



# From Products to Experience Ecosystems: Haier's Internet of Food

**ISB General Management Programme-7  
Strategic Decision-Making**

**Professor Gurneeta Vasudeva Singh**



# Learning Objectives/ Session Plan



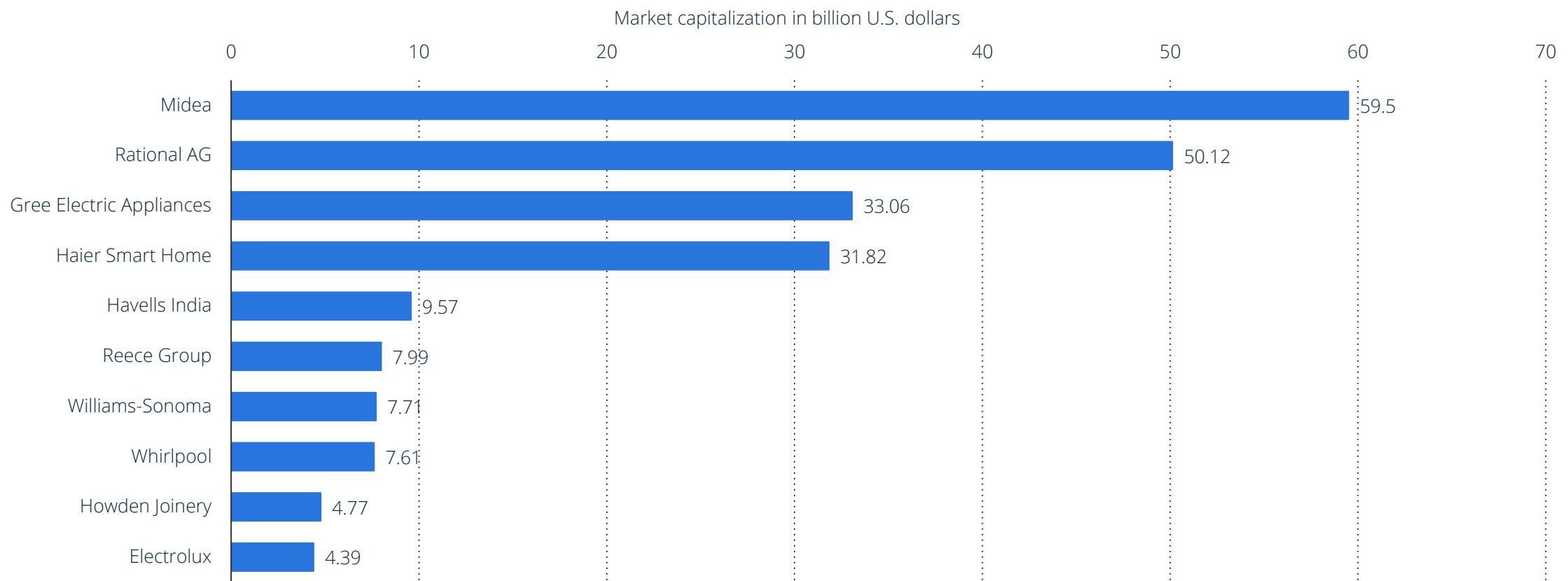
- *How business ecosystems create value.*
- *How an innovative company (Haier) changed its organizational structure towards an open Ecosystem Micro Community model.*
- *Understand the internal structural changes to participate or orchestrate digitally enabled business ecosystems, and their trade-offs*
- *Understand the institutional characteristics that drive firms' choices and success of unified or differentiated models of organizing*

# Discussion Questions

- Why is Haier interested in the Internet of Food? What is the expected benefit and business rationale for putting an innovation ecosystem in place?
- What organizational innovations did Haier pursue?
- Why did it need to create Ecosystem Microenterprise Communities (EMCs)? What were the strengths and weaknesses of EMCs?
- What is GEA's structural approach for engagement with ecosystem actors? Should it try to emulate Haier's approach?

## Largest home and kitchen appliances companies globally in 2023, by market capitalization (in billion U.S. dollars)

Leading home and kitchen appliance companies worldwide in 2023, by market cap

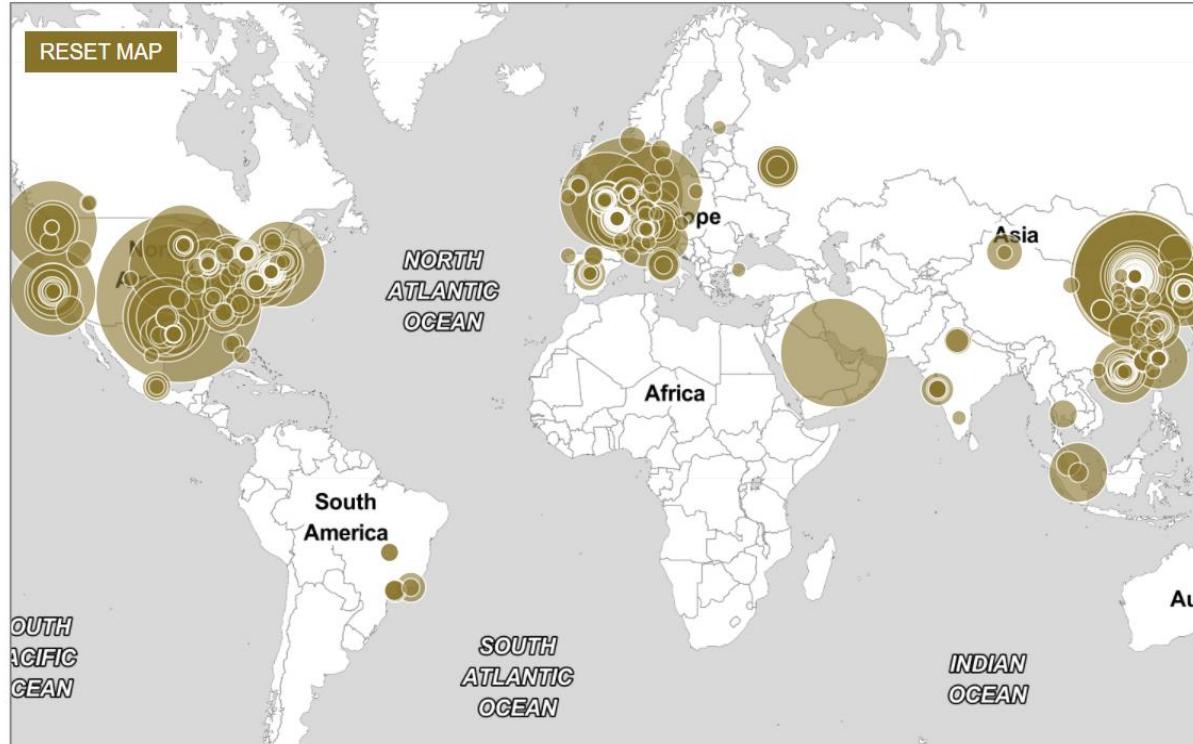


**Note(s):** Worldwide; 2023

Further information regarding this statistic can be found on [page 8](#).

**Source(s):** CompaniesMarketCap.com; ID 1381748

# Fortune 500 Global



500 HEADQUARTERS DISPLAYED

Map tiles by Stamen - Design by Nicolas Rapp for Fortune

## Why Are Certain Emerging Market Companies Becoming So Successful Globally?

*Exploiting Local Institutional Weaknesses as a Business Opportunity and Source of Global Competitive Advantage*

- Innovation
- Cost effectiveness
- Take on the role of institutional intermediaries

[https://interactives.fortune.com/global\\_500\\_2020/dashboard/index.html?\\_ga=2.42197669.1265516278.1624316996-56096086.1623343655](https://interactives.fortune.com/global_500_2020/dashboard/index.html?_ga=2.42197669.1265516278.1624316996-56096086.1623343655)

## Following the science

Investment in research and development as % of GDP

Selected regions and countries

● 2014   ● 2018

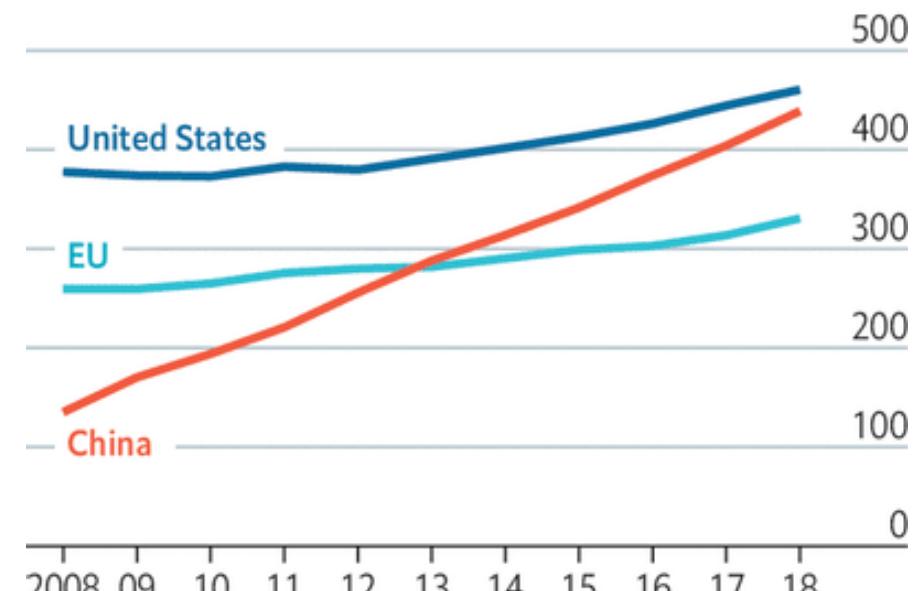


Source: UNESCO

The Economist

## Closing the gap

Gross domestic spending on research and development\*, \$bn

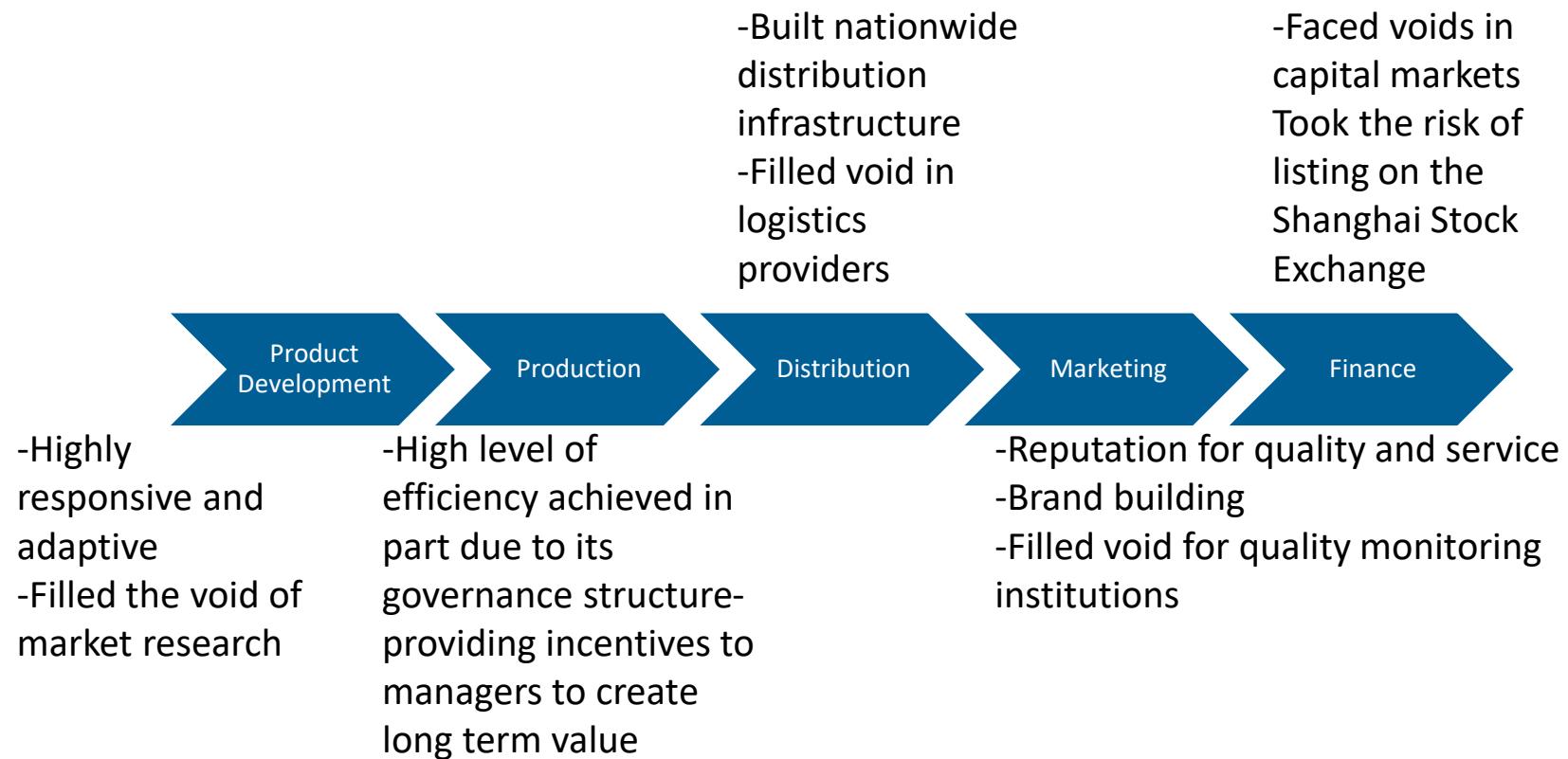


Source: UNESCO

\*2005 prices at purchasing-power parity

The Economist

# Haier's Capabilities Across the Value Chain

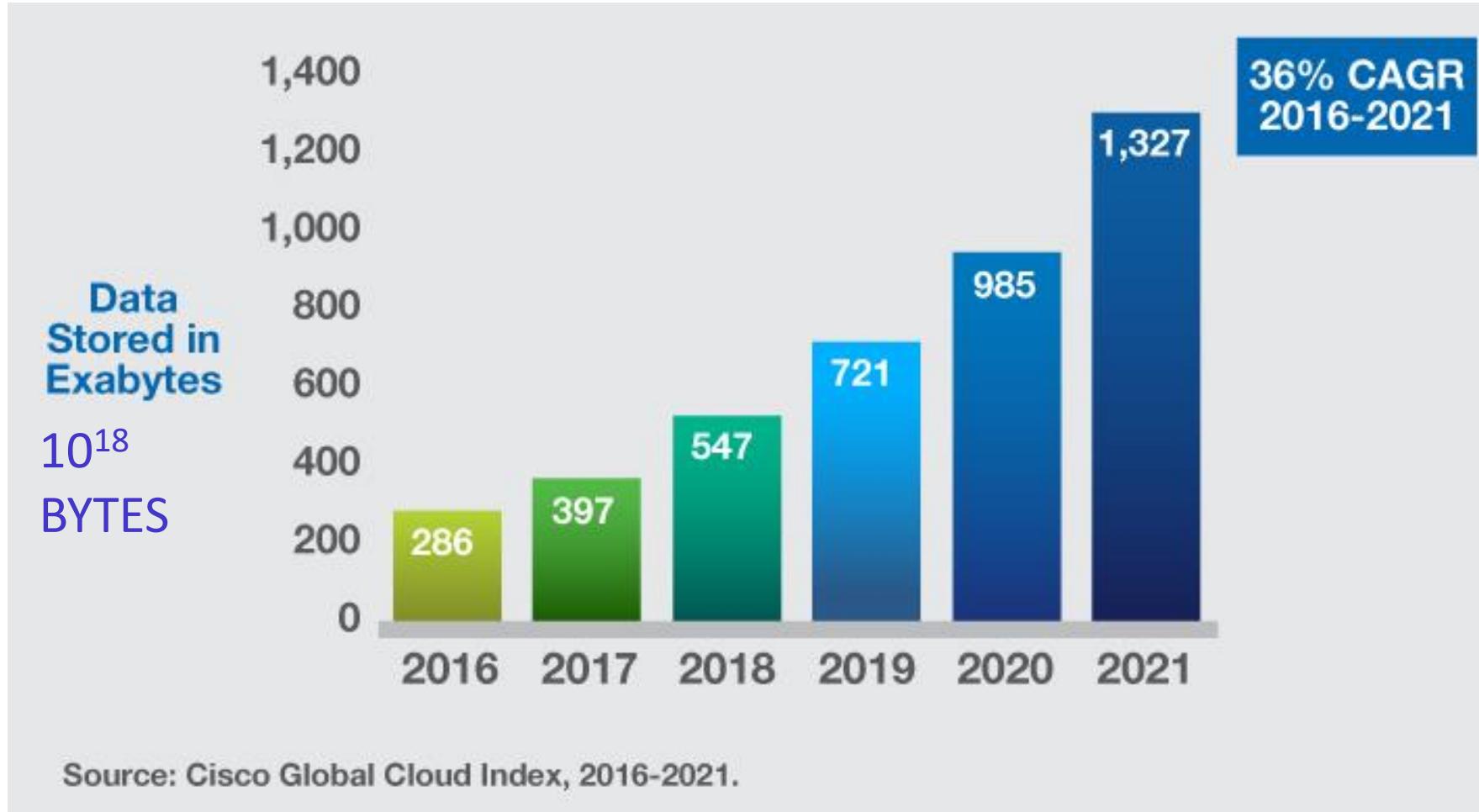


**Why is Haier interested in the Internet of Food? What is the expected benefit and business rationale for putting an innovation ecosystem in place?**

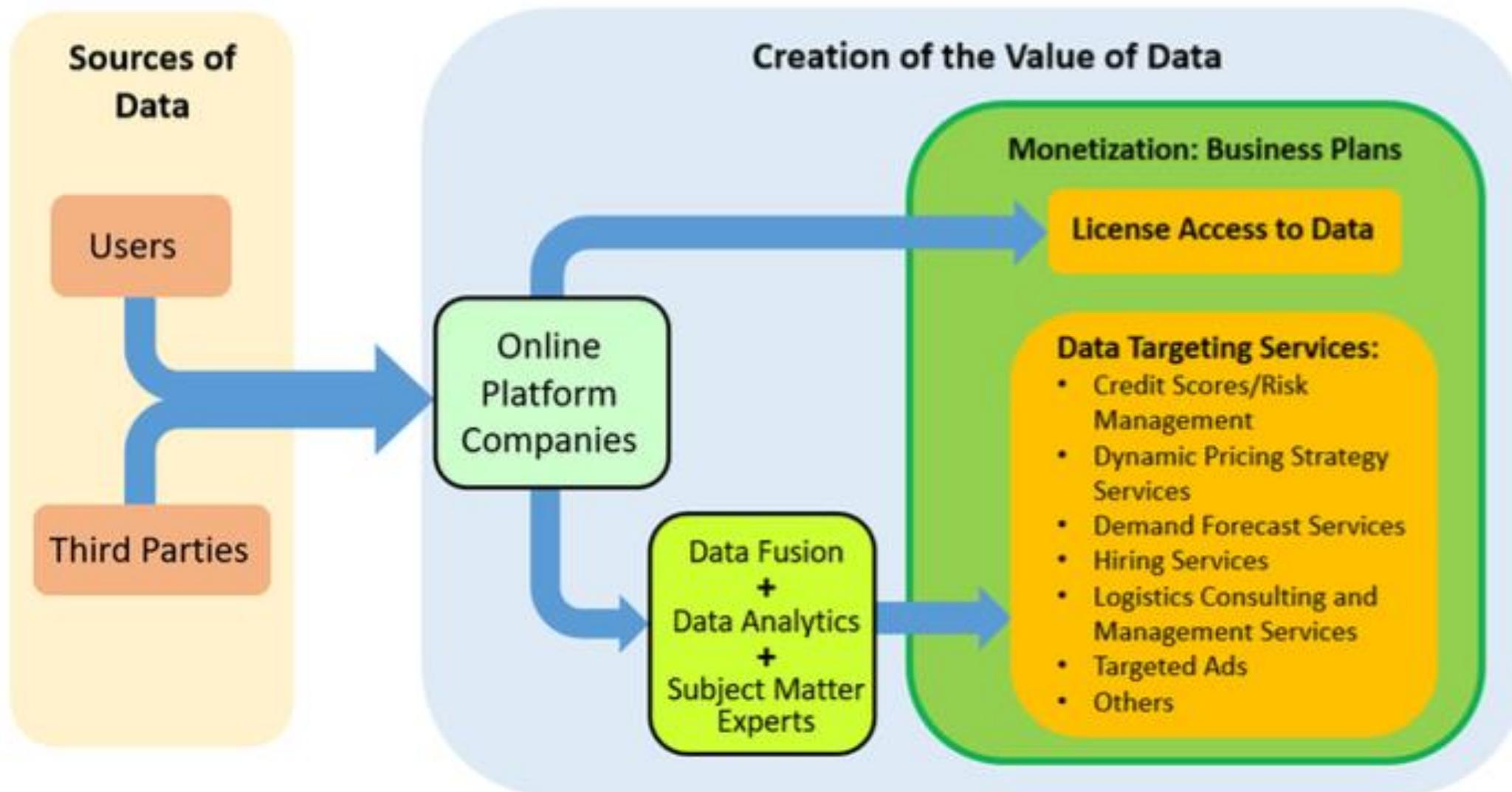
The IoT has triggered "data explosion" in the new era. "Data is an asset" becomes a basic concept guiding the business society, and "user experience-centric" is gradually being into reality.

According to prediction by the International Data Corporation (IDC), by 2025, the amount of data generated by IoT devices globally will exceed 79.4 zettabytes (ZB)

# “Data Is the New Oil”: Firms store vast and growing amounts of data



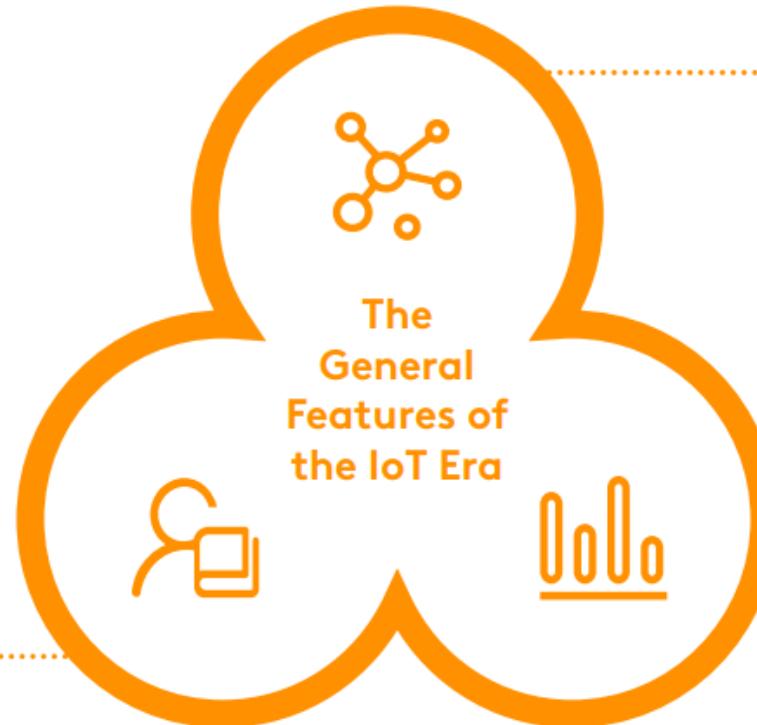
# Value of data?



## Three General Features of the IoT Era

### User Experience-centric

- By collecting user data from diverse touchpoints, companies in IoT era could obtain a comprehensive, multi-dimensional and dynamic understanding of users
- Smart factories in IoT era can quickly meet the customization needs of users through flexible production lines and transparent supply chains

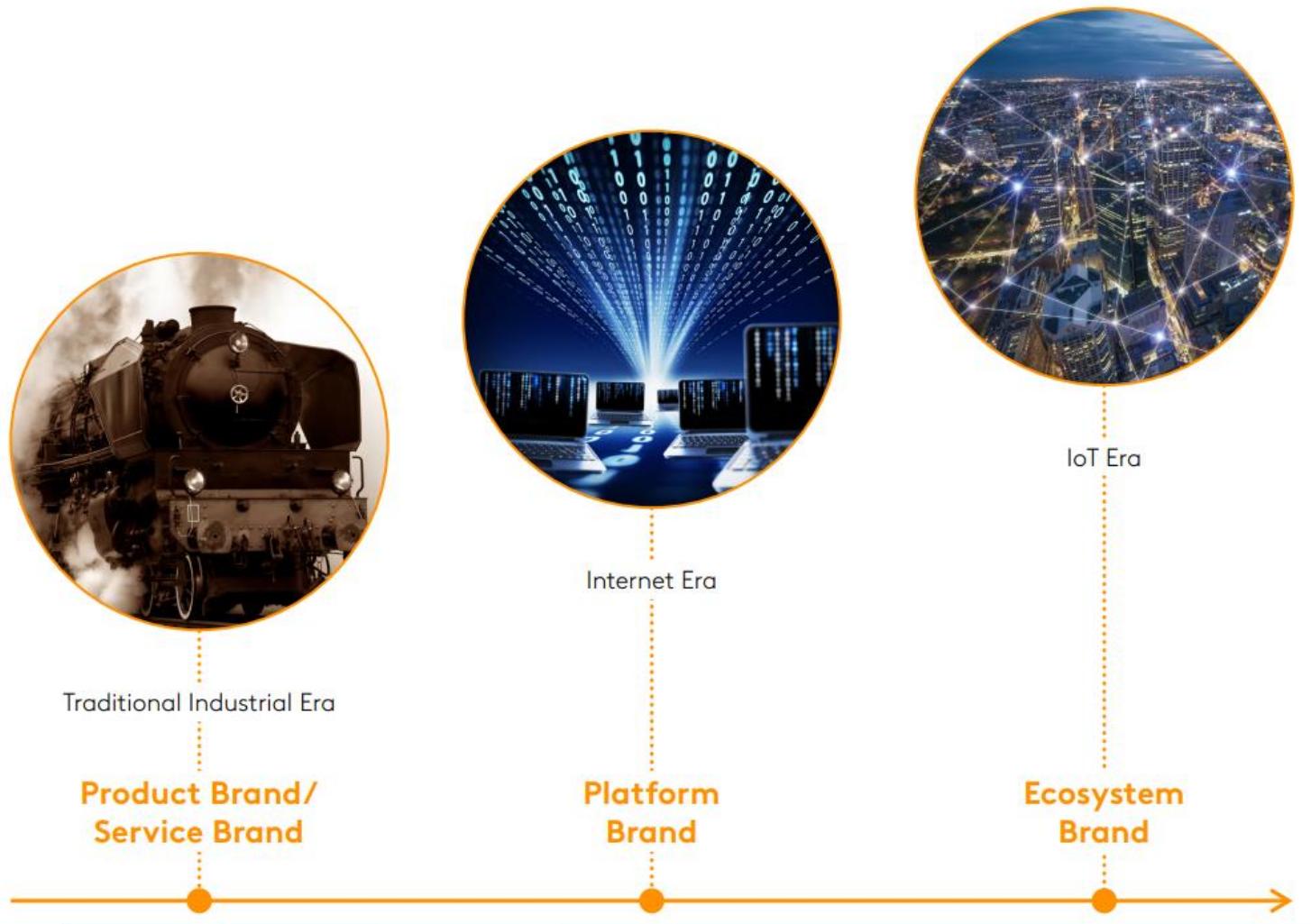


### Interconnectedness and Multi-dimensional Connection

- Objects can connect with each other without human intervention, which ensures that content is transmitted in an objective, timely and comprehensive fashion to a certain extent
- Virtual and reality are tightly connected. Physical entities establish their own digital twins which makes their status traceable, analyzable and predictable.

### Data-driven and Data as an Asset

- Internally, data could help enterprises reduce costs, enhance efficiency and create new value
- Externally, data has become an important corporate credit

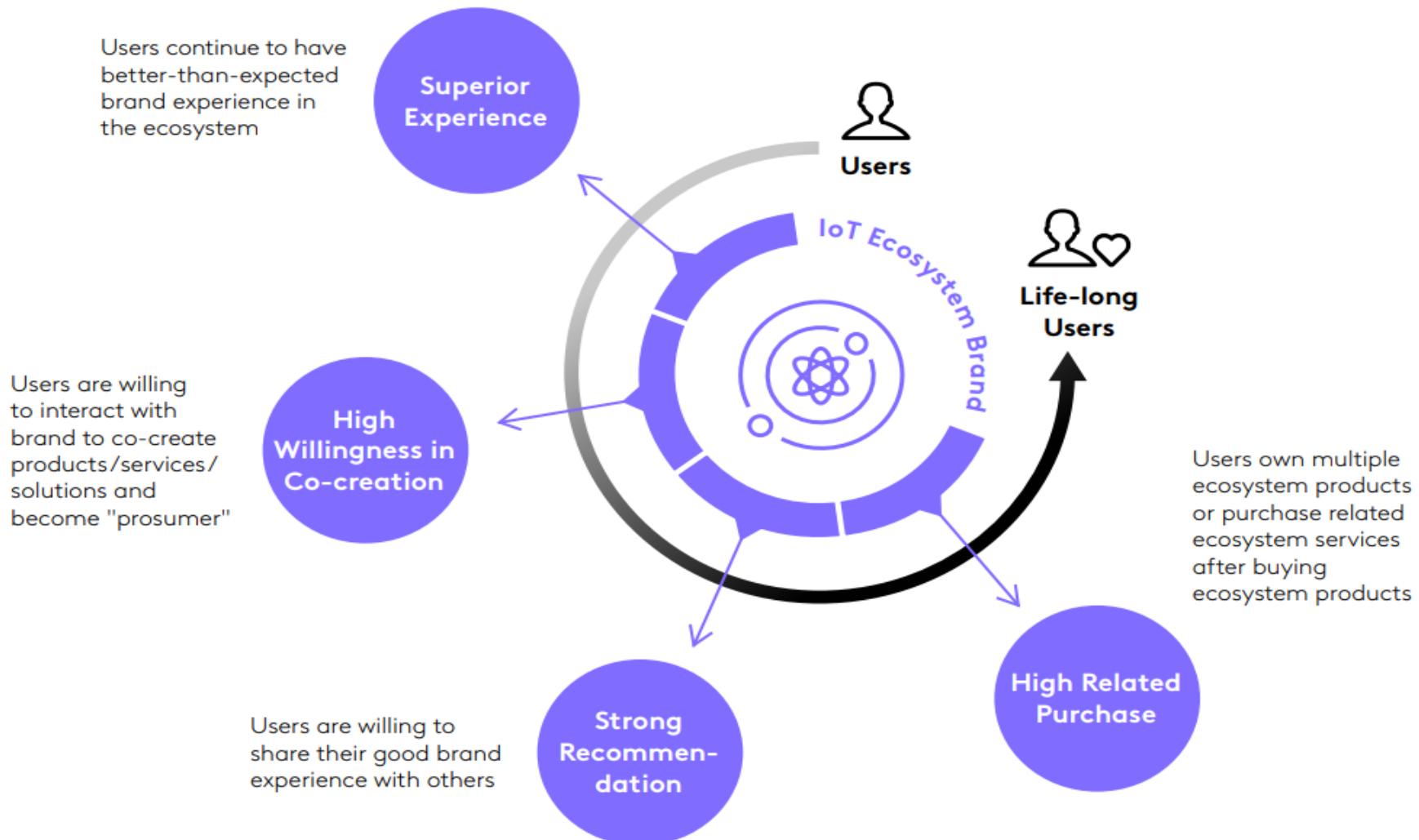


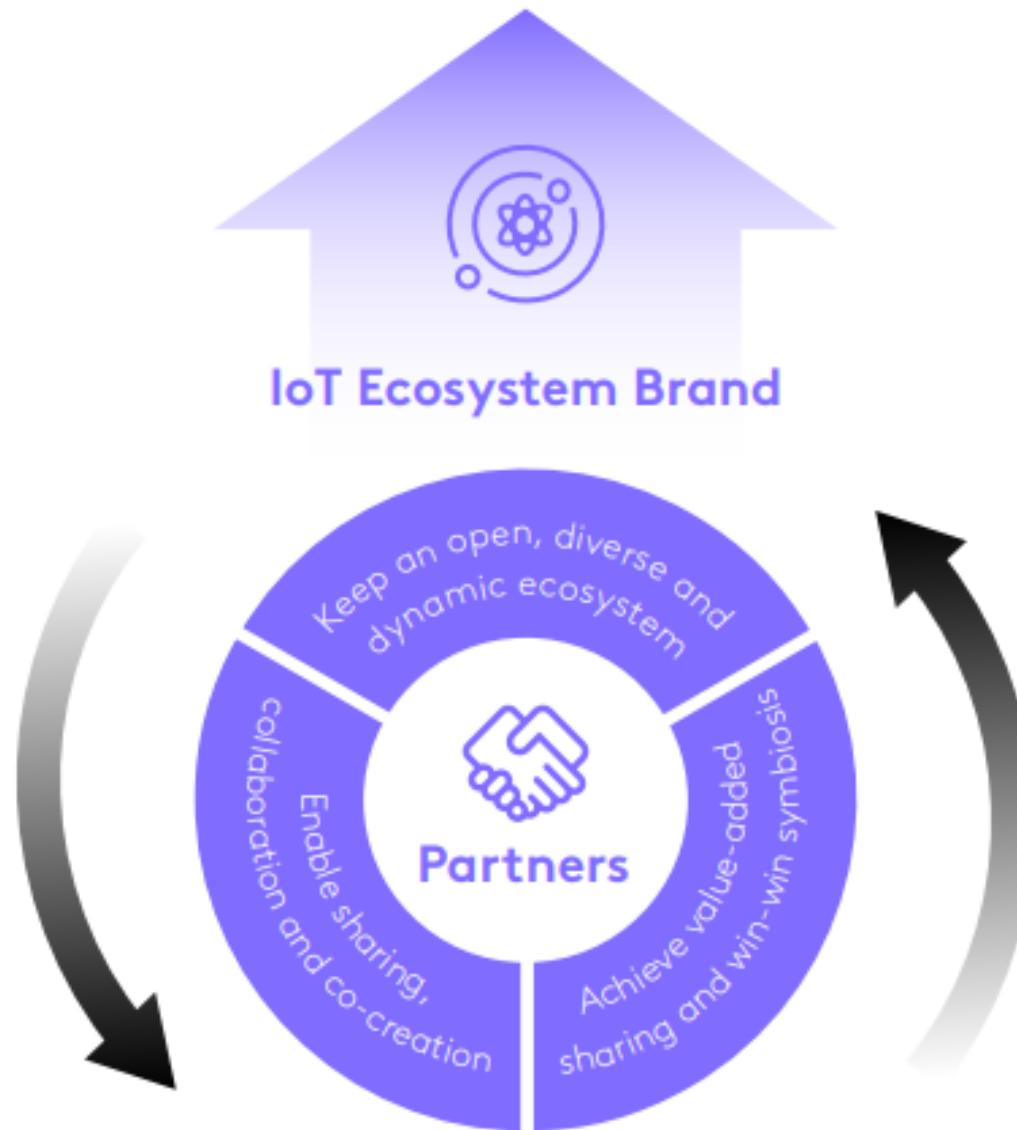
Meanwhile, ecosystem brand is also a vivid application of the sharing economy at the enterprise level: in the IoT era, the power of an enterprise is not determined by how many resources it owns, but by how many resources it could mobilize and integrate. Corporate strategy has thus evolved into "the art of integrating and managing resources that you don't own".<sup>7</sup>

# What organizational innovations did Haier pursue?



## User Perspective: Make Life-long Users





# Customer Complaint #1: “My washing machine won’t work after I use it to rinse the morning’s harvest.”

About 10 years ago, a rural farmer dialed into Haier's call center complaining that his washing machine was full of dirt and not functioning properly. When the technician visited the customer's home he discovered the dirt was not from the clothes the farmer wore in the field to harvest his potatoes, but rather from the harvest itself. The man had been using his washing machine to wash both clothes and potatoes. Instead of educating the farmer on how to properly use a washing machine, the technician returned to headquarters with the man's feedback. Haier subsequently released a washing machine capable of washing both clothes and potatoes, the 2009 upgraded version of which led Haier to become the number one provider of laundry equipment in the entire world.

## A Washing Machine That Washes Both Clothes and Potatoes

Through community-based interactions, the Haier team extensively solicited users' feedback on washing machines and identified "large capacity", "quietness" and "the ability to thoroughly clean stains like grass leaves and juice" as the typical needs. Based on laboratory research, the technical team developed a "Yunxi washing machine" that can remove special stains by taking into consideration different parameters such as water temperature, speed, and water level. On the day of its debut, 156,000 models of first-generation Yunxi were pre-ordered. Following this, Haier quickly iterated the lineup through continuous interaction with the community. It took 3 months for the first-generation model to be rolled out, 2 months for the second-generation, and only 45 day for the third-generation - three major iterations were made within just a year. The debut sales volume of the latter-generation products jumped over 30 percent, and the prices rose over 10%, compared with the older models. As a bestseller in the market, the Yunxi washing machine is constantly breaking its sales records - sales volume reached 340,000 in 2017, 620,000 in 2018 and 810,000 in 2019.

## Customer Complaint #2: “My refrigerator is out of food because rodents ate it all.”

### The Rodent Proof Refrigerator

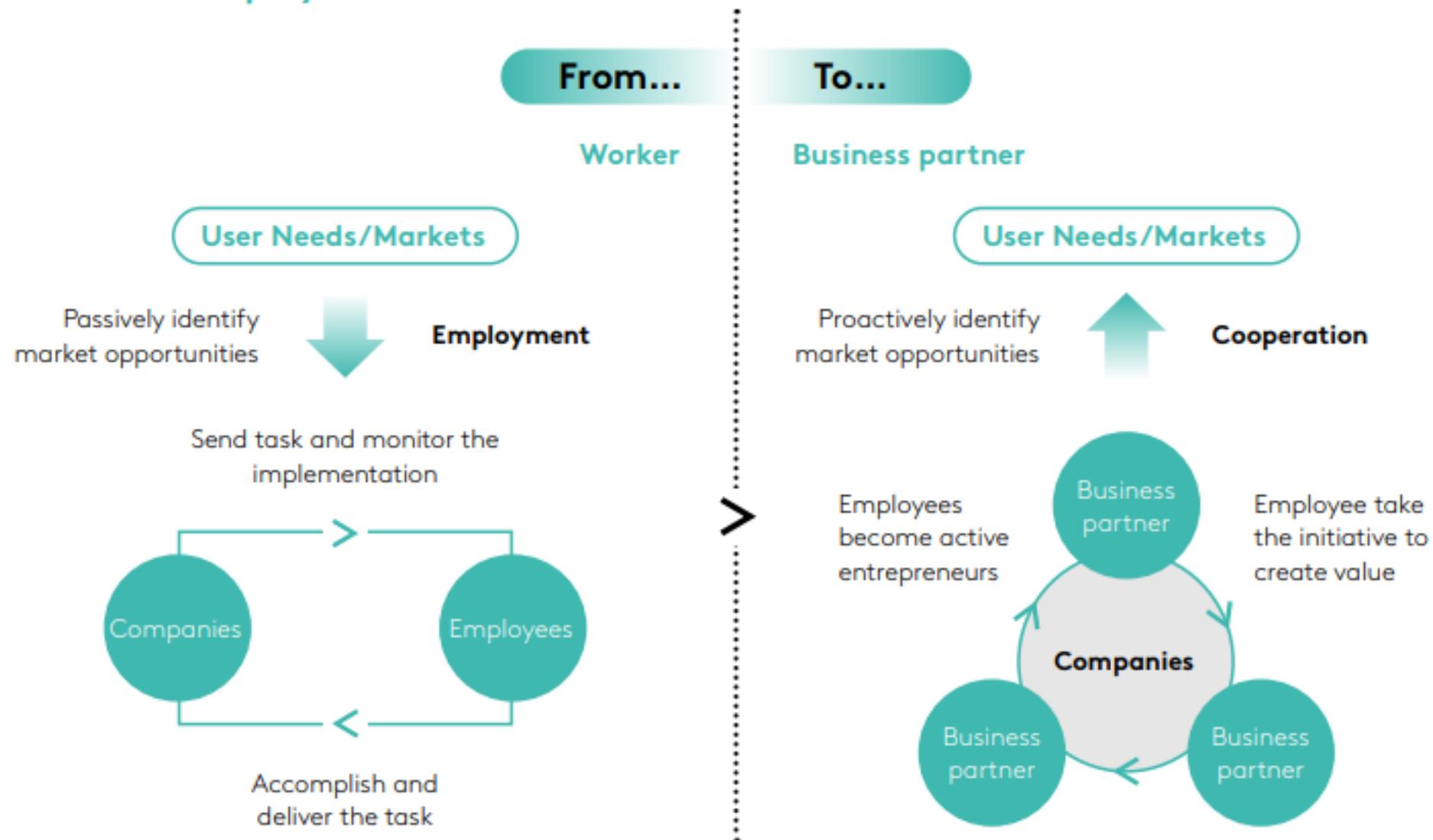
Haier’s customer service center later began to receive complaints that rodents were getting into their refrigerators. Apparently, when customers plugged the appliance into the wall and the compressor turned on, rodents couldn’t resist finding a new home inside. Again, recognizing that the needs of its rural customers differed from those in urban residences, Haier came up with a second innovation: the rodent-proof fridge. The specially designed refrigerator features metal plates to cover holes in the fridge and uses thicker “bite-proof” wiring.

The complaints keep coming, and the domestic innovation continues to happen. Haier has gone on to produce washers that are able to peel potatoes, safely wash clothes typically meant for hand-washing and even design a model for herders in Inner Mongolia and the Tibetan Plateau which helps process yak butter.

## Four Cornerstones Of Organizational Reinvention

Standard	From...	>> To...	The standard definition
 <b>Employee Role</b>	<b>Worker</b>	<b>&gt;&gt; Business partner</b>	<p>The relationship between company and its employees should shift from "<b>employment</b>" to "<b>cooperation</b>". Becoming a "<b>business partner</b>" will motivate employees to be active entrepreneurs who take the initiative to create value for users, company and themselves</p>
 <b>Organizational Structure</b>	<b>Traditional hierarchical structure composed of various functional departments and tiers</b>	<b>&gt;&gt; Network structure composed of various small business project teams</b>	<p>Companies <b>break down the division of functions and levels</b> and <b>form flexible and agile small business project teams</b> based on <b>user needs</b>. A variety of these teams work together to create a network that the company leverages to access the market</p>
 <b>Management Mode</b>	<b>Control</b>	<b>&gt;&gt; Empower</b>	<p>Companies shift from the "management and control" mode to the "empowerment and authorization" mode and assume an "<b>incubator</b>" role. <b>Empowerment</b> is mainly reflected in the following aspects:</p> <ol style="list-style-type: none"> <li>1. Grant business project teams <b>the autonomy and power to make key decisions</b> related to HR, finance, and business operation</li> <li>2. <b>Build a strong mid office</b> to provide support to business project teams on data, technology, and other general organizational functions</li> </ol>
 <b>Incentive Mechanism</b>	<b>Pay employees for the work they have done</b>	<b>&gt;&gt; Co-create and share the benefits</b>	<p>Companies reward employees by allowing them to fully share the business value they create as business partners, which means "<b>the higher value they create for users, the more benefits they can get</b>"</p>

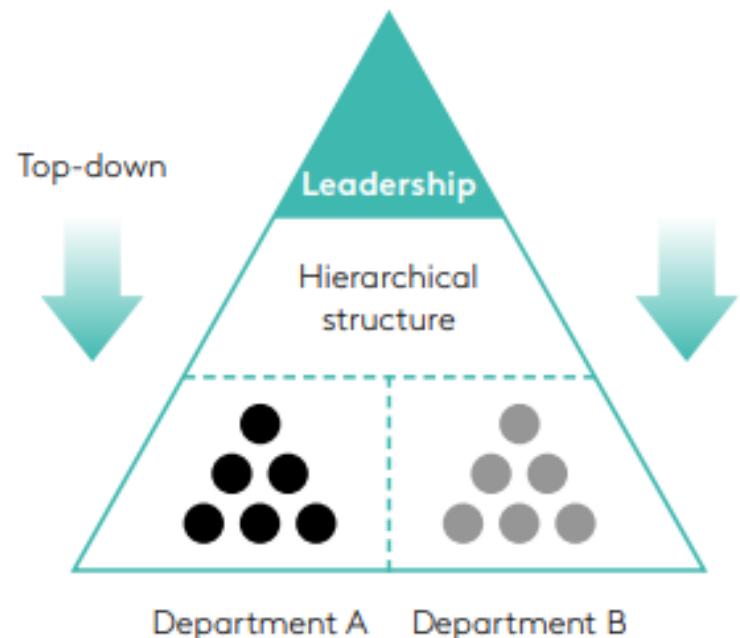
## Transform Employee Role



## Transform Organizational Structure

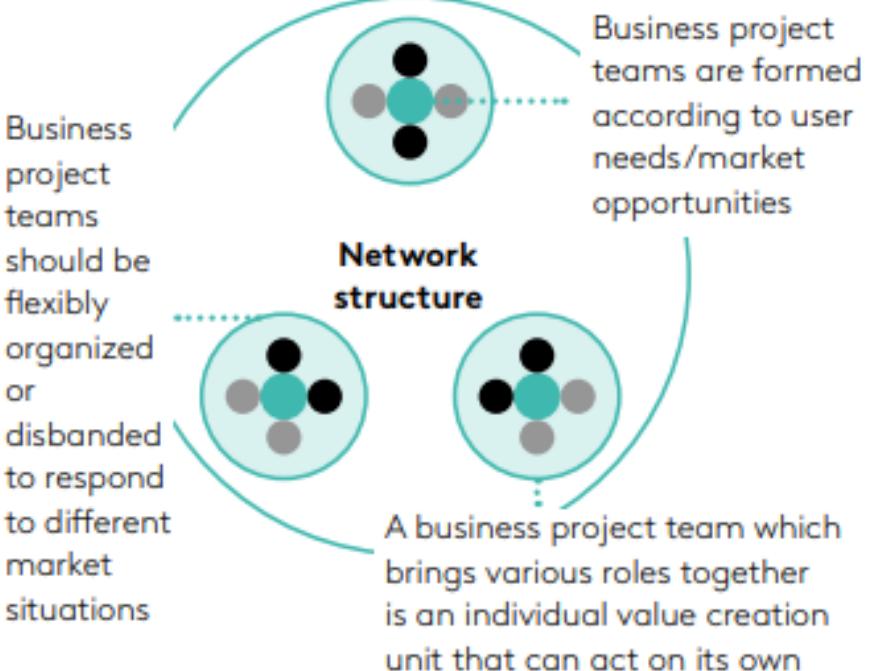
From...

Traditional hierarchical structure composed of various functional departments and tiers

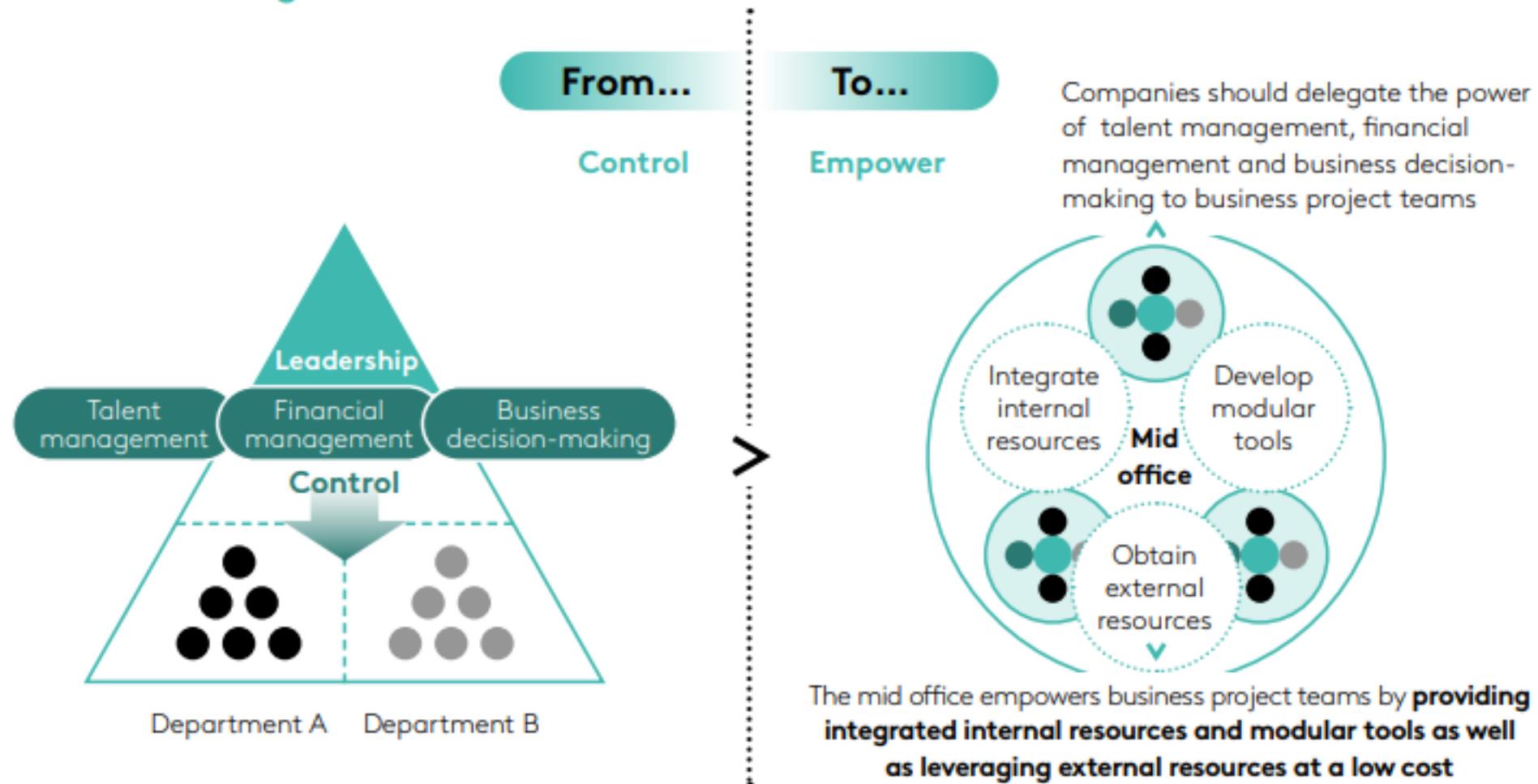


To...

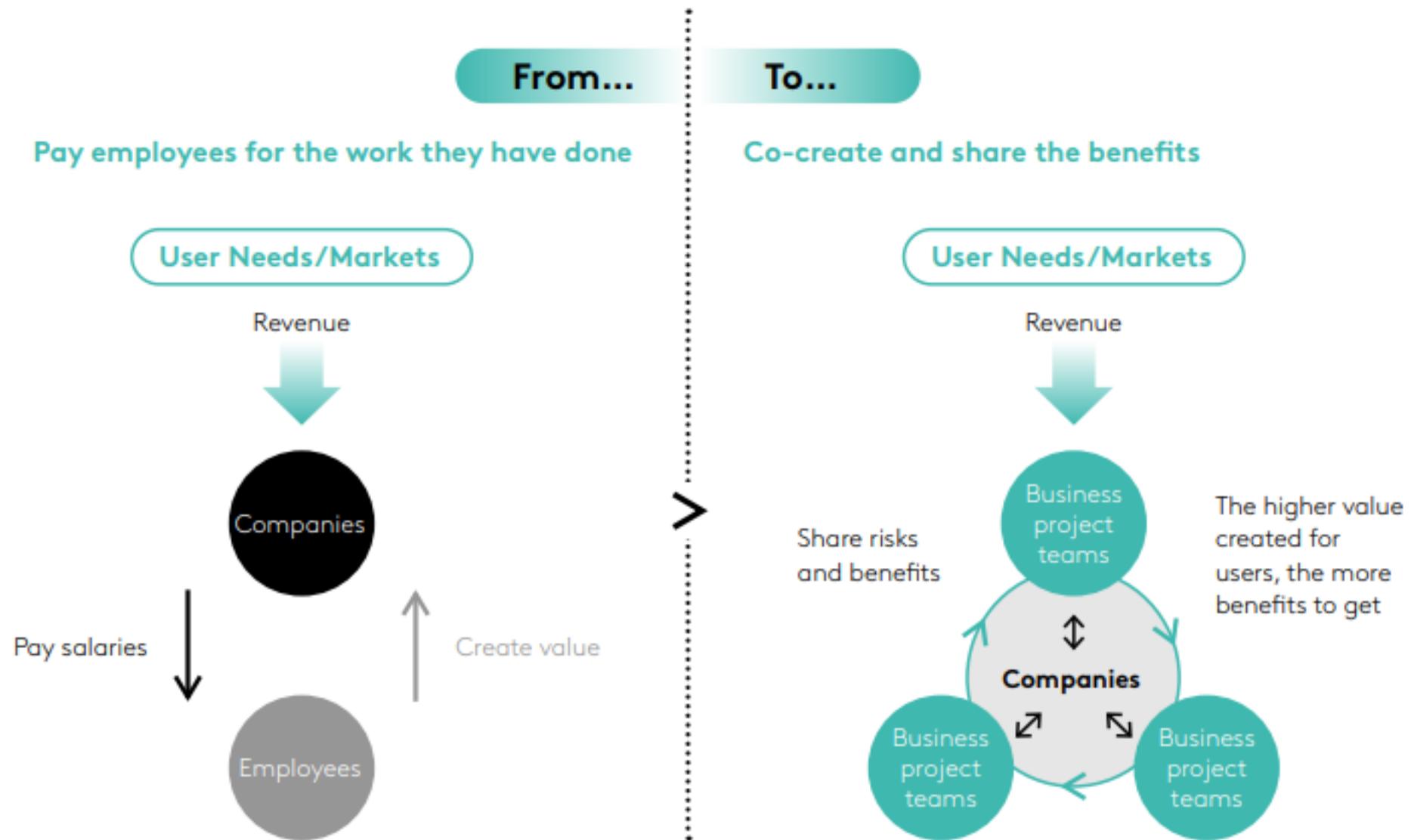
Network structure composed of various small business project teams



## Transform Management Mode



## Transform Incentive Mechanism



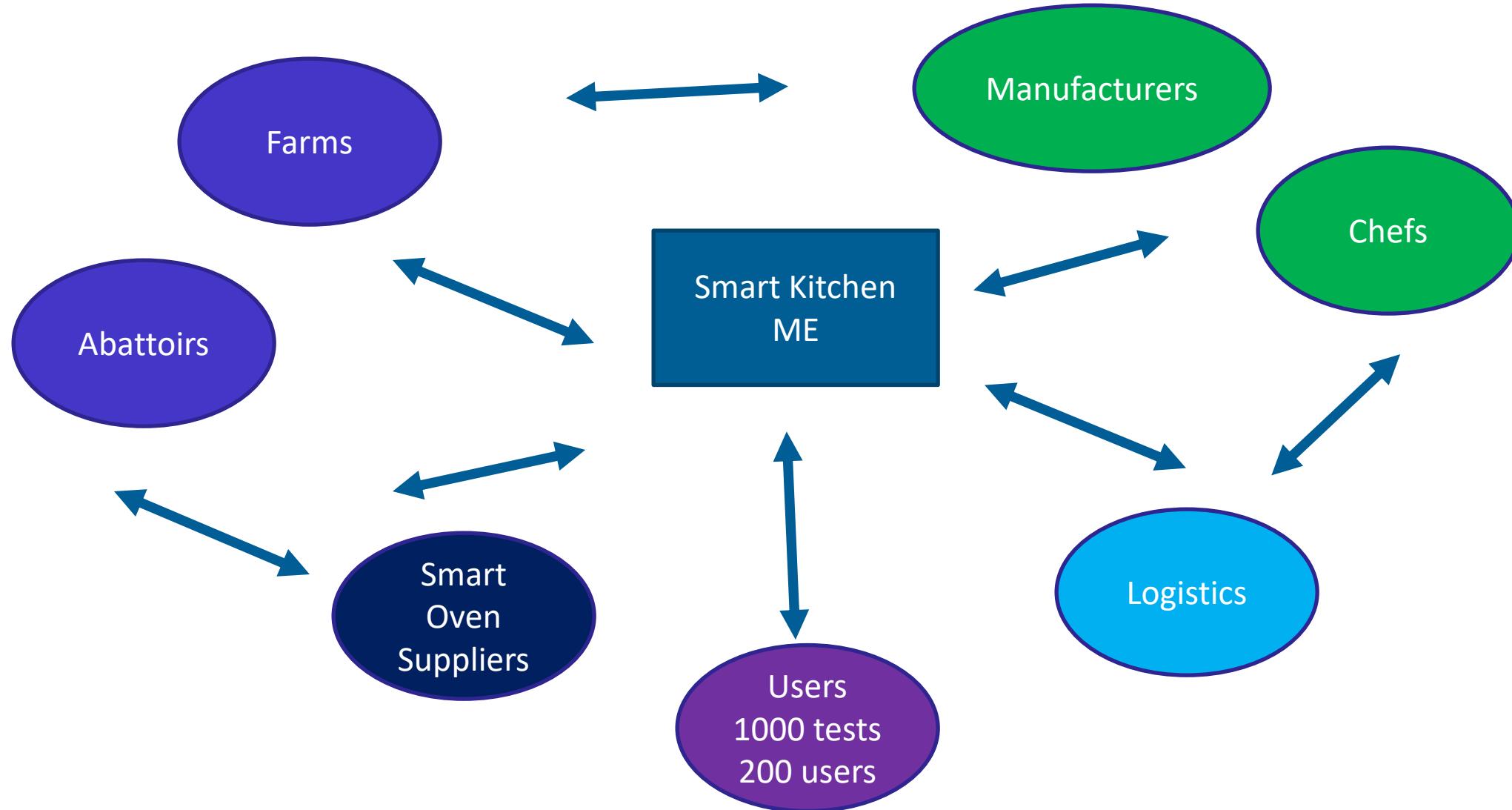
**Why did it need to create  
Ecosystem Microenterprise  
Communities (EMCs)? What  
were the strengths and  
weaknesses of EMCs?**

# The '5-Star' Peking Roast Duck EMC



- Order through Alphesh
- Unpack and arrange the ingredients
- Place frozen duck in steam over
- Scan QR code on the phone, sending instructions to the oven
- Cook in 1.5 hours
- Watch video on how to assemble

# The Smart Kitchen ME and IoF: Farm to Plate Value Chain



# Shift Towards EMCs: Key Features

- Shift Towards Open Innovation Systems
  - Engaging with external parties as a part of the 'ecosystem brand'
  - Develop a multi-product ecosystem
  - Assume the role of an orchestrator
- Expand Into Use Cases and New Ways to Monetize
  - Use cases create value but also entail costs that is borne internally, by collaborators or customers

# Value Creation and Value Capture



- 1 month after launch sold 20,000 peking ducks with revenues of 4mill RMB
- Revenues distributed across ecosystem participants
- Dynamic value-added sharing %
  - In the early stages, 60:40 between EMC solution and EMC experience
- Negotiated contracts
- ~10% contributed towards Haier Fund

# EMC Strengths and Weaknesses

- Strengths
  - Built on prior success with autonomous units
  - Use of technology such as WorkBench for coordination and Cosmoplat collaboration platform
- Weaknesses
  - High fixed costs and lower scalability
  - Rather than use transfer pricing everything negotiated by enterprises
  - Complexity
  - Duplication of efforts
  - Fighting organizations normal “egocentric” structures towards more decentralization

**What is GEA's structural approach for engagement with ecosystem actors?  
Should it try to emulate Haier's approach?**



GE APPLIANCES  
a Haier company

Abc

GE Appliances named Smart  
Appliance Company of the Year  
for the fifth time by IoT  
Breakthrough Awards Program

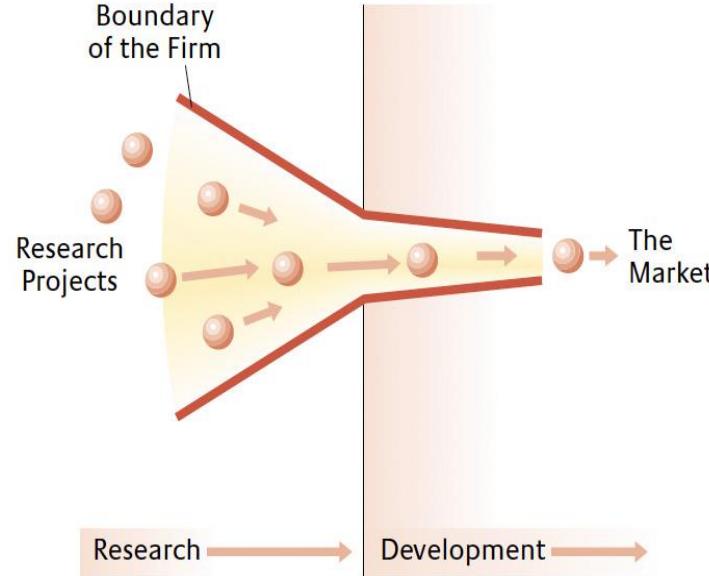


# GEA Approach

- Followed a parallel but distinct structure to Haier
- GEA offered FirstBuild as a structure to tinker with a new product and develop it commercially
- Didn't just open manufacturing to outsiders
- Used Indiegogo to gauge customer interest
- Focused on communities of complementors to develop 'cool' products e.g. mycophiles for mushroom growers
- Encouraged innovation but also pulled the plug when monetization was not clear, exerting financial discipline
- **Open innovation system attendant on success with complex negotiations and may not be culturally or legally compatible in the US**

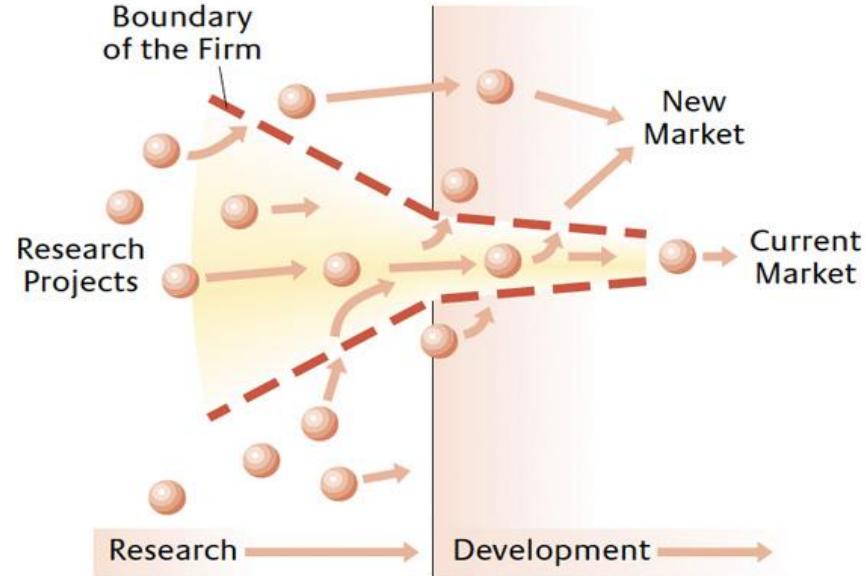
# Conclusions and Key Lessons

# 1. Closed vs. Open Innovation



## The Closed Innovation Model

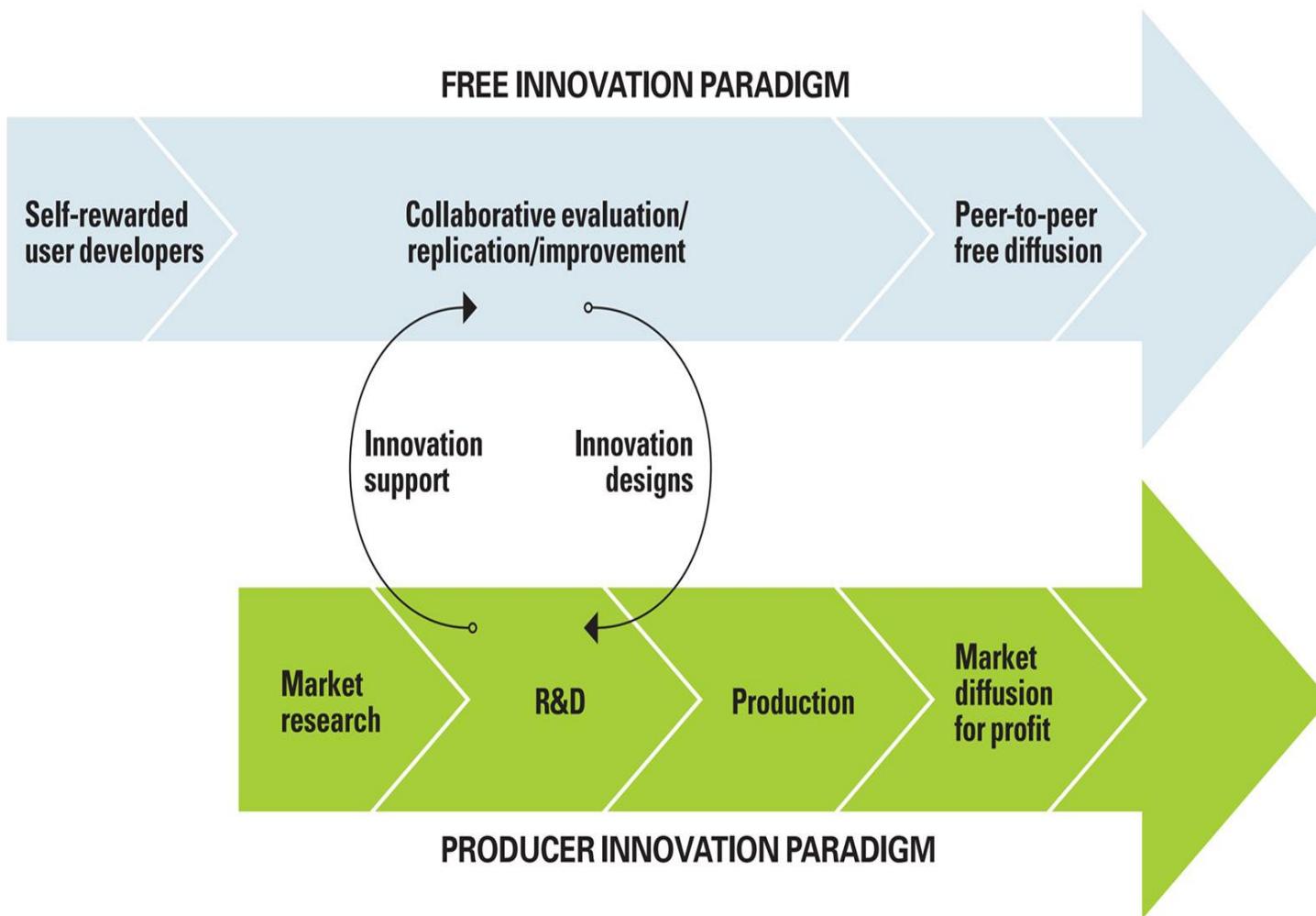
In closed innovation, a company generates, develops and commercializes its own ideas. This philosophy of self-reliance dominated the R&D operations of many leading industrial corporations for most of the 20th century.



## The Open Innovation Model

In the new model of open innovation, a company commercializes both its own ideas as well as innovations from other firms and seeks ways to bring its in-house ideas to market by deploying pathways outside its current businesses. Note that the boundary between the company and its surrounding environment is porous (represented by a dashed line), enabling innovations to move more easily between the two.

# User-Driven Innovation



*Source: E. von Hippel, Free Innovation, 2017*

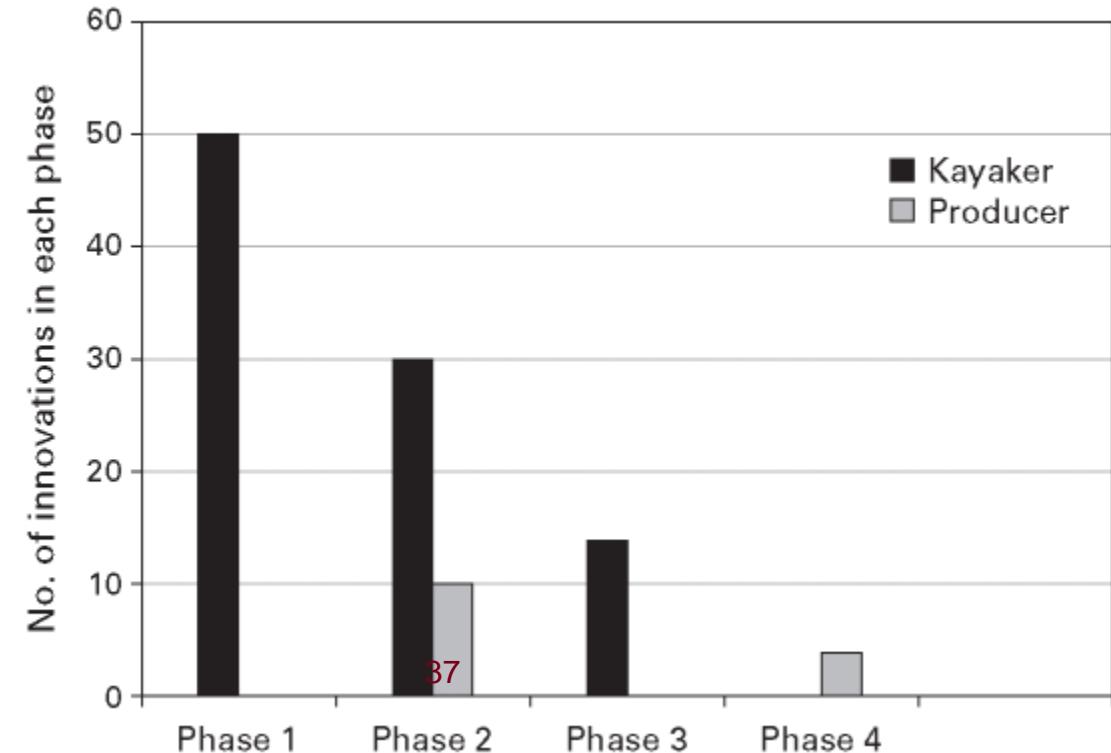
Examples:  
The Rise of “Cultured Meat”  
Whitewater Kayaking

# Innovation by User Communities

In all cases, members of each community were following the simple adage,  
“If you want something done right, do it yourself.”

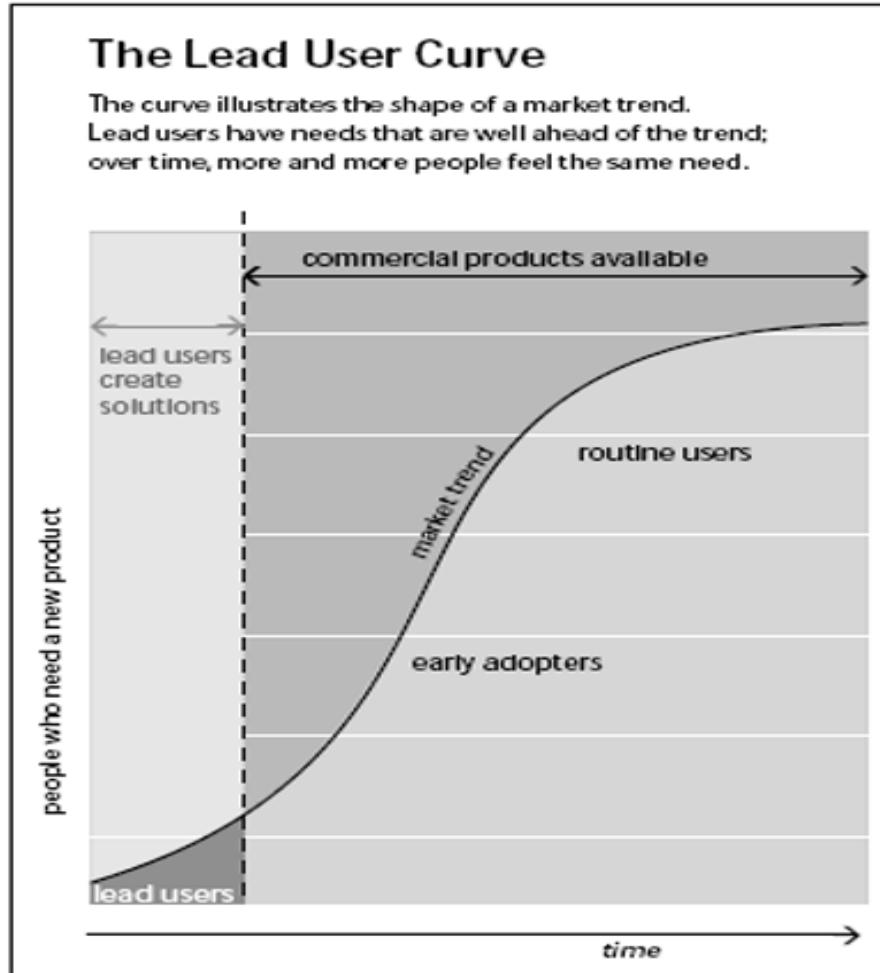
- Open source software (downloading, using and modifying software e.g. Apache)
- High-performance windsurfing (sharing techniques and product modifications, voluntarily coaching each other and helping coordinate group activities)
- Whitewater kayaking (developed outlines of the sport, basic equipment, novel techniques like squirtboarding, hull design etc.)

Source: Von Hippel, E. (2001). Learning from open-source software. *MIT Sloan management review*, 42(4), 82-86.



Source: Hienert, von Hippel, and Jensen 2014.

# Lead User Innovation



Source: <https://hbr.org/1999/09/creating-breakthroughs-at-3m>

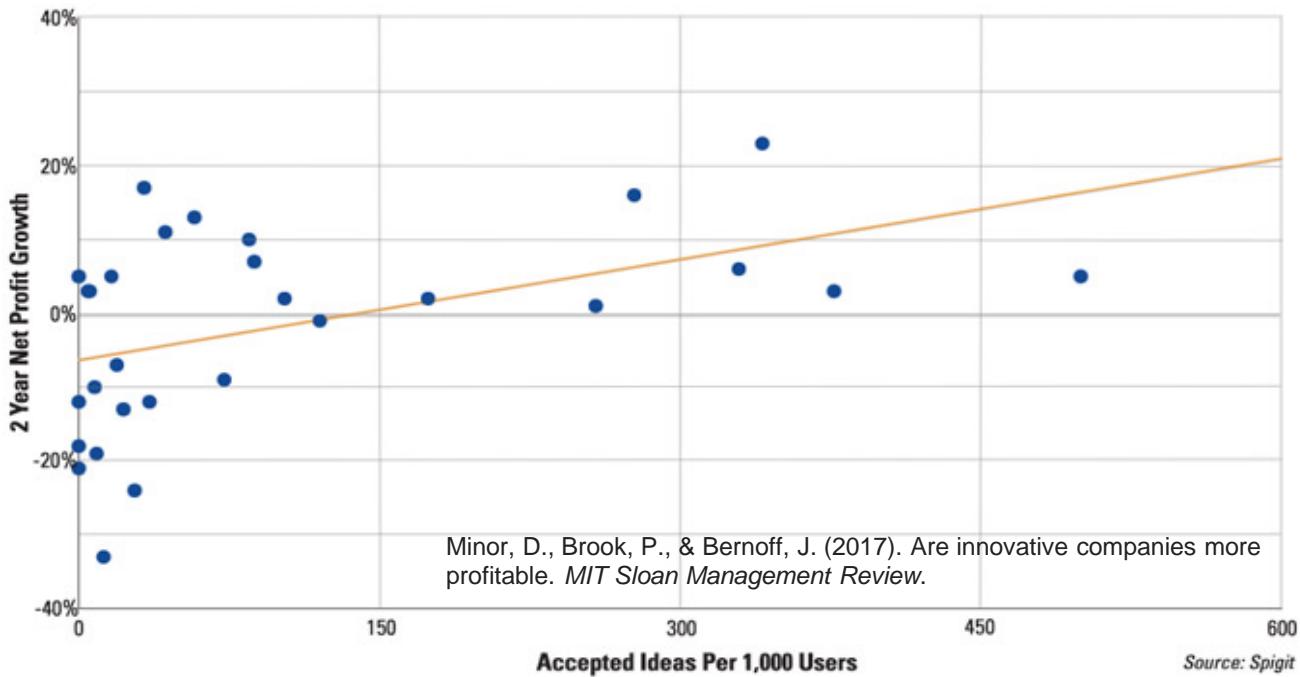
Von Hippel, Eric. (1986). Lead users: a source of novel product concepts. *Management Science*, 32(7), 791-805.

- Lead users are regular people “whose present strong needs will become general in a marketplace months or years in the future.”
- They are perfect subjects for company market research, but they also are proactive about thinking about what they need: “Since lead users often attempt to fill the need they experience, they can provide new product concept and design data as well.”
- Examples: 3M surgical <sup>38</sup>drapes (lead user doctors), automobile braking systems (lead user car racers), food (lead users astronauts, dieters), aviation (lead users military)

# Individual/Employee-driven Innovation

## Profit Growth Is Correlated With More Accepted Ideas

Looking at 28 companies using ideation management software over two years, the authors found that the greatest number of ideas per 1,000 users correlated strongly with a company's profitability and growth.



Analyzed five years of data from 154 public companies covering over 3.5 million employees that have used an idea management system called Spigit. The key variable identified across all the companies is the ***ideation rate***, defined as the number of ideas approved by management divided by the total number of active users in the system.

Higher ideation rates are correlated with growth and net income, most likely because companies with an innovation culture not only generate better ideas, but are organized and managed to act on them.

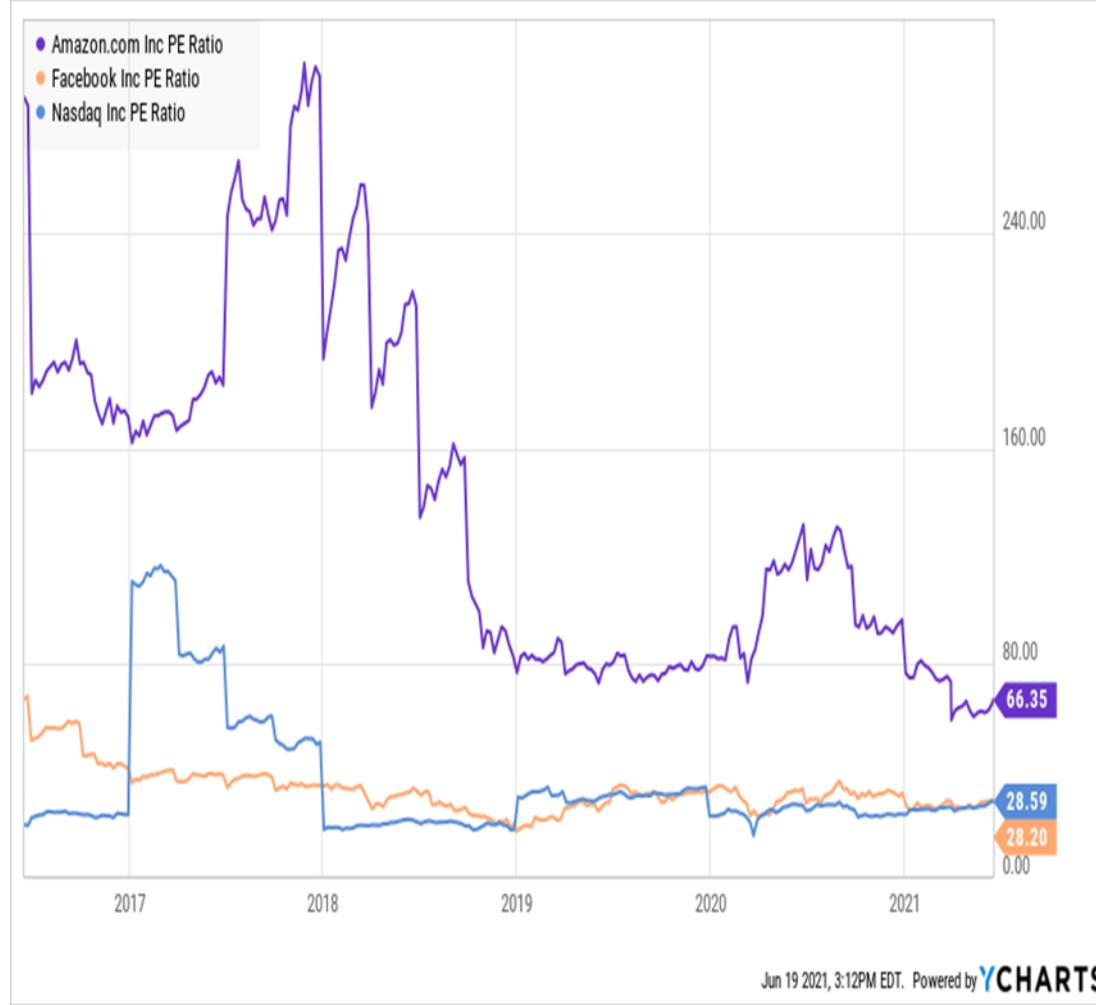
## 2. Business Ecosystems: Tradeoffs



Ant's use of its Alipay payment app at this vegetable market in Hangzhou, China

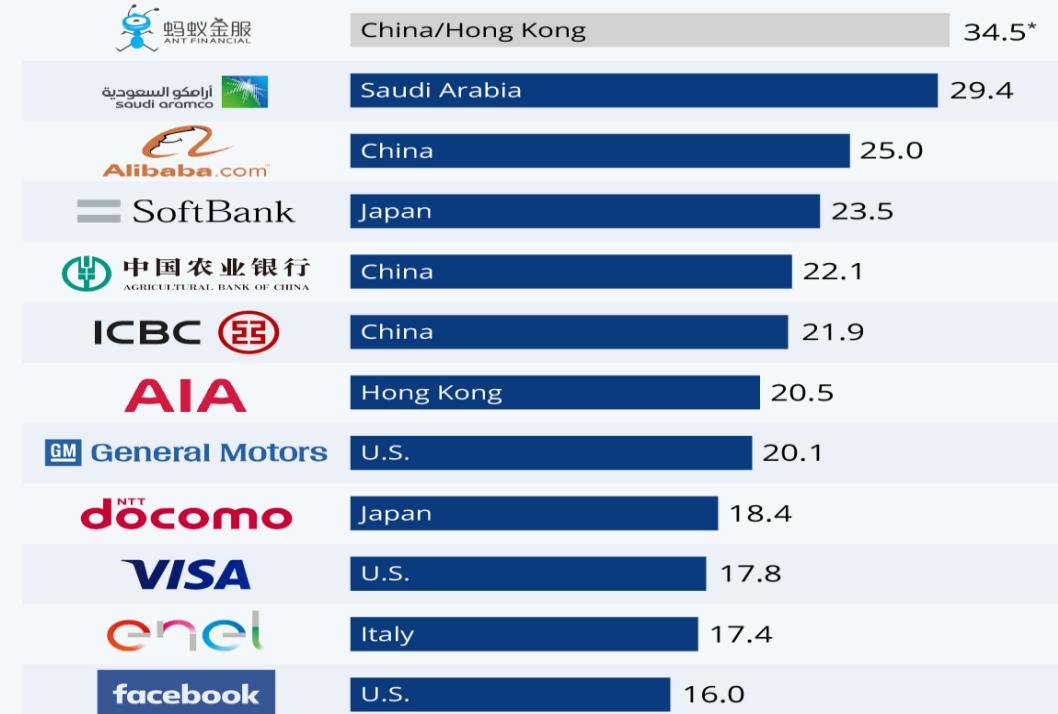


# The Market Value of “Big Data” Platforms



## The Biggest IPOs of All Time

Global IPOs with most money raised (in billion U.S. dollars)



Includes money raised by expanding IPO after launch

\* expected

Source: Media reports



# Paradox of High Market Value of Data Assets and Costs to Social Welfare: Privacy and Security



**PNAS**  
Proceedings of the National Academy of Sciences of the United States of America

Home Articles Front Matter News Podcasts Authors

RESEARCH ARTICLE

**Experimental evidence of massive-scale emotional contagion through social networks**

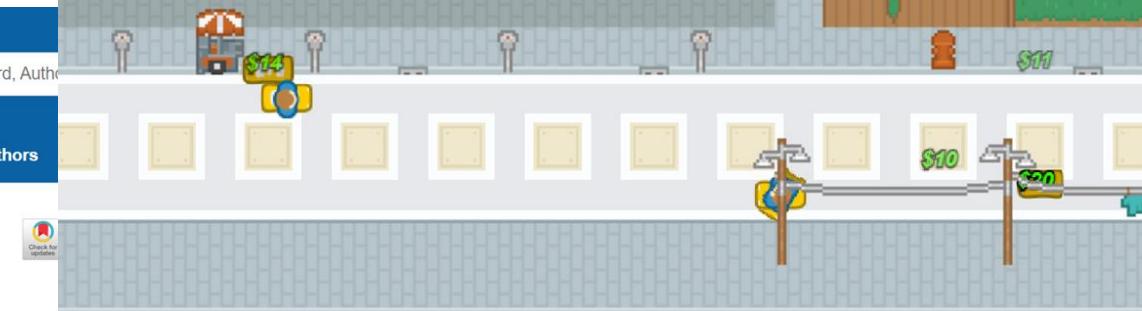
Adam D. I. Kramer, Jamie E. Guillory, and Jeffrey T. Hancock  
+ See all authors and affiliations

PNAS June 17, 2014 111 (24) 8788-8790; first published June 2, 2014; <https://doi.org/10.1073/pnas.1320040111>

Edited by Susan T. Fiske, Princeton University, Princeton, NJ, and approved March 25, 2014 (received for review October 22, 2013)

## What data experiments tell us about racial discrimination on Airbnb

The authors of a new book on data-driven decision-making look at how Airbnb dealt—eventually, to a degree—with hosts who aren't so hospitable.



## How Uber Uses Psychological Tricks to Push Its Drivers' Buttons

The company has undertaken an extraordinary experiment in behavioral science to subtly entice an independent work force to maximize its growth.



# Why “Big Data” Platforms Subvert Data Privacy/Social Welfare



SPECIAL ISSUE ARTICLE



WILEY

## Platform ecosystems as meta-organizations: Implications for platform strategies

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### Abstract

**Research summary:** Platform ecosystems have spurred new products and services, sparked innovation, and improved economic efficiency in various industries and technology sectors. A distinctive feature of the platform architecture is its modular and interdependent system of core and complementary components bound together by design rules and an overarching value proposition. Accordingly, we conceptualize platforms as meta-organizations, or “organizations of organizations” that are less formal and less hierarchical structures than firms, and yet more closely coupled than traditional markets. To function successfully, however, platforms require coordination among multiple participants not all of whose interests are

- Winner-take-all contests: incentivizes misuse of data/behavioral information
- Lack of direct authority: architectural design choices/algorithms for manipulation/deception
- Gatekeeping structural positions: create bottlenecks and need for data moderation, checks and balances
- Tangled web of interactions result in direct and indirect harms to users
- Institutional factors: lax enforcement of policies/regulatory weaknesses

### 3. Institutional Differences: Laissez-Faire vs. Rights Based Data Privacy Law

#### Permissionless innovation (U.S.)

- Business interests/corporate flexibility above individuals
- Privacy as a tradable good or commodity
- Privacy rights from government but not private entities
- Privacy notice and choice-'take it or leave it'
- Legally and administratively constrained FTC: Deception authority over unfairness authority—as a long as the company is forthright
- Fractal, scattershot approach of privacy laws and patchy protections-statutes such as HIPPA, FERPA, GLBA, FERCA
- Largest fine by FTC--\$22.5 mill against Google in 2012 for tracking users of Apple's Safari, Google's revenue was ~USD 12 bill

#### Constitutional right to data privacy and data protection as a human rights issue (E.U./GDPR)

- The EU Data Protection Directive is precursor
- Connection to Human Rights Law (Declaration of Human Rights) gives it additional gravity
- Individuals first and industry second
- Data controller must have legal basis to collect data—not automatic
- Relies on notice and choice, but allows compensatory measures, meaningful consent, fines,
- Law with teeth: Fines-2-4% of global turnover, judicial redress

# Markets vs. State



## China Blocked Jack Ma's Ant IPO After Investigation Revealed Likely Beneficiaries

Well-connected Chinese power players, including some with links to political families that represent a potential challenge to President Xi, were behind layers of opaque investment vehicles. The information added to concerns about financial risk and anger at Ma's outspoken criticism.



# Regulatory Intervention: GDPR



- General Data Protection Regulation (GDPR) known to be “the toughest privacy and security law in the world” (GDPR.eu, 2020)
- The regulation was proposed in 2012
- The regulation entered into force on 24 May 2016
- The regulation was adopted by all EU members on 25 May 2018

# Implications for U.S. Companies

- US companies are caught in the cross-hairs
- Institutional contradictions between the US and EU GDPR laws, could result in lip service or misalignments

Yes they Khan

Joe Biden appoints Lina Khan to head the Federal Trade Commission

Big tech firms should start to worry





**Thank You!**

