



The Phoenix Committee on Foreign Relations

“Inside the Firewall: Chinese Private Entrepreneurs are Driving Exponential Technological Disruption that Will Transform Future Global Ecosystems and Business Dynamics”



October 25, 2018
Gainey Ranch Golf Club
By [Nicholas V. Chen](#)*
nchen@pamirlaw.com

* Special thanks to Josie Tai, Mengfei Shen, and George Shen

The Old “Made in China”



CHEAP LABOR



Made in China Made in Germany

POOR QUALITY



Source: asiaone.com

**THE COPYCAT
(AKA THE KING OF KNOCKOFFS)**



Source: emergingequity.org

STATE-OWNED ENTERPRISES

International Entrepreneurs: Copycats

“Alipay of India”

Paytm

“Alibaba of Southeast Asia”

LAZADA
GROUP

“Alibaba of Africa”

 **konga**.com

“Alibaba of India”

 **snapdeal**

“Mobike of the US”


LIMEBIKE
Your ride anytime.

“Alibaba of Indonesia”


tokopedia

When Technology Meets China, China Changes the World

- Rising Geopolitical Volatility
- Mobile Internet and Cloud
- Shared Economy
- Climate Change



- Young Demographic in Emerging Market
- Rapid Urbanization
- Rising Middle Class
- Changing Global Leadership Role

Meet China's Disruptors



AI

Advanced Manufacturing

Fintech

VR/AR

Biotech

Mobility/Autonomous Driving

“China’s Disruptors” Chronicles the Power of Private Entrepreneurs

- “If you read only one China book, read this one.” Nicholas V. Chen

Key Themes (book released in July 2015)

- The real force in Chinese economy is increasingly private companies, not SOEs
- Leading private Chinese companies are innovative and ambitious
- They are changing not only China but increasingly also the rest of the world

“ Five of the best new books on innovation ”

– China’s Disruptors’ *public recognition by Fortune.com, April 2015*



Author: Edward Tse, Gao Feng Advisory Company
<http://www.edwardtseblog.com/>

These Entrepreneurs are Spurring Exponential Change in China.

Internet



Jack Ma
- Alibaba



Pony Ma
- Tencent



Robin Li
- Baidu



Lei Jun
- Xiaomi



Richard Liu
- JD.com



Diane Wang
- DHGate

Technology



Wang Tao
- DJI



Hu Zhihua
- EHang



Chen Haibi
- DIAN
Diagnostics



Wang Jian
- BGI



Wang Jun
- iCarbonX



Yu Gang
- Yiyawang

Consumer & Retail



Zhang Jindong
- Suning



Shen Ya
- VIP Shop



Zhang Ruimin
- Haier



Wei Jianjun
- Great Wall



Li Shufu
- Geely

Auto/Connected Mobility



Jean Liu
- Didi



Zhou Hang
- Yidao

FS



Wang Jingbo
- Noah Wealth
Management



Ma Mingzhe
- Pingan



Peng Lei
- Ant
Financial



Wu Gang
- Goldwind



Wang Wei
- SF Express

They May Also Change the World

-
- **These entrepreneurs use technology to redefine relationships across the value chain as they transform how business is done in new evolving ecosystems...**
 - **These innovative, risk-taking entrepreneurs succeed by creating solutions to societal pain points and lifestyle needs.**

-
- **China's disruptive entrepreneurs are being copied in many places and will change the velocity and trajectory of economic development trends around the world...**
 - **These innovations empower entrepreneurs and businesses and catalyze the development of shared economies, artificial intelligence, Internet of Things, and advanced manufacturing...**

Driving Forces of China's Economic Advancement

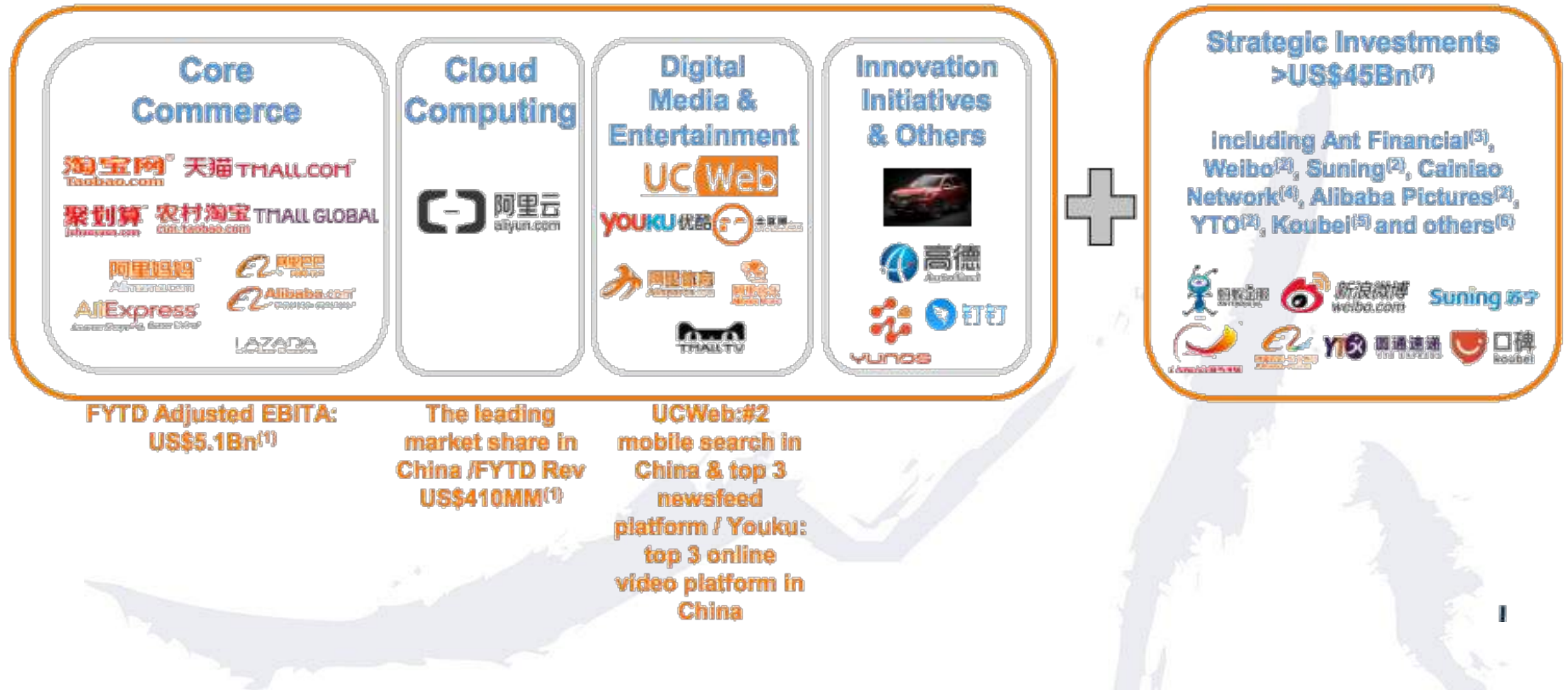
- **E-Commerce and E-Finance:** Driving Global Supply Chain and Empowering Entrepreneurs
- **SuperApps:** Boosting User Accessibility and Buy-In
- **Internet-of-Things:** Revolutionizing Data Collection and Production Optimization
- **Automation:** Complementing and Replacing Labor Across all Sectors

Alibaba: World's Largest E-Commerce Ecosystem



Alibaba in 2014 (e-Commerce)

Alibaba in 2017 (e-Finance)



FYTD Adjusted EBITA:
US\$5.1Bn⁽¹⁾

The leading market share in China /FYTD Rev US\$410MM⁽¹⁾

UCWeb:#2 mobile search in China & top 3 newsfeed platform / Youku: top 3 online video platform in China

Super Apps: WeChat

What's Wechat?

WeChat is a smartphone application that consists of...



Movie Ticket

+



Bill payment

+



Free calling

+



Investment

+



Social network



Mobile payment

+



User Review

+



Group buying

+



Taxi order

+



Free messaging

Highly-Performing Automation: China Will Export 300M Jobs in the Next 5 Years



E-Commerce and E-Finance

- **Driving Global Supply Chain and Empowering Entrepreneurs**
- **The radical exponential disruption drives global e-commerce supply chains, replacing money and traditional banks with e-finance systems that provides more accessible financial support and capital.**

Alibaba Envisioning Future Consumer to Business (“C2B”) Business

- Alibaba has foreseen the upcoming era of C2B, where customers will expect to completely dictate what they need and how they need it, and only companies that accommodate them will survive



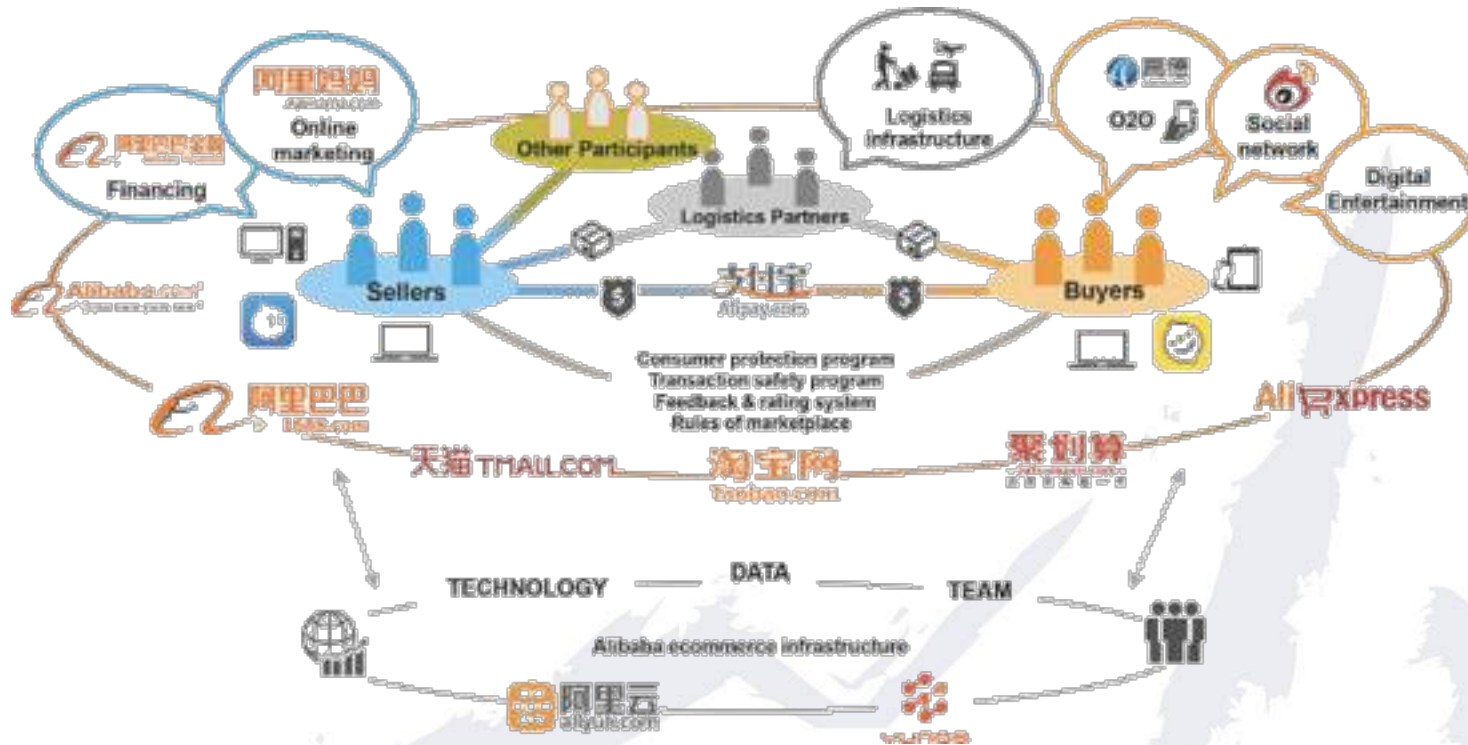
The Alibaba Phenomenon

- How big is it?



- Alibaba Group is the **largest online and mobile commerce company in the world** in terms of gross merchandise volume (GMV) **since 2013** – more than Amazon and Ebay combined.
- By 2020 China's e-commerce market is forecast to be bigger than the existing markets in America, Britain, Japan, Germany and France combined.
- It could become one of the world's most valuable companies five years from now, dominating the global supply chain.

The Alibaba Ecosystem



**What does Alibaba do?
Everything from online marketplace, to
cloud computing, to payment gate...**

The Alibaba Ecosystem

CLOSED-LOOP SUPPLY CHAIN, B2B, B2C AND C2B PLATFORM

- **Taobao Marketplace (2003)** – World’s largest online shopping destination.
 - ▶ Shoppers choose from a wide range of products and service
 - ▶ Features hundreds of millions of product and service listings
- **Tmall.com (2008)** – World’s largest third-party platform for brands and retailers
 - ▶ A premium shopping experience for increasingly sophisticated Chinese consumers in search of top-quality branded merchandise.
- **Juhuasuan (2010)** – Most popular online group buying marketplace in China
 - ▶ Offers quality products at discounted prices by aggregating demand from numerous consumers
 - ▶ Mainly through flash sales which make products available at discounted prices for a limited period of time

The Alibaba Ecosystem

SELF-SUSTAINED MARKETPLACE AND GLOBAL WHOLESALE TRADE

- **Alibaba.com**
 - ▶ Leading platform for global wholesale trade serving millions of buyers and suppliers around the world.
- **AliExpress (2010)** – Popular global consumer marketplace
 - ▶ A premium shopping experience for increasingly sophisticated Chinese consumers in search of top-quality branded merchandise.
- **1688.com (1999)** – Leading online wholesale marketplace in China
 - ▶ Serves as a wholesale channel for merchants doing business on Alibaba Group's retail marketplaces to source products from domestic wholesalers.

The Alibaba Ecosystem

DATA PROCESSING/CLOUD COMPUTING, AND ONLINE MARKETING TECHNOLOGIES

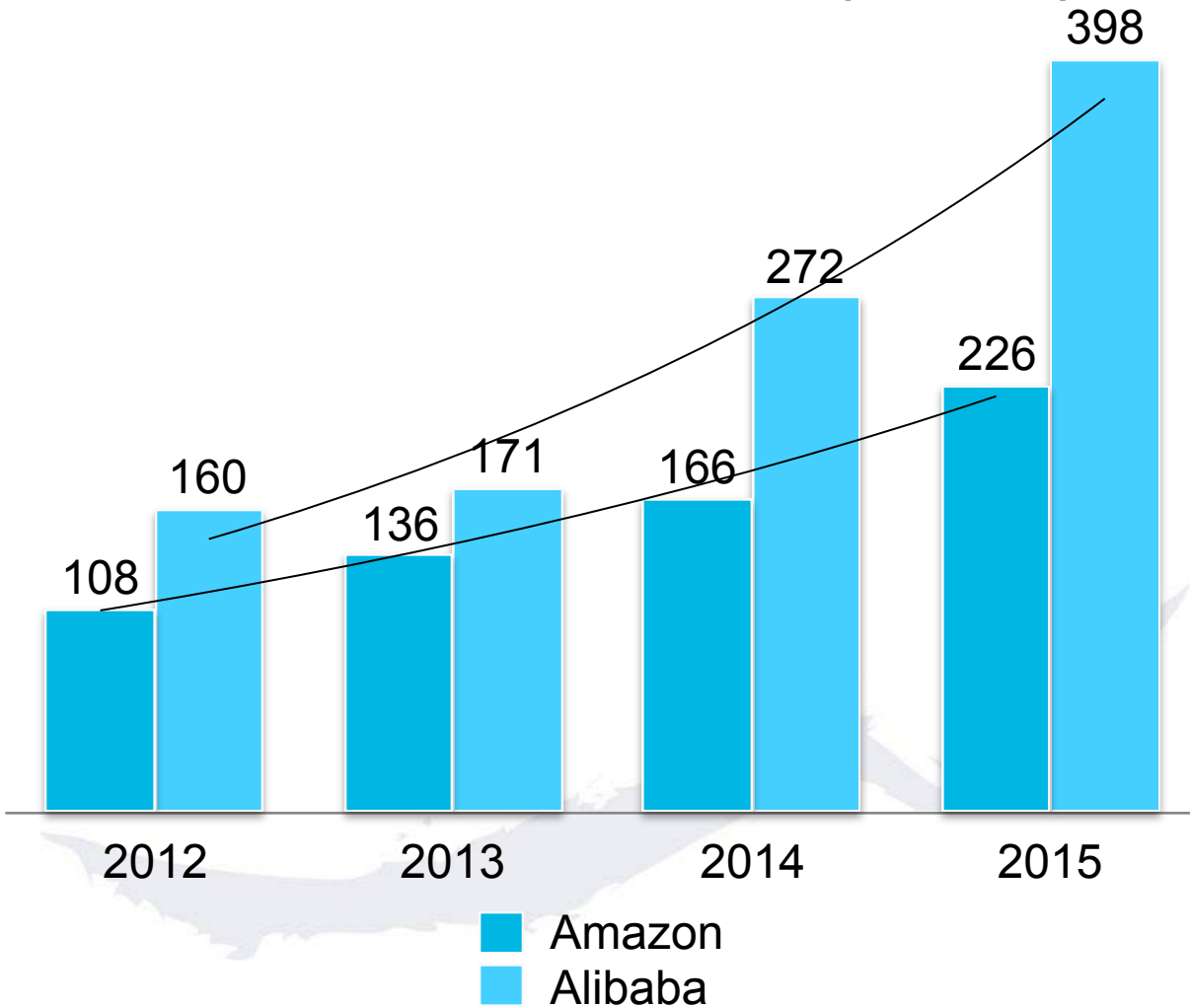
- **Alibaba Cloud Computing (2009)** – Developer of platforms for cloud computing and data management
 - ▶ Operates the network that powers Alibaba Group’s extensive online and mobile commerce ecosystem
 - ▶ Sells a comprehensive suite of cloud computing services to support sellers and other third-party entities participating in this ecosystem.
- **Alimama (2007)** – Leading online marketing technology platform
 - ▶ Offers sellers on Alibaba Group’s marketplaces online marketing services for both personal computers and mobile devices.
 - ▶ Through the Taobao Affiliate Network, Alimama also provides those sellers with such marketing services on third party websites

The Alibaba Ecosystem

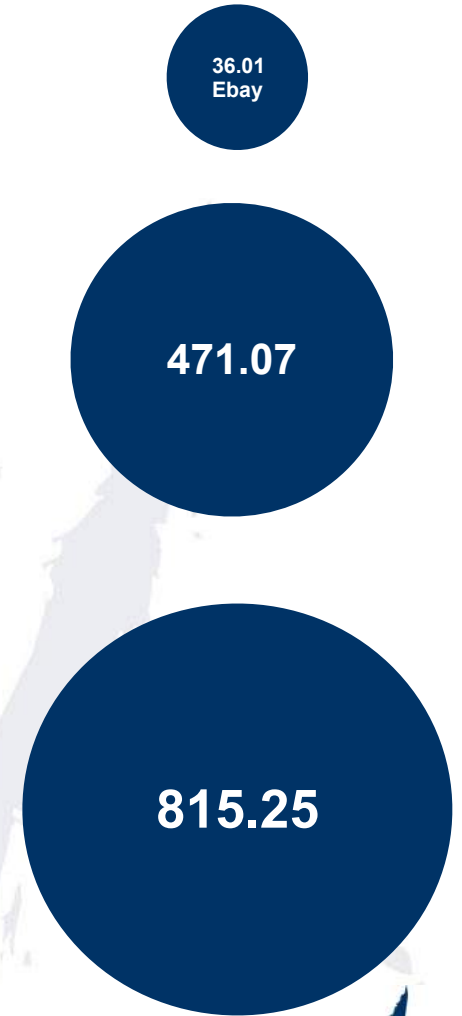
INDEPENDENT LOGISTIC BACKUP AND FINANCIAL SERVICE PLATFORM

- **Ant Financial Services Group** – Financial services provider
 - ▶ Focused on serving small and micro enterprises and consumers.
 - ▶ Businesses operated by Ant Financial Services Group include Alipay, Alipay Wallet, Yu'e Bao, Zhao Cai Bao, Ant Micro Loan and Sesame Credit.
- **Cainiao Logistics** – Operator of a logistics information platform
 - ▶ Provides real-time access to information for both buyers and sellers
 - ▶ Offers information that allows delivery service providers to improve the efficiency and effectiveness of their services

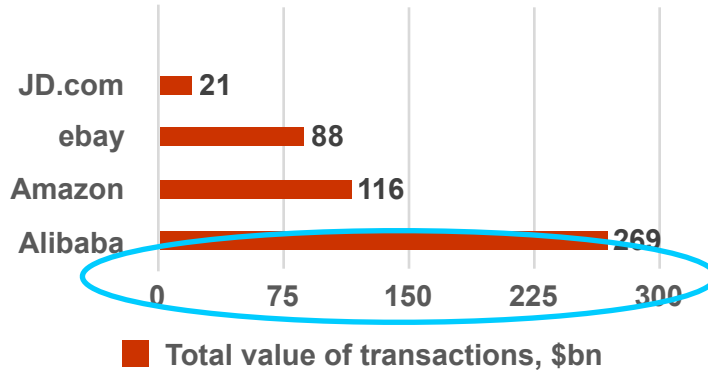
Gross Merchandise Value (USD bn)



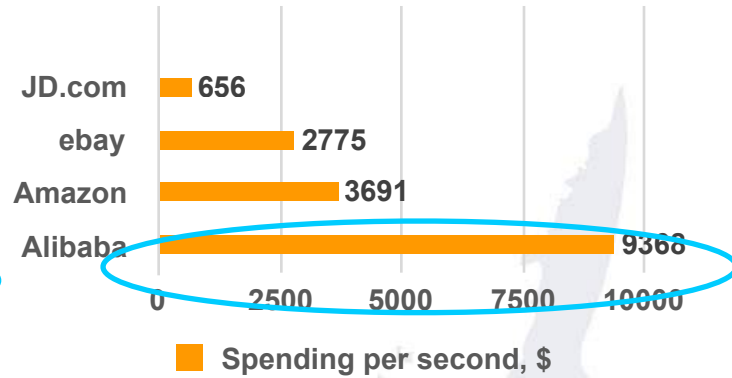
Market Capitalization, 2018 (USD Bn)



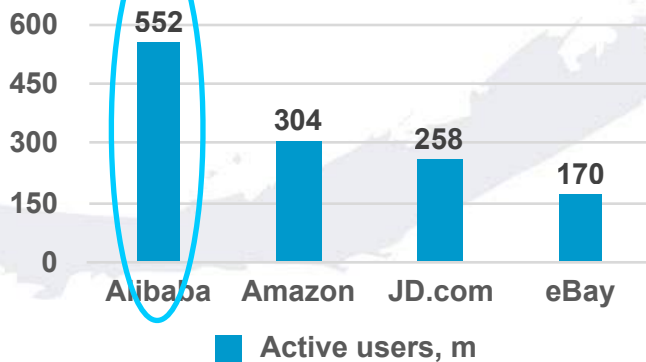
Total Value of Transactions, \$bn



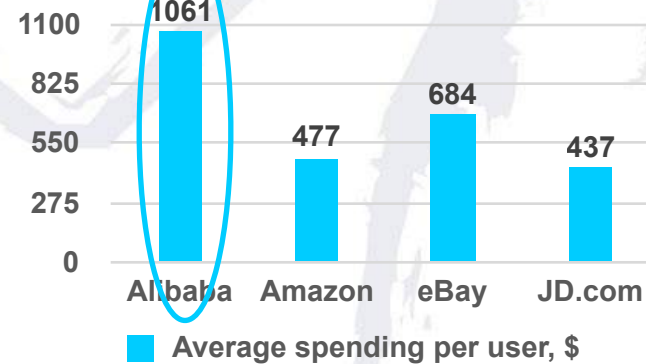
Spending per Second, \$



Active Users, M



Average Spending per User, \$



The Alibaba Phenomenon

Robust Marketplaces

- US **\$768 billion** total GMV
- **552 million** annual active buyers and **617 million** mobile monthly active users
- **50+** average annual orders per active buyer

Ecosystem Scale and Size

- **450 million+** paying customer relations
- **874,000+** paying cloud computing customers
- **620,000+** marketing affiliates

By the end of 2018 FY

Beyond Just Numbers

- Alibaba will change the world in ways more profound than just its monumental numbers
- The Future of Finance and Business Realized Through Big Data and Cloud Technology: Fast, Costless, Real-Time



蚂蚁金服
ANT FINANCIAL

蚂蚁金服旗下品牌



Ant Financial Presents

- **Ant Financial Services Group – Financial services provider serving small and micro enterprises and consumers**
 - **With the vision “to turn trust into wealth”, Ant Financial is dedicated to building an open ecosystem of Internet thinking and technologies while working with other financial institutions to support the future financial needs of society.**
 - **Businesses operated by Ant Financial Services Group include Alipay, Alipay Wallet, Yu’e Bao, Zhao Cai Bao, Ant Micro Loan and Sesame Credit.**
-

The Future of Finance: Smart Loans for Micro-Enterprises



Traditional Banks	Ant Finance (by Alibaba)
Centralized risk management processing for small loans, takes a month minimum	1-minute loaning through 100% online process
Nation-wide branches	No branch, no account manager needed
Complex questionnaire system to determine solvency	0 survey or questionnaire
Limited scope of service	Lending to 400,000 businesses each year, large and small
Secured loan, requires substantial collateral	Non-collateral, unsecured business loan up to 500,000 RMB per loan
Huge cost, high bad debt risks	Bad debt < 2%

Conclusion: Banks Cannot Compete With Ant

Smart Business Through Big Data

- Alibaba uses big data to get solid, real-world business results - and putting that in place to improve performance.
- The Cloud stores data to **drive real time on demand information to drive sales, decrease costs and revolutionize their business model and ecosystem**

Big Data Reshapes Banking

Traditional Banks

- One Model For All:
 - Reports
 - Financial Statements
 - Monthly Income
 - Real Estate
 - Credit Checks
 - ...
 - **Conclusion: inflexible, slow, inaccurate, inefficient**

Ant Finance (by Alibaba)

- Data: Getting Data From Everywhere
 - Solvency Model:
 - Sale-related Statistics
 - Credit Evaluation Model:
 - Analysis of your weibo posts
 - Online gamer's moral behaviors (frequency of quitting)
 - Customer feedback of your products
 - Pricing Model:
 - Price Preferences And Strategies

Pain Point: Trusting The Data

Big Data is Ant Finance's Big Advantage

Traditional Banks	Ant Finance (by Alibaba)
Monthly Update <ul style="list-style-type: none">Download 30-day account history at the end of each month	Instant Update <ul style="list-style-type: none">Every behavior makes a difference
Manual Evaluation After Loan Application <ul style="list-style-type: none">A lot of manpower to conduct reviewsTakes at least weeks	Pre-Loan Evaluation <ul style="list-style-type: none">Knowing the borrower before he/she borrowsOpen to ANY type of business
Data Open Loop <ul style="list-style-type: none">Dependent on human intervention to reach conclusion	Data Closed Loop <ul style="list-style-type: none">Algorithms matterLoan on-click, immediate feedback, 0 human intervention

Pain Point: Quick, Costless, Real-Time

The Future of Finance is not a Bank



The Future of Finance is not a Bank



- **NEO (also called Antshares) utilizes traditional coding languages, making it more accessible to developers compared to its competitors like Bitcoin or Ethereum**
 - **NEO has secured a patent that will allow it to become a centralized blockchain supernode**
-

Why Cryptocurrencies Like Neo Change the Future

- **Every transaction is recorded on the blockchain**
- **It will improve transparency in global transactions:**
 - ▶ Ban Cash and Record Every Transaction
 - ▶ Instant Tax Collection
 - ▶ Threats of Negative Interest Rates
- **“One blockchain to rule them all”**

CAN YOU
TELL ME
ABOUT MY
FUTURE?

HMMM...
I WOULD,
BUT I CAN'T
READ
CHINESE!

Los Angeles
Times ©2013

ENCORE

HORSEY

The Future: Smart Business

The Past	The Future
Sample – And Guessing About All The Rest	Population – Knowing Everyone In The Crowd
Static Data	Live Data
Gather	Record
Offline	Online
Human Decision-making	Data Drives Decision
Open Loop	Closed Loop

The Future: Smart Business

The Past	The Future
B2b, B2c <ul style="list-style-type: none">• Business To Business, Business To Consumer• Production Determines Consumption	C2b <ul style="list-style-type: none">• Consumer To Business• Consumption Determines Production
Assembly Line, Standardized Products	Personalized Products, Made-to-Order
Guesswork -> Decision	Data -> Decision, No More Guesswork
Percentage Growth	Exponential Growth

The Future: Smart Business

Future Finance

- Future Commerce
- Demise Of Cash
- E-Finance Replaces Banks –
No More Banks
- No Human Intervention
- Threatens Old-world Financial
Systems

Future Business

- Customer Internet Behavioral
and Preferential Data Will
Determine Products
- Empowerment Of Customers
and Sellers

A Portrait of Future Successful Businesses



-
- **Mobility and Accessibility**
 - **Threatens Old-World Financial Systems**
 - **Empowers Customers and Sellers**
 - **.....what about our own lives?**



Wechat: The super app – Boosting user accessibility and buy-in



-
- Behind China's "Great Firewall" lies a universe of industrial and scientific advancements that allows us to glimpse into an **alternative to the western vision of technology in the future**
 - WeChat originally started as a messaging app and later developed into a **"SuperApp"** is changing the role of social media and the way people communicate, interact and live.
- 

~~“What’s your name?”~~

“Add me on Wechat”









Three Myths About WeChat

- **Myth #1: Just a Copycat**
- **Myth #2: Just a Messaging App**
- **Myth #3: Just for Young People**

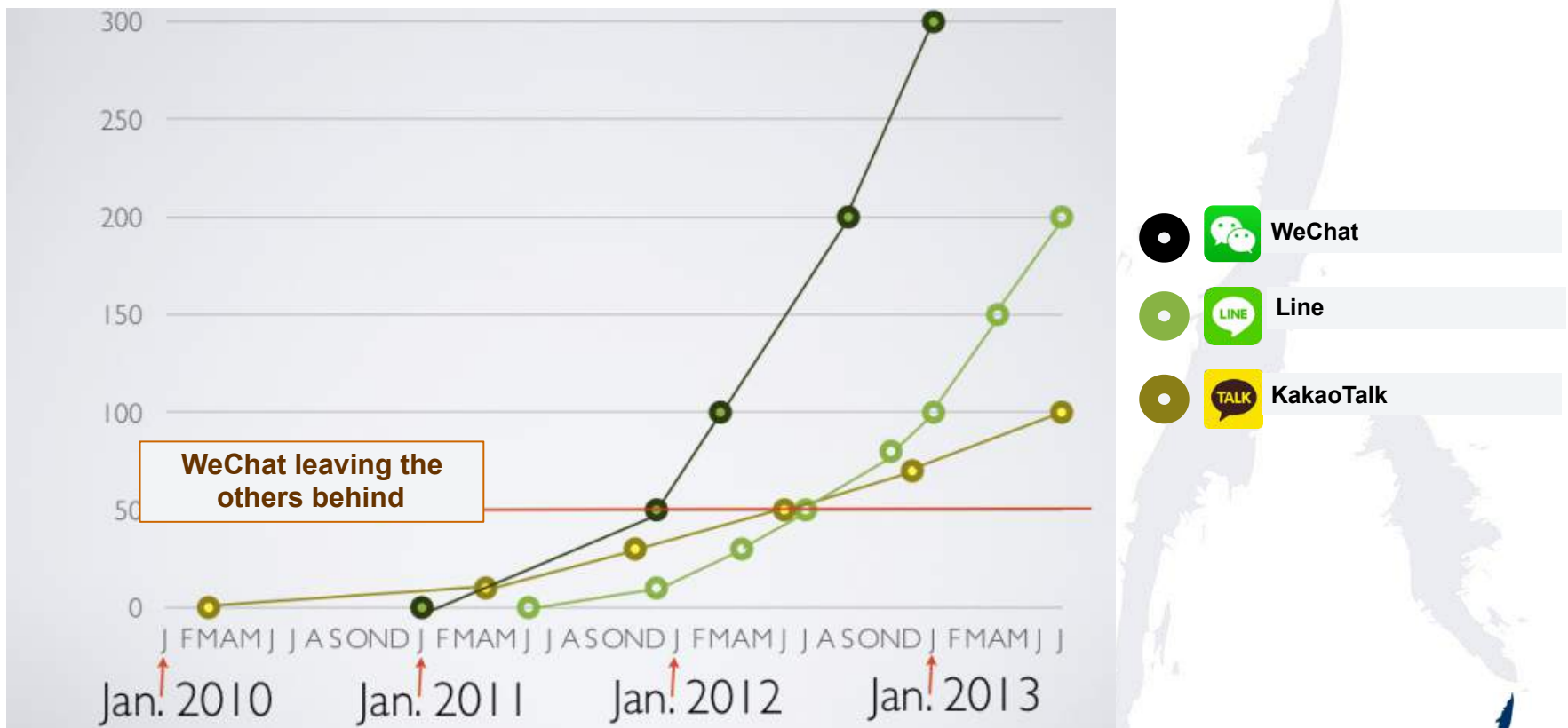
Myth #1: Just a Copycat

- Reality: Wechat Has More Features Than ALL Peer Apps

	WeChat (China)	Line (Japan, Taiwan)	KakaoTalk (South Korea)	Instagram (US, Europe)	Messenger (US, Canada, Australia)	WhatsApp (South America)
Feature						
Voice Call	✓	✓	✓		✓	✓
Video Call	✓	✓	✓	✓	✓	
Social Ad Products	✓	✓	✓	✓		
P2P Payments	✓	✓	✓	✓	✓	
B2C Direct Messaging	✓	✓	✓	✓	✓	
E-Commerce Platform	✓	✓	✓			
Call Taxi	✓	✓	✓			
Loyalty Programs	✓					

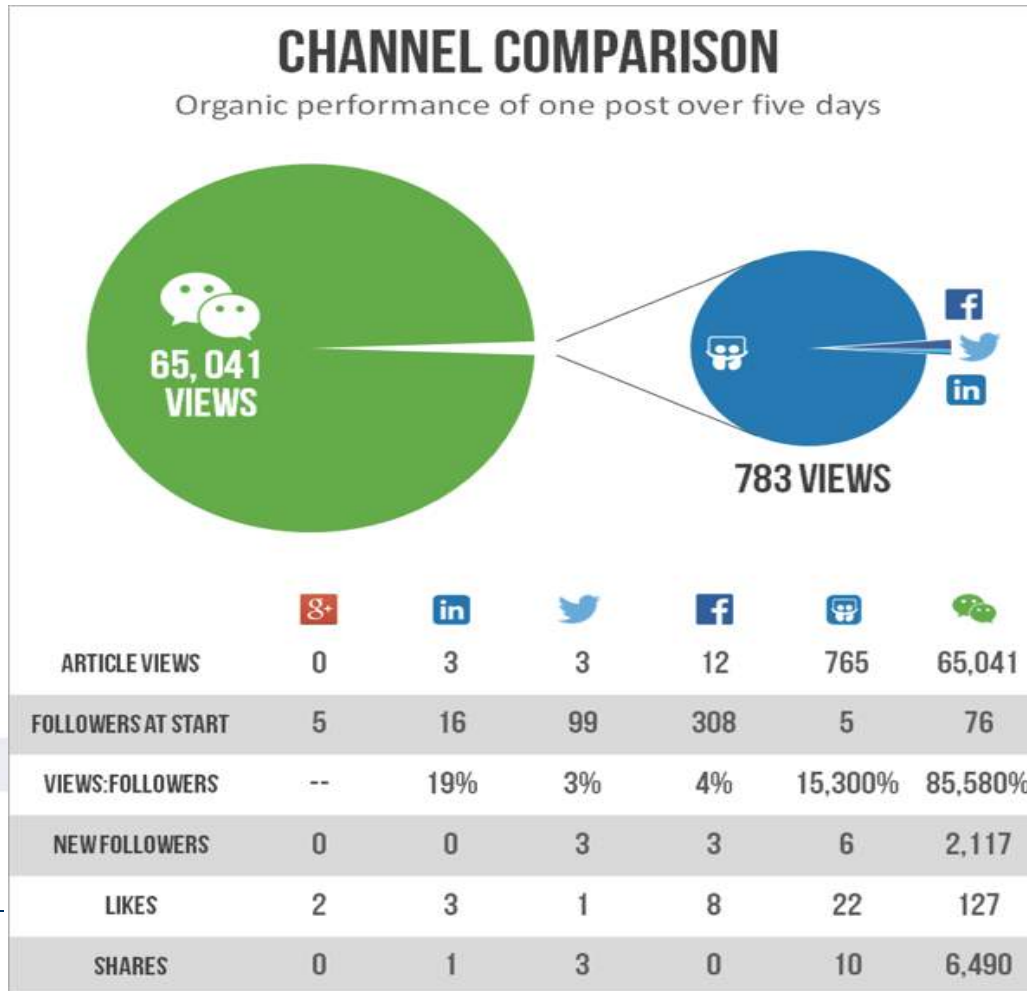
Myth #1: Just a Copycat

- **Reality:** in terms of growth trend, WeChat has far more potential than its western counterparts



Myth #1: Just a Copycat

- Reality: Wechat's Organic Performance Buries Competitors



Myth #2: Just a Messaging App

What's Wechat?

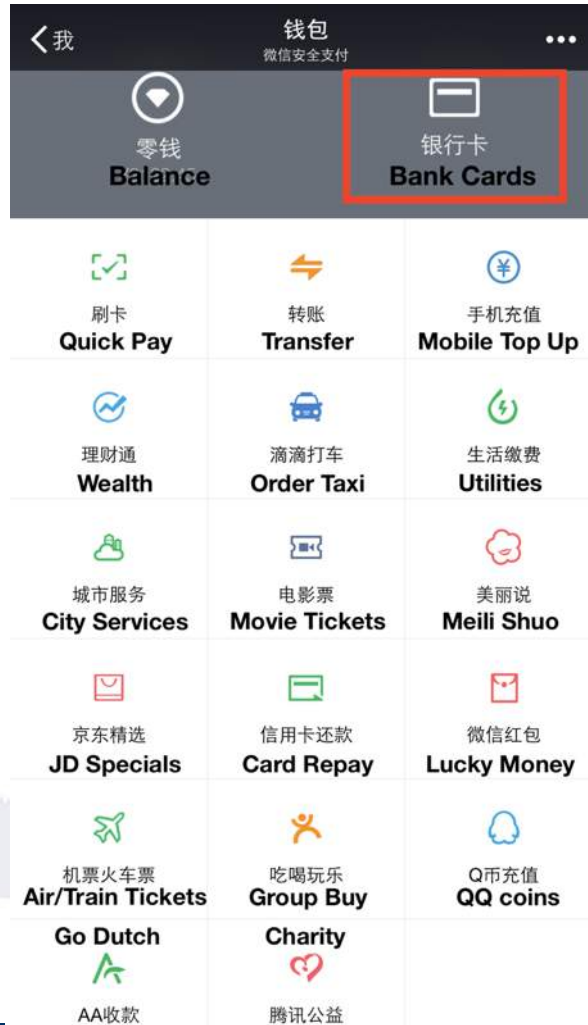
WeChat is a smartphone application that consists of...

The infographic consists of two rows of icons, each followed by a plus sign and a text label. The first row includes: a movie ticket icon labeled 'Movie Ticket', a document with a dollar sign icon labeled 'Bill payment', a telephone handset icon labeled 'Free calling', a bar chart with an upward arrow icon labeled 'Investment', and a globe icon labeled 'Social network'. The second row includes: a smartphone with a Euro symbol icon labeled 'Mobile payment', a thumbs-up icon labeled 'User Review', a shopping cart icon labeled 'Group buying', a taxi icon labeled 'Taxi order', and a speech bubble icon labeled 'Free messaging'.

<https://chinachannel.co/1017-wechat-report-users/>

Myth #2: Just a Messaging App

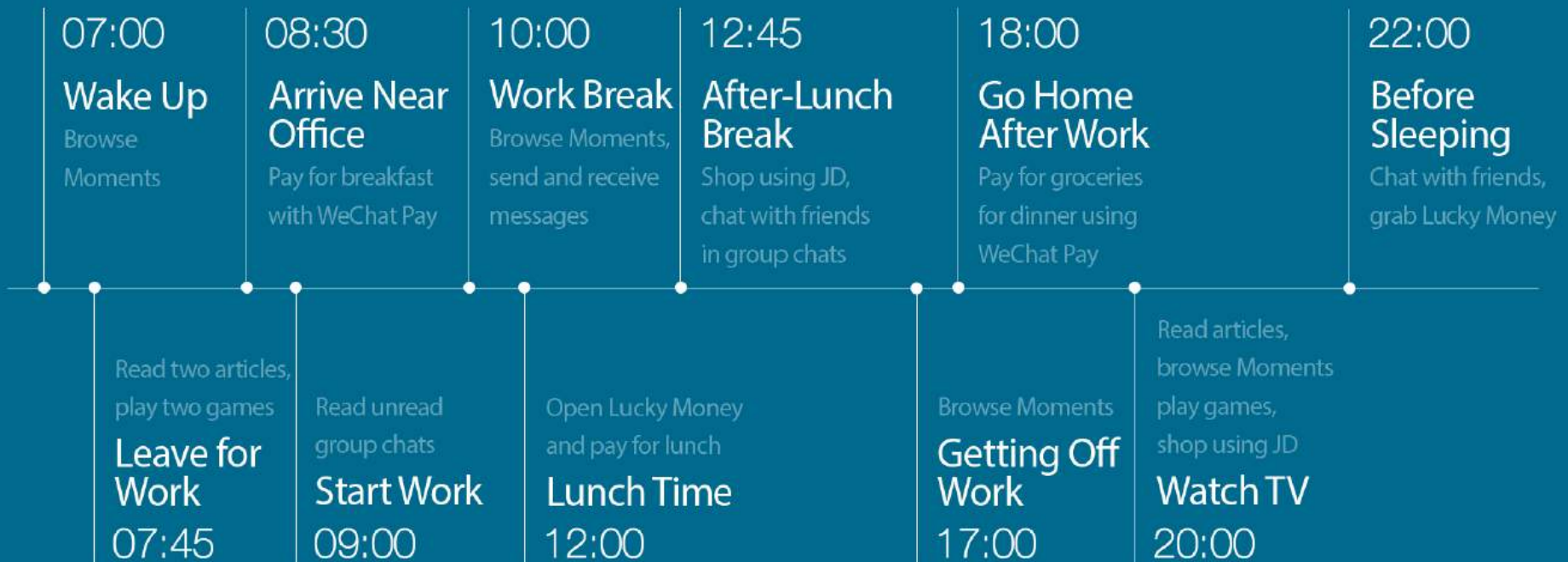
- Messaging
- Official Accounts
- Moments
- Group Chat
- WeChat Pay
- City Services
- Track Delivery
- Order Food & Reserve Tables



- WeChat Mini Programs
- Friend Seek
- WeChat Index
- News Feed
- Search
- Pay Bills
- Donation
- Wealth Management

Myth #2: Just a Messaging App

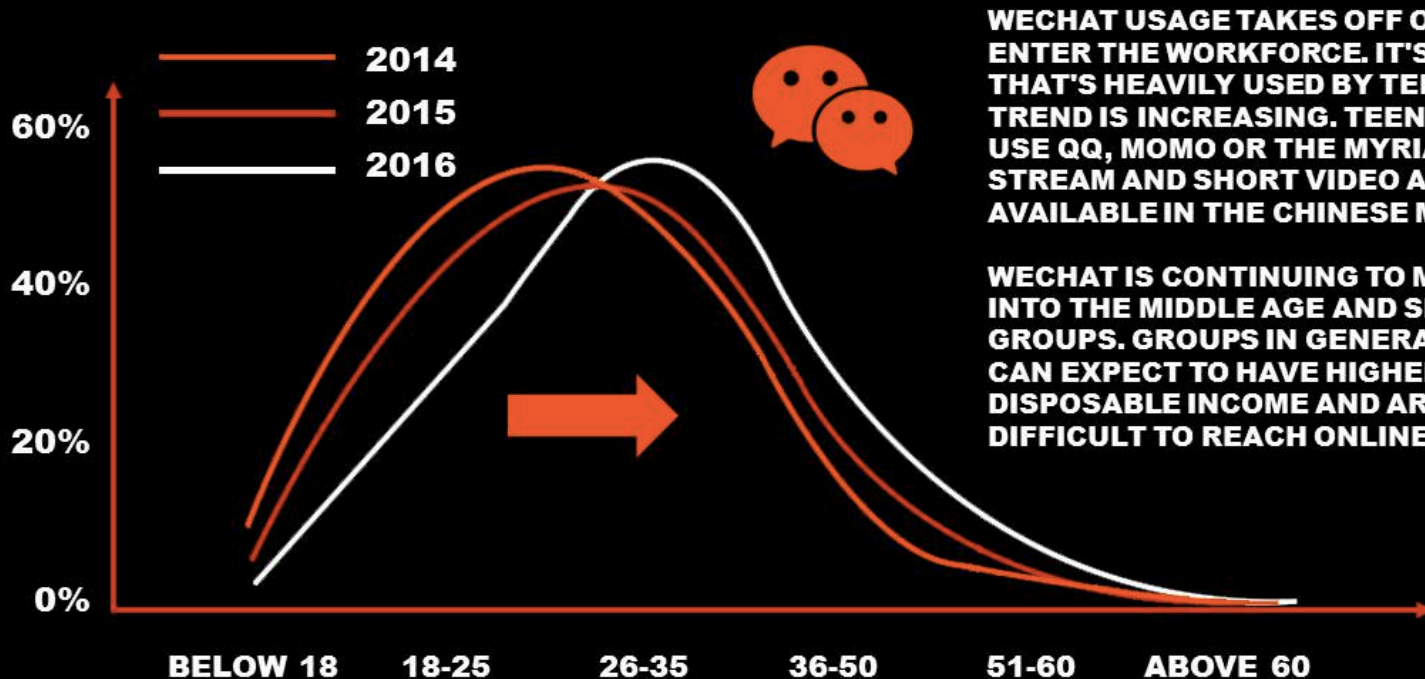
A Typical Day for a WeChat User



Myth #3: Just for Young People

China Channel

WECHAT USER AGE DISTRIBUTION



WECHAT USAGE TAKES OFF ONCE USERS ENTER THE WORKFORCE. IT'S NOT AN APP THAT'S HEAVILY USED BY TEENS. THIS TREND IS INCREASING. TEENS PREFER TO USE QQ, MOMO OR THE MYRIAD OF LIVE-STREAM AND SHORT VIDEO APPS AVAILABLE IN THE CHINESE MARKET.

WECHAT IS CONTINUING TO MAKE GAINS INTO THE MIDDLE AGE AND SENIOR AGE GROUPS. GROUPS IN GENERAL THAT WE CAN EXPECT TO HAVE HIGHER AVERAGE DISPOSABLE INCOME AND ARE MORE DIFFICULT TO REACH ONLINE.

CHINACHANNEL.CO

DATA: CHINA ACADEMY OF INFORMATION AND COMMUNICATIONS TECHNOLOGY (CAICT) STUDY 2016

How WeChat is Changing Lives

- **Change #1: Transition To A Cashless World**
- **Change #2: Social Interaction – Expands the Scope Of Contact, Wechat Fundamentally Changes The Nature Of Interpersonal Relationships**
- **Change #3: Big Data Enlarges The Role Of Mobile Devices In Our Daily Lives**

Change #1: Transition To A Cashless World

- **Alibaba challenges the existing bank system**
- **WeChat enables transactions completely online, renders banks even more irrelevant**





An Everyday Wechat Story

Mengfei, on her way to work in the morning, was very hungry.

She sees Mr. Ji's Jianbing shop. It smells so good.

She realizes that she forgot to bring her wallet.

No cash, no credit card, not a single coin.



An Everyday Wechat Story

Mr. Ji told her to not worry.

“Do you have a WeChat?” He asks.

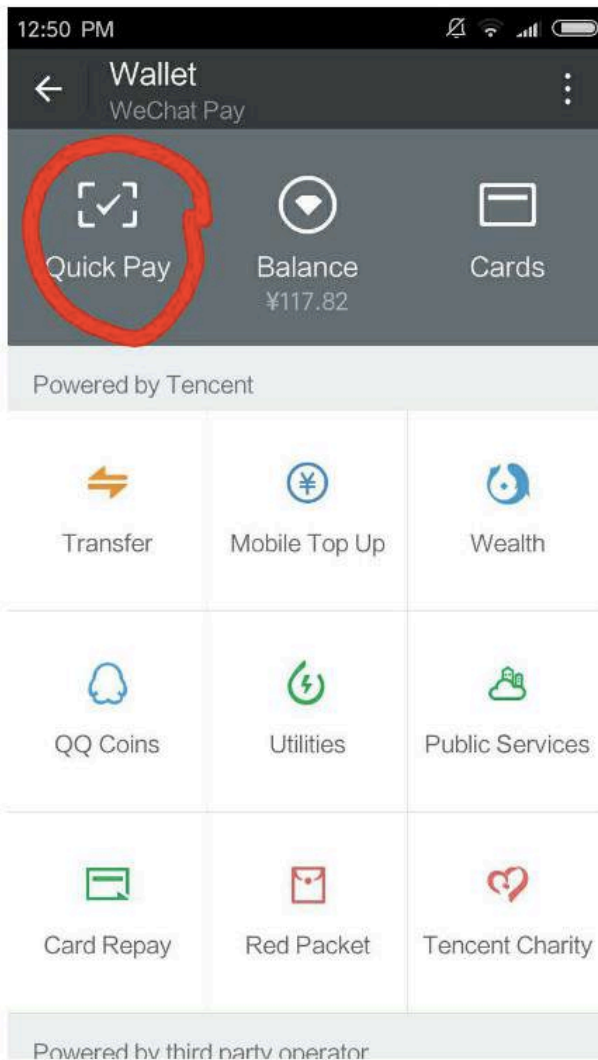
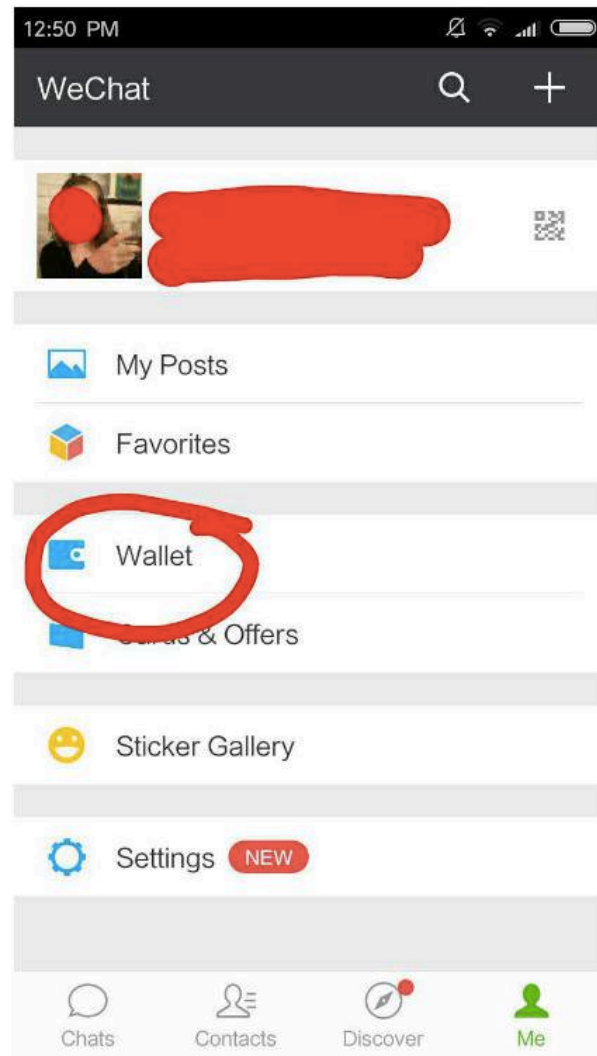
Of course, like every other Chinese person, Mengfei has a WeChat account.



An Everyday Wechat Story

She pulls out her phone and clicks into “WeChat wallet”, scans the QR code on Mr. Ji’s poster, and transfers RMB 4.5 for a big, warm and delicious Jianbing with extra sauce and egg.

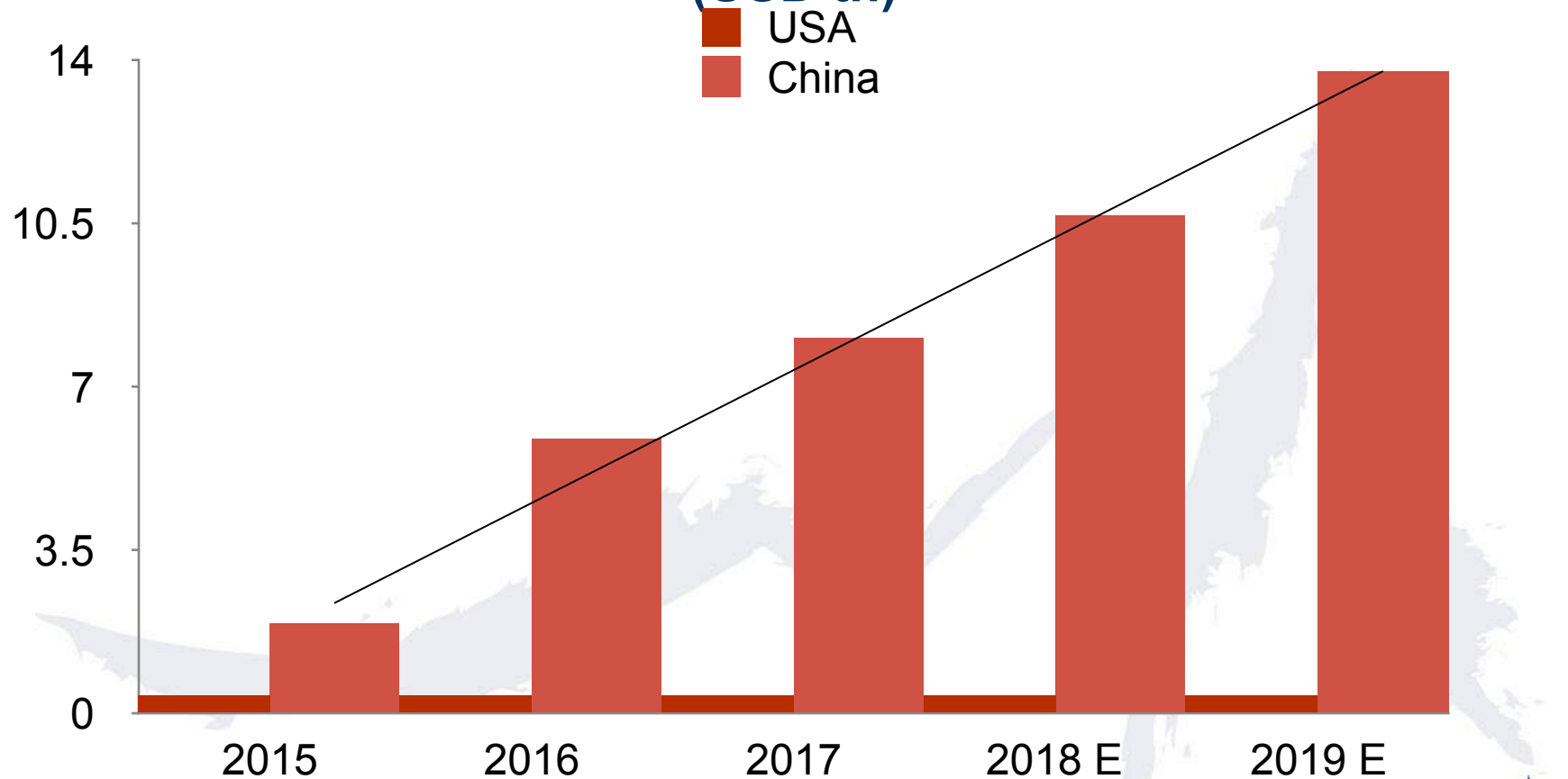
Transition to a Cashless World



Transition to a Cashless World

Transactions Made on Mobile Devices US & China

(USD tn)



Payment Methods in Convenience Stores in Beijing Zhongguancun Area

Union Pay + Debit Card
22%

Apple Pay

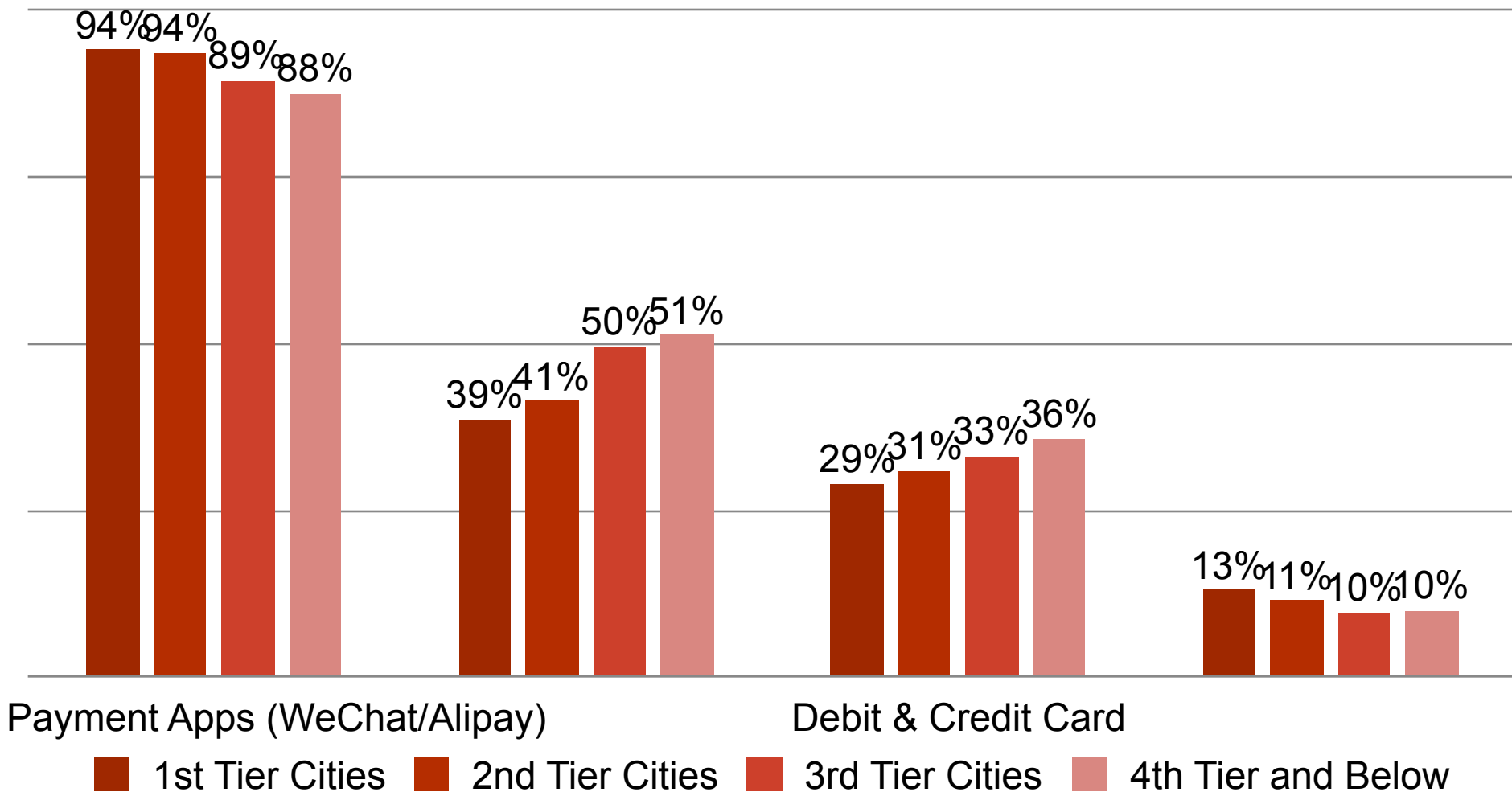
Cash
11%

Alipay + WeChat
67%



- Alipay + WeChat
- Apple Pay
- Cash
- Union Pay + Debit Card

Primary Payment Methods for Offline Purchases

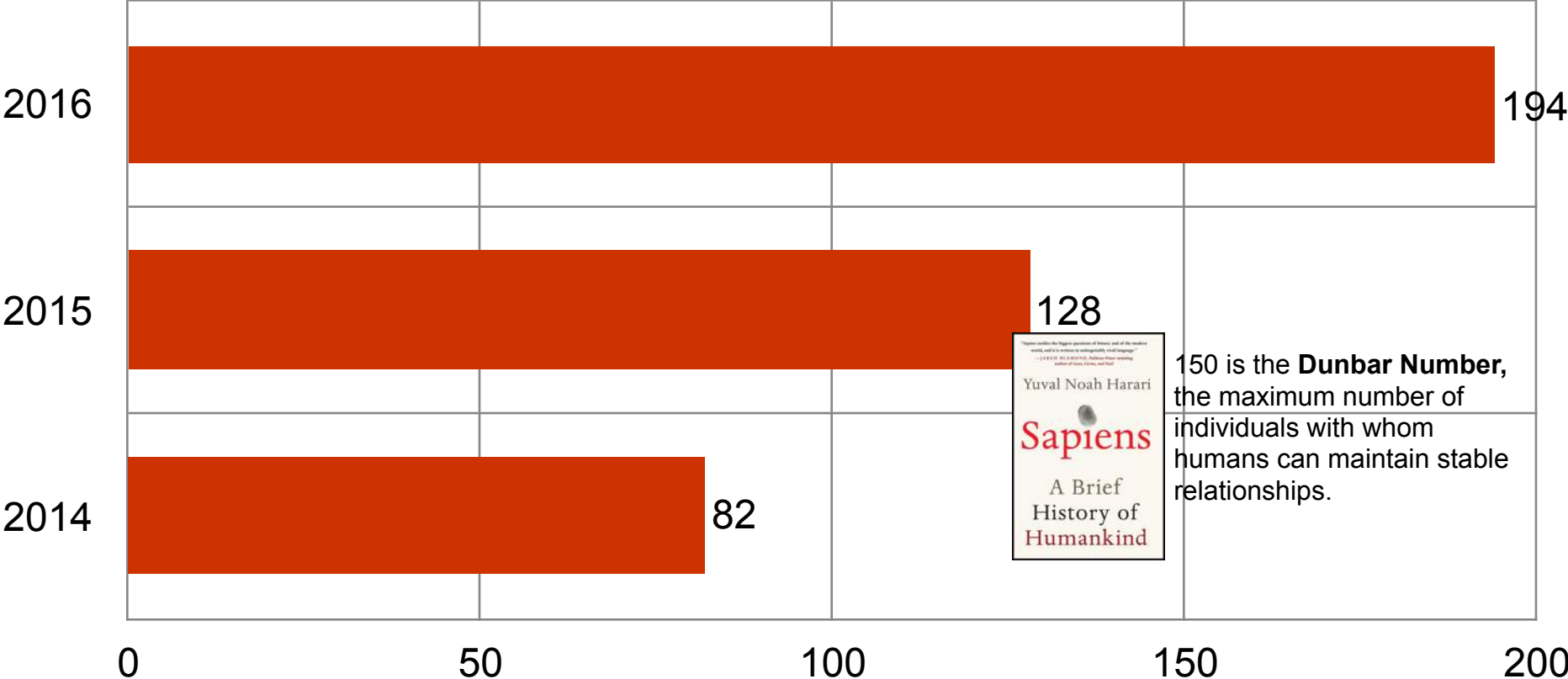


Change #2: Changing and Expanding Human Interaction

Results of Virtual Connections

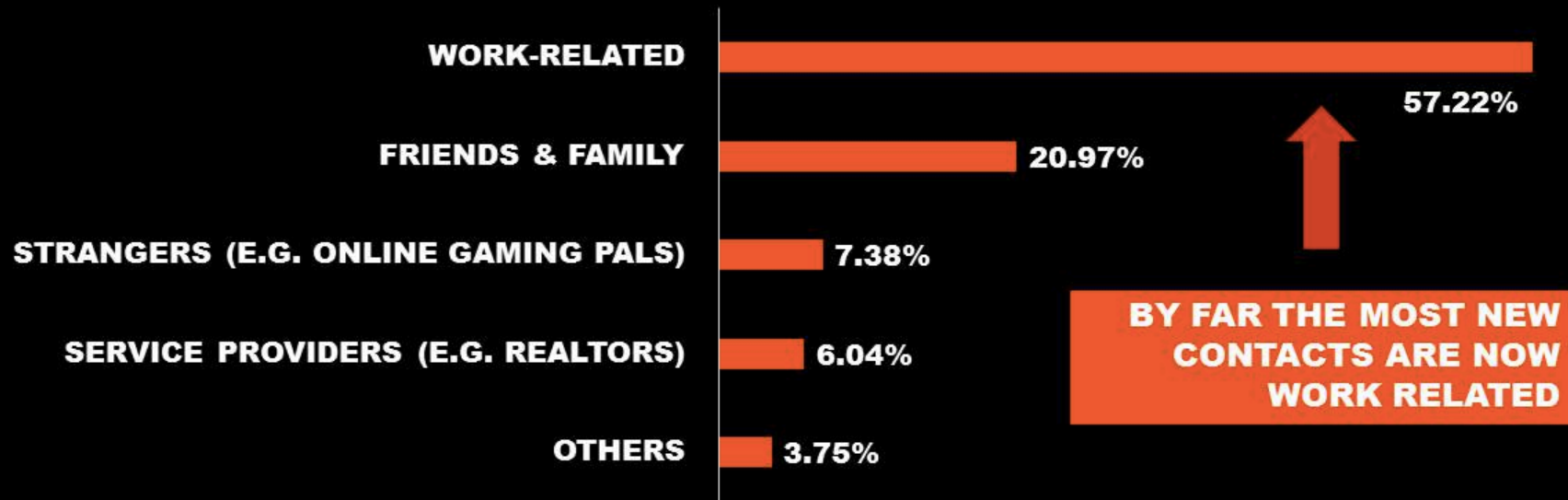
- Facilitate more effective collaborations
- Distribute your fixed amount of social capital to more people
- However, lacks real-time participation in shared experience.

Average Number of Wechat Contacts per User



Social Interaction on Mobile Devices is Increasingly Work-Related

NEW WECHAT CONTACTS

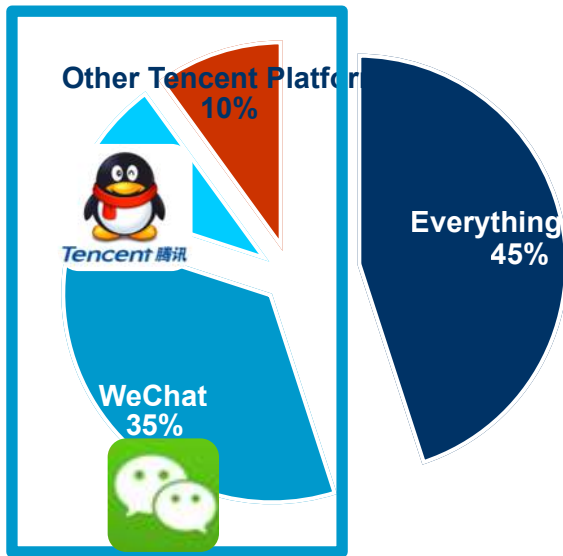


Change #3: Our Lives are Being Integrated With the Apps

- WeChat's capacity is huge. Are our future lives going to be integrated with WeChat as well?
 - Lessons for competitors: Like Alibaba, WeChat has created its very own, **all-encompassing ecosystem**
 - By utilizing big data and cloud technology, mobile devices are not merely tools or robots...they are becoming more and more intelligent.
 - (But, there might be privacy and state surveillance concern.)
 - **Increasing and improving the human/device experience**
-

Time Spent on Mobile in China

TENCENT
owns **55%**
of our
time!



- Everything Else
- WeChat
- QQ
- Other Tencent Platforms

WeChat Official Partners Ecosystem



Knowing Where You Go

**Returning Home On Chinese
New Year**

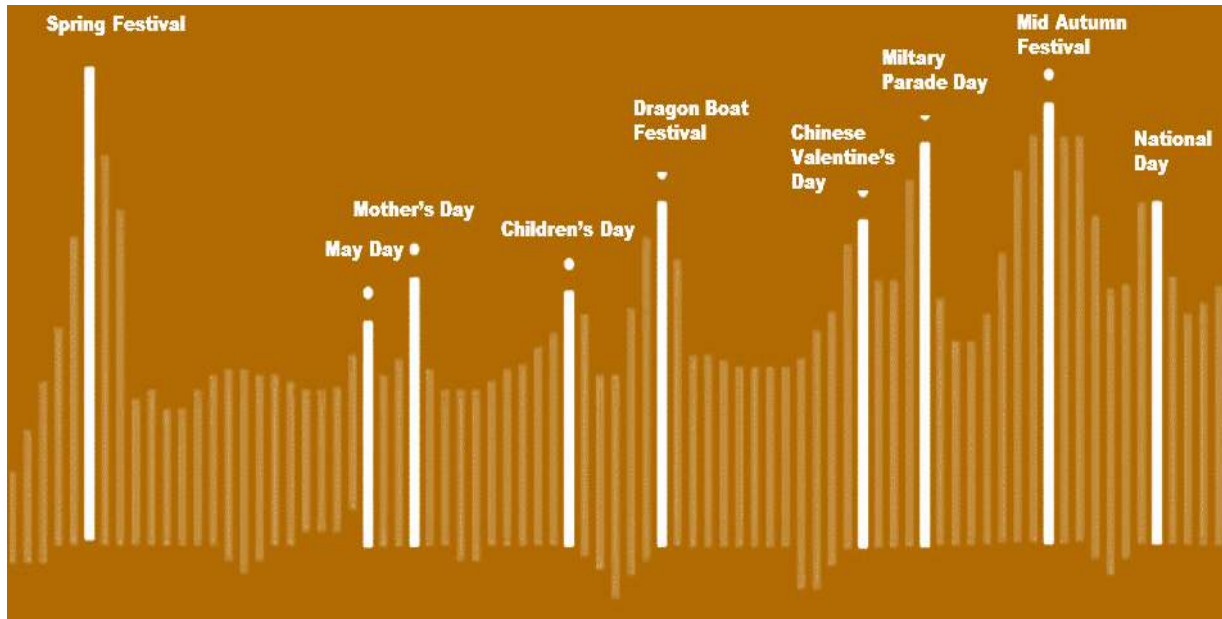


**Back To Work After Chinese
New Year**



...based on location data WeChat can gain an accurate picture of the nation's movement as they travel (However, Big Brother concern?)

Knowing How You Feel



WeChat is able to use **big data and text data mining** in order to measure individual users sentiment across 1 year worth of experiences. A higher bar indicates more positive sentiment. People are happier at weekends. Mondays are the lowest point of their sentiment and the happiest parts of the year are Spring Festival and Mid Autumn Festival.

Knowing What You Think

Voice & video calls traffic on WeChat
within China



The most popular countries that
Chinese WeChat users like to call



1. America
2. Japan
3. Hong Kong
4. Korea
5. Taiwan

...based on aggregated data of video & voice call traffic

Knowing What You Want

Most popular domestic tourist destinations for Chinese during the recent National Day break

平遥古城
南京路步行街
西塘古镇
天安门
夫子庙
西湖
丽江
外滩
鼓浪屿
春熙路
宽窄巷子
解放碑

Most popular international tourist destinations for Chinese during the recent National Day break

台湾
Taiwan
日本
Japan
香港
Hong Kong
美国
USA
泰国
Thailand
韩国
Korea

...based on aggregated data of location tagging moments posts

Knowing What You Like



Most Popular Music 2016



Most Popular Dramas 2016



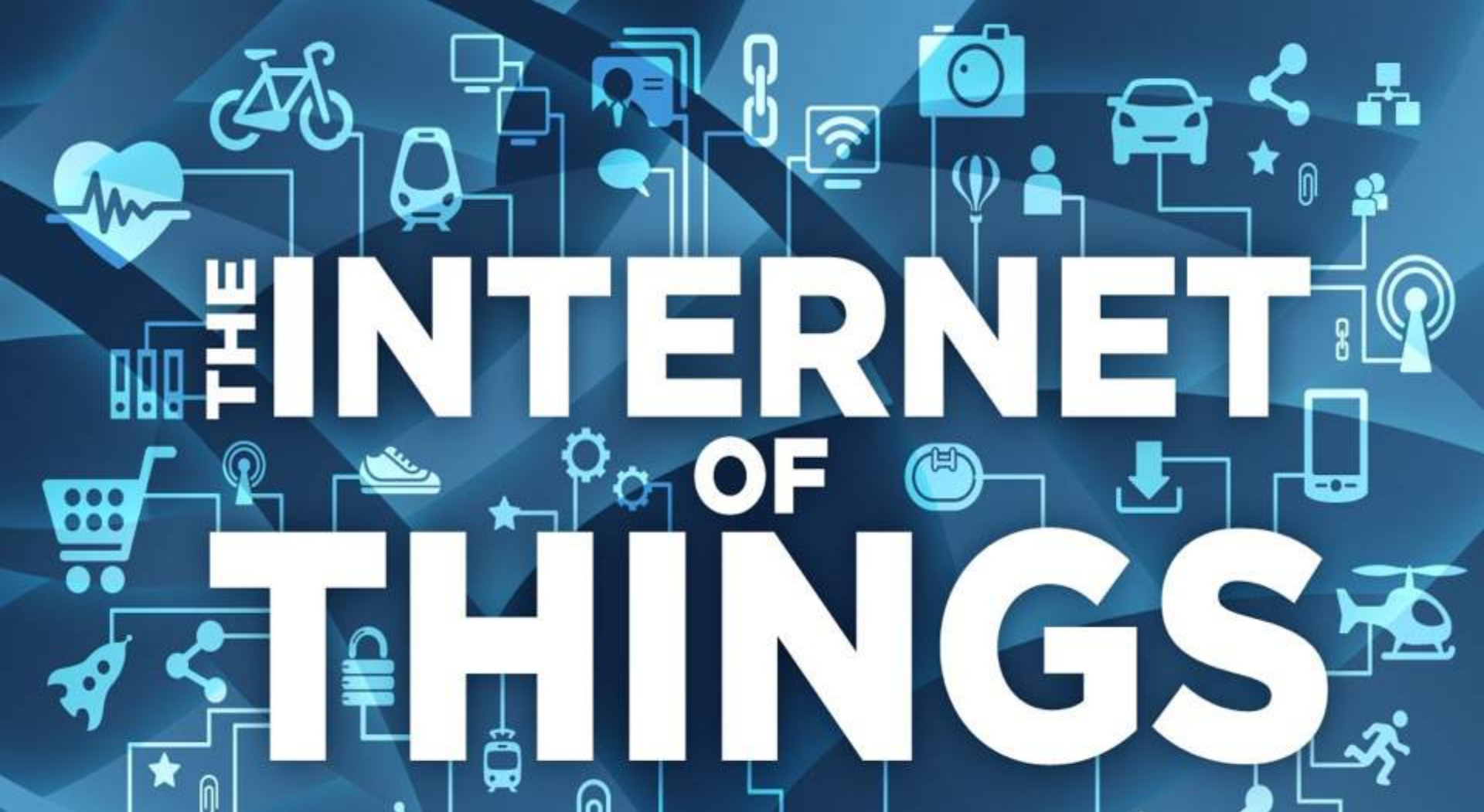
Most Popular Films 2016

...based on aggregated data from WeChat users moments posts

Using Big Data-Derived Insight, WeChat Makes Human Lives Better

- With big data, SuperApps and electronic devices, human life experiences can be improved with customized solutions to address day-to-day pain points





THE INTERNET OF THINGS

- Coffeepots that talk to alarm clocks. Thermostats that talk to motion sensors. Factory machines that talk to the power grid and to boxes of raw material. Devices coordinating activities independently is no longer sci-fi, it's reality.

What is the Internet of Things?

*“The Internet of Things means **sensors connected to the Internet** and behaving in an Internet-like way by making open, ad hoc connections, sharing data freely, and allowing unexpected applications, so computers can understand the world around them and become humanity’s nervous system.”*

~Kevin Ashton
British technology pioneer credited with coining the term
“Internet of Things”

IoT Will Yield a Digital Transformation Larger Than the Revolution of Mobile Devices

- **Core Mechanism:** Connecting everyday objects to internet through sensors that collect usage data
 - Helps us make **changes to systems based on consumer behavior**
 - **Smarter Urban Management/Smart Cities:** Reverse China and world's environmental problems through **enhanced energy efficiency and smart infrastructure**
 - **Change Corporate Business Models:** In the new C2B model, businesses will customize products based on consumer behavior; **consumers will “create” the products**
 - **Massive Digitalization:** Gather data and information and come up with **decisions in the moment**
 - **IoT is reinventing interactions, services, communications**
-



Your alarm rings at 6:00 am; you wake up and switch it off.

As soon as you switch off your alarm, it conveys to the water boiler to heat water at a temperature you prefer and the coffee maker starts brewing coffee!



Smart Home Systems



GARAGE DOOR CLOSES. LIGHTS TURN OFF WHEN YOU LEAVE.

SECURITY CAMERA ACTIVATES ALARM. TELLS OFF-DUTY COP TO COME BY.

MOISTURE SENSORS IN LAWN TELL SPRINKLERS TO TURN ON. SPRINKLERS ALSO CHECK FORECAST TO PREDICT WATER REQUIREMENTS.

BASKETBALL COURT TRACKS YOUR SHOT PERCENTAGE.

DOG TAG TEXTS YOU WHEN ROVER LEAVES THE YARD.

SWIMMING POOL HEATS UP WHEN THERE'S A BARBECUE ON THE CALENDAR.

BABY'S ROOM TRIES TO SOOTHE HIM BACK TO SLEEP. IF THAT DOESN'T WORK, IT TEXTS YOU ...

... AT THE NEXT-DOOR NEIGHBOR'S



THE SMART CITY

Urban development vision to integrate information and communication technology (ICT) and Internet of things (IoT) technology to manage a city's assets (infrastructure and public facilities) and to increase efficiency.

A Programmable City



Healthcare



Energy



Building



Retail



Security



Home



Education



Transportation



IoT



Agriculture

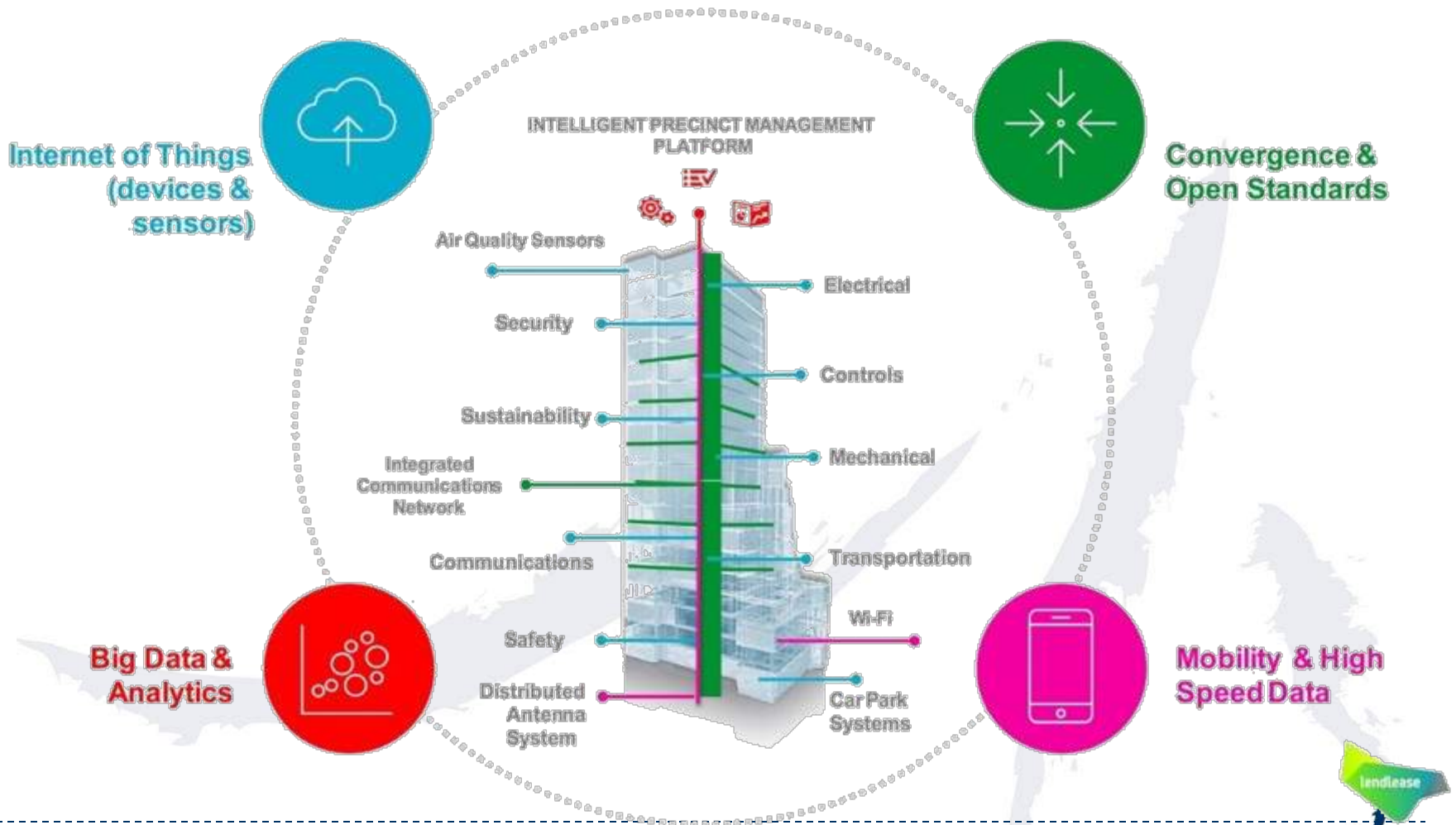


Factory



Cloud Computing

CREATING SMARTER BUILDINGS



It's All About the Sensors

- **Smart Homes for Elderly:** Micro-electric mechanical sensors (MEMS), an accelerometer also found in FitBit that tracks speed and frequency of movement, to monitor health of elderly
- **Smart Waste Bins:** sensors on lid help detect and send location and contents of bin to waste management team; optimize route planning and keep public spaces clean
- **e-Traffic Scan:** GPS that track location and speed installed into taxis to collect traffic information on expressways and roads



The Era of Data Collection

- Ultimate goal is to make the life of the citizens better and more convenient via the interconnection of everyday objects with the internet
- Government collects data from sensors to make adjustments and additions to the system
- “Employing data to anticipate problems” (WSJ)



Singapore is not the Only One



Songdo, South Korea: the world's first smart city - in pictures



Songdo has been built on 1500 acres of reclaimed land.
Photograph: Maria Teresa Bilotta

Yokohama Smart City Project (YSCP)

Establishing a social system that aims to achieve a **30% reduction in CO₂ emissions**

CEMS Community energy management system (CEMS)



HEMS
Home energy management system (HEMS)

Introduced into **4,000 homes**

20% CO₂ reduction
Investment recovery in three years

Visualization of power consumption and testing of demand response system



BEMS
Building energy management system (BEMS)

Introduced into buildings with a combined area of **1.6 million m²**

20% CO₂ reduction
Investment recovery in five years

Implementation of an integrated BEMS and next-generation BEMS

China is Building Hundreds of Smart Cities

- **290 cities** have initiated smart-city pilot projects, and more than **300 cities** have signed smart-city construction agreements with IT companies like Tencent and Ant Financial
- “As construction of smart cities accelerates, the scale of related markets is expected to hit 100 billion RMB.” (China Daily)



The screenshot shows the top portion of a news article on the China Daily website. The header includes the logo 'CHINADAILY.COM.CN' and navigation links for 'HOME', 'CHINA', 'WORLD', 'BUSINESS', 'LIFESTYLE', 'CULTURE', 'TRAVEL', 'WATCHTHIS', 'SPORTS', and 'OPINION'. Below the header, there are sub-navigation links for 'China', 'News', 'Society', 'Innovation', 'HK/Taiwan/Macao', 'Cover Story', and 'Photos'. The article title is 'China's 'smart cities' to number 500 before end of 2017'. The byline reads 'People's Daily Online | Updated: 2017-04-21 09:36'. Social media sharing icons for Facebook, Twitter, LinkedIn, and a plus sign are visible at the bottom right of the article snippet.

WHY SMART CITIES?

This ecosystem is the solution to optimize use of energy resources, which the world, especially China, will need to do save and protect the environment.



China, with 1.3 billion people, understands and needs IoT

- Smart grids will be critical to the energy infrastructure both in cities, to increase **energy efficiency**, and in rural areas, to build energy infrastructure that have yet to exist.
- Smarter infrastructure to **mitigate traffic jams** in cities, will reduce carbon output
- Smart appliances to **cut emissions and energy consumption**
- IoT employed to **increase crop yields** and monitor irrigation, by 2050 worldwide food output predicted to double
- This is only the beginning for China.

**IOT WILL NOT ONLY IMPROVE URBAN MANAGEMENT AND
HOME SYSTEMS,**

IT WILL CHANGE FUNDAMENTAL BUSINESS LOGIC

Alibaba's New Business Model is the World's Future Business Model

- C2B: Consumer to Business
- Consumers “create” the products
- Using behavior data collected through IoT systems, businesses will more accurately customize products addressing consumer needs
- *“We will see a shift to C2B, in other words, it’s all about customisation [...] it is not about cost competition any longer, we have to compete against value.”*
 - ▶ Jack Ma

The Driving Force of Digital Transformation: IoT

- By 2025, the IoT's economic impact could reach **US\$11 trillion**, or **11%** of global economic value, and by 2030 the IoT could influence nearly the entire economy.
- Real value lies in the data collection
 - **1 trillion sensors by 2025: Ubiquity** will allow for information exchange on a global data network
- **Mobile: Digital Revolution** → **IoT: Digital Transformation**
- Massive Digitalization → gather data and information and develop **decisions in the moment**
- IoT automatically gathers data that has never been gathered before
 - Businesses gain knowledge where it was ignorant

Figure 3

Digital Transformation Creates New Business Models

Four Business Models Made Possible by Digital Transformation

As a Service	Resource-Optimized Innovation	Omnichannel Customer Experience	Business Awareness
Digitize your products and offer comprehensive, relevant solutions	Build a resource information repository for your supply chain	Simplify customer interactions by adding value-generating channels to your supply chain	Expand your network of suppliers for greater agility and resilience
Offer services such as leasing, predictive maintenance, smart vending, and data services	Identify resources used in products and components and develop a plan for managing waste	Open the enterprise toward improved customer experiences and co-innovation	Simplify customer interactions with better insight into demand, innovation, and opportunities
	Optimize, retrieve, and reuse resources by tracking and tracing them throughout the supply chain	Close the gap between offline and online experiences	Predict possible disruptions in demand, supply, and opportunities in real time
	Forecast and alert partners about possible resource disruptions	Add partners to the supply chain to improve customer experiences, embrace co-specialization, and benefit from innovation	Combine demand, market, and business data to generate more-accurate forecasts and respond to customer needs quickly
	Design new offerings with an eye on removing inefficiencies, risks, and volatility		
	Share and trade waste within your network or among your partners		

IoT is Reinventing Interactions, Communications and Services

“A decade from now, we will be dependent on the knowledge derived from the continuous stream of data from our wearables and our smart home devices... We will be able to make better informed, more accurate and more timely decisions; and decisions that will improve our lives, save us money, and may even save our planet. The IoT will make the difference.”

~Cees Links, Founder & CEO GreenPeak Technologies

Advanced Manufacturing

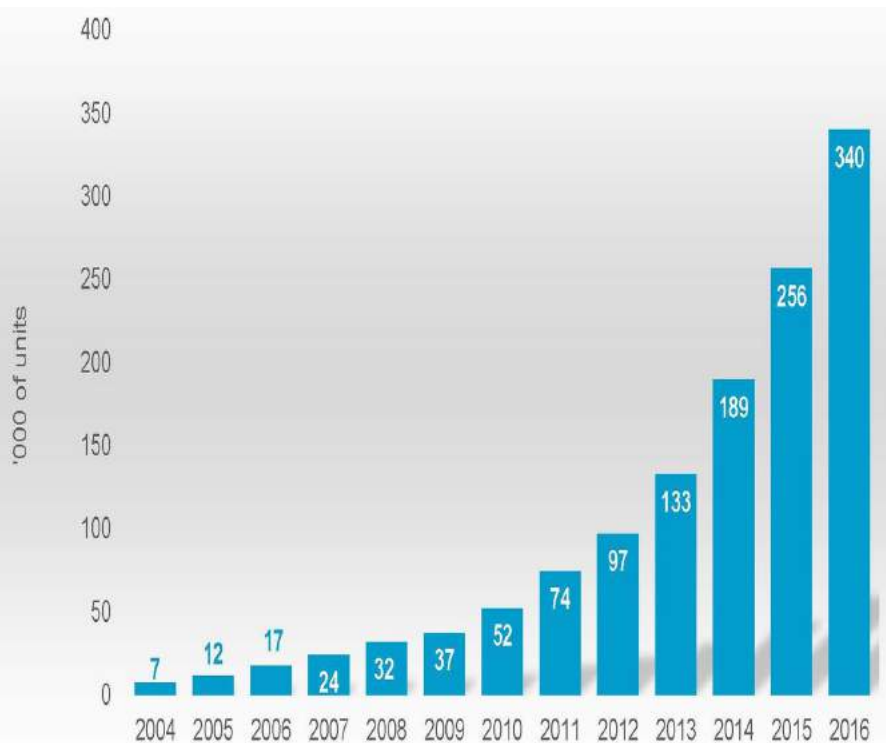
**Complementing and Replacing Labor Across
all Sectors**

-
- **In the next 5 years, China will export 300M manufacturing jobs.**
 - **China is the world's largest investor in advanced manufacturing**
 - **In the future, robots will become the cheapest and most efficient labor force**

Wild Growth Ahead for Robots in China

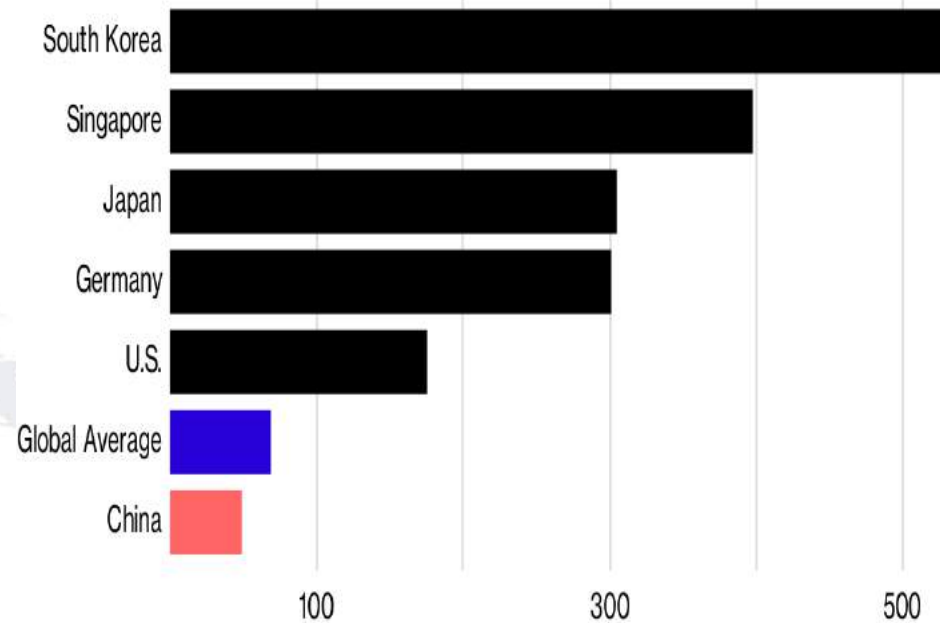
Estimated operational stock of industrial robots in China

(1000 units at year-end)



Robots density in China and around the world

(number of industrial robots per 10,000 persons employed in manufacturing)



Source: International Federation of Robotics

13th Five Year Plan

- Goal to increase annual production of industrial robots to counter increasing labor costs in China
- Reiterates support for “Made in China 2025” and “Internet Plus”, initiatives as key policies to **move up the value-added chain by increasing intelligent manufacturing capabilities**
- China has committed \$150 billion to this gigantic modernization scheme
- Indicates automation investment and developments a **top priority for the PRC government**



Growth in China

In July 2017, Yaskawa, one of the “Big Four” in industrial robots manufacturing, expanded its only overseas robots plant in Changzhou, Jiangsu to boost the output further by 25%.



Source: <http://www.yaskawa.com.cn/news/detail.aspx?id=94>

Honhai (Foxconn) Technology Co.

- Prioritize automation to lower operating costs in Chinese factories as wages continue to rise
- Replaces 60,000 Chinese workers with robots in its global production lines
- Utilizes five “lights-out” factories that are fully automated and require no on-site human presence



ROBOT REVOLUTION

The Long-Term Jobs Killer Is Not China. It's Automation.

 **Claire Cain Miller** @clairecm DEC. 21, 2016

      550



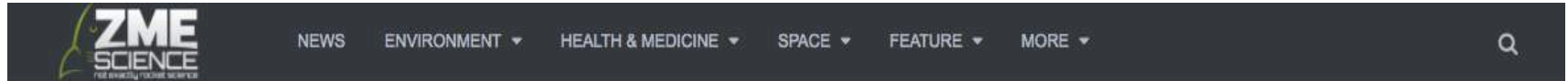
RELATED COVERAGE

-  **FEATURE**
The Great A.I. Awakening DEC. 14, 2016
-  **IN THE FUTURE**
Will You Lose Your Job to a Robot? Silicon Valley Is Split AUG. 6, 2014
-  **ECONOMIC VIEW**
What Would It Take to Replace the Pay Working-Class Americans Have Lost? DEC. 9, 2016
-  **ECONOMIC TRENDS**
The Obama Economy Has Unfinished Business DEC. 15, 2016

“[...] 47 percent of jobs in the US are ‘at risk’ of being automated in the next 20 years.”

**- Oxford University and
Oxford Martin School**

Revolution of Industrial Robots



Chinese factory replaces 90% of human workers with robots.
Production rises by 250%, defects drop by 80%

⌚ LAST UPDATED ON FEBRUARY 3RD, 2017 AT 6:14 PM BY MIHAI ANDREI ✉

One robot replaces ~28 workers at manufacturing company in China, total of 250 workers replaced by 9 robots

- ▶ “cheaper, don’t take sick days, more efficient” ~factory owner



**Industrial robots are taking over
manufacturing labor,
what about the service sector?**



Robot Hotel in Japan



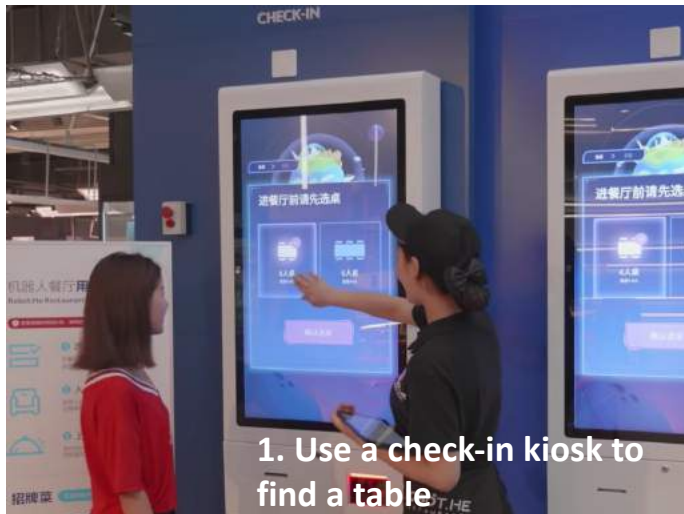
Flippy, the Burger-Grilling Robot

- Debuted March 2017 at a restaurant in California



- Uses thermal sensors, computer vision and attachable tools to cook burgers as ordered

Robot.He – robot waiters in a restaurant



1. Use a check-in kiosk to find a table



3. Carts carrying the prepared food navigate to customers' tables

Opened in July 2018 in Shanghai, in Alibaba's Hema Supermarket



2. Fresh seafood sent for preparation through a conveyor



4. Retrieve the meal from one's table

Today: Robots are Aides

DaVinci Surgical System

- Magnified vision system that gives surgeons a 3D HD view inside the patient's body
- Ergonomically designed console where the surgeon sits while operating
- Patient-side cart where the patient is positioned during surgery
- Wristed instruments that bend and rotate far greater than the human hand



Tomorrow: Robots Could Be Surgeons



- **And it's already happening...first autonomous, soft-tissue surgery performed in 2016**

**“Consistency throughout the performance
was better than
[human] surgeons.”**

The Rise of Automation

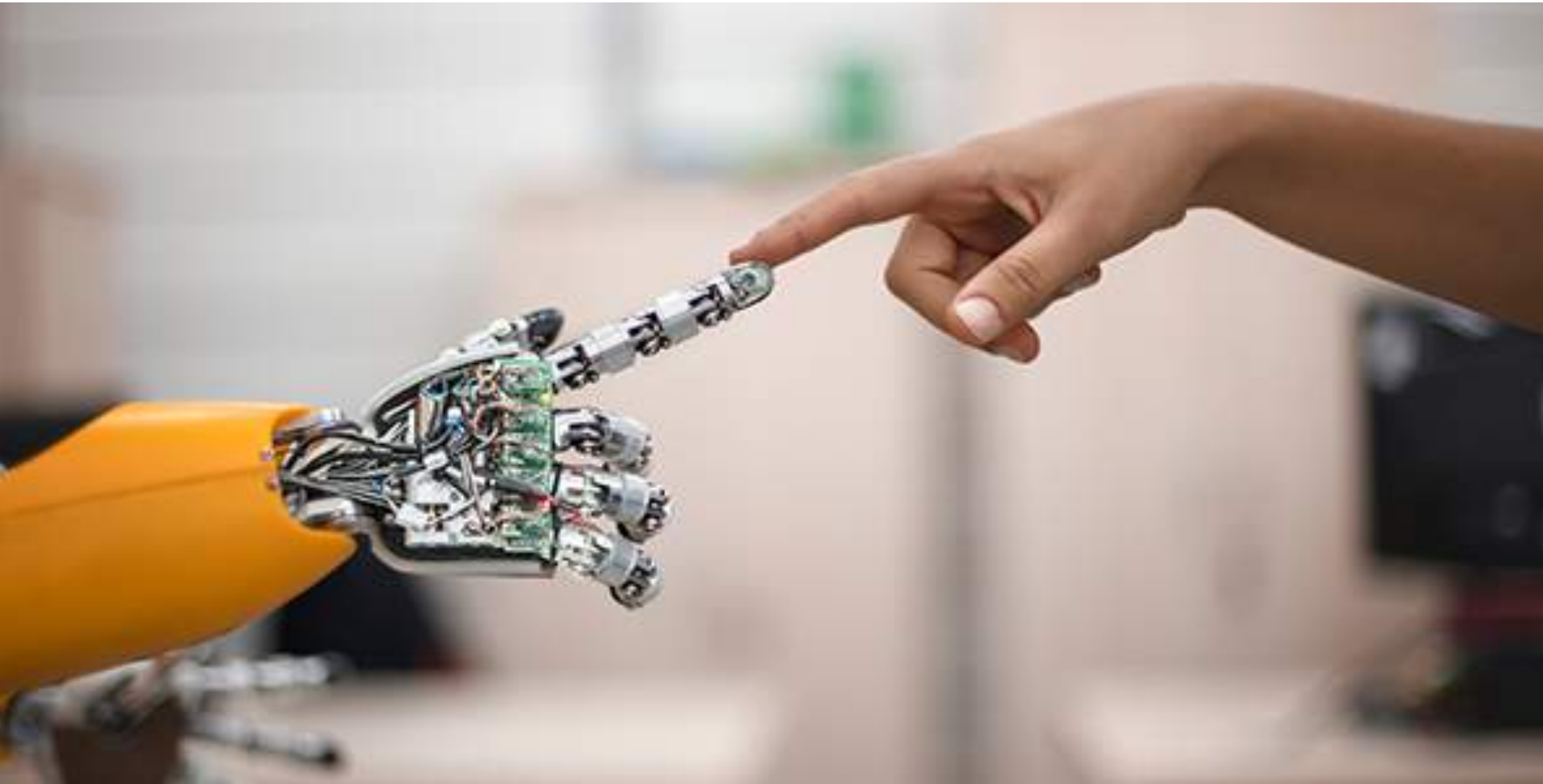
PRO

- Increased precision and productivity
- Faster and stronger
- Cheaper than human counterparts
- Substitute for dangerous and unwanted work

CON

- Unemployment. What happens after the end of jobs?
- Security. How do we keep AI safe from adversaries?
- Singularity. How do we keep in control of a complex intelligent system?
- Inequality. How do we distribute the wealth created by machines?

When Sci-Fi Becomes Reality



Lessons for Us



E-
Commerc
e/-Finance

- Redefin
ing the



SuperApp
s

- Boostin
g user



Internet of
Things

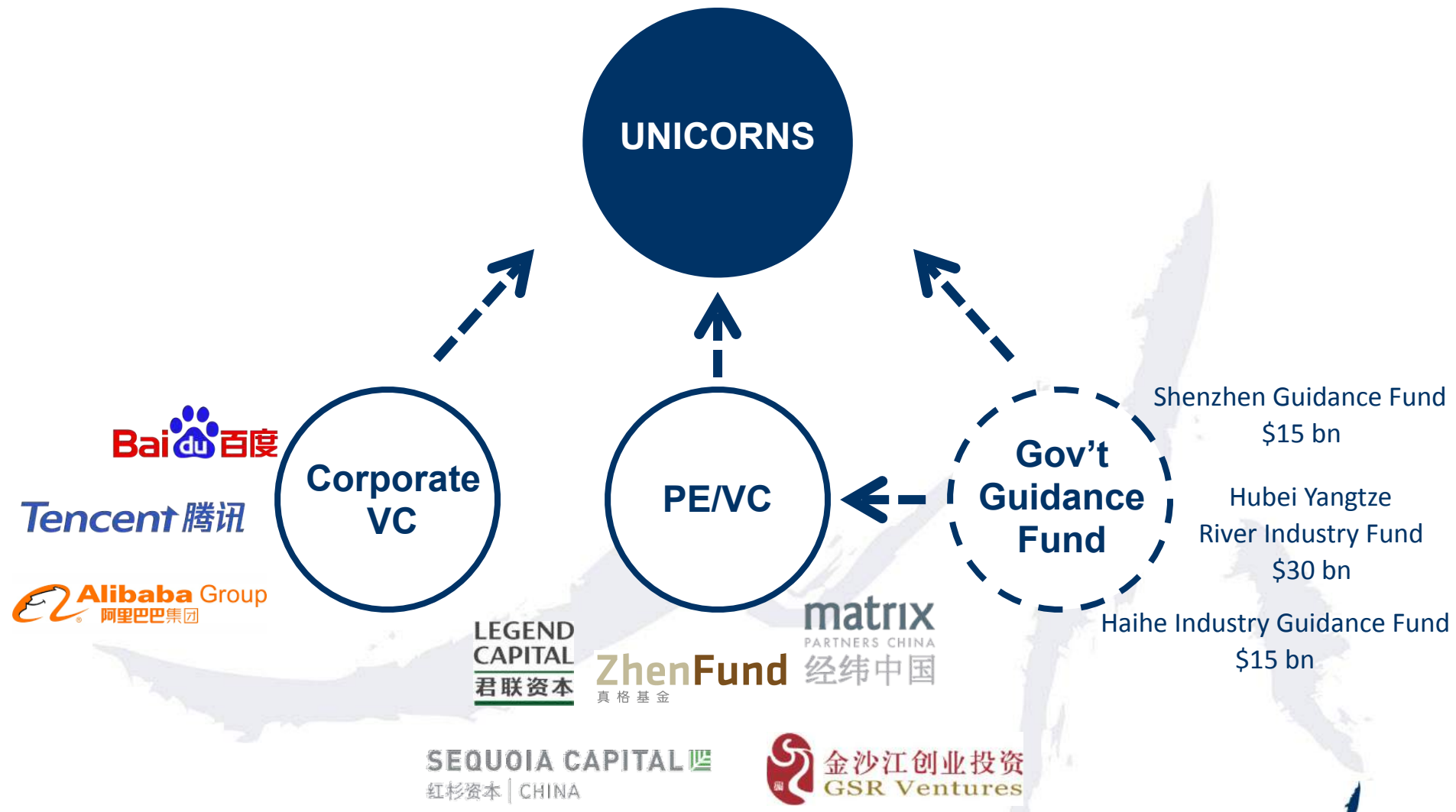
- Revolut
ionizing
Data



Advanced
Manufactu
ring

- Comple
mentin

Capital Behind the Disruptive Innovations



Half of the Largest VC Deals Globally are in China

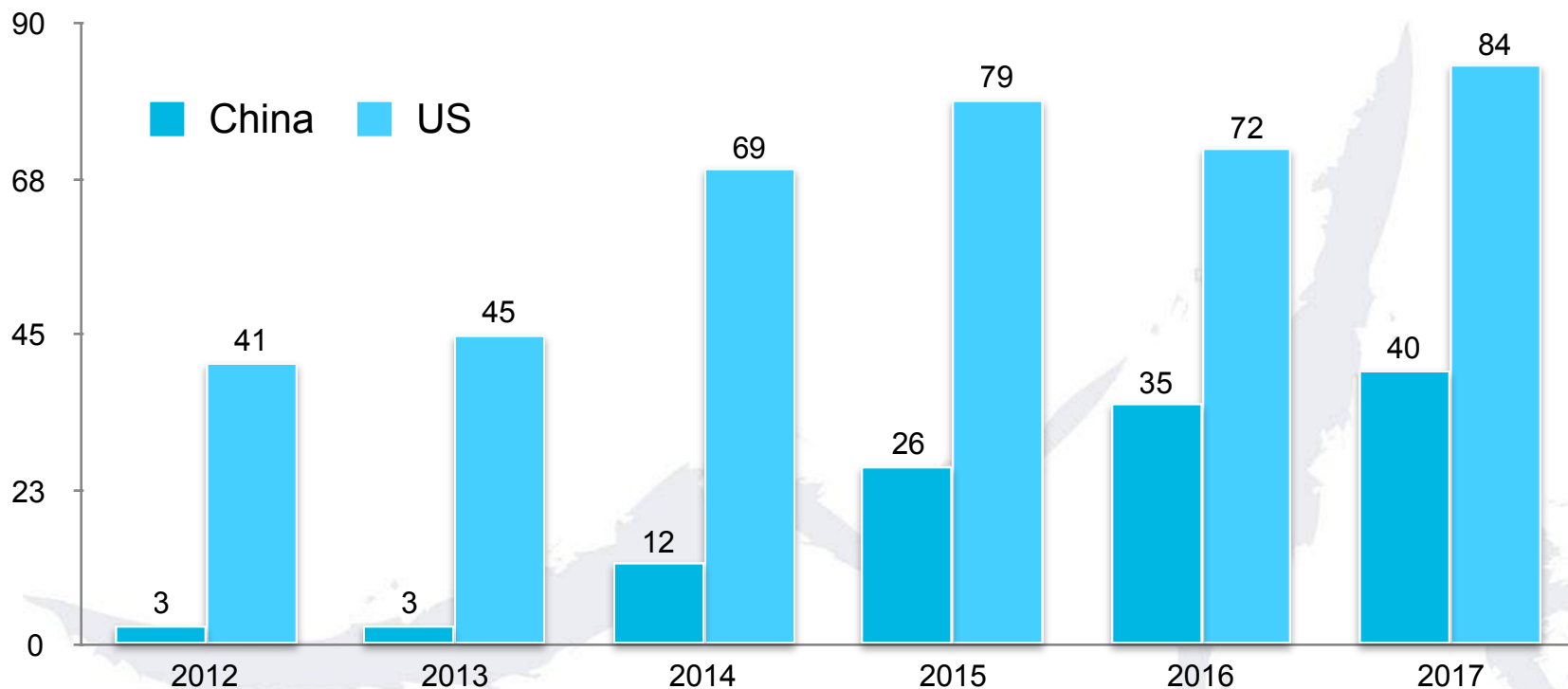
Largest VC Deals Announced Globally in 2017

Portfolio Company	Deal Date	Deal Size (\$ mn)	Location
Didi Chuxing	Apr-17	5,500	China
WeWork Companies Inc.	Aug-17	4,400	US
Didi Chuxing	Dec-17	4,000	China
Meituan-Dianping	Oct-17	4,000	China
Snap Inc.	Nov-17	2,100	US
Grab Holdings	Jul-17	2,000	Singapore
Toutiao	Aug-17	2,000	China

Source: Preqin

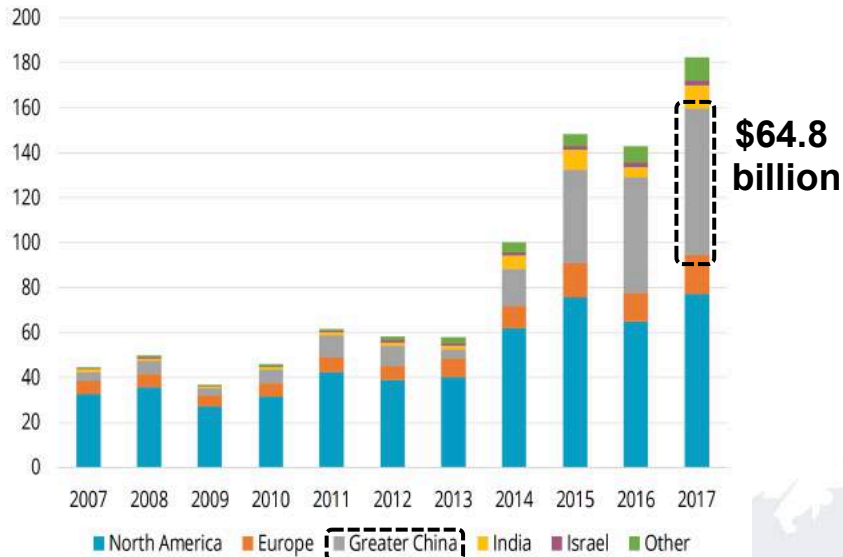
Pitchbook: Venture Financing in China Now Half of that of US

Deal Size of Venture Financing (\$ bn)

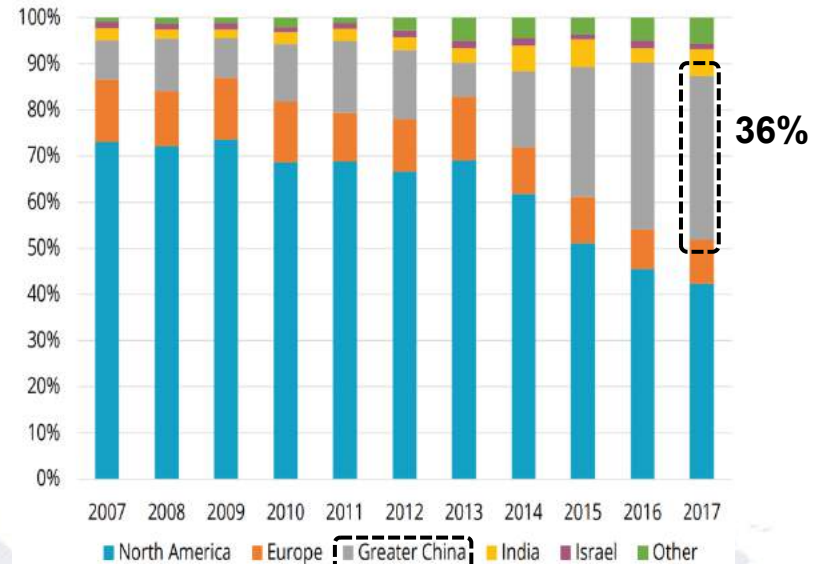


Preqin: Venture Financing in China is 36% of Global

Aggregate Value of Venture Capital Deals (\$ bn)



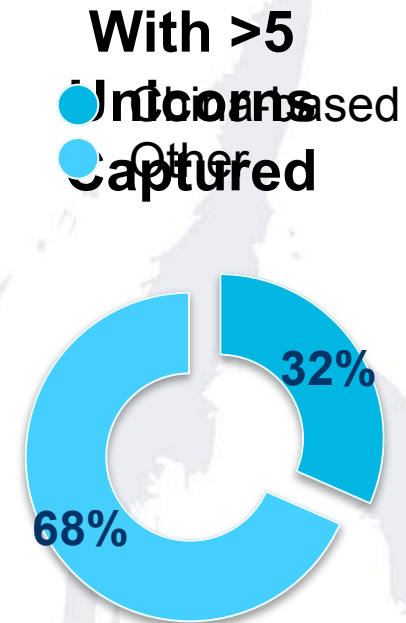
Proportion of Aggregate Value of Venture Capital Deals



...and roughly equal to that of US

Top Institutional Investors Globally in Capturing Unicorns

Institution	Fund Raised	#. of Unicorns
Sequoia Capital	\$13.9 bn	40
Sequoia Capital China	\$3 bn	
Tencent	NA	30
Google	NA	25
Warburg Pincus	\$75 bn	14
Temasek Holdings	NA	14
Accel Partners	\$10.1 bn	14
Alibaba	NA	14
IDG Capital	\$2.9 bn	13
Baidu	NA	12
DST Global	\$1.7 bn	12
Matrix Partners	\$2.3 bn	12
Matrix Partners China	\$1.6 bn	
Khosla Ventures	\$2.8 bn	11
Qiming Venture Partners	\$4 bn	11



Source: Deloitte, Crunchbase

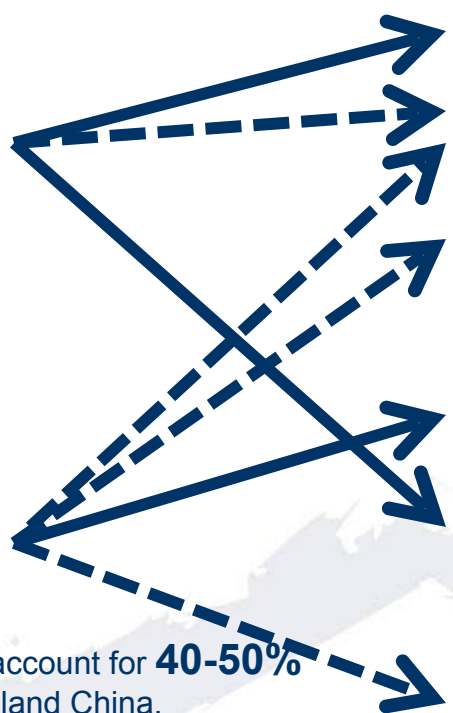
Disruptors Fund the New Disruption

Corporate VC

——> Dominant control
 - - - - -> Investment made



Tencent 腾讯



- Baidu, Alibaba and Tencent account for **40-50%** of venture capital flows in mainland China, compared to 5% for US large tech groups
- Tencent has **\$60 billion** in fund under its management, separate from its balance sheet

Top Unicorns in China

Company	Valuation	Sector
Ant Financial	\$150 bn	Online finance
Didi Chuxing	\$56 bn	Internet services
Meituan-Dianping	\$30 bn	Internet services
JD Finance	\$26 bn	Online finance
Tencent Music	\$25 bn	Culture & Entertainment
Cainiao	\$20 bn	Logistics
Toutiao	\$20 bn	Culture & Entertainment
Kuaishou	\$17 bn	Culture & Entertainment
DJI	\$15 bn	Robotics

Source: McKinsey, FT.com (<https://www.ft.com/content/38a54804-2238-11e8-9a70-08f715791301>)



China's 20 Year Transformation



Copycat



Inventor

China's 20 Year Transformation

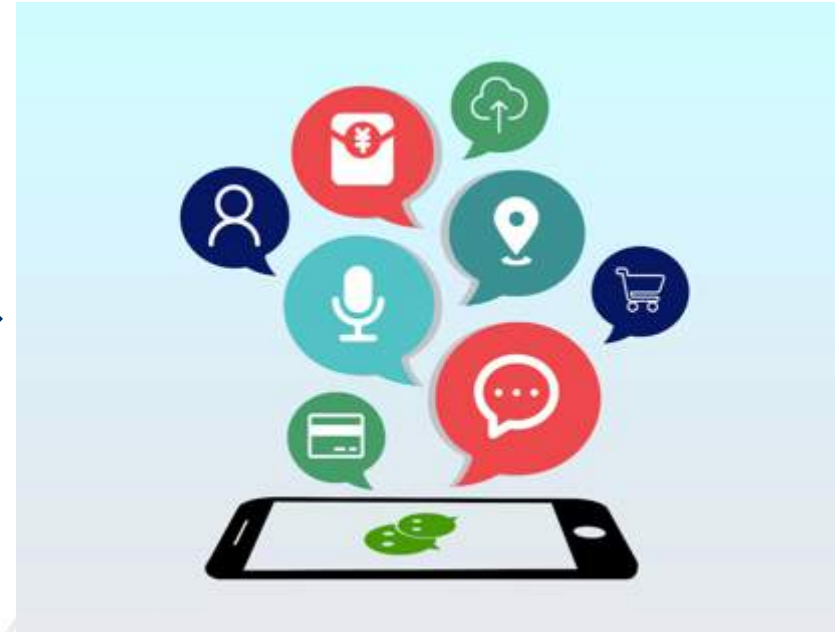


Cheap Labor



Automation

China's 20 Year Transformation



Poor Quality



Advanced
Technology

Chinese Innovations Leading the World

The world according to China's disruptors, 2050



Other countries are following in the footsteps of these Chinese companies. Today, China is the one being copied.

Source: Edward Tse, Gao Feng Advisory Company

What Drives China's Innovation?

- **Decade-long, gradual transition from planned economy to market economy**
 - ▶ Generating discontinuities
- **Society's "pain points" were exposed**
 - ▶ Providing opportunities for entrepreneurs
- **Intense and transformative competition**
- **Massive market scale**
 - ▶ Allowing rapid scale up
- **Prevalence of technology, especially the wireless internet**
- **Concentration of VC, private equity and angel funds**
 - ▶ Overseas and local

What is China's Next Decade?

For Chinese government and companies:

R&D = Key

- Alibaba to nearly triple R&D spending to \$15 billion over three years (Reuters).
- Alibaba will launch 8 research bases in China, Israel, US, Russia and Singapore
- Beijing prioritizes state funding in quantum computing, AI and big data, urging provincial governments, universities, the military and private firms to play a bigger role in developing advanced technology (Reuters).

Are China's Tech Megatrends Relevant to Us?

- **China's entrepreneurial disruptors succeed because they address the pain points of society.**





CAN YOU
TELL ME
ABOUT MY
FUTURE?

HMMM...
I WOULD,
BUT I CAN'T
READ
CHINESE!

Los Angeles
Times © 2013

ENCORE

HORSEY



For More Information

Contact **Nicholas V. Chen** at
nchen@pamirlaw.com

Shanghai: Suite 1205, Baohua Mansion 518 Anyuan Road, Putuo District Shanghai 200040, China

(P) +86-21-3669-6955 | (M) +86-136-0105-2111

Taipei: 7F, No. 214, Dunhua North Road, Song Shan District, Taipei 10546, Taiwan

(P) +886-2-5588-1788 | (M) +886-936-162-555

<https://www.pamirlaw.com>