

TSE M1 – Semester 1

October 2018

Paul Seabright

# Understanding Real World Organizations

## Week 6:

Organizations and the Economics of Platforms



# A general problem

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- We will study religious organizations, charities, NGOs; and we will study gangs and mafias, and insurgent groups such as ISIS
  - A common feature is that each such organization offers ACCESS to other members, as well as selection of the kinds of members who may join (including by imposing demanding terms of membership)
  - Sometimes this has the characteristic of a club good – the members want to meet others just like them
  - Sometimes it has the features of a platform good – for example, funders want to have access to users of funds, and vice versa. This is a “Multi-Sided Market” (MSM)
  - So here we will consider the more general analysis of platform goods – when one group of users demands access to one or more other types of users
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# World's largest firms by market capitalization

<b>Rank</b>	<b>2007</b>	<b>2017</b>
<b>1</b>	<b>Exxon Mobil</b>	<b>Apple</b>
<b>2</b>	<b>General Electric</b>	<b>Google</b>
<b>3</b>	<b>Microsoft</b>	<b>Microsoft</b>
<b>4</b>	<b>Royal Dutch Shell</b>	<b>Amazon</b>
<b>5</b>	<b>AT&amp;T</b>	<b>Facebook</b>
<b>6</b>	<b>Citigroup</b>	<b>Berkshire Hathaway</b>
<b>7</b>	<b>Gazprom</b>	<b>Exxon Mobil</b>

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What kinds of organization are these new digital giants...?

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# What is Uber:

A firm?

A market?

A service provider?

An owner of intellectual property?

Data on wheels?

None of the above?

All of the above?

The world's most valuable startup is leading the race to transform the future of transport

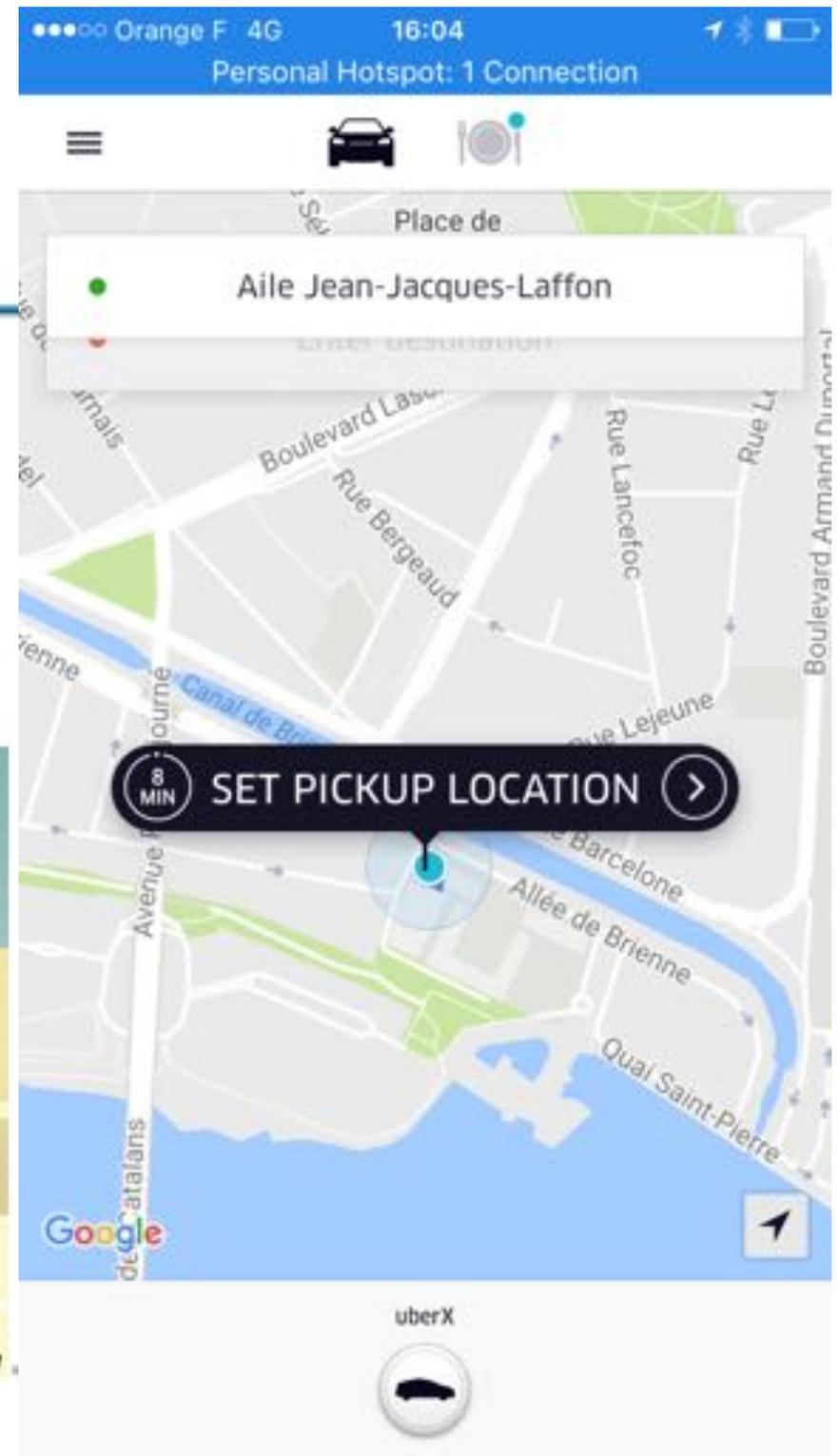
Sep 3rd 2016 | From the print edition



6.5K



"LET'S Uber." Few companies offer something so popular that their name becomes a verb. But that is one of the many achievements of Uber, a company founded in 2009



# And AirBnB?



And ISIS?

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## FINANCIAL TIMES

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*Be first to use FT.com's new prototype site. Opt in here (you can opt out at any time).*

October 14, 2015 12:50 pm

# Isis Inc: how oil fuels the jihadi terrorists

Erika Solomon in Beirut, Guy Chazan and Sam Jones in London

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 Comments

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The jihadis run a sprawling oil operation forcing even their enemies to do business with them

# Outline of presentation

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- The effects of digital technology on modern societies – the reconfiguration of tasks
  - An example of reconfiguring tasks: MOOCs
  - Organizations as allocators of entitlements to attention.
- What makes platforms special?
- What are a platform's strategic choices?
- What does competition between platforms look like?
- Reshaping organizational architecture – the trust problem

# Let's distinguish different effects of digital technology on modern society (I)

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- Creation, processing and sharing of information – the scarce resource is no longer information but ATTENTION
- Creation of new goods and services, from social networks and GPS guidance to... cat videos
- New methods for making and delivering existing goods and services
  - 3D printing
  - Delivery by drone
  - Internet dating, psychotherapy over Skype
  - Distributing the design and manufacture of cars and aircraft across the world
- The idea: **tasks can be broken into components and reassembled**

# Let's distinguish different effects of digital technology on modern society (II)

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- Creation of new types of organization
  - Outsourced tasks, micro-multinationals
  - Crowd-sourced financing, information gathering
  - Platforms – intermediaries between different user groups
- Improved methods of managing existing organizations
  - Using ICT to discover and reach new markets and sources of supply
  - Using ICT to monitor & improve management practices
  - Restructuring task allocation
- The mechanism: digital technology changes the pattern of substitutability/complementarity relations between task components

# An example of unbundling and reassembling tasks: the impact of MOOCs (I)

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- Bettinger et al: “Virtual Classrooms”, *AER* September 2017, investigate performance of 230,000 students taking 750 courses in a for-profit US college, in both on-line and on-campus versions
- On-campus versions of courses had fewer women (35% compared to 55%), and an average age of 28 years as opposed to 33 years online
- By instrumenting with the interaction of random non-availability of online versions and distance of residence from campus, estimate that courses with physical presence increase the probability of an A-grade by 12 percentage points
- The impact is concentrated on low-performing students

## An example of unbundling and reassembling tasks: the impact of MOOCs (II)

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- Though authors they don't investigate mechanisms, the key seems to lie in motivation, which is lower online
- It's a mistake to see education as a homogeneous service demanded by students
- Students demand at least two different services: *understanding* and *motivation*, and the inputs into this process are *information* and *attention* – in proportions that differ between the two services
- Physical proximity is a special kind of attention – “close” attention
- We can see organizations as allocating ***entitlement to attention***

# Organizations as allocators of entitlements to attention

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- Coase saw the main distinction as between transactions inside versus transactions outside the firm (“hierarchies” versus “markets”).
- In fact, attention entitlements are not an all-or-nothing matter: there can be more or less priority entitlements.
- An organization does not accord equal priority to everyone inside to the attention of everyone else: instead, it allocates attention according to a set of escalating entitlement priorities.
- Outside the organization attention is allocated by bilateral negotiation under the constraints of a communication technology.

# So *how* do organizations allocate entitlements to attention?

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- In practice organizations never allocate attention entitlements with perfect efficiency. Why not?
- Existing attention entitlements create veto power, which can prevent efficient reorganization when technology changes.
- An important reason organizations differ in their response to the availability of *information* technology is differences in the existing allocations of *attention*, which create different configurations of winners and losers from adopting the new technology.
- Reallocating information and reallocating attention may have quite different effects – and losers may not trust the outcome.

# The key take-home message:

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- Creation of platforms is a massive phenomenon, but it's happening alongside lots of other changes in organizations, especially the breakdown and reassembly of productive tasks.
- You can't understand the potential of platforms without also seeing how they fit into the other changes.
- So what are platforms and how do they differ from other organizations?
- And how can organizations reconfigure themselves to gain platform advantages?

# Platforms – a general feature

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- The common feature of platforms is that they offers ACCESS to other members, as well as selection of the kinds of members who may join (including by imposing demanding terms of membership).
  - Sometimes this has the characteristic of a club good – the members want to meet others just like them.
  - Sometimes it has the features of a platform good – for example, funders want to have access to users of funds, and vice versa.
  - So here we will consider the more general analysis of multi-sided markets (MSM)– when one group of users demands access to one or more other types of users.
  - The simple version of this problem is studied under the terminology of “two-sided markets”.
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# A classic example of a 2SM: a (heterosexual) dating agency

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- Needs female members so as to be attractive to males  
... but also needs males to be attractive to females
  - This is an example of a *network externality*  
the value of the service depends on number of other users
  - Some markets have network externalities that are not two-sided
    - ❖ Example: fax machines
    - ❖ The bigger the “club” of users, the greater the value for each user
  - Here: focus on network externalities linking different ‘sides’  
→ need to “get both sides on board”
  - Sometimes this means charging very different rates
    - ❖ Different ease of attracting the two sides
    - ❖ Different importance of one side for the other side
  - E.g., nightclubs offer free entry and free drinks to single women
    - ❖ This is not because the drinks cost less for men
    - ❖ But because women’s presence increases men’s willingness to pay
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# Multi-sided markets and their clients

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- Computer operating systems
    - ❖ Need to attract users
    - ❖ Need to attract applications developers
  - Credit card issuers
    - ❖ Merchants
    - ❖ Consumers
  - Real estate agencies
    - ❖ People with property to sell
    - ❖ Buyers of property
  - Futures and securities exchanges
    - ❖ Portfolio managers
    - ❖ Security issuers
  - Auction houses
    - ❖ Sellers
    - ❖ Buyers
  - Newspapers and TV stations
    - ❖ Readers
    - ❖ Advertisers, editorial writers, content providers
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# What does this imply for pricing?

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- Pricing is not necessarily the same on both sides
  - one side may even have free services (or be paid to join)
- Pricing may have to be very low for both sides in initial phase
  - attracting launch customers makes the platform valuable in the future
- A platform that has already attracted a lot of customers may have a big advantage over a rival that has not so many
  - ❖ Depends on how easy it is for customers to use more than one platform
    - not easy for computer operating systems, newspapers, physical auction houses
      - (but easier than it used to be)
    - easier for TV stations, credit cards, real estate agencies, online auction houses
  - ❖ May trigger tougher competition to acquire customer base

# What exactly makes a market two-sided?

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- An intuitive account

- The intermediary (a *platform*) facilitates interactions between parties on the two sides, which yield benefits and costs to those parties
  - Interactions with the platform therefore create *externalities* for other parties, BUT
  - The parties' interaction does not allow them to negotiate to internalize fully these externalities
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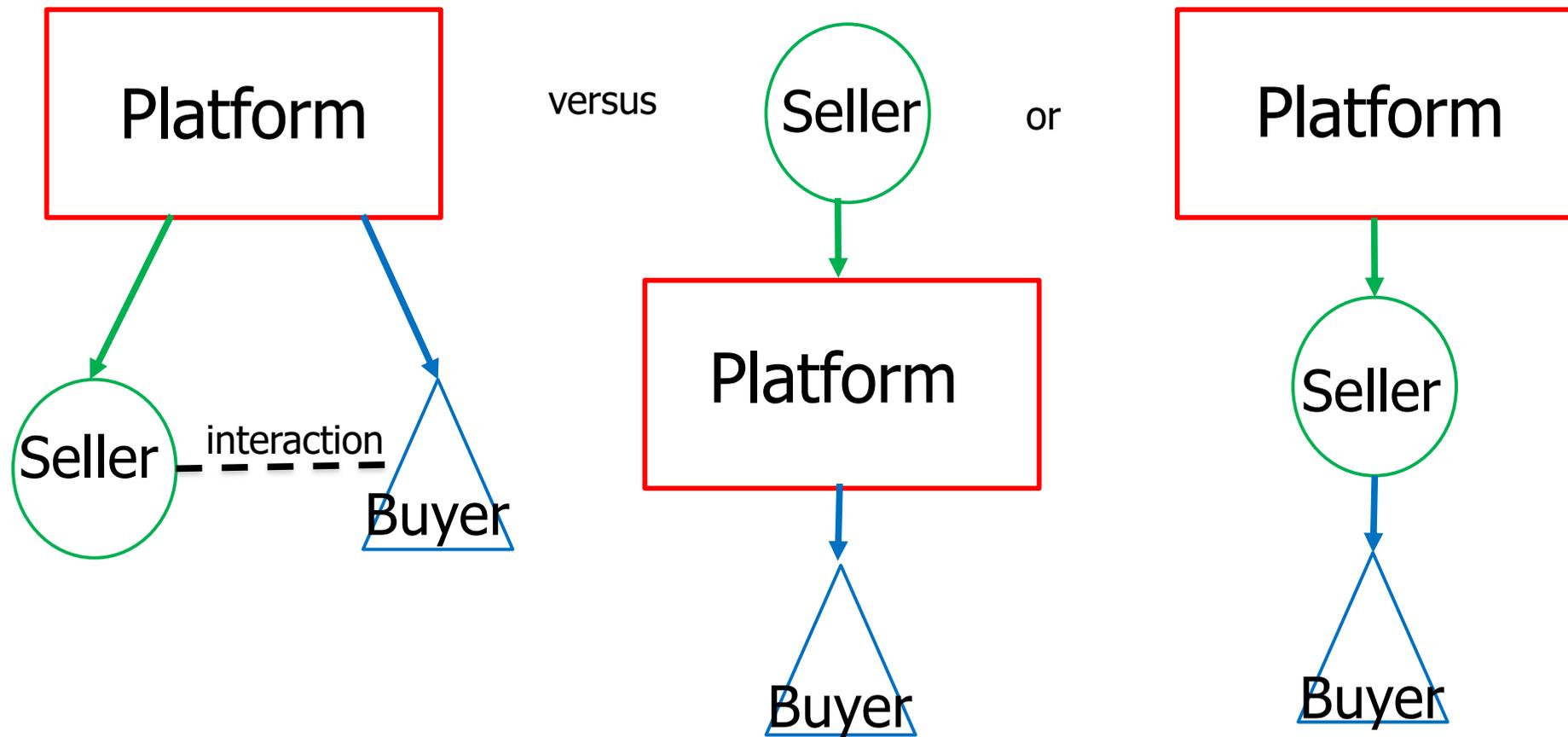
# What exactly makes a market two-sided?

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- A more precise account
    - Let  $p_a$  and  $p_b$  be the prices charged to user types  $a$  and  $b$
    - Let  $P = p_a + p_b$  be the total price charged by the platform
    - Then a market is two-sided if the value generated by the platform (e.g., volume of transactions between parties multiplied by benefits per transaction) depends not only on overall *price level*  $P$  but also on the *price structure*, i.e., on the division of  $P$  into  $p_a$  and  $p_b$
-

# Compare 2SM and a vertical relationship

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# Interactions that are NOT two-sided:

## (1) A purely vertical relation

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- Examples

- Component supplier – manufacturer – customer
- IP owner – licensee – downstream user
- Workers – employers – customers

- No externalities from price structure – consumer cares only about quality and price of final product

- No direct negotiation between two sides – platform negotiates only with seller

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# Interactions that are NOT two-sided: (2) if direct negotiations more effective

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- Examples
    - Standard markets
    - Caveat: old marketplace, department stores, ...
  - The two sides can negotiate bilaterally to internalize any externalities from any dealings with the other
  - If any side also interacts with the platform, they can “undo” this by compensating each other accordingly
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# Interactions that are NOT two-sided: (3) assembly operations

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- Examples

- Cars: frame, engine, tires, ...
- Most final goods...

- Platform is better placed to do the mix and match

- A matter of balance

- OS software (full choice of applications)
  - Aircraft (choice of engine)
  - Cars
-

# But many “pipeline” firms have been reconfiguring themselves as platforms:

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- Apple
  - Airbus
  - Siemens
  - Samsung
  - Renault
  - You....?
-

# So what does a platform do in a MSM?

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- ◆ Sets prices, affecting interactions between users:
    - fixed (subscription fees) and/or per transaction (usage)
  - ◆ Regulates competition (AppStore, Visa), acts as a licensing authority (solvency requirements on exchanges).
  - ◆ Collects, analyzes and monetizes data.
  - ◆ Provides information and enforcement (Ebay, Uber).
  - ◆ It's all about *trust*.....
-

# Strategic choices for the platform (I)

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- ◆ How open should the architecture be?
  - ◆ How much contractual freedom should the users have, with each other and with off-platform users?
  - ◆ What is the right modular architecture for the platform's tasks? What are the basic units of assembly?
  - ◆ Where in the many relationships on the platform does the trust capital reside, and how can it be leveraged?
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# Strategic choices for the platform (II)

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- ◆ How to use and share data?
  - ◆ Data are collectively-generated, so traditional concepts of IP are hard to apply – there’s no “natural” owner.
  - ◆ Both the users’ choices and the platforms’ choices affect the nature and quality of the data collected.
  - ◆ And the creation of data doesn’t bring only benefits (eg data on health conditions shared with insurers) – it’s all about *trust* (again).
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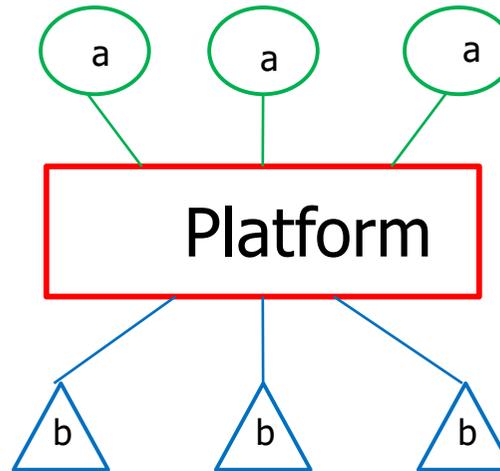
What does competition between platforms  
look like...?

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# A Monopoly Platform

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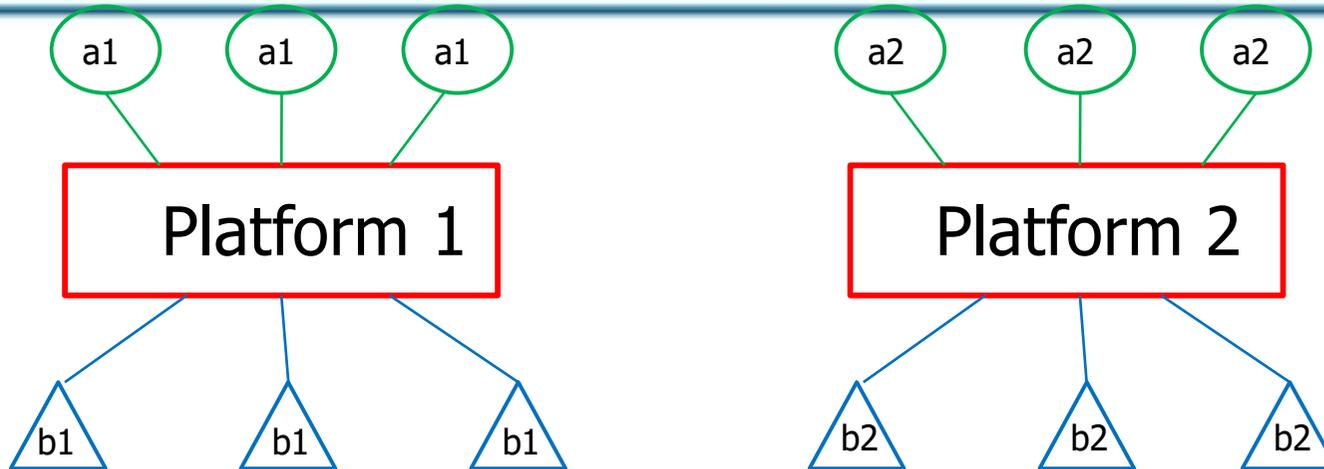
- From the point of view of each type of user, the services of the platform are *complementary* to those of other type of user
- This means that interventions by platform are often beneficial (except in special cases of foreclosure risk)

# Substitutable and complementary goods: a reminder

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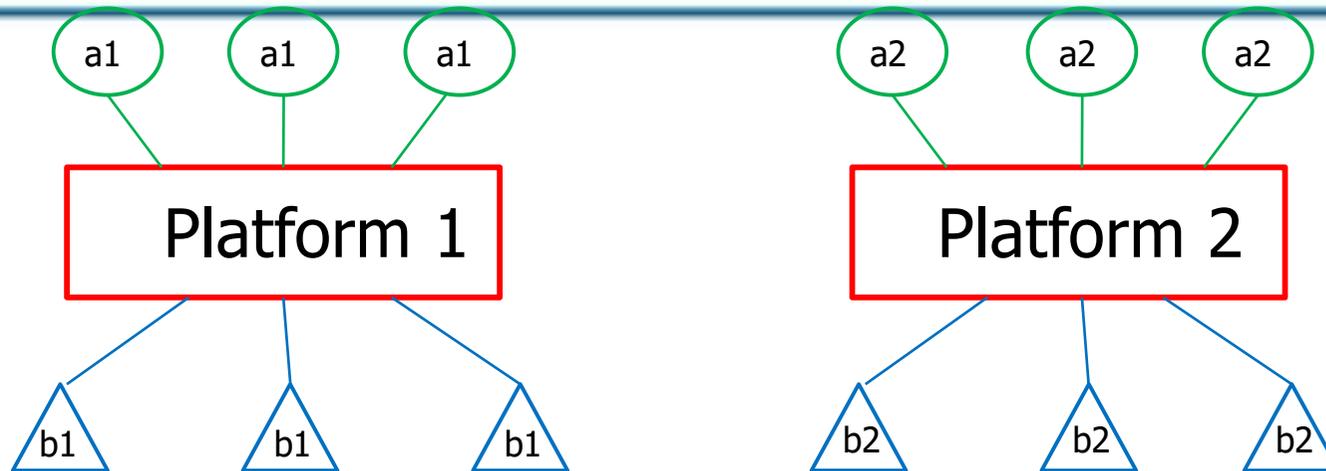
- Substitutable products and services
    - Competing car or clothing brands, trains and planes..
    - If the price of one rises ....demand for the others increases
    - Coordination between producers typically anti-competitive
  - Complementary products and services
    - Razors and blades, games and consoles
    - If the price of one product rises,  
... the demand for the others falls
    - Coordination between producers typically pro-competitive
-

# Competing Platforms



- Are the two platforms substitutes or complements?
- This depends on
  - ❖ Whether there is single- or multi-homing
  - ❖ The extent to which different users on each side are substitutes or complements for each other

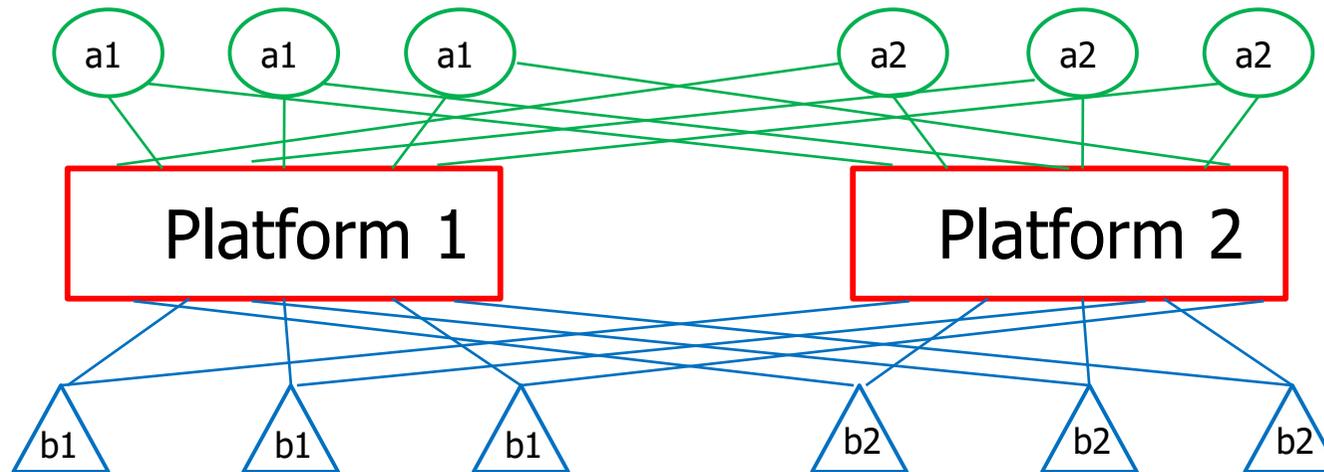
# Competing Platforms: Single Homing



- For both *a* and *b* users, Platform 2 is an imperfect substitute for Platform 1 whatever the relations between *a1* and *a2* types
- But each platform offers a limited access to the other side
- Competition or tipping may prevail, depending on
  - ❖ Initial conditions
  - ❖ Importance of platform differentiation vs networks effects

# Competing Platforms: Multi Homing on Both Sides

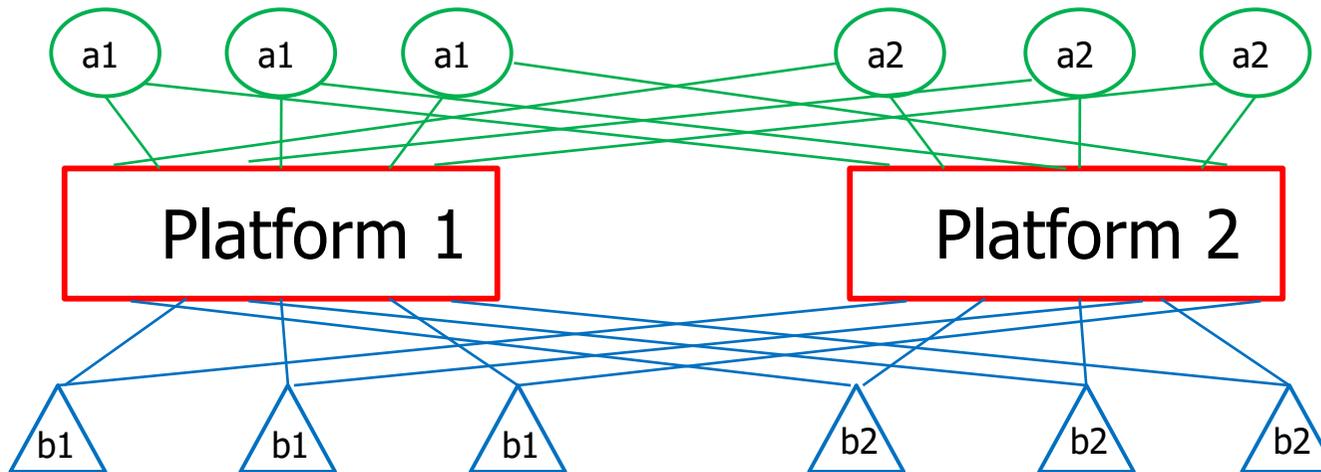
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- For both *a* and *b* users, Platform 2 is now a *perfect* substitute for Platform 1 whatever the relations between *a1* and *a2* types
- Networks effects no longer affect competition
- But if the platforms are very close substitutes, multi-homing may be unstable if there are fixed costs – the market may tip!

# Competing Platforms: Multi Homing on Both Sides

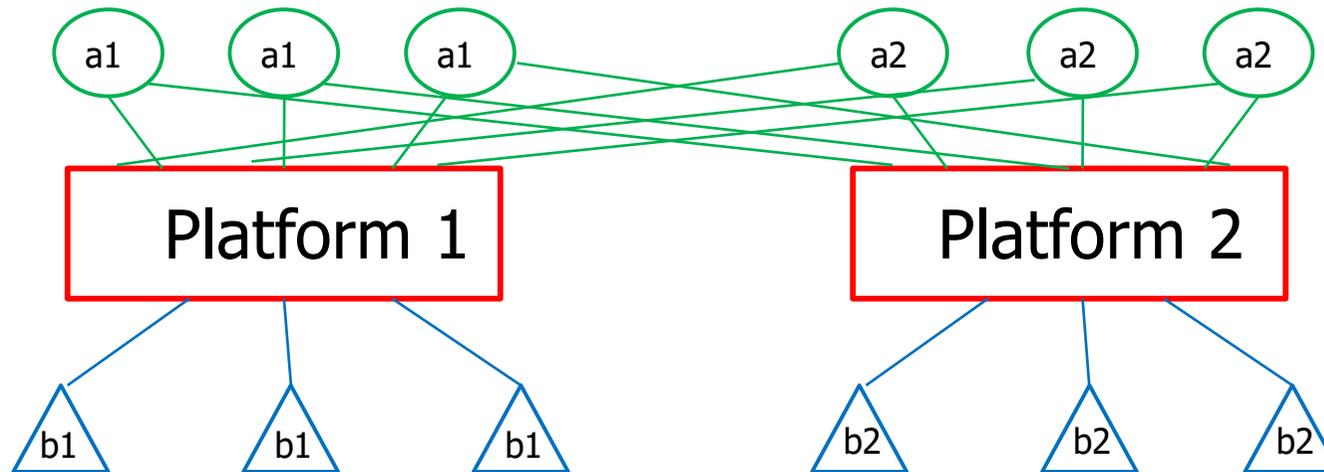
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- One possible outcome: initial multi-homing on both sides “tips” into one-sided multi-homing
- Another outcome – platforms differentiate via multi-homing by only some users – e.g. by exclusivity arrangements
- So exclusivity can preserve platform competition!

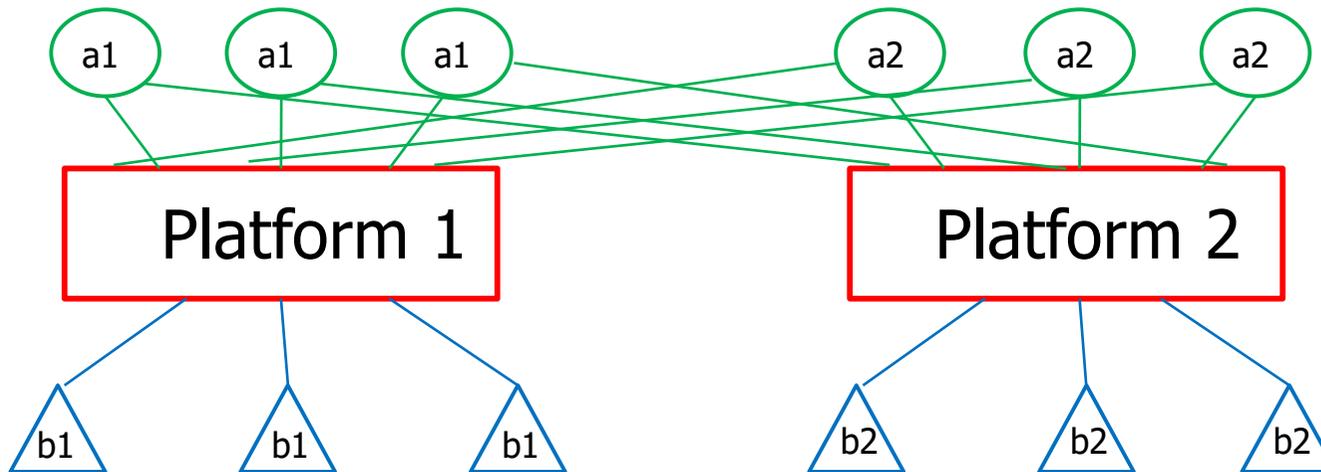
# Competing Platforms: Multi Homing on One Side

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- For *b* users, Platform 2 is a substitute for Platform 1 whatever the nature of the relations between *a1* and *a2* types
- But for *a* users, the platforms could still be complements!
- Example: TV channels for content providers and viewers

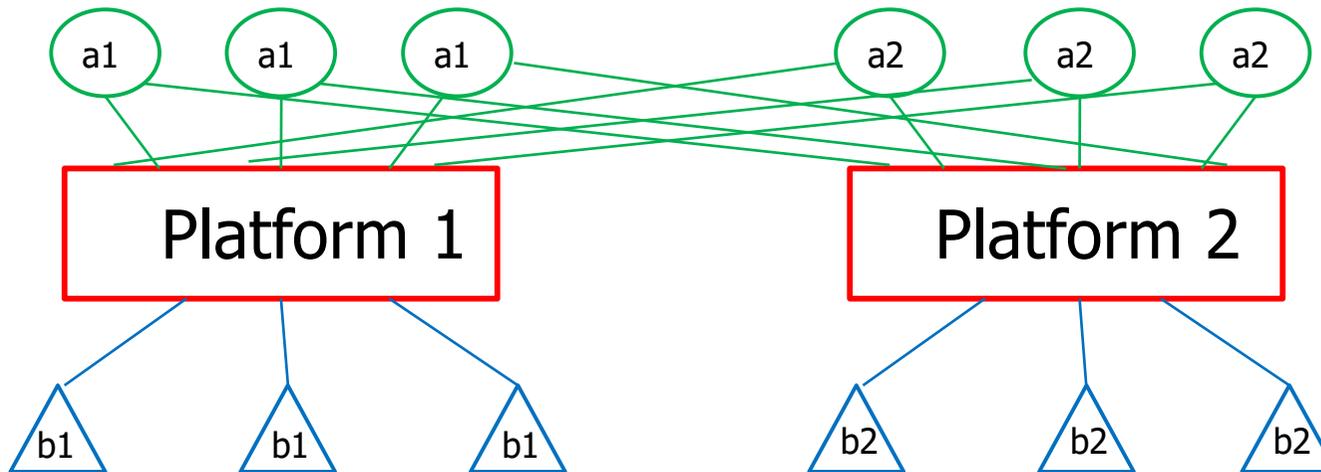
# Competing Platforms: Multi Homing on One Side



- Note that for *a* users, there is a competitive bottleneck: each platform has monopoly of access to each *b* user
- This can be true even if *b* users single-home only because ... platforms are very close substitutes

# Competing Platforms: Multi Homing on One Side

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- Thus we expect that platforms
  - ❖ will extract a lot of rent from *a* users  
(they're offering scarce access to *b* users)
  - ❖ but compete it away in an attempt to attract *b* users  
... unless *b* users are locked in for technological reasons

# Many types of outcomes

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- Platforms can be substitutes (Windows – Linux) or complements (Windows – WMP)
  - They can be initial complements that may turn into substitutes (Windows – Navigator?)
  - Factors conducive to single homing
    - Access costs: Cable TV, user learning costs (software)
    - Absence of value-added by platform
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# Digital technology and the trust relationship

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- Traditionally trust has mattered in economic relationships for two main reasons
- **First**, people in an economic relationship have to do what they promise to do – in terms of quantity and quality
- **Secondly**, they have to trust in the durability if their relationship enough to be prepared to makes specific investments – those that are worth doing only if the relationship continues
- Digital technology makes the first type of trust easier - but the second often more difficult!

# How does this help us to understand the puzzle of trust in the digital economy?

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- Trust in what people promise to do is often improved by ICT
  - Knowing that substitutes are available for your services is a very good incentive to keep your word
  - ICT makes it possible for people to monitor the trustworthiness of others and choose alternatives if trust is not high enough (see eBay).
- Trust in the stability of the economic relationship is often undermined by ICT:
  - Tasks can be divided up in new ways as complementarity/substitutability relationships change, often very suddenly
  - Everybody can be Uberized – even university professors!

# Take-home messages

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- We live in an information-rich environment that has created new challenges us as individuals and also as managers and citizens
- Information provides potential benefits as a complement to our existing sources of activity and prosperity
- But because of its affects on entitlements to attention, can also become a substitute – and therefore a threat!
- Using information wisely means looking for sources of complementarity – ICT needs champions to be adopted and used
- But it also means reassuring people about the threats to their livelihood

# Let's go back to religious organizations, charities, gangs, insurgent groups..

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- Who are the “users” of the platform in this case?
  - What aspects of the other user groups does each one care about? (Numbers? Quality? Activity?)
  - What kinds of recruitment and retention strategy do they use
  - Do users single- or multi-home? Why?
  - What are the main sources of their rents?
  - Do multiple business models coexist?
-