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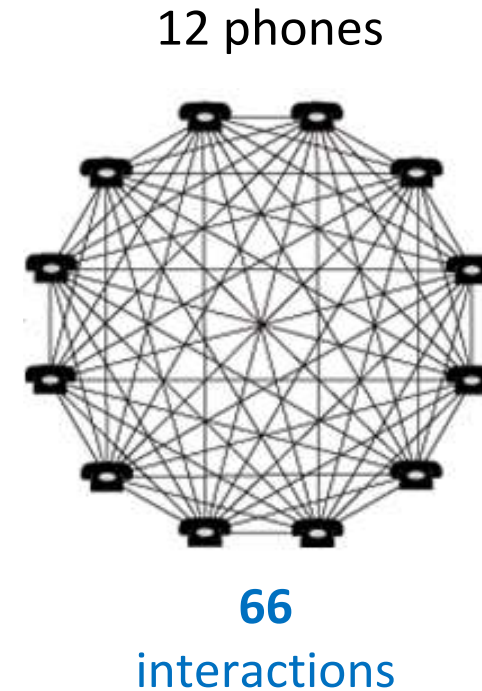
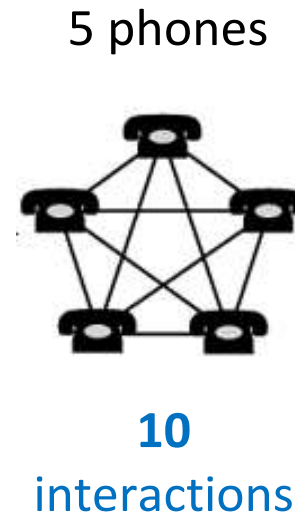
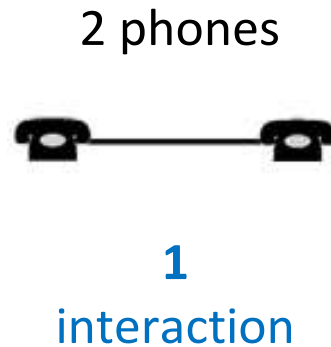
**Kuliah 3: Platform Strategy**  
Network Effects

Dodie Tricahyono, Ph.D.

- Network effects are the incremental benefit gained by an existing user for each new user that joins the network.
- There are two types of network effects: direct and indirect network effects.
- Direct network effects are also known as same-side effects. The value of a service simply goes up as the number of users goes up.
- Indirect network effects are also known as cross-side effects. The value of the service increases for one user group when a new user of a different user group joins the network.
- Note that a key difference between indirect and direct network effects is that the *type* of user who joins *matters*. Look at Uber example, when a new driver joins Uber, there is little to no additional value to other drivers. However, when a rider joins Uber, that increase the value of Uber for all drivers.

\*Nicholas L. Johnson, *What are Network Effects?* <https://www.applicoinc.com/blog/network-effects/>

More users = more value = more users ...

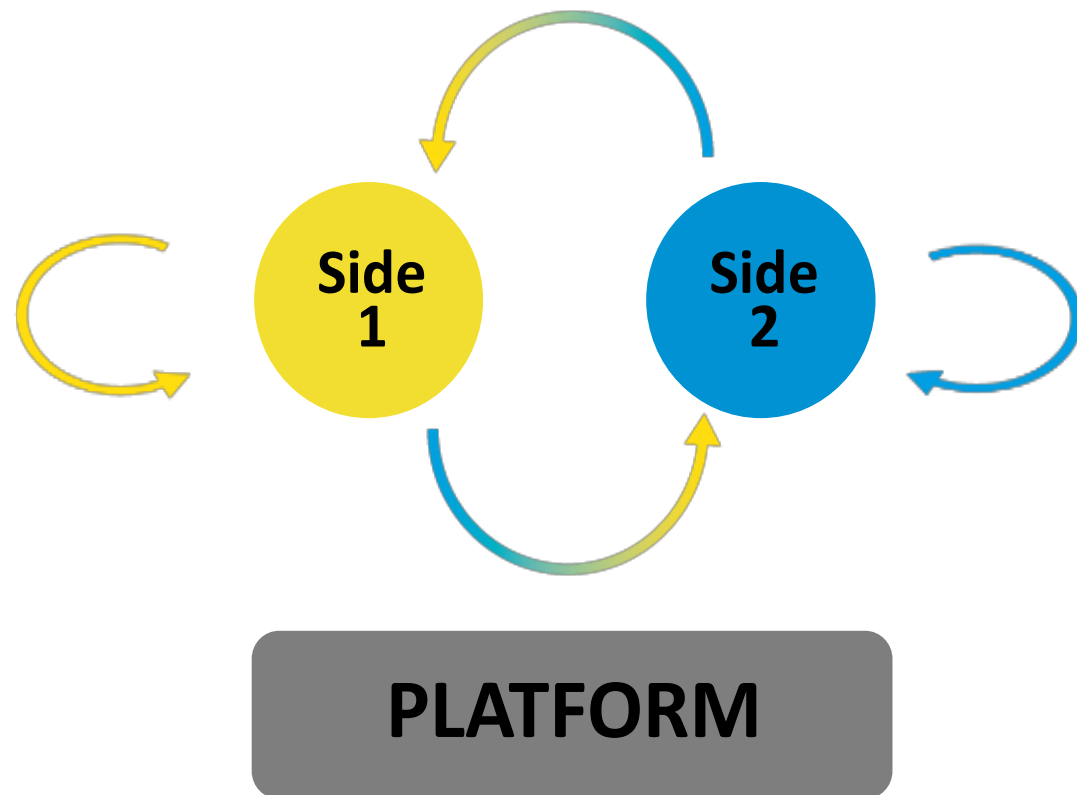


Metcalfe's law:  
 $N(n-1)/2$

For example: telephone, it is only useful if the people that you need to reach also have telephones. The more people there are who have phones, the more useful it is to have one yourself.

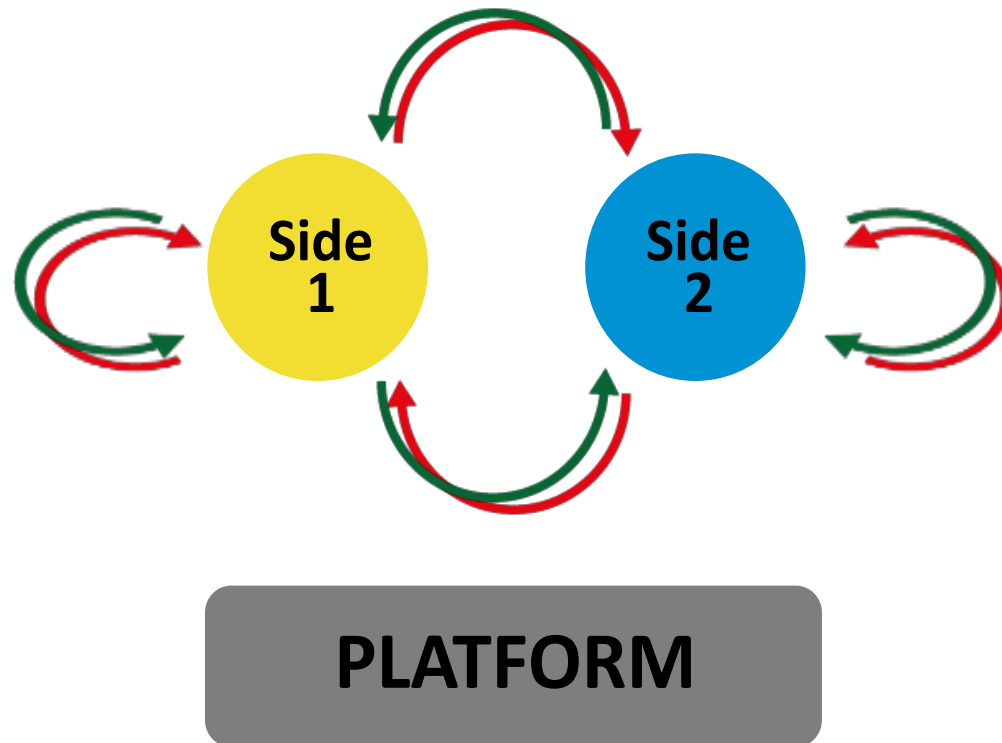
- The indirect network effect also known as cross-side effects.
- In indirect network effect: the value of the service increases for one user group when a new user of a different user group joins the network.
- You must have two or more user groups to achieve indirect network effects.
- In most platforms, there are two users groups: producers and consumers. The more consumers on the network, the more valuable that network is to producers, and vice versa.

- Joining a network has a cost. In some cases, to join a network a user must buy hardware, such as the telephone. Even today, digital platforms require smart devices and benefit greatly from the ubiquity of smartphones, such that from the consumer perspective apps are “free.” Uber is free – for those who already have a smartphone.
- In other cases, the cost is more direct. An Uber driver pays a fee to Uber for services rendered through the app.
- When a platform attains a critical mass of users, the cost of joining the platform is outweighed by the value of joining, with most of that value being derived from the power of the network (e.g. the Uber driver will have access to *many* more passengers, making the transaction fee worth the cost).
- Prior to critical mass, the cost of joining is greater than the value derived from joining, so the platform will need to employ strategies to incentivize early usage, such as subsidizing initial user acquisition. Like providing a referral fee, for example.



- A **same-side** effect for each side, i.e., preference regarding number of other users on *own* side
- A **cross-side** effect in each direction, i.e., preference regarding number of users on *other* side

THESE CAN BE *POSITIVE* OR *NEGATIVE*.



+ **same-side** : Player-to-player contact in Xbox MMOG, end-user PDF sharing.

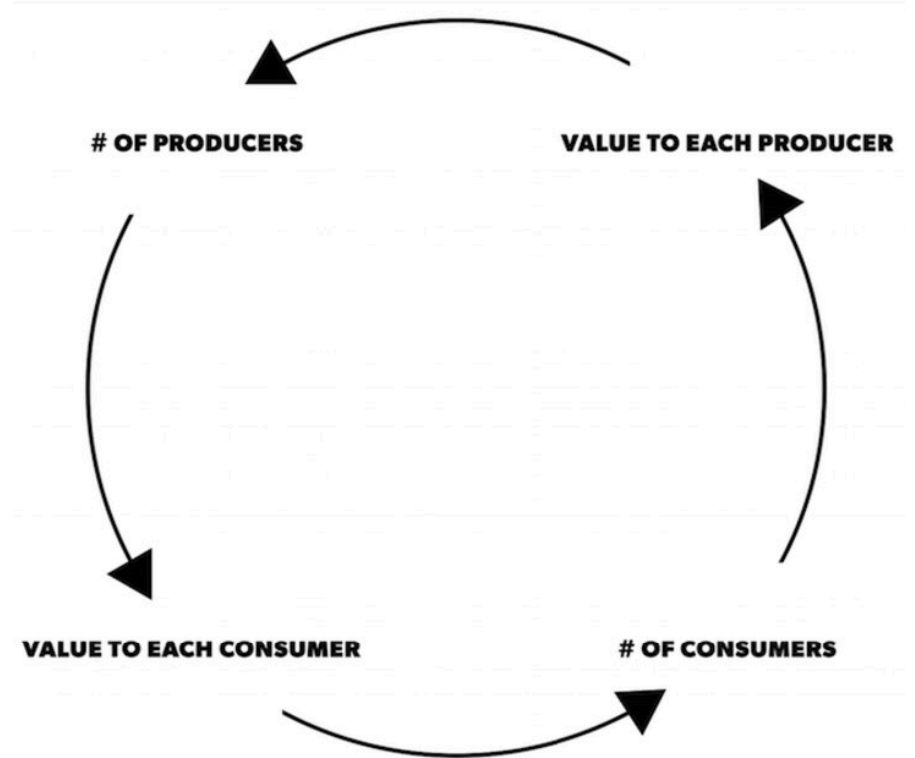
+ **cross-side** : merchants & consumers for Visa, developers & end-users for Windows

- **same-side** : competing suppliers in Covisint auction, competing dates on Match.com

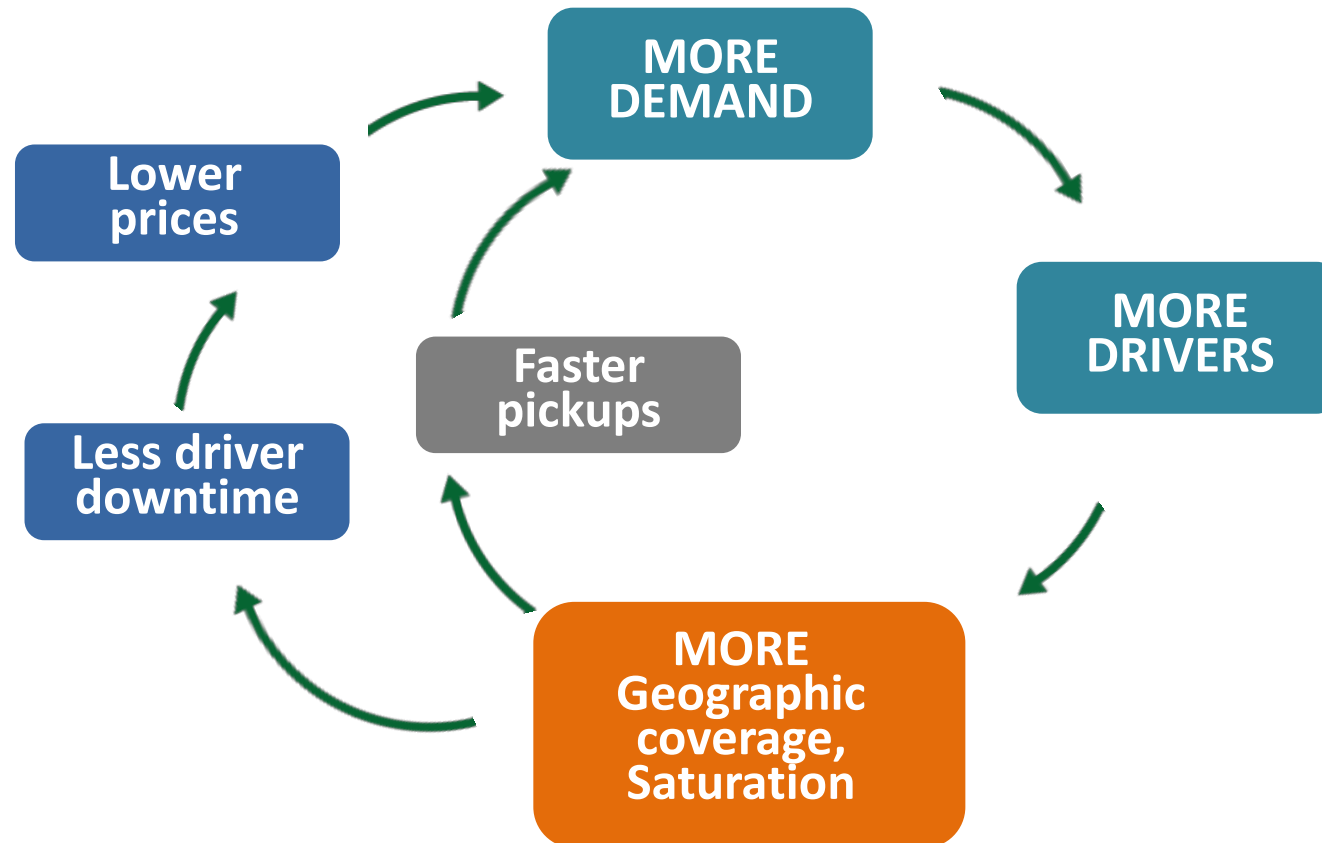
- **cross-side** : Digital Rights Management costs to consumers. Advertising clutter to viewers.

You must manage *all* such interactions

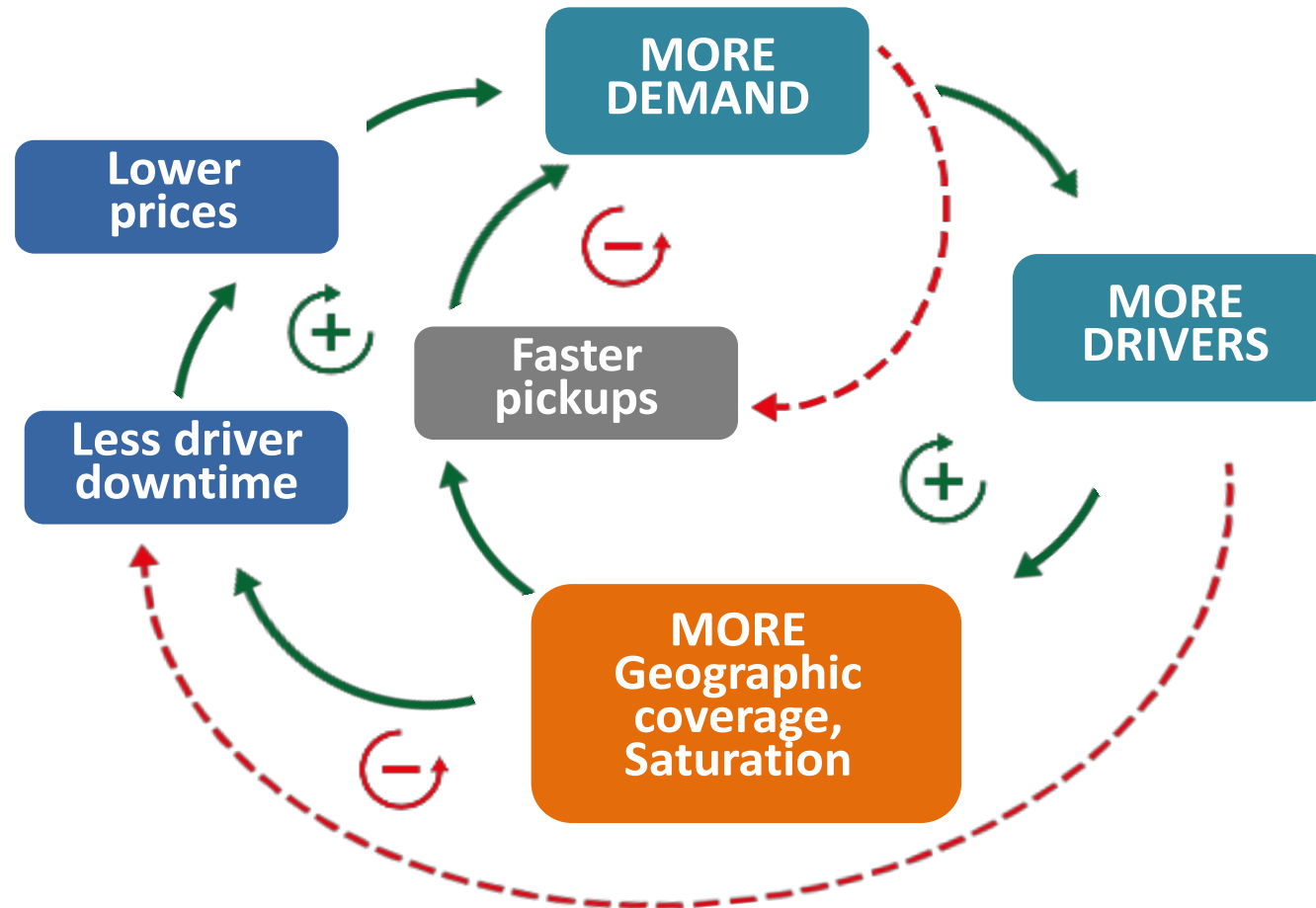
- In fact, if all else holds equal, an increase in platform membership can lead to higher quality services or products transacted on the platform.
- For example, if there are many developers producing great apps on a given platform – say Apple’s iOS – more consumers will be drawn to that platform and will go out and buy iPhones. As the number of iPhone users grows, more and more people will learn how to develop apps on iOS because the market is growing, thereby opening the doors to a wider array of higher quality apps. Expert software developers who existed before Apple iOS will also see the growing platform as an opportunity too big to ignore.
- This interdependent cycle between producers and consumers known is known as a “positive feedback loop” and is the bread and butter of successful platforms.



## DAVID SACK'S (COO PAYPAL, CEO YAMMER) SKETCH SHOWS HOW POSITIVE FEEDBACK DROVE UBER GROWTH

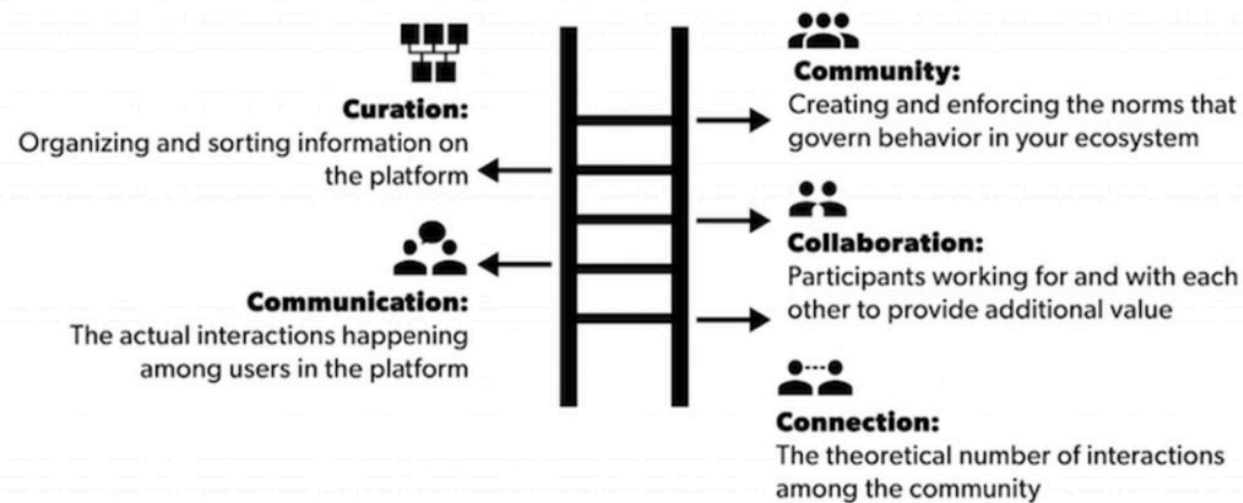


**ALL POSITIVE FEEDBACK LOOPS MEET NEGATIVE FEEDBACK LOOPS (ELSE THEY EXPLODE).  
MAKE SURE YOU FIND THEM AND MITIGATE THEM.**



- However, while this is the key to sustained platform growth, not all growth on a platform leads to higher quality. While a grow platforming *will* attract more high quality users, it will also attract lower quality users too, as well as [spammers and scammers](#).
- Therefore platform managers must emphasize the “higher quality” nature of growth and maintain a high standard for access and use.
- Facebook provides an early case study in growth management. The initial user base began as a highly curated group (students at a single university). As it expanded, Facebook remained strived to maintain user integrity by flushing out spam accounts, ensuring users are who they say they are, and creating community rules to highlight the aspects of Facebook that users most enjoy, while banning objectionable content. Former competitors like MySpace and other social networks rapidly deteriorated precisely because they did not implement these safeguards against low-quality growth.

## The 5 C's of Network Effects: Connection, Communication, Collaboration, Curation, and Community.

**Step 1: Connection**

Connection refers to user onboarding and their ability to find others on the platform. How easy is it for users to find the right counter parties to buy from, sell to, share and collaborate with, etc.?

**Step 2: Communication**

Communication between users should be as seamless as possible, allowing for the greatest ease-of-use. Seamless mobile syncing is a must-have as well.

**Step 3: Curation**

Curation maintains the usability and integrity of your platform by keeping the quality of your users and content high and easily searchable. To ensure quality, platforms must focus on two aspects of the platform: user access (who is on the platform) and content/catalogue curation (what is on the platform).

**Step 4: Collaboration**

Collaboration enables users to self-organize into new networks that advance the specific agendas that are important to them individually.

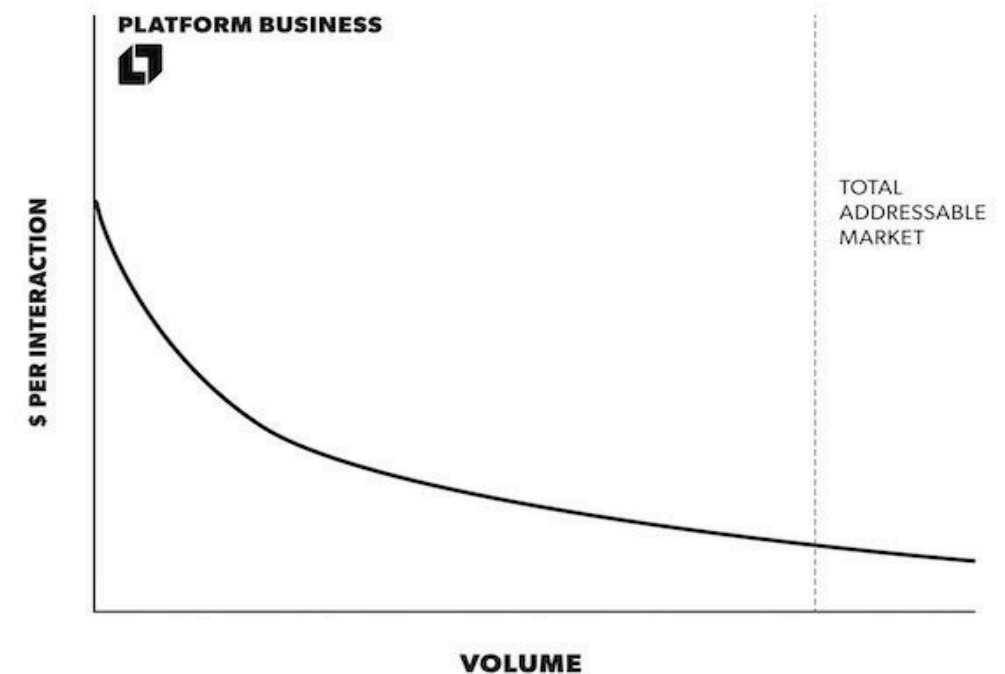
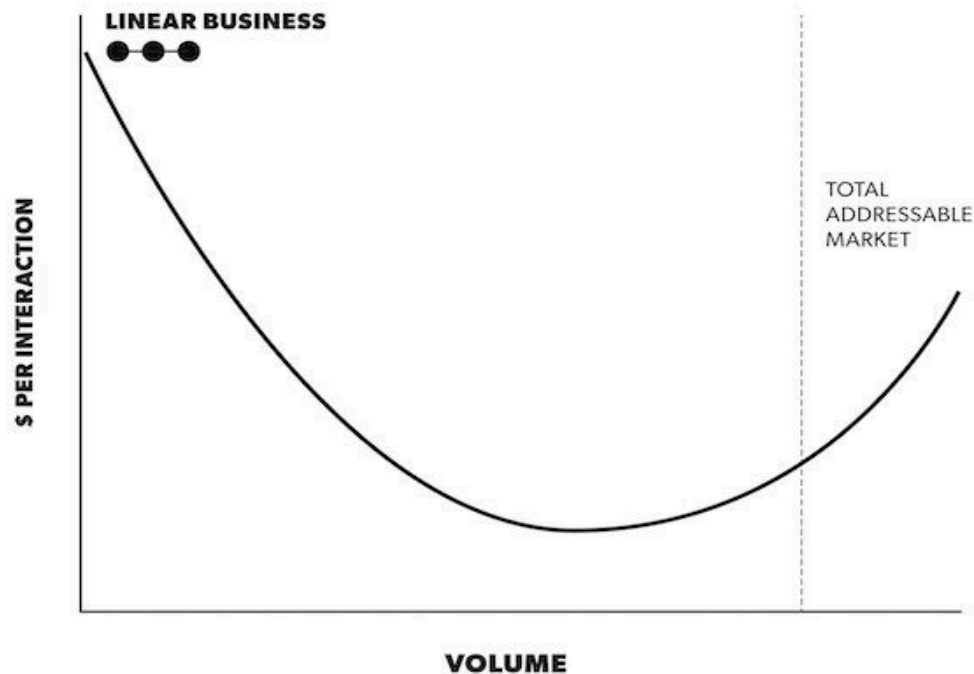
**Step 5: Community**

The final step, community, grants users a sense of ownership of the platform, such as when a user edits a fact on Wikipedia, rates an app in Google Play, or flags inappropriate content on Facebook. In a sense, it's user-enforced curation.

Curation and Community feedback and participation provide steady guardrails for runaway growth, while Connection, Communication, and Collaboration attracts users and keep them coming to the platform over and over again.

- When talking about network effects, the discourse implicitly refers to network effects as having a global benefit wherein each new user benefits the entire network (global here refers to the entire network, not geography). However, in practice, network effects are local and clustered into subset or micro-networks within the larger network. Local network effects can be just as, if not more, powerful and make a platform more attractive to a subset of users.
- For example, YouTube has many local networks on its platforms from makeup enthusiasts to video game streamers to book reviewers. This strengthens Youtube's resilience to competition. YouTube continues to grow overall because its other micro-networks are robust and growing.
- Thus, local network effects can be a powerful force in keeping user engagement high and consistent, because it emphasizes and accounts for each user's individual interest and forms a community around that interest.
- Seen through this lens, a new platform should never try to target *everyone*, but instead focus on a niche subculture or demographic. That niche may be the entire network in the platform's early stages, but, in the future, it will represent just one strong local network in a larger platform

- As a platform scales, its costs per unit sold decreases logarithmically (see figure below). In comparison, linear businesses are constrained by a U-shaped cost-per-unit curve as they increase sales.
- In contrast, a platform grows not by buying more assets, but by acquiring more users, which has a near-zero cost. For example, when Uber wants to add more cars to its platform, it just needs to attract new drivers to its network, not buy more cars. This costs the platform next to nothing.



## WHEN DO WINNER-TAKE-ALL MARKETS EMERGE?

1. Large Supply/Demand Effects (Utilities & Facebook vs Consulting). Costs fall or value rises with volume.
2. Large Multi-Homing Costs (OS vs credit cards). Consumers tend to choose just one
3. Niche specialization is low (geographically unrestricted courses vs geographically restricted courses). Differentiation creates protected markets not swamped by scale economies.



**More Likely**



**Less Likely**



Source: Eisenmann, Parker, Van Alstyne, 2006. "Strategies for Two Sided Markets." *Harvard Business Review*.

## TO PRICE A PLATFORM WITH NETWORK EFFECTS, WHO GETS THE SUBSIDY?

*Answer: The side that is the stronger attractant (or that creates more value)*



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Source: Parker & Van Alstyne, 2005. "Two Sided Network Effects: A Theory of Information Product Design." *Mgmt Sci.*

## The Story of Acrobat Reader/Writer

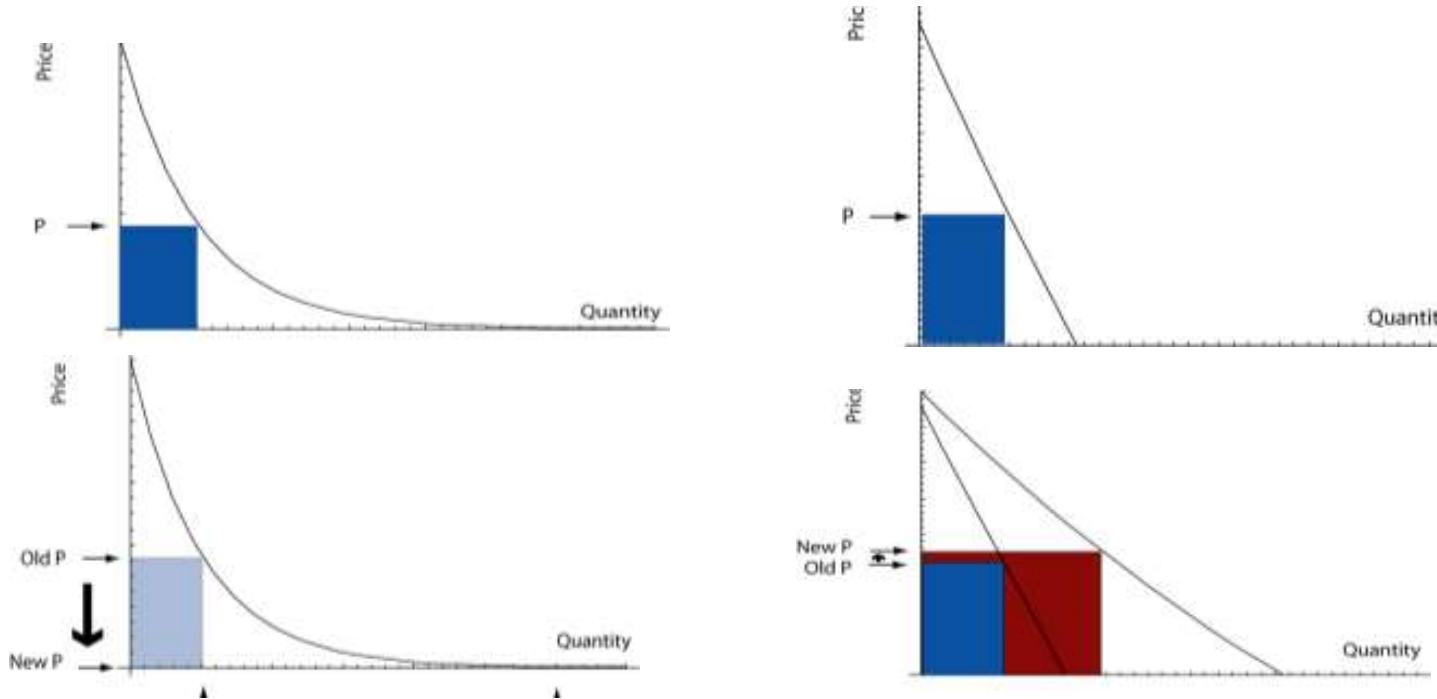
Adobe first tried to sell PDF readers and writers but no one wanted to buy readers when there was no content to read. And, no one wanted to buy writers when no one had readers. Adobe broke the logjam by giving PDF readers away.



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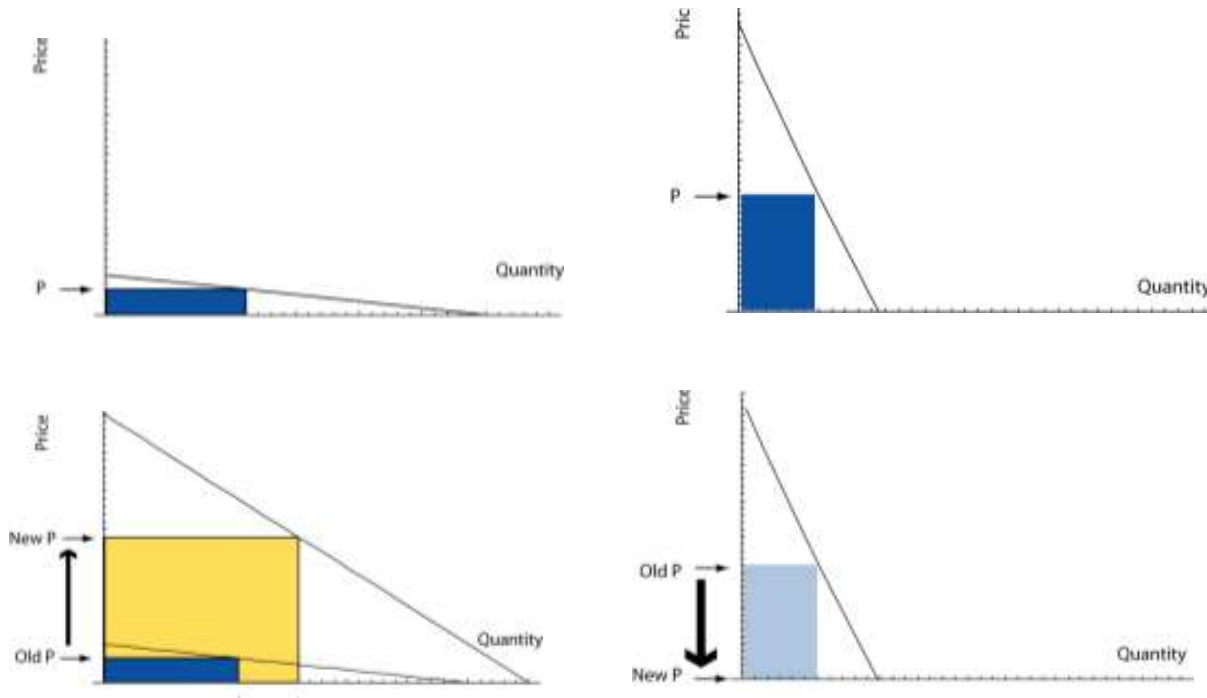
Source: Tripsas “Adobe Systems Inc.”  
Harvard Business School case 801-19.

# Adobe Acrobat: SUBSIDIZE CONSUMERS



Making PDF readers free dramatically increased the value of PDF writers, shifting producer demand out and to the right. Here, Adobe subsidized consumers. Profit lost on one side of market is more than made up by profit gain on other side of market.

# Operating Systems: Subsidize Developers



Making System Development Toolkits (SDKs) free dramatically increased the value of operating systems, shifting consumer demand out and to the right. Here, Microsoft subsidized producers. Profit lost on one side of market is more than made up by profit gain on other side.



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Source: Parker & Van Alstyne, 2000. "Information Complements, Substitutes and Strategic Product Design"

# WHEN DOES FREE MAKE SENSE?

- 1) People understand the razors & blades strategy (same as cellphones & minutes, printers & ink)
  - Give away one thing, charge for another
  - The SAME person gets both items
- 2) People often misunderstand 2-sided network pricing
  - Subsidize one party in order to attract then charge another party
  - Subsidy side and money side of the market are DIFFERENT parties (like women & men on ladies' nights)
- 3) Monetization is trickier for 2-sided networks
  - Charging the wrong side (or both) reduces growth and network effects



# ISSUES



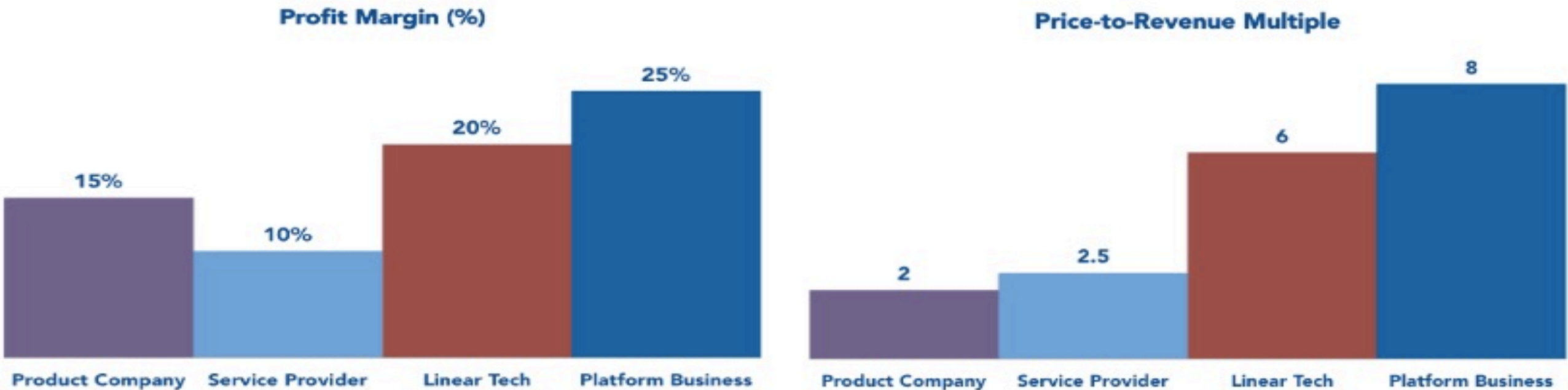
**Q: Why is price more important in network markets?**

A: The entire demand curve can *change* with price.

**Q: Why is price more strategic in 2-sided networks?**

A: Imagine competing on the subsidy side – you need a source of subsidy at least as great.

- The word 'copy' is key to understanding a platform's near-zero marginal cost of distribution. An app might cost \$500,000 to develop. However, every copy of that app thereafter costs next to nothing to produce and distribute.
- Uber made some investment in developing Uber, and today continues to improve the app through developers to enhance user experience, but development costs do not have a one-to-one relationship with each new user acquired.
- Thanks to the Internet and sharing technology, information goods today have a near-zero marginal cost of distribution.
- Platforms boast higher profit margins and higher price-to-revenue multiples.



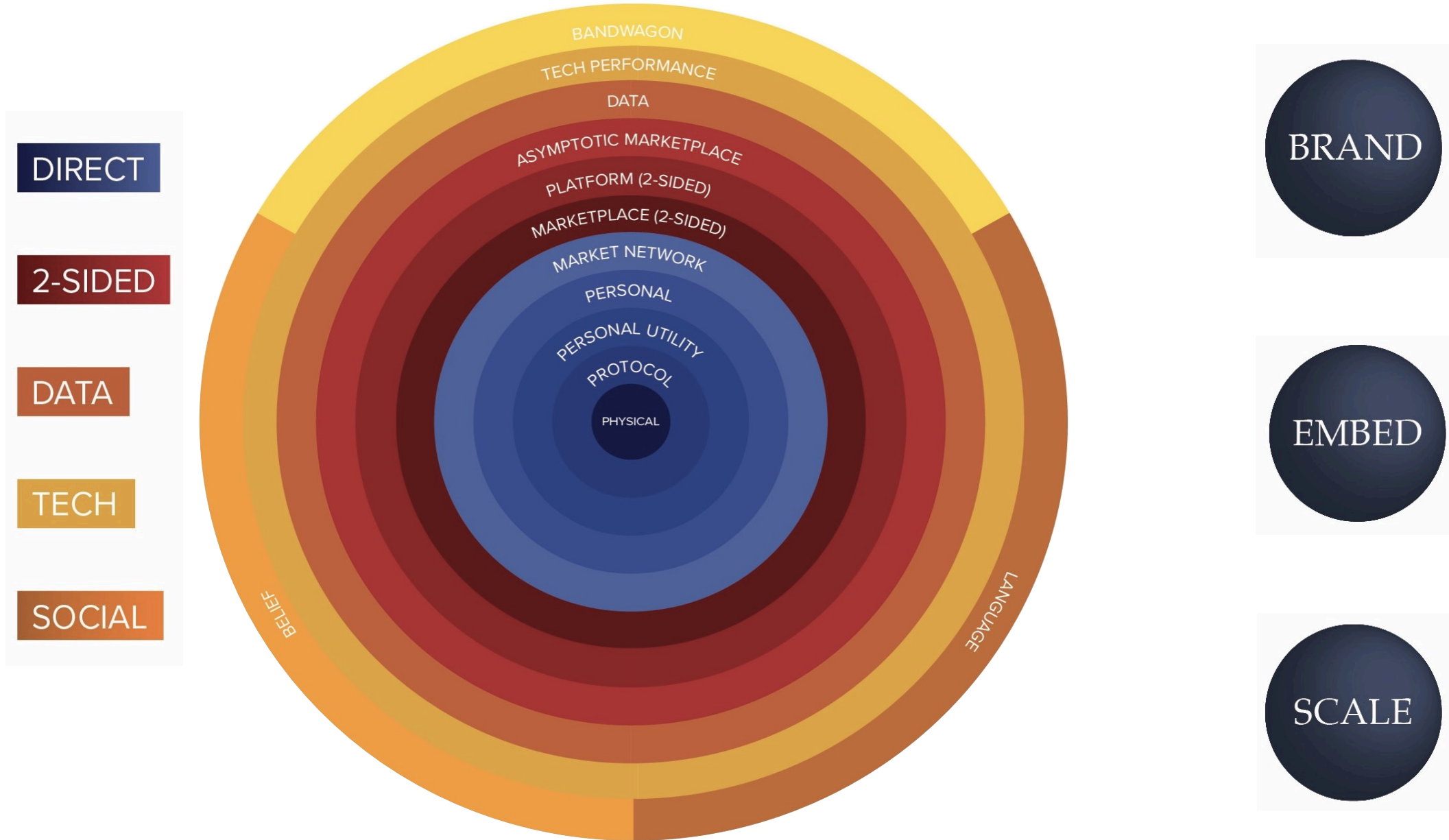
\*Data from *Modern Monopolies* research looking at S&P 500, 2016

## The Link & Youtube Case Series

<https://www.nfx.com/post/network-effects-bible/>: **Network Effects Bible**

- [https://www.youtube.com/watch?v=0B\\_NM\\_kL6rM](https://www.youtube.com/watch?v=0B_NM_kL6rM): The 13 Types of Network Effects
- [https://www.youtube.com/watch?v=yEminPU\\_7cc](https://www.youtube.com/watch?v=yEminPU_7cc): The Network Effects of Uber: Under the Hood
- <https://www.youtube.com/watch?v=BhRZ8-lzgZc>: Why Facebook Will Survive
- <https://www.youtube.com/watch?v=0Z04tNHCKnY>: The Network Effects of Trulia: The \$3.5 Billion Marketplace





- <https://www.youtube.com/watch?v=2rnNHt84iRE>: Why you keep using Facebook, even if you hate it