



Boston University Questrom School of Business

## Platform Ecosystems: How Networks Invert the Firm

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MIT Leading Disruption



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<u>Firm</u>	<u>Year</u>	<u>Empl.</u>	<u>Mkt Cap</u>
BMW	1916	116,000	\$60B
Uber	2009	12,000	\$62B
Marriott	1927	226,000	\$35B
Airbnb	2008	5,000	\$31B
Walt Disney	1923	195,000	\$178B
Facebook	2004	20,000	\$489B
Kodak	1888	145,000	\$30B (heyday)
Instagram	2010	13	\$1B (acquisition)

The transition to Internet era firms resembles the transition to Industrial era firms ... but for the opposite reason

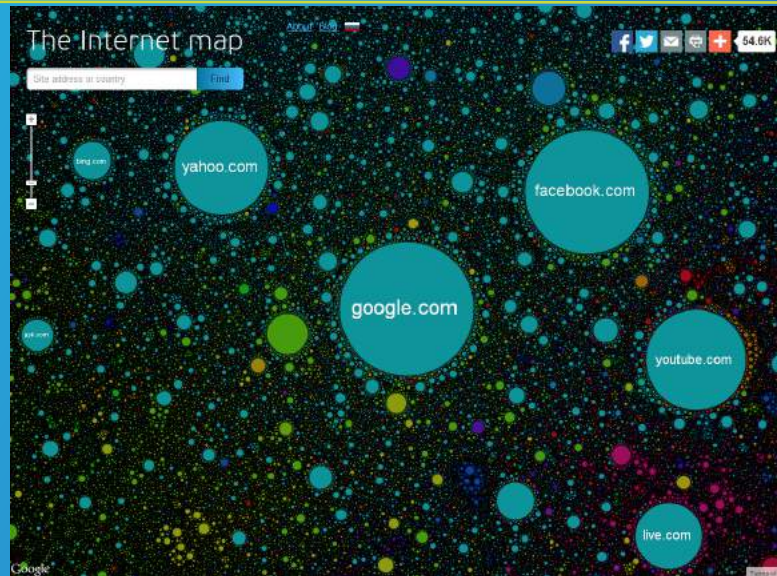
These platform business models beat product business models every time

Forces that generate platforms invert the firm, changing IT, marketing, human resources, finance, strategy...

## InterBrand: 2016 Global Brands

01  <b>+5%</b> 178,119 \$m	02  <b>+11%</b> 133,252 \$m	03  <b>-7%</b> 73,102 \$m	04  <b>+8%</b> 72,795 \$m	05  <b>+9%</b> 53,580 \$m	06  <b>-19%</b> 52,500 \$m	07  <b>+14%</b> 51,808 \$m	08  <b>+33%</b> 50,338 \$m
09  <b>+18%</b> 43,490 \$m	10  <b>+2%</b> 43,130 \$m	11  <b>+12%</b> 41,535 \$m	12  <b>-1%</b> 39,381 \$m	13  <b>+6%</b> 38,790 \$m	14  <b>+4%</b> 36,952 \$m	15  <b>+48%</b> 32,593 \$m	16  <b>+4%</b> 30,948 \$m
17  <b>-3%</b> 26,552 \$m	18  <b>+9%</b> 25,634 \$m	19  <b>+8%</b> 23,999 \$m	20  <b>+2%</b> 22,881 \$m	21  <b>-4%</b> 22,106 \$m	22  <b>+13%</b> 21,293 \$m	23  <b>+3%</b> 20,269 \$m	24  <b>-10%</b> 19,959 \$m
25  <b>-3%</b> 16,358 \$m	26  <b>+8%</b> 17,834 \$m	27  <b>+19%</b> 16,766 \$m	28  <b>+6%</b> 16,134 \$m	29  <b>+4%</b> 15,333 \$m	30  <b>+8%</b> 15,099 \$m	31  <b>+3%</b> 14,227 \$m	32  <b>-6%</b> 13,136 \$m

## Dominated by Platforms



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## World's Most Valuable Companies

	Company	Market Cap (\$B)
➤	Apple	785
➤	Alphabet (Google)	658
➤	Microsoft	563
➤	Amazon	500
➤	Facebook	494
	Berkshire Hathaway	427
➤	Alibaba	390
	Johnson & Johnson	352
	Exxon Mobile	342
	JP Morgan Chase	322

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## Platforms are overtaking energy and banking

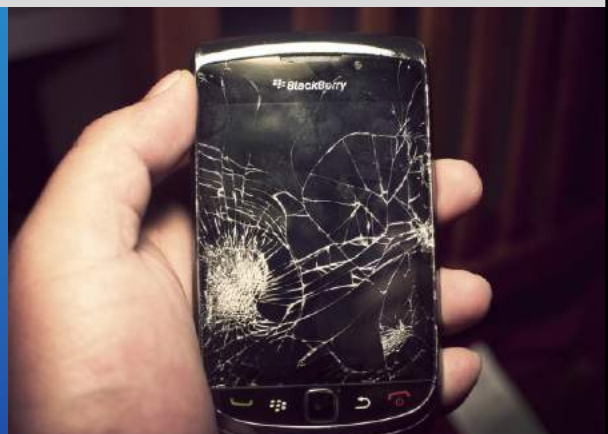


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Source: Visualcapitalist.com, Bloomberg

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## The Product Business Model is Broken

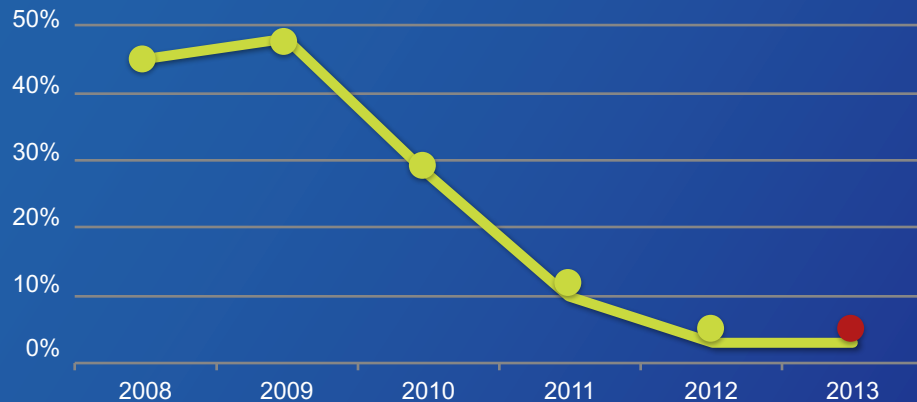


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## The Product Business Model is Broken

In 2009, BlackBerry had nearly 50% market share in U.S. operating systems, according to IDC. Now: 2.1%



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## 1980-2000 Microsoft Platform Beats Apple Product



Apple launched the PC revolution but Microsoft licensed widely, built a huge developer ecosystem, 6X larger.

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## InterBrand: 2016 Global Brands

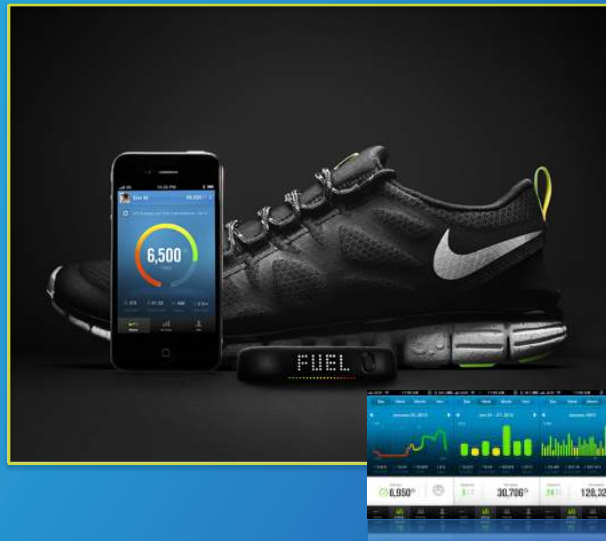
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09  <b>+18%</b> 43,490 \$m	10  <b>+2%</b> 43,130 \$m	11  <b>+12%</b> 41,839 \$m	12  <b>-1%</b> 39,381 \$m	13  <b>+6%</b> 38,790 \$m	14  <b>+4%</b> 36,952 \$m	15  <b>+48%</b> 32,593 \$m	16  <b>+4%</b> 30,948 \$m
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## Nike Builds a Biz Platform



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## How would you create a platform around spice?

1. Enumerate end user features: salty, citrus, sou...
2. Get consumer preferences
3. Match to best products
4. Mix new combinations, help users create & upload, allow ratings, build a community



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## How are these Related?

Uber Drivers  
eBay Sellers  
Xbox Developers  
Amex Merchants  
Aga Khan Doctors  
YouTube Videographers  
AirBnb Rooms  
Tesla Charge Stations  
Mechanical Turk Laborers  
LinkedIn Employers  
Upwork Projects  
Android Developers



Uber Riders  
eBay Buyers  
Xbox Gamers  
Amex CardHolders  
Aga Khan Patients  
YouTube Viewers  
AirBnb Renters  
Tesla Car Drivers  
Mechanical Turk Jobs  
LinkedIn Employees  
Upwork Freelancers  
Android Users

- 1: Each side attracts the Other
- 2: They're all outside
- 3: They interact

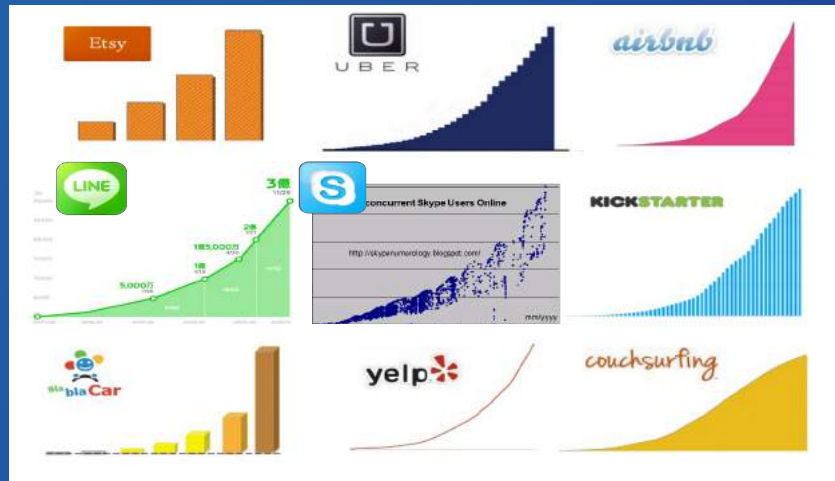
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## Network Effects: Users create value for Users

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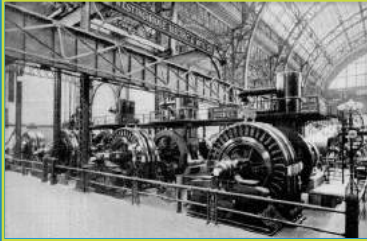
**Giants of the Internet era resemble those of the Industrial era but for the opposite reason.**

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## Giants of Supply Side Economies of scale

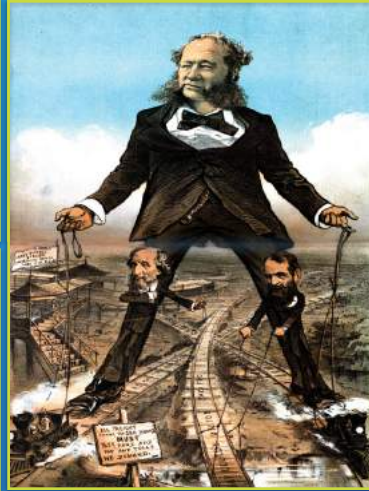
Electric  
Dynamo  
1893



Ford Model T  
1908



Acklam Ironworks  
1924



Standard Oil  
Cossus of  
(Rail) Roads

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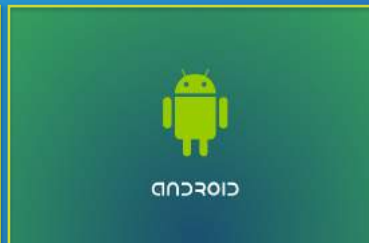
27

## Giants of *Demand* Side Economies of scale

Desktops  
Online



Mobile



Online Videos



Social Networks



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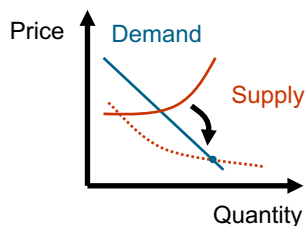
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29

# Economies of Scale

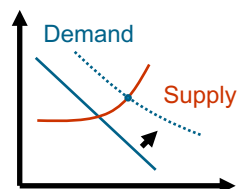
@InfoEcon

## Supply Econ of Scale



- Falling average costs
- Monopoly production
- Utilities, Semiconductors

## Demand Econ of Scale



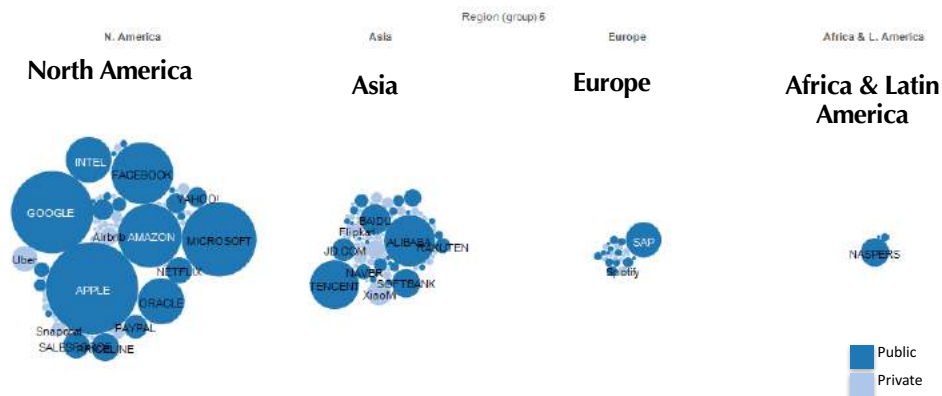
- Rising average value
- Monopoly consumption
- IM, Social Networks

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34

# \$1B+ Platforms by Region



North America has more platform firms, as measured by market cap, than anywhere else in the world. China, with a large homogeneous market, is growing fast. Europe, with a more fragmented market, has less than 1/4 the value of North America and is not far ahead of developing regions

Source: P. Evans, CGE; CB Insights, Capital IQ, CrunchBase, 2015

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35

**In any market with network effects, the focus of attention must shift from inside to outside the firm.**

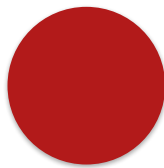
**Reason:** You can't *scale* network effects inside as easily as outside.

## What Changes :: Marketing

**Businesses shift from outbound messaging to inbound servicing**

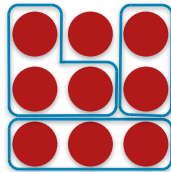
# Four Decades of Consumer Marketing

**1980's**



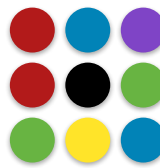
Single  
Message

**1990's**



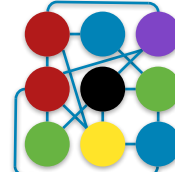
Segmentation

**2000's**



Individual  
Targeting

**2010's**



Virality / Social  
Influence

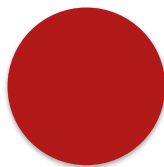
Source: Rob Cain, CIO Coca Cola Company

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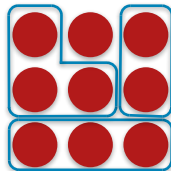
# Four Decades of Consumer Marketing

**1980's**



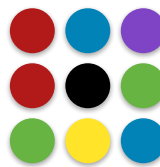
Single  
Message

**1990's**



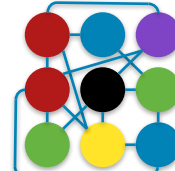
Segmentation

**2000's**



Individual  
Targeting

**2010's**



Virality / Social  
Influence

**PUSH / OUTBOUND**

**PULL / INBOUND**

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## Warby Parker Try Five



Users get 5 styles at home, post to social networks to get votes on best look, keep the one(s) they like. Users to the marketing to growth networks

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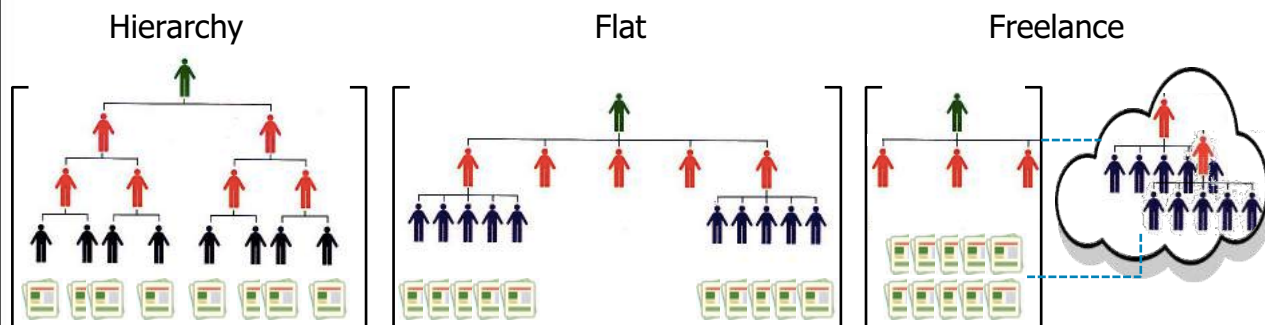
## What Changes :: Human Resources

Emphasis shifts from employees to contractors,  
from internal experts to external crowds, and  
from subordinate dictation to community persuasion

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## Can outsource even middle management



Firms are accessing “cloud labor” at the team and individual level

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## Gatekeepers replaced by crowds



Advice from travelers over travel agents



Advice from laymen & lawyers over lawyers on retainer



Work from freelance crowds over staff

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## What Changes :: Operations & Logistics

Value creation shifts from internal to external servicing

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## Value creation inside versus outside

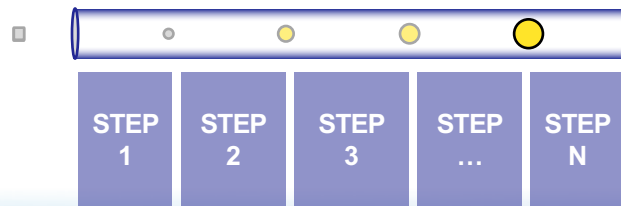


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65

## Value creation inside versus outside

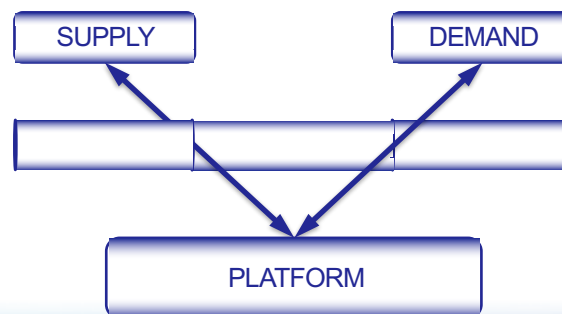


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## Value creation inside versus outside



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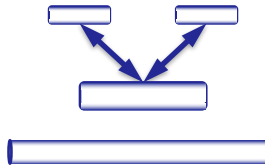
67

## Business Models Can Overlap

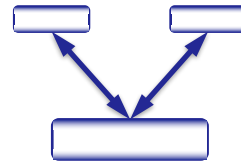
Platforms Scale More than Pipes



Dell  
Coca Cola



Apple  
Samsung



Airbnb  
Uber

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68

**Founded in 2008, Airbnb operates at global scale:  
1M+ listings, 34,000 cities, 180 countries**

**Paris**



40,000 listings

**Berlin**



8,105 listings

**Sydney**



5,692 listings

Identify spare capacity, scale across boundaries

Courtesy Peter Evans © 2016

Source: <http://tomslee.net/airbnb-data>, 2015

“In 2015, Uber, the world’s largest taxi company owns no vehicles, Facebook the world’s most popular media owner creates no content, Alibaba the most valuable retailer has no inventory, and Airbnb the world’s largest hotelier owns no real estate.”



*Tom Goodwin, Sr. VP of Strategy Havas Media*

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## What Changes :: Finance

**Corporate valuation models that underestimate market expansion due to network effects fail to invest**

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- Estimate global taxi market
  - Estimate market share
- Est. risk adjusted cash flow
  - Consider proprietary methods, barriers to competition

• **Value: \$5.9 Billion**

*Aswath Damodaran: NYU Finance professor, Corporate Valuation author, Herb Simon Prize.*  
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- All true but overlooking network effects.
- Prices decline expanding to rental car market *and* car replacement market *and* delivery market.
- Oh, BTW, already 3x size in 2009 when Uber started.





• **Value: \$17 Billion**  
*Source: David Sacks, COO PayPal, CEO Yammer*

*Bill Gurley: Venture Capitalist, OpenTable, Zillow, Uber*

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Instagram sold for \$1B not because of contributions from 13 employees but from 30 million users



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## What Changes :: R&D and Innovation

### Platforms Open Themselves to Third Party Contributions

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A platform is a system that can be... adapted to countless needs and niches that the platform's original developers could not possibly have contemplated..."



*Mark Andreessen: Venture Capitalist, Netscape  
Founder, Board HP, eBay*

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## It's Working when Users do Something You Didn't Expect

**Ford Model T**



**Hay Carrier**



**Flour Mill**



**Racecar**



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83

## It's Working when Users do Something You Didn't Expect

**Mobile Church**



**Snowmobile**



**Sawmill**



**Goat Carrier**



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84

## Does Openness Work?



*The Rise & Ignominious Fall of MySpace – Business Week 2011*

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## Does Openness Work?

**"We tried to create every feature in the world and said, 'O.K., we can do it, why should we let a third party do it?' " says (MySpace cofounder) DeWolfe.**

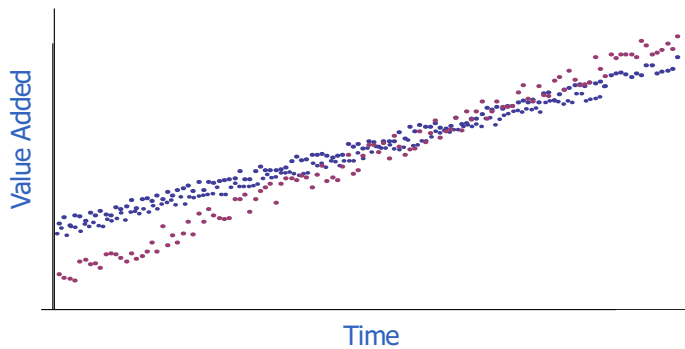
**"We should have picked 5 to 10 key features that we totally focused on and let other people innovate on everything else."**

*The Rise & Ignominious Fall of MySpace – Business Week 2011*

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## Why Platforms Beat Products



Consider product innovation alone

Harnessing 3rd party resources, innovation occurs at a higher combined rate

Even if a platform starts behind, its value overtakes the product leader

Shed costs, keep 30% gains!

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## What Changes :: Information Technology

### IT Support Shifts from Inside to Outside the Firm

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## IT Support Becomes Increasingly Outward Focused



### ERP Back-Office Systems

*Inventory tracking, Restocking,  
Statistical Process Control, Product  
Planning, Human Resources, Workflow  
Management...*



### CRM Front-Office Systems

*Lead Tracking, Taking orders, Point  
of Sale Terminals, Price Quotes,  
Customer Support, Returns,  
Marketing Campaign Mgmt...*



### Social Media Out-of-Office Systems

*Community Building, Sentiment  
Analysis, Inbound Traffic  
Management, Content Scheduling,  
SEO Optimization, Media Monitoring*

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## Bezos Platform Mandate

1. All teams will expose their data...
2. Teams must communicate through interfaces.
3. ... no other form of interprocess communication allowed
4. Interfaces, without exception, must be externalizable.
5. Anyone who doesn't do this will be fired.



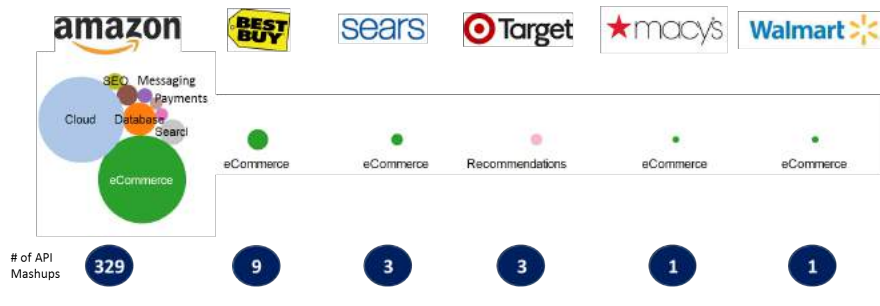
Source: Yegge Rant

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## Who is Getting More 3<sup>rd</sup> Party Value Add?

### API Mashups: Amazon vs. Other Major Retail Enterprises



Source: Rahul Basole and Peter Evans, with data from ProgrammableWeb, Center for Global Enterprise, 2015

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Source: P. Evans, CGE; CB Insights, Capital IQ, CrunchBase, 2015

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## Amazon growth over 10 years 2491% vs. Walmart (48%), Target (23%), Macy's (-12%), Best Buy (-31%)

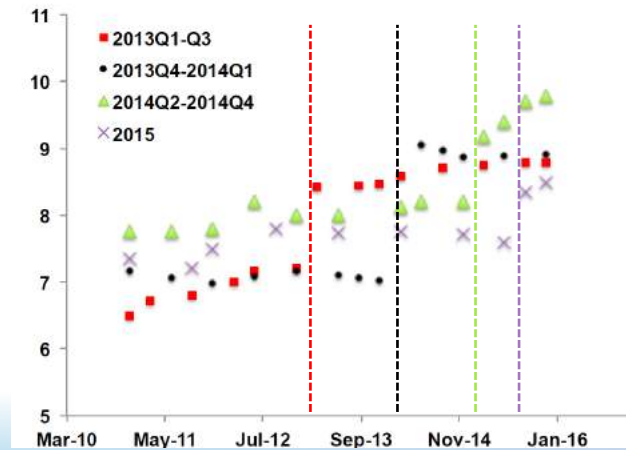


Logistics & supply chain squeezing have limits.  
External value add is much less limited.

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## Firms experience significant net income gains after API adoption



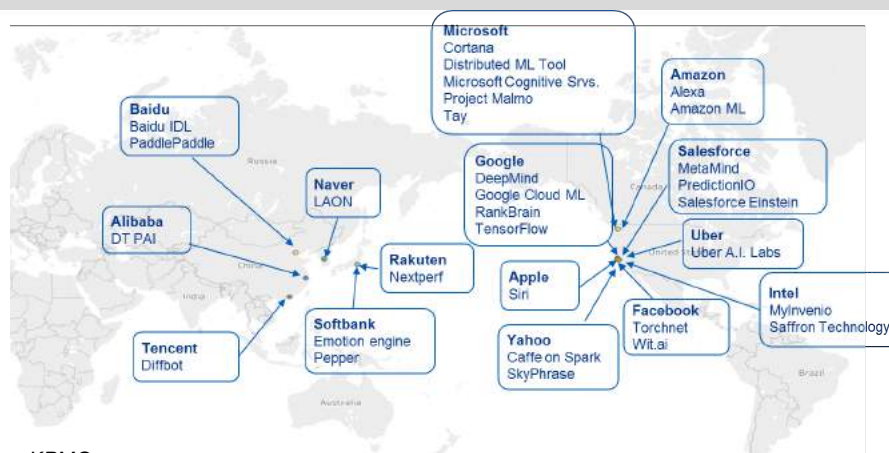
Log net income grouped by adoption date

Source: Benzell, Lagarda, Van Alstyne (2016) "The Role of APIs in the Firm Performance" using Apigee data  
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## AI Programs Globally



Source: Peter Evans KPMG

Data → AI → Better Offerings → Data ...

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95

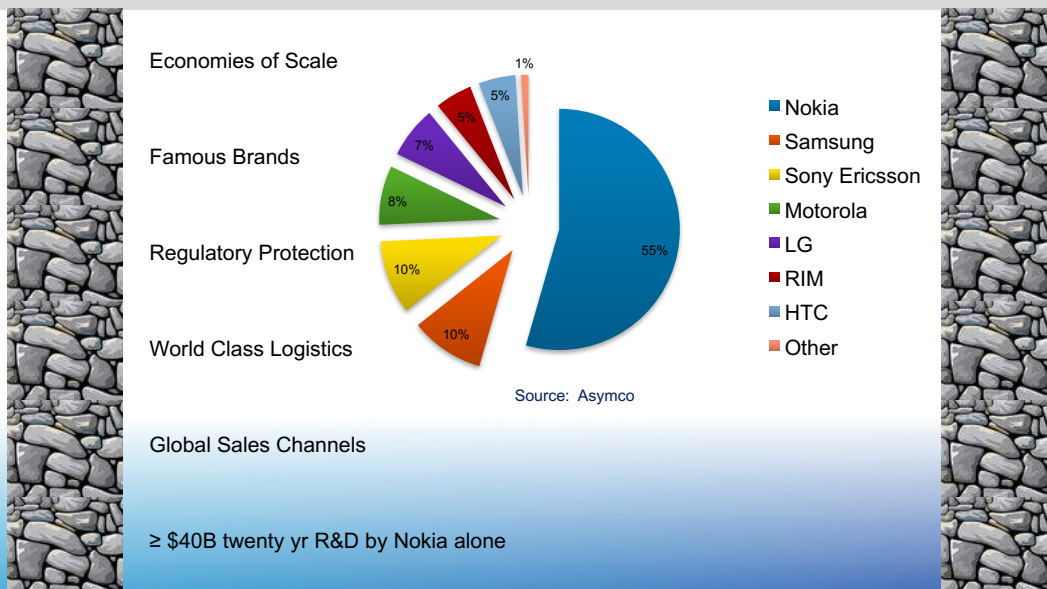
## What Changes :: Strategy

Goal shifts from control, entry barriers, and differentiation to more valuable market exchanges.

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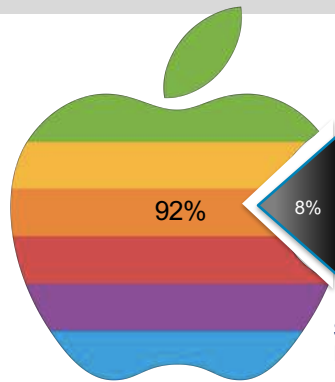
## Only 7 Firms Controlled 99% of Handset Profits in 2007



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**In 6 years, all but one had  $\leq 0$  profit while 1 newcomer had 92%**



Source: Business Insider  
Insight: Henry Tirri, former CTO Nokia

Is it likely all 7 incumbents had failed strategies, run by clueless management, lacking execution capabilities?

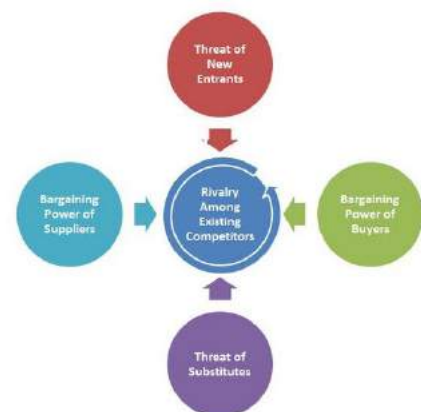
Or was something more fundamental happening?

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## Porter's Five Forces & Resource Based View

1. Goal is a protected market niche, emphasizing industry barriers
2. Categories are sharp
3. Weapon is cost leadership or product differentiation
4. Inimitable resources you own provide sustained advantage
5. Core competence: focus what you do best



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## Platform Strategy Differs

1. Goal is interactions that yield NW effects - partner to partner value. NW effects provide sustainability



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## Platform Strategy Differs

1. Goal is interactions that yield NW effects - partner to partner value. NW effects provide sustainability
2. Boundaries can be altered as consumers can be producers

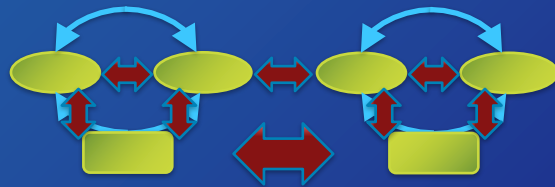


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## Platform Strategy Differs

1. Goal is interactions that yield NW effects - partner to partner value. NW effects provide sustainability
2. Boundaries can be altered
3. Competition is multi-layered, more like 3D chess.



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## Platform Strategy Differs

Product		Platform
Distinct: Buyers, Suppliers, Substitutes, Entrants, Rivals	– Market Forces	– Overlap: Consumers ~ producers, competitors ~ complementors
Core Competencies	– Focus	– Core Interactions
Supply Side	– Scale Economies	– Demand Side
Own Inimitable Resources	– Assets	– Community as Asset
Cost Leadership / Product Differentiation	– Goal / Metric	– Engagement, Positive Spillovers, Just Governance
Barriers to Entry, Boulevards for Exit	– Access	– Permissionless Entry, Open Around Key Control Points
By Firm	– Innovation	– By Firm and Ecosystem

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## Network Effects & Inverting the Firm Changes...

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- **Human Resources**

Internal Employees →  
External communities

- **R&D**

Experts & Specialized departments →  
Crowdsourcing & Open Innovation

- **Finance**

Records outside firm,  
Shareholder Value → Stakeholder  
Value, Incorporate network effects

- **Strategy**

Entry Barriers & Inimitable Resources  
→ Permissionless Entry & 3<sup>rd</sup> Party  
Resources

- **Marketing**

Push → Pull, Outbound → Inbound

- **IT**

Back Office (ERP) → Front Office  
(CRM) → Out-of-Office (Social & Big  
Data)

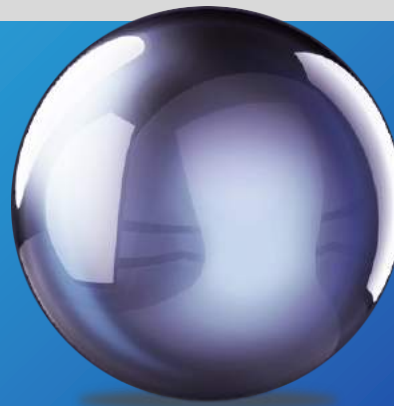
- **Operations & Logistics**

Uber: biggest taxi company, no taxis,  
Airbnb (biggest accommodations but  
no real estate), Facebook (biggest  
media firm but creates no content),  
Alibaba (biggest merchant but has no  
inventory)

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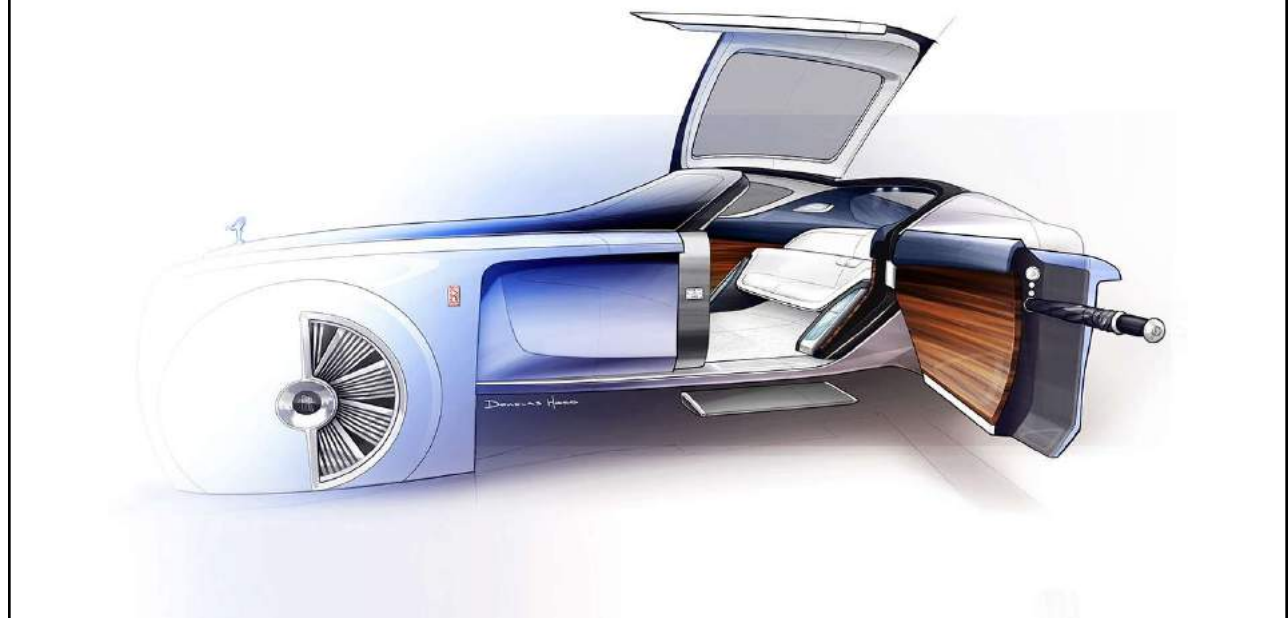
## What's Next?



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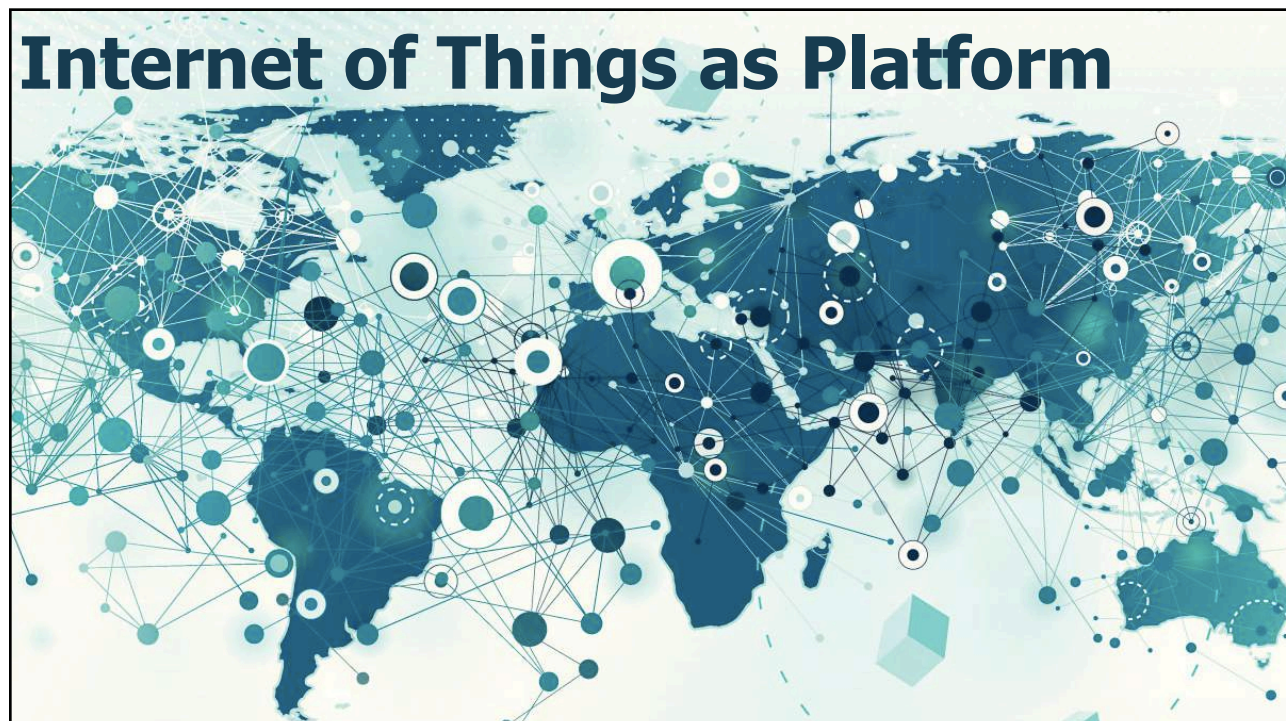
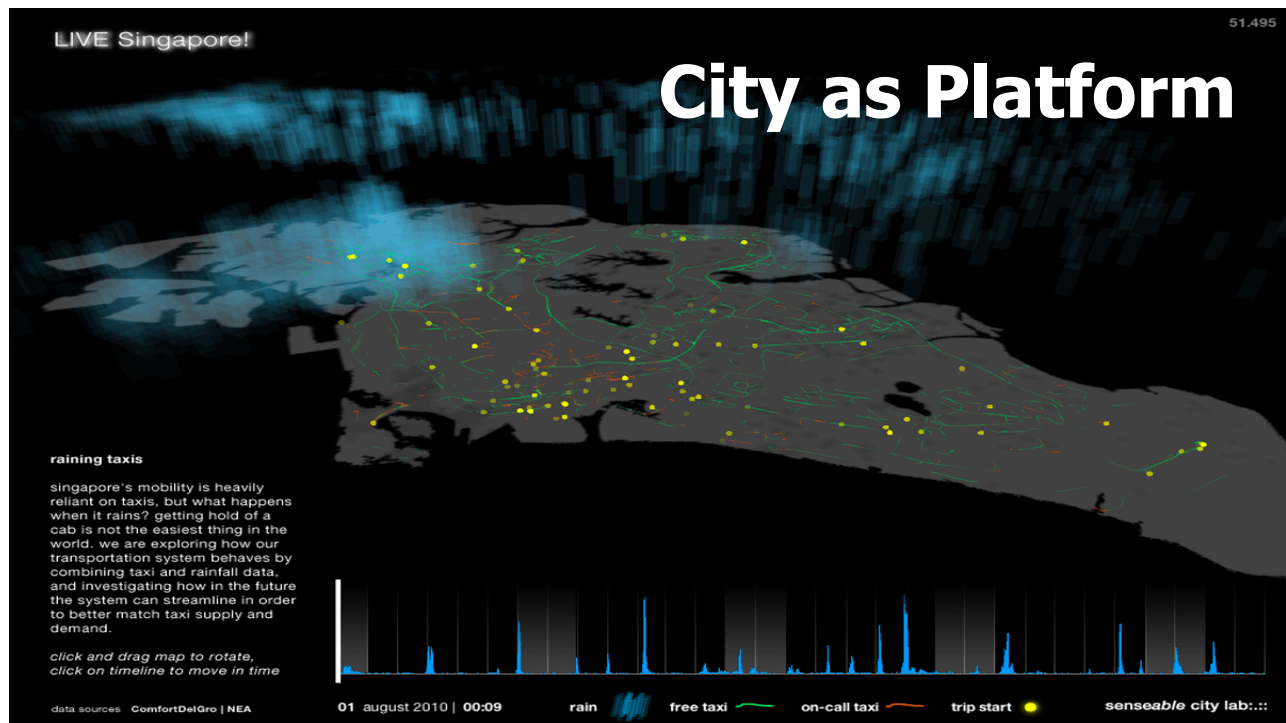
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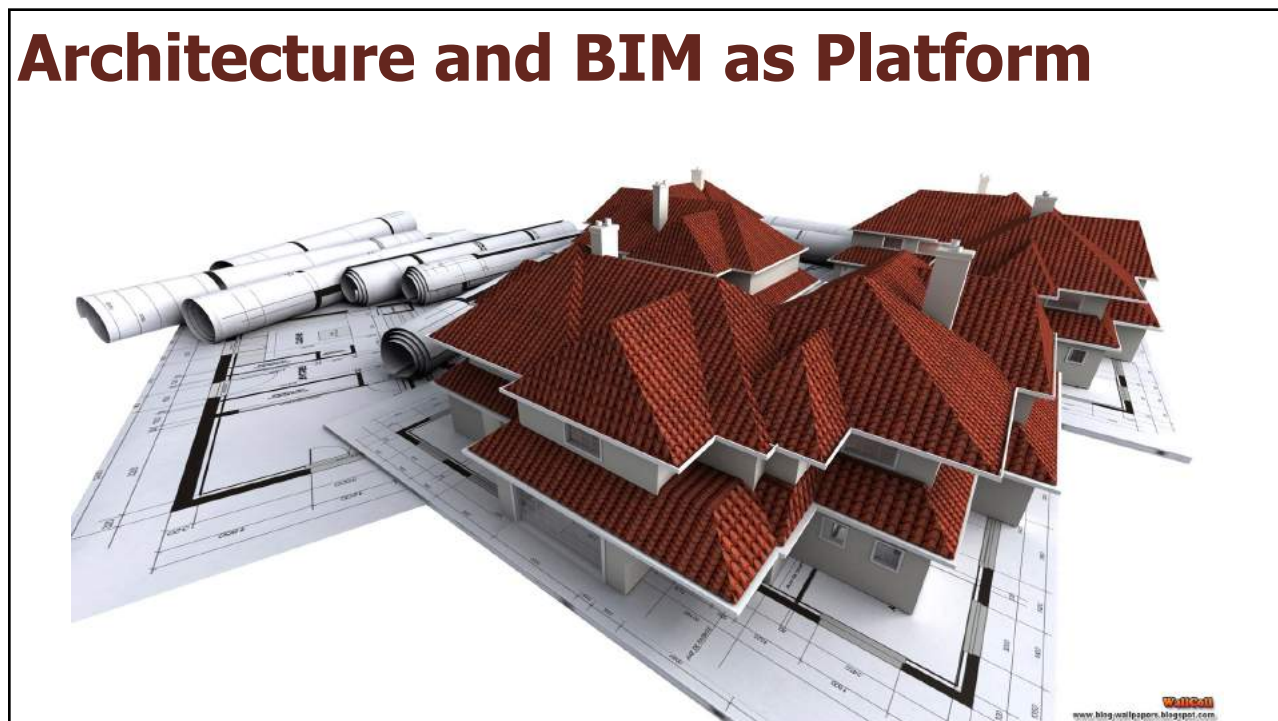
# Car as Platform

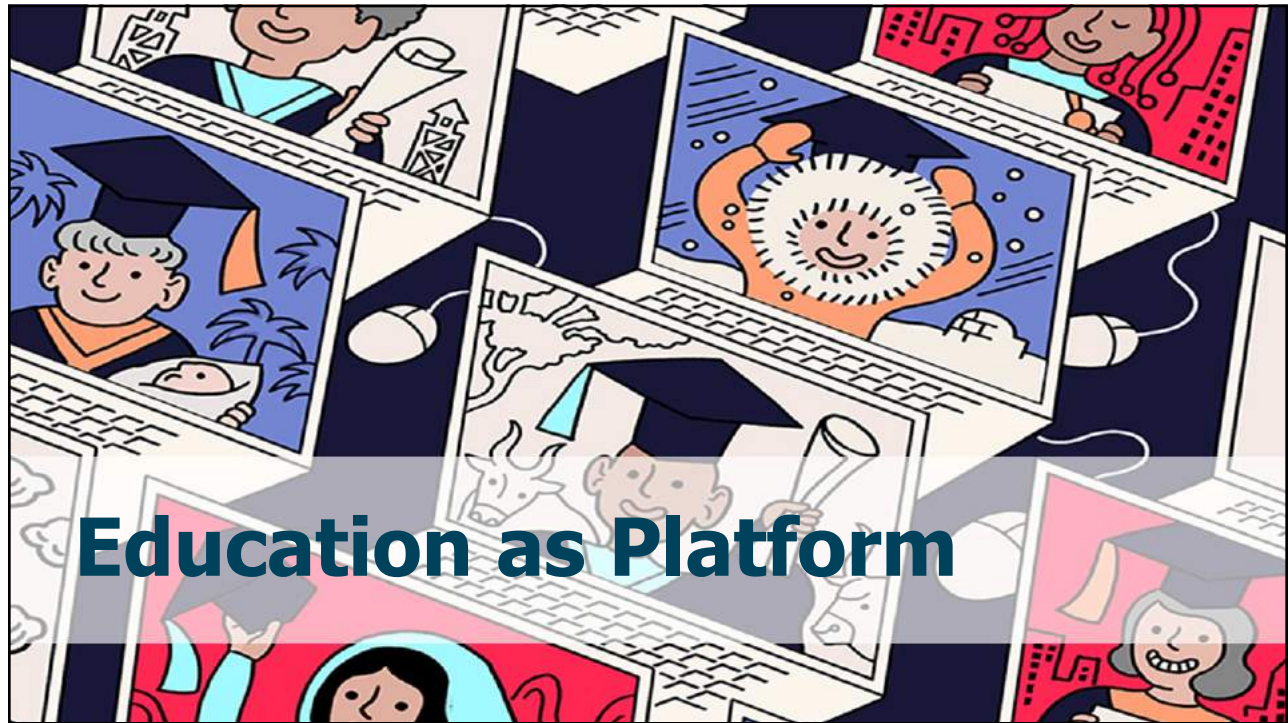


# Block Chain & Finance as Platform









## Education as Platform



## Healthcare as Platform

- Demand economies of scale (i.e. network effects) are creating giant new firms. These represent the opposite side of the profit equation from supply economies of scale.
- These platform firms beat product firms – faster innovation, value proportional to use.
- Information and community are critical resources.
- Network effects invert the firm. They cannot scale inside as easily as outside.
- Inverting the firm affects all value creating activities: marketing, human resources, IT, finance, operations, R&D, strategy.



Platform Ecosystems:  
How Developers  
Invert the Firm



Pipelines,  
Platforms & New  
Rules of Strategy



Available on  
Amazon [here](#).



Boston University Questrom School of Business

# THANK YOU

## QUESTIONS & DISCUSSION

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