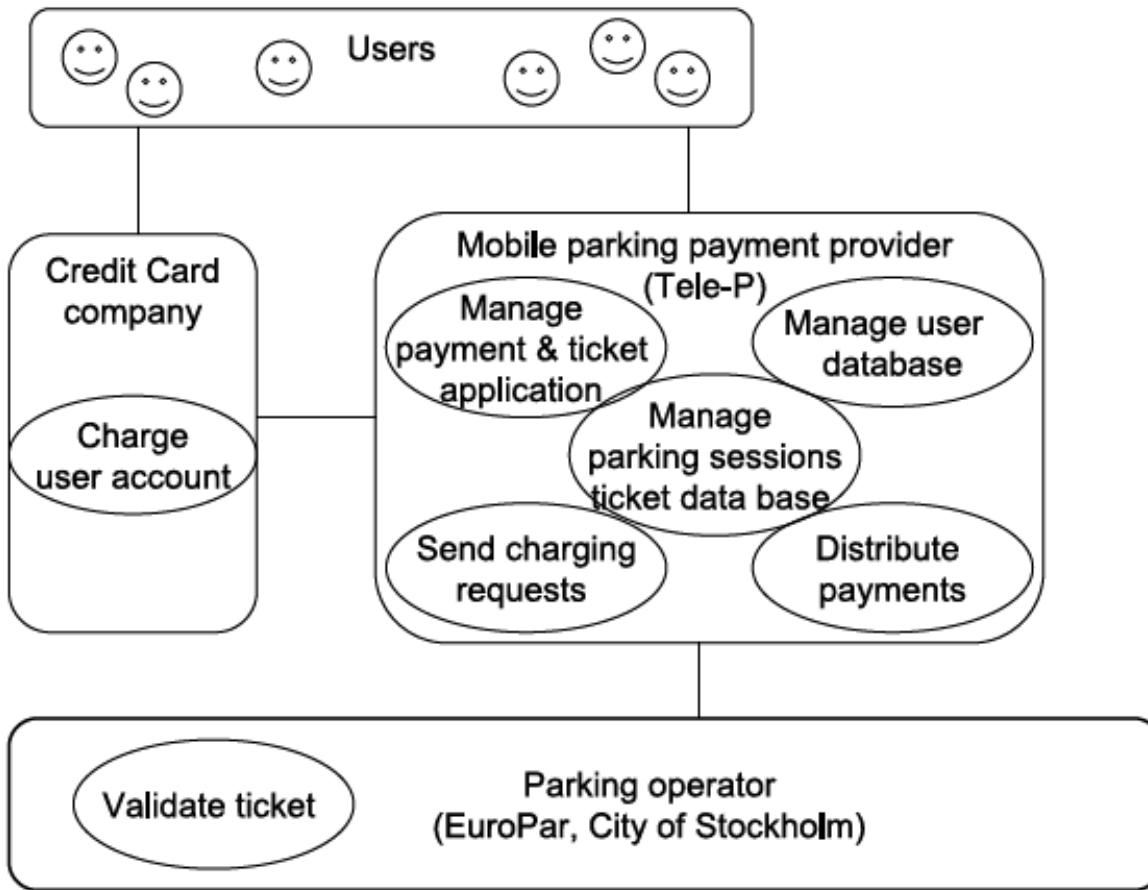


Figure 5.20: Activities when a mobile parking subscription is used

# SMS parking – distribution of activities

Activity	The End-user	The Service Provider	An Intermediary	The Mobile Network Operator
Ticket Order	X		X	
SMS aggregation			X	
End-user Charging			X	X
Payment distribution		X	X	
Ticket issue	X		X	
Ticket validation	X	X	X	

Table 5.4: Distribution of activities among actors for SMS ticketing

# SMS parking

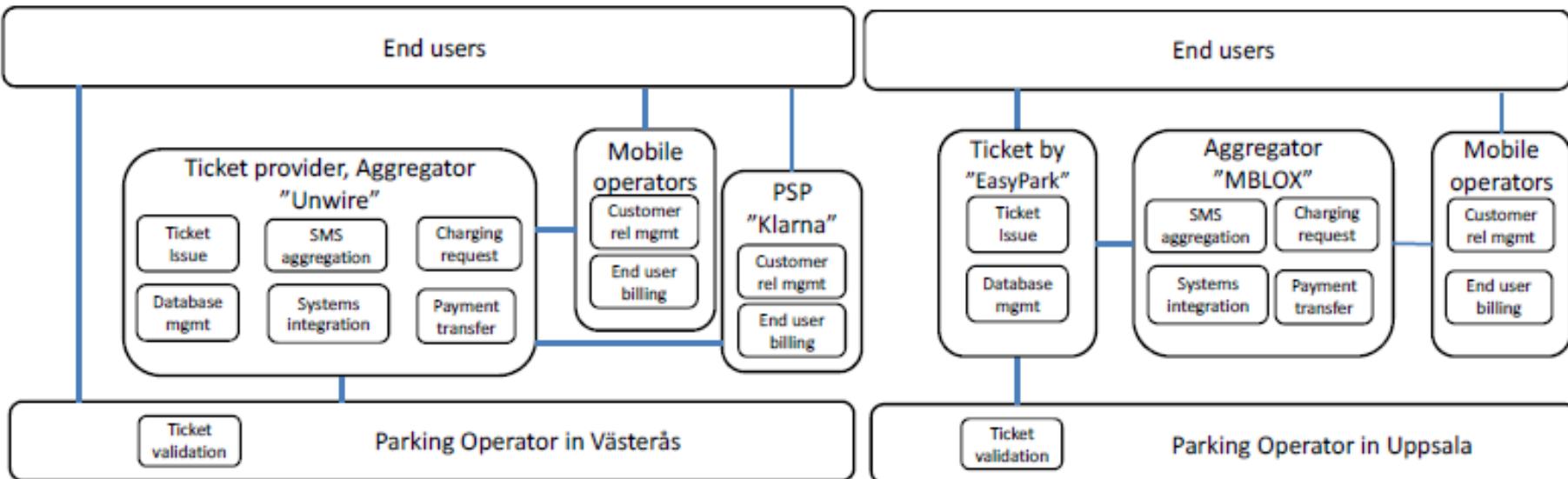


Figure 7. Distribution of activities and resources among actors for provisioning of SMS tickets for parking services until early 2013 – the case Västerås to the left and Uppsala to the right.



# A big change – the start of "the death of SMS payments"

2013

- EU payment directive
- A need for public organization to procure payment services
- Many actors, fragmented market
- Not user friendly
- Lack of customer orientation

# SMS tickets for public transport (Markendahl et al 2013)

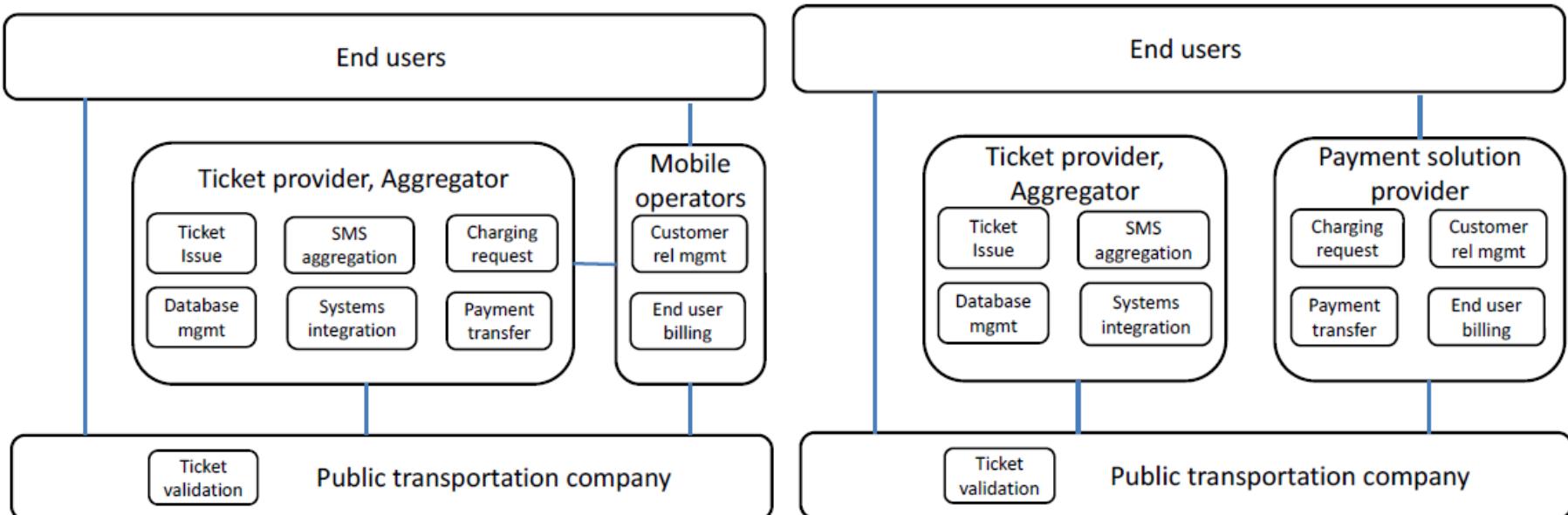
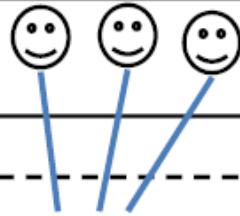
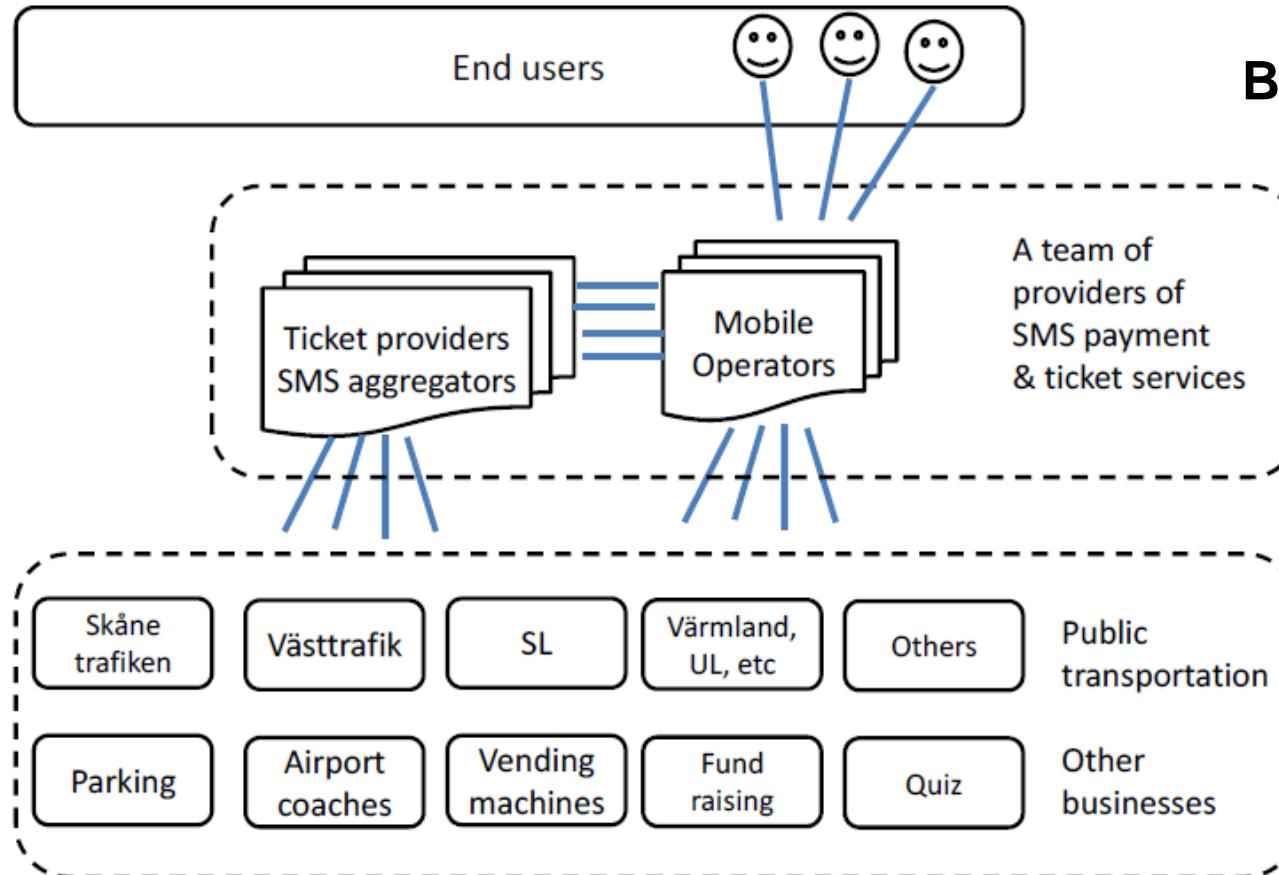


Figure 8. *Typical distribution of activities and resources among actors for provisioning of SMS tickets for public transportation in Sweden; until (left) and after (right) February 2013.*

End users



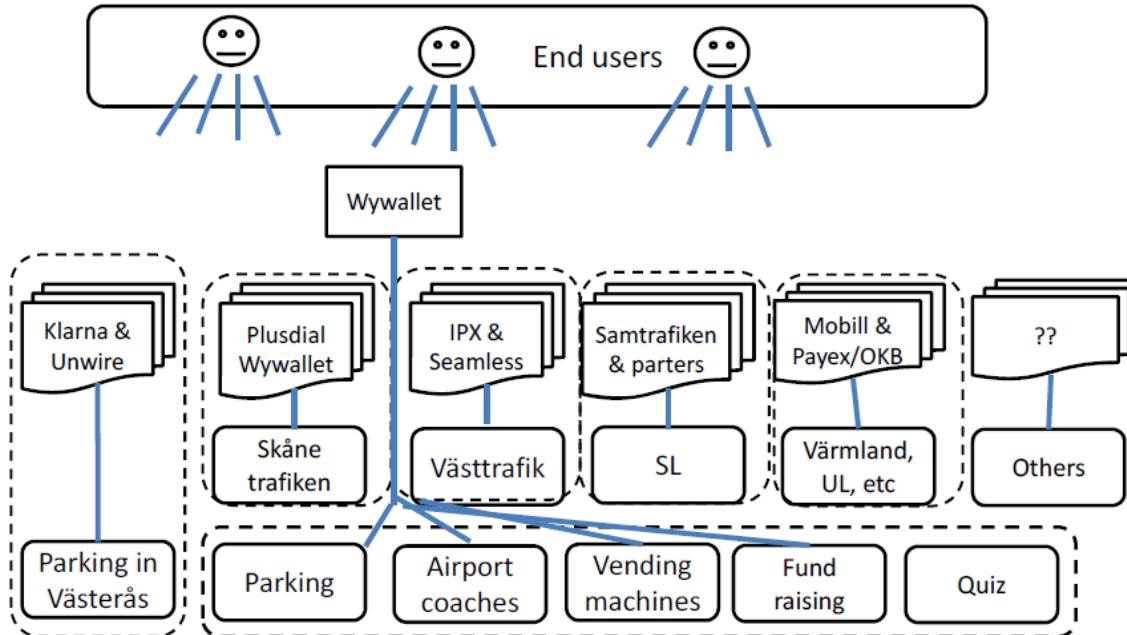
Before 2013



*A map of business relations for the former way to provide SMS payment services, one “set of providers” provided services and solutions to all businesses; consumers were connected through the subscriptions with the mobile network operators.*

# SMS tickets for public transport (Markendahl et al 2013)

2013 and after

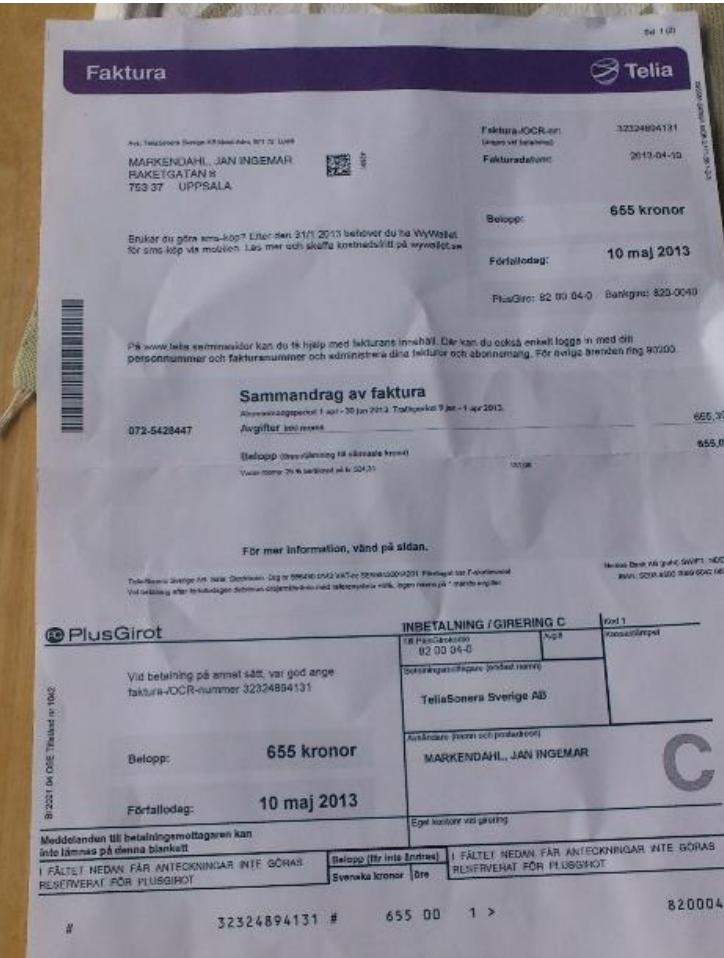


*A map of business relations for the new way to provide SMS payment services, multiple teams provide services and solutions to different businesses; consumers need to register for multiple accounts (providers) in order to use different services.*



# SMS payments The traditional way

- Billing using the mobile subscription
- One invoice
- Use different numbers for different services



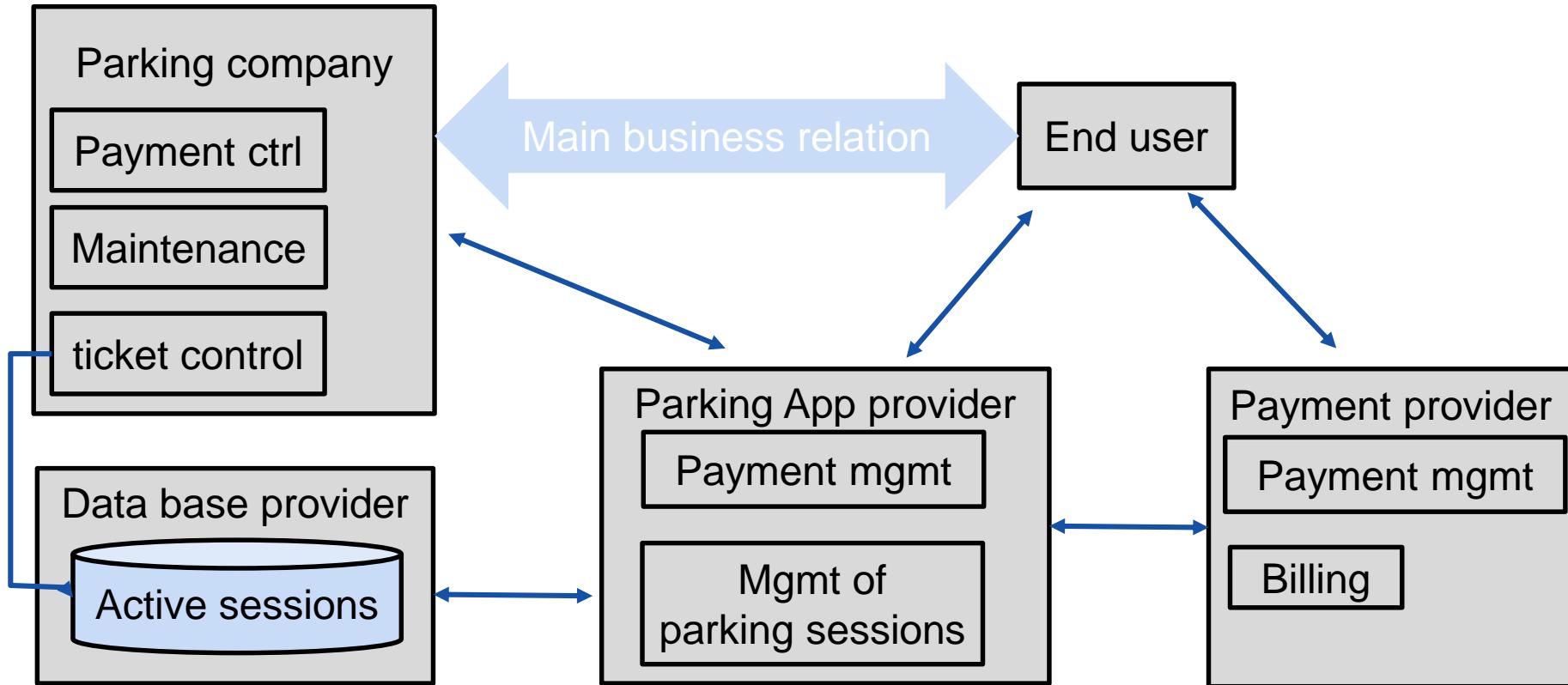


# SMS payments New setting

Many subscriptions  
Many invoices  
Small amounts



# Parking apps – value network



# Parking apps – ecosystem in Sweden

Parking  
companies

Around 100

Data base  
providers  
3

Parking App  
providers

Around 10

Payment  
providers

Around 5



# Conclusions – success or not for payments

- Mobile Apps should be put into an overall business context
- Some reasons why Swish did take off
  - Connecting existing business ecosystems
  - No end-user fees
  - Using a general security solution (Bank ID)
- Why other payment solution may have failed
- Introducing NEW actors in the ecosystem
  - New agreements, Additional fees, Unclear values
- Special security solutions
- Actors were more solution oriented than customer oriented



# Conclusions - mobile services for businesses

- Apps may need to be integrated into many business systems
  - Many business relations may be needed
  - Scalability may be a problem if many involved actors and relations
  - Risky if end-users need to establish (many) new agreements
- 
- It is a good idea to involve banks in financial services (Swish)
  - It is a good idea to develop common solutions for specific sectors (Swish and common data models/formats for parking apps)



# Content summary

- Business ecosystems in general and analyzing key components.
  - One main part is about the actors, their business relations and how they interact. Here we will discuss business models, business logic, business and value networks.
  - The other main part is about the "Market conditions". Here we include the market structure, competition, market regulation and also political actions.
- Next we will look into different types of ecosystems for the mobile business.
  - The ecosystem around mobile network operators and the connectivity business.
  - Then we will look into smartphone apps and platforms, and the application business.
- Some specific mobile services that connects businesses and consumers.
  - The first one is mobile payments and the second one is mobile parking.
- Summary
  - Analyzing business ecosystems means that you have to identify the involved market actors, what kind of business networks they form and how they interact with each other
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