



# 'Big data' and EU competition law





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# Overview

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-  Introduction to 'big data'
-  Economic characteristics of data
-  Data concentration and merger review
-  Algorithms and restrictive practices



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# Introduction to 'big data'



# Definition 'big data'

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- Term 'big data' refers to the exponential growth in the availability and use of data
  - New is not only the **amount**, but also the **scope** and **accuracy** of the data
  - '3V' definition of research firm Gartner:
    - Volume
    - Velocity
    - Variety
    - Add 2 more V's: veracity and value



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## World Economic Forum, 2011:

- 'volunteered data': explicitly shared by users
- 'observed data': obtained by monitoring the behaviour of users
- 'inferred data': derived from the analysis of volunteered and observed data (i.e.: metadata)

## Big data ≠ personal data:

- Data protection legislation: *'any information relating to an identified or identifiable natural person'*



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- Speech previous Competition Commissioner Almunia **‘Competition and personal data protection’** (Nov. 2012):

*‘personal data may well become a competition issue; for instance, if customers were prevented from switching from a company to another because they cannot carry their data along’*

- Speech Competition Commissioner Vestager **‘Competition in a big data world’** (Jan. 2016):

*‘If a company’s use of data is so bad for competition that it outweighs the benefits, we may have to step in to restore a level playing field. But we shouldn’t take action just because a company holds a lot of data. After all, data doesn’t automatically equal power’*



# Work by national competition authorities



- **UK** Competition & Markets Authority, 'The commercial use of consumer data', June 2015
- **French** Autorité de la concurrence and **German** Bundeskartellamt, Competition Law and Data, 10 May 2016
- Sector inquiry of the **French** Autorité de la concurrence regarding data processing into the online advertising industry, 23 May 2016
- **Spanish** Autoritat Catalana de Competència, 'The Data-Driven Economy. Challenges for Competition', November 2016
- **OECD** Roundtable on 'big data' and competition policy, November 2016
- Sector inquiry of the **Italian** Competition Authority, Communications Authority and Data Protection Authority regarding 'big data', 30 May 2017
- **Japan** Fair Trade Commission is reportedly crafting antitrust guidelines on 'big data', June 2017



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# Economic characteristics of data





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- Economies of scale: average production costs decline as the **scale of production** increases
    - High fixed costs, but low marginal costs
    - Volume of data provides an advantage
  
  - Economies of scope: average production costs decline as **more types of products** are produced
    - Variety of data provides an advantage
    - More comprehensive picture of consumer preferences



# Network effects

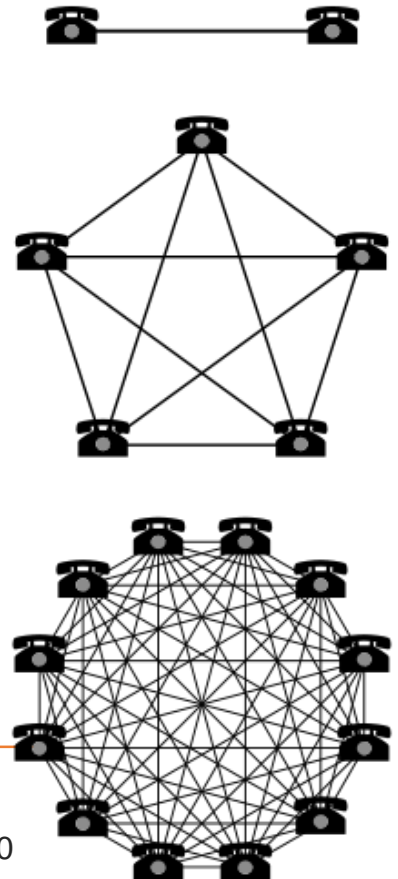
 Value of a good increases with the number of others using the same good

 **Direct** network effect: good becomes more valuable as the number of users grows

- Think of the telephone network

 **Indirect** network effect: increasing number of users of a good leads to more complementary products which raise the value of the good

- Think of relationship between hardware and software



# Data as indirect network effect



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- As the number of users increases, more information can be collected to improve the quality of the service
  - Search engine:
    - General: on the basis of language, location, time of search query
    - Personalised: on the basis of personal search history and information from additional services (Google: Gmail, Maps, etc.)
  - 'Machine learning'
  - Relevance of search results is vital



# Data as a barrier to entry

- Volume and variety of data may form a barrier to entry
- **BUT:** diminishing returns to scale
  - Value of having additional data may decrease at some point
  - Strength of the barrier to entry then depends on the volume at which the returns from additional information start to diminish

No	Yes
Data is a non-rivalrous good	Access to data can be made exclusive
Data is widely available	Specific data is needed to operate an online platform
Users multi-home	Network effects reduce the possibility for users to multi-home

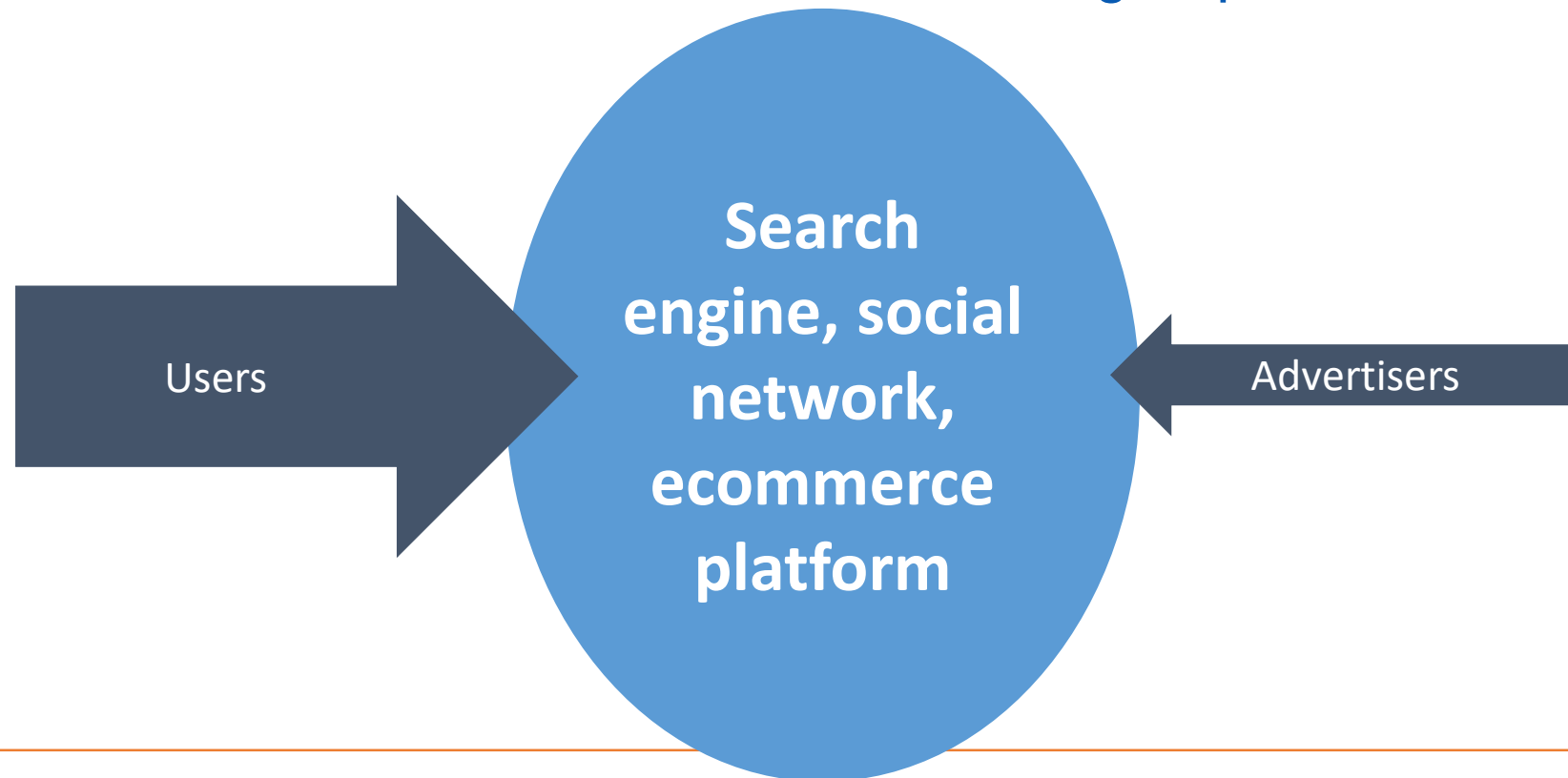


# Multi-sided platforms

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- Rochet & Tirole 2002-2003
  - Interdependence of the different sides of the platform
  - ‘Indirect’ network effects: value of the platform for customers on one side increases as the number of customers on the other side rises
  - **HOWEVER:** indirectness does not refer to the complementarity of products but to the multi-sidedness of a platform



‘Multi-sided’ network effects connect the customer groups



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- Map the network effects in Facebook's social network
  - Distinguish between:
    - Direct and indirect network effects on the user side
    - Direct and indirect network effects on the advertiser side
    - Multi-sided network effects



# Impact multi-sidedness on competition analysis

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- Giving away a service for free on one side of the platform does not give rise to anticompetitive predatory pricing

- ‘Free’ side must not be overlooked:

*KinderStart v. Google* case in the US where the court declined to apply antitrust law to internet search because it had not been indicated that antitrust law is concerned with free services

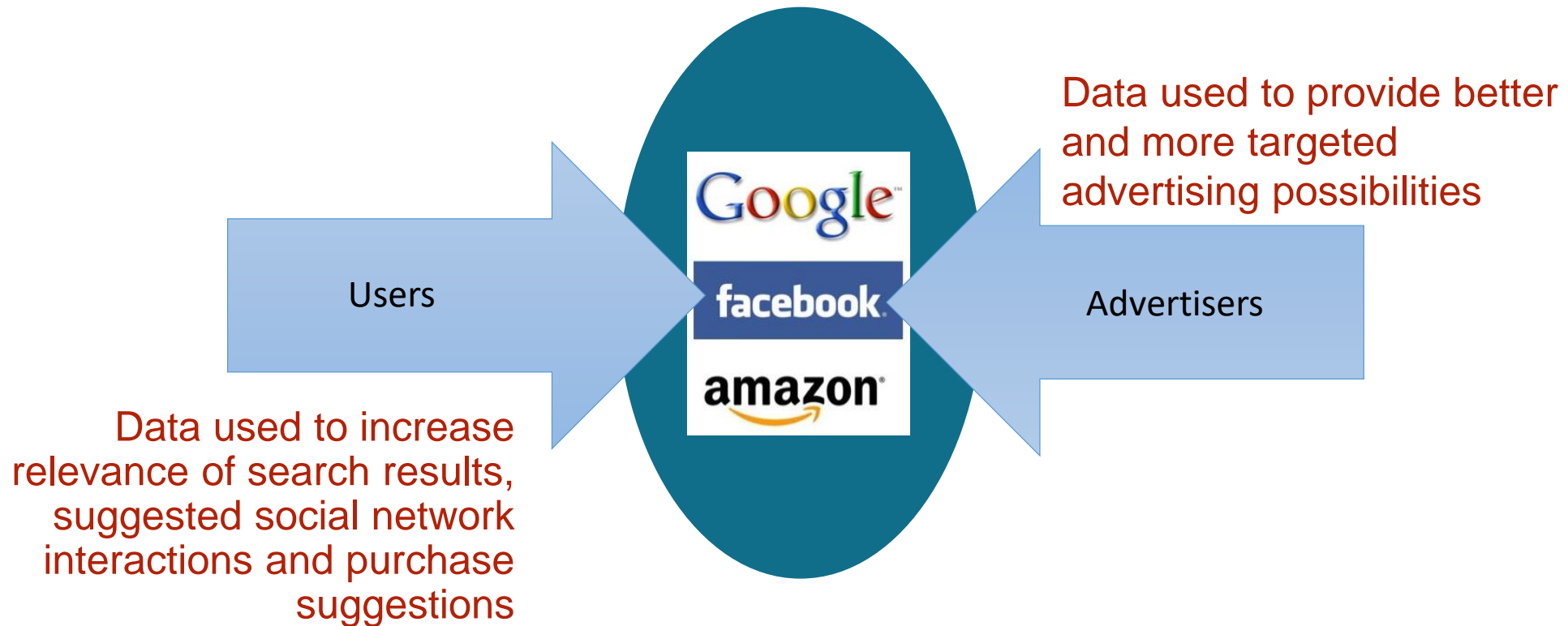
- Consequences for the SSNIP test:

- No price on the user side
- **SSNDQ** test?
- Qualitative instead of quantitative research? Surveys, interviews...





# Data in a two-sided business model



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## Data concentration and merger review



# Branches of EU competition law targeted at undertakings



## Article 101 TFEU

- Cooperation between independent undertakings

## Article 102 TFEU

- Abuse of dominance by one or more undertakings

## Merger Control Regulation

- Exogenous growth of undertakings



# Three-step analysis

## Market definition:

- Relevant product market
- Relevant geographic market
- Possibly a temporal element

## Dominance / market power:

- Power to behave to an appreciable extent independently of competitors, customers and consumers
- Market share is indicative, not conclusive:
  - +40% over certain period of time: **suggestive** of dominance
  - +50% over certain period of time: **presumption** of dominance

## Assess behaviour under relevant branch



# Combination of data sets in mergers

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## *Google/DoubleClick* merger (2008):

combination of information on users' search behaviour from Google and users' web-browsing behaviour from DoubleClick

## *Facebook/WhatsApp* merger (2014):

concerns about data concentration if Facebook were to start using WhatsApp's data to provide targeted advertising on Facebook

## *Microsoft/LinkedIn* merger (2016):

similar concerns about data concentration in relation to online advertising



## Search engines:

- *Microsoft/Yahoo* merger: analysis of the relevant market for online advertising; existence of a relevant market for online search was left open
- *Google* cases: practices on the market for online search advertising AND the market for online search

## *Facebook/WhatsApp* merger:

- Separate relevant markets for the user and advertiser side
- Relevant market for online advertising and potential sub-markets
- Potential relevant market for communications apps and social networks



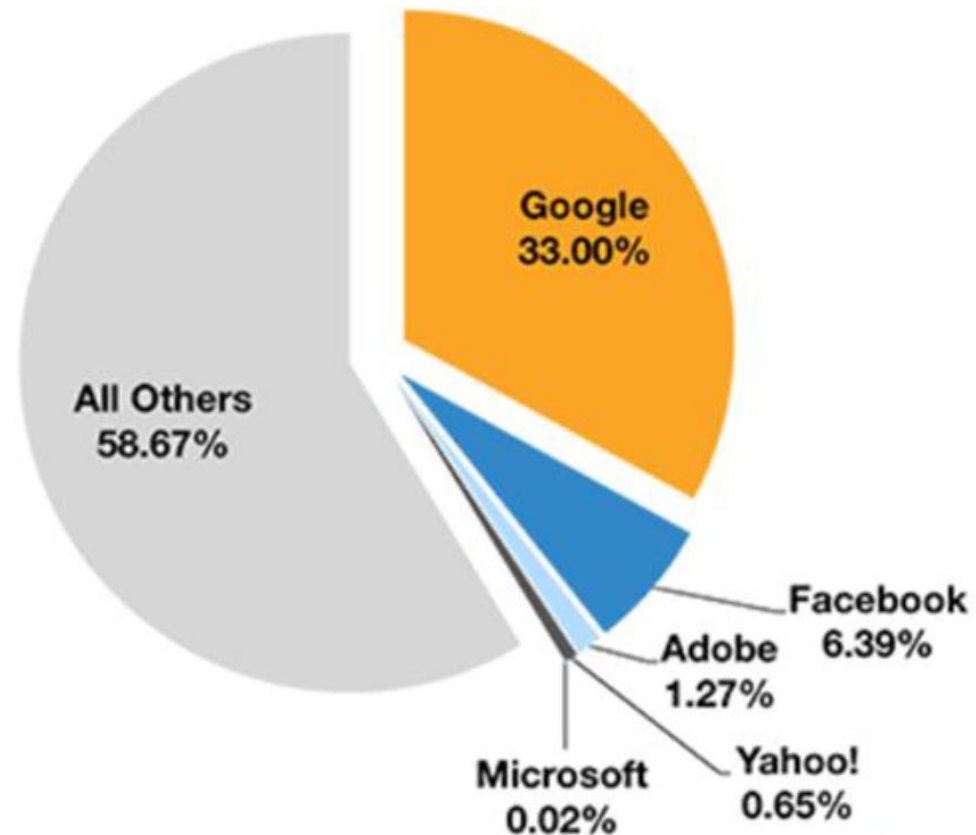
# Market for data?

- Market definition requires existence of supply and demand for data
- *Facebook/WhatsApp* merger:
  - Commission did not investigate any possible market definition with regard to the provision of data or data analytics services because neither of the parties was active in any such potential markets (par. 72)
- Market for data has been defined in cases where it was truly traded as a product:
  - *TomTom/TeleAtlas*: databases of digital maps
  - *Thomson/Reuters*: databases of financial information
- In online platforms, data is usually merely used as input and not traded as a product
- Evolution in *Microsoft/LinkedIn*



# Facebook/WhatsApp decision p. 34

Share of Data Collection Across the Web



Source: Ghostery panel data, Jan-Mar 2013.  
Ordered by frequency of panel user interactions with tracking applications.

EVIDON



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# Market for data?

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- Definition of a **hypothetical or potential market for data** in addition to the existing relevant markets for the services provided to users and advertisers
  - More forward-looking analysis:
    - Data is not just an input, but also enables market players to detect trends for potential new products
  - Reflects market reality:
    - Mergers and particular types of conduct seem to be increasingly incentivised by the prospect of having extra data
  - Better analysis of combination of datasets in mergers



# Why is this problematic?

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## *Google/Nest* merger in the US:

- Nest did not compete with Google in any relevant product market
- Merger possibly reinforced Google's position with regard to access to data about the behaviour of consumers



- Presumption for a market share of 50% or more
- Commission in *Microsoft/Skype* merger:
  - 80-90% market share on narrowest relevant market for video calls on Windows PCs
  - BUT: **market shares only provide a limited indication** of competitive strength in the communications services market because of the **nascent and dynamic character** of the sector due to which market shares can change quickly within a short period of time (par. 78)
- General Court in *Cisco*:
  - *'the consumer communications sector is a **recent and fast-growing sector which is characterised by short innovation cycles** in which large market shares may turn out to be ephemeral. In such a dynamic context, **high market shares are not necessarily indicative of market power** and, therefore, of lasting damage to competition'* (par. 69)



## ■ Press release European Commission *Google Shopping* June 2017:

- *'Google's search engine has held **very high market shares** in all EEA countries, **exceeding 90%** in most. It has done so consistently since at least 2008, which is the period investigated by the Commission. There are also **high barriers to entry** in these markets, in part because of **network effects**: the more consumers use a search engine, the more attractive it becomes to advertisers. The profits generated can then be used to attract even more consumers. Similarly, the **data** a search engine gathers about consumers can in turn be used to improve results'*.

## ■ Stability of market shares:

- Stable market shares still a reliable indicator in dynamic markets?
- ECJ in *Akzo*, par. 59: 3 years as basis for stable market share



- On the basis of the turnover of the parties it is assessed whether a merger has a Community dimension
- Are turnover thresholds still appropriate in the digital economy? See *Facebook/WhatsApp* merger:
  - Turnover WhatsApp too low under Article 1(3) Merger Regulation
  - Facebook relied on Article 4(5) because merger was capable of being reviewed under national competition laws of 3 Member States
- In addition to turnover thresholds, perhaps add market shares or transaction volume as indicators – see developments in Germany and Austria



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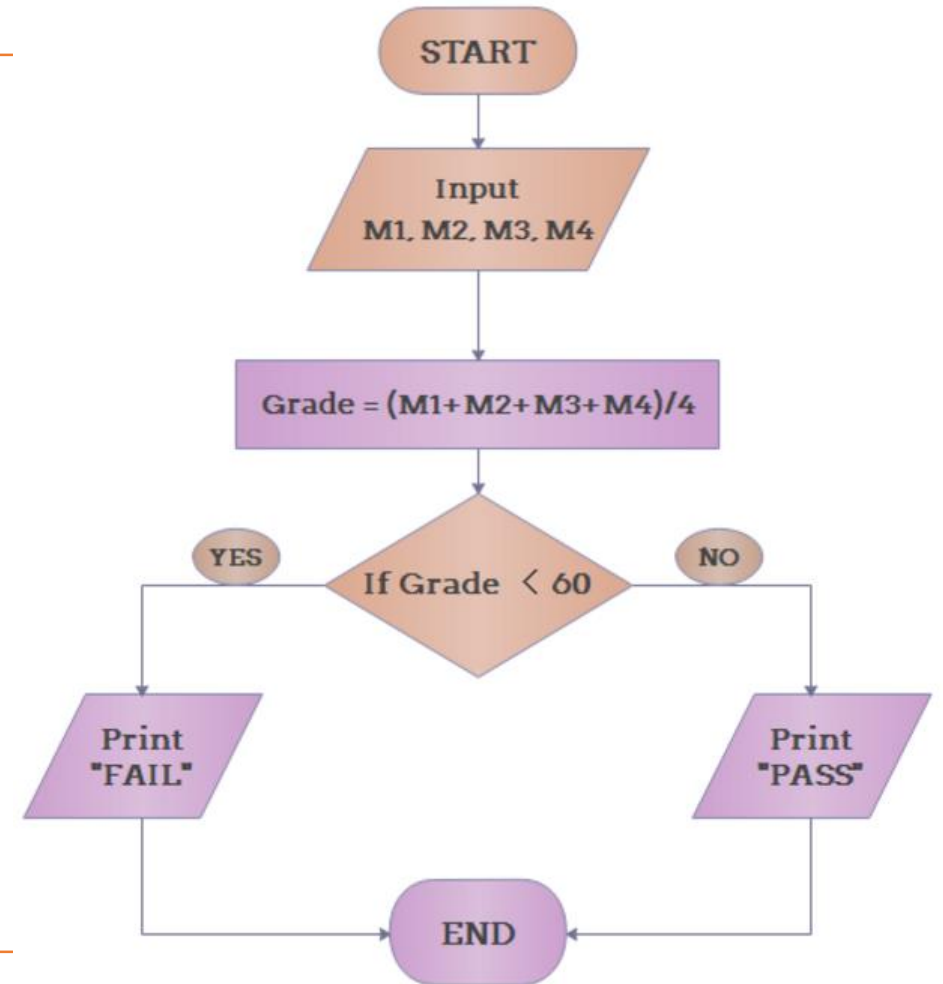
# Algorithms and restrictive practices



# Working of algorithms

- Set of steps which have to be performed in a certain order to carry out a specific task
- Automated decision-making
- Machine learning

## CONNECTOR



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- Pricing algorithms create more market transparency but possibly also **higher risk of collusion**
  
  - **Are current triggers for liability under Article 101 TFEU still appropriate to capture anticompetitive behaviour?**
  
  - **Focus on three issues:**
    - Agreements implemented by way of an algorithm
    - Competitors rely on the same algorithm
    - Autonomous action by algorithms





# Agreements implemented by way of an algorithm



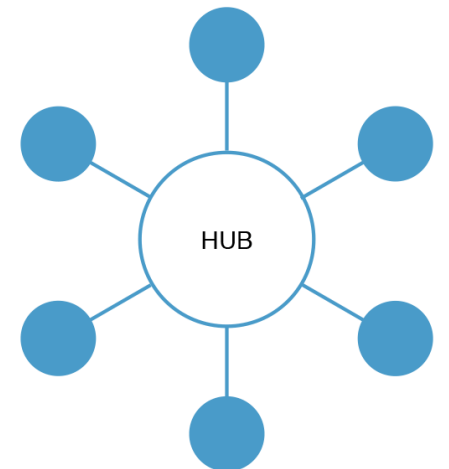
- *Topkins*, April 2015: US DOJ
- *Trod*, August 2016: US DOJ and UK CMA
- In both cases **pre-existing agreement** was present
- Traditional competition law concepts could be adequately applied



# Competitors rely on the same algorithm



- Complaint against Uber's CEO filed by a customer in Jan. 2016 in the US alleging a price fixing conspiracy among Uber drivers:
  - Uber matches drivers with customers
  - Drivers are independent contractors and not employed by Uber
  - Drivers charge the price set by Uber's algorithm
- Uber as a 'hub and spoke' technology cartel?
  - Uber's vertical agreements with each driver may give rise to horizontal coordination due to **parallel use of the same algorithm**
  - Creation of an artificial market: surge pricing
  - Key issue: existence of anticompetitive object or effects?



# Role of algorithms in hub-and-spoke cartels

## Liability of cartel facilitators in EU competition law:

- *Treuhand* (2015): consultancy firm which actively contributed to a cartel in a market different from its own
- *Eturas* (2016): online system which capped discount rates available to travel agencies through technical restriction
  - Eturas as third party facilitator
  - Liability of travel agencies for concerted practice?

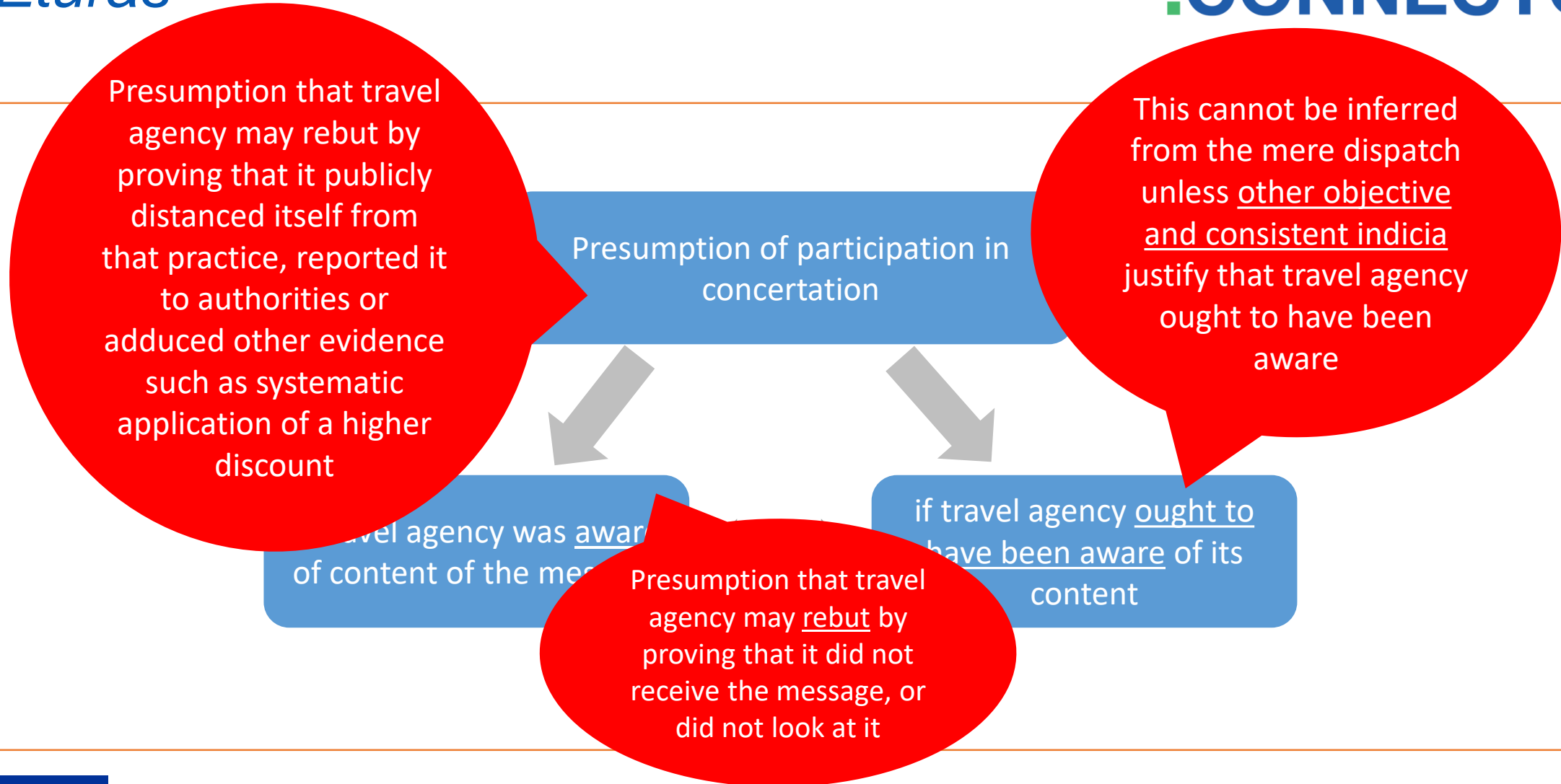


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## Concerted practice requires:

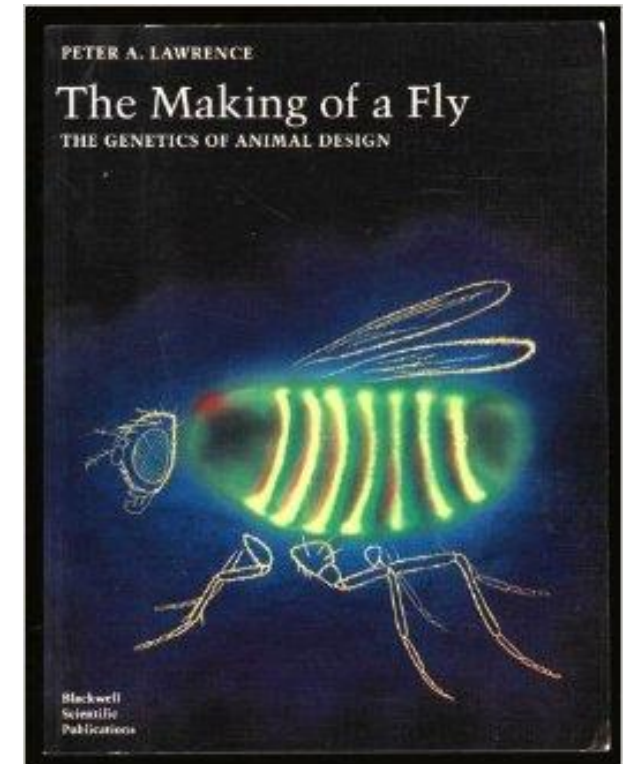
- concertation among participating undertakings
- subsequent market conduct
- causal connection between the two





# What if algorithms act autonomously?

- Book *The Making of a Fly* sold on Amazon for \$23.7 million: price was set through the **interaction of two different algorithms**
- Application of Article 101 TFEU:
  - No agreement
  - **Concerted practice?**  
But no contact or communication



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- Each undertaking must independently determine the policy it intends to adopt on the market

- *Suiker Unie*, par. 174:

requirement of independence does not exclude economic operators to adopt themselves intelligently to the conduct of their competitors,

but *'it does however strictly preclude any direct or indirect contact between such operators, the object or effect whereof is either to influence the conduct on the market [...] or to disclose to such a competitor the course of conduct [...] on the market'*



# Need for a new approach?

- **Tacit collusion:** market works as if there were collusion but there is no concerted practice and no agreement to collude
- What should be the right standard of proof?
  - Should it be sufficient that an undertaking accepts the risk that the use of algorithms may induce collusion?
  - To what extent should an undertaking be liable for **autonomous acts** of an algorithm?
- Need to re-think current approach to Article 101 TFEU?

Speech Competition Commission Vestager (March 2017): *‘What businesses can – and must – do is to ensure **antitrust compliance by design**. That means **pricing algorithms need to be built in a way that doesn't allow them to collude**’*





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