



Digital Disruption in China's Automotive Industry

*Bill Russo
Edward Tse
Chee-Kiang Lim
Alan Chan*

January, 2016

© 2016 Gao Feng Advisory Company

Preface

Recent advances in the world of mobile connectivity, big data and social networks have infiltrated the traditional realm of the automotive industry and are beginning to redraw the competitive landscape among traditional hardware companies and digital “disruptors”.

The traditional automotive industry, where technology innovation has primarily been focused on powertrain and safety systems, must now contend with new forms of mobility services that are revolutionizing mobility needs. The conventional hardware-centric, sales-driven, asset-heavy and ownership-based business model with sporadic customer interactions is being superseded by more connected, on-demand, cost-effective, personalized mobility services. This new form of “connected mobility” is driving new technologies in the world of navigation, analytics, driver safety, driver assistance and information virtualization.

China’s automotive industry is at the forefront of digital disruption as the transformation is happening much faster in China than that in the rest of the world. The unique context of China’s urban transportation challenge, the high penetration rate of mobile device connectivity, combined with the rapid and aggressive introduction of alternative mobility and ownership concepts will compress the time needed to commercialize smart, connected car technology and related services. These conditions may permit China to “leapfrog” towards a new era of personalized and electrified mobility.

The Origins of Digital Disruption

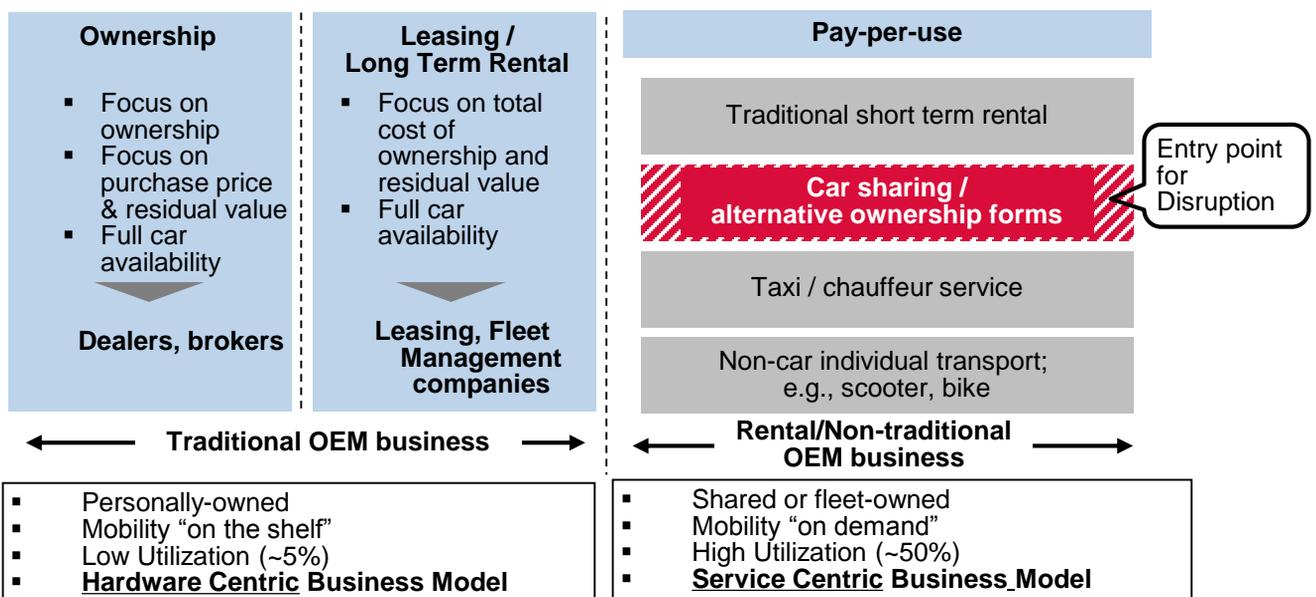
Disruption of traditional hardware-centric business models typically originates from outside the core set of industry players. Traditional Original Equipment Manufacturer (OEM) business models rely on selling products through an established business-to-consumer (B2C) channel, often through an intermediary sales partner that is either owned or franchised to represent the OEM brands in the marketplace. Consumers of the product pay a price to outright own the asset. These customers then assume the cost of ownership and depreciation burden of that asset over time. While OEMs may profit from financing and selling services to the consumer, their

core business focus and purpose is the transaction of hardware sales. OEMs may also offer leasing or long-term rental of the product to consumers as a means of mitigating the residual value and cost of ownership concerns of the end user.

The entry point for the new breed of digital disruptors is through the “pay-per-use” service-based business model (as illustrated in Exhibit 1). While this channel has existed for some time in the form of services managed through centralized professionally managed fleets (Rental car companies, taxi and chauffeur services), digitally disruptive companies such as Uber, and China's Yidao Yongche and Didi-Kuaidi (a merger between Alibaba and Tencent) have gained rapid and widespread market acceptance. Such companies are leveraging a “platform strategy” to dynamically match

Exhibit 1

Mobility Business Model Alternatives



Source: Gao Feng analysis

supply with demand for mobility services, effectively eliminating inefficient middle layers and maximizing the rates of asset utilization.

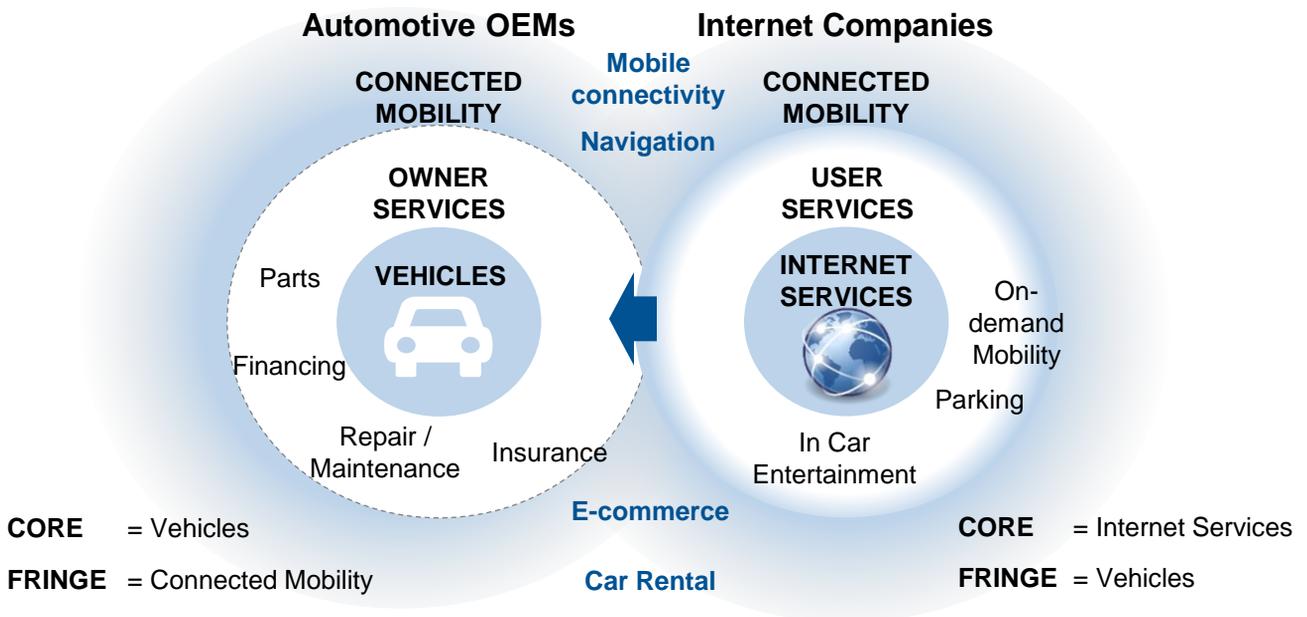
Once an entry point is established, these asset-light, services-centric Internet technology disruptors are able to leverage their big data and analytics capabilities to gain insight on consumers and their mobility patterns and behaviors. The simple illustration of Exhibit 2 captures the concept behind this. Essentially, these disruptors view connected mobility services as a natural extension of their ecosystem platform and are viewing the traditional services and perhaps even the OEM hardware business as a way of expanding their sphere. Serving the "Mobility on Demand" market is merely the point of

entry for an entire suite of Internet-based mobile connectivity services which may include navigation, route planning, e-commerce, vehicle repair and maintenance, usage based insurance, and other very lucrative "owner services" which are very important to today's OEM business.

Internet companies are leveraging connected mobility services as a means to disintermediate the value chain of the automotive industry and capture a profitable services ecosystem. OEMs are at risk of their business model being relegated to a high-risk, asset-intensive, commoditized, business-to-business (B2B) channel for delivering hardware to the profitable ecosystem of the mobility services providers.

Exhibit 2

Internet companies are disrupting the OEM fringe and threatening their core



Source: Gao Feng analysis

Drivers of digital disruption in China

There are three drivers that are accelerating digital disruption in the automotive industry in China.

The first driver is **relentless urbanization**. Since 1978, China's urban population share has risen from 18% to 53%, and is expected to reach 65% by 2025. China's significant economic boom has also dramatically expanded the middle class population and their combined buying power and mobility needs have resulted in a large population of vehicles. Despite the government's effort in urban planning and investment in infrastructure, China's cities have struggled to keep up with the pace of urbanization, leading to major "pain points" associated with vehicle ownership and personal mobility. Chinese entrepreneurial companies are adept at identifying market imperfections and turning these pain points into new mobility solutions.

The second driver is the increasingly **connected lifestyle** of Chinese consumers. There are currently more than 600 million Internet users in China, and over 80% of them are connected via mobile devices. Chinese consumers, especially the tech-savvy younger generation, demand greater connectivity, more accessible services and a more personalized user experience. They are more willing to share their tangible and intangible assets, such as sharing their

car or rides via some online peer-to-peer (P2P) car-sharing and ride-sharing platforms. They are more eager to utilize their fractional leisure time to take part-time jobs for earning extra income and making new friends, such as working as a part-time driver for People's Uber (a ride-sharing service offered by Uber China). While traditional vehicle owners have not challenged the status quo of owning a depreciating asset which sits idle 95% of the time, millennials are embracing the "sharing economy" which offers a consumption-based model that maximizes the utilization rate of resources by sharing them with others on a pay-per-use basis. This shift from owning hardware to consuming mobility as a service has become a major trend in China's urban mobility landscape and is altering the consumption and utilization pattern for mobility in China.

The third driver is **government regulatory intervention**. Several themes are emerging which may accelerate digital disruption in the auto sector. State-owned-enterprise (SOE) reform will gradually open up the highly regulated automotive industry, allowing more private investment into a sector historically dominated by the government. This can spark new partnerships and ventures, especially from China's dynamic and privately owned internet and communications technology firms. The China government is also planning to grant electric vehicle manufacturing licenses to new firms in order to spark innovations in this field. To build sustainable transportation systems, the government is also subsidizing

new-energy vehicle (NEV) adoption and investing in smart cities, Internet of Things and multi-modal transportation infrastructure. The newly announced “Internet Plus” national strategy and “Made in China 2025” plans have signaled China’s ambition to upgrade its traditional industries through digital transformation.

What are the potential disruptions?

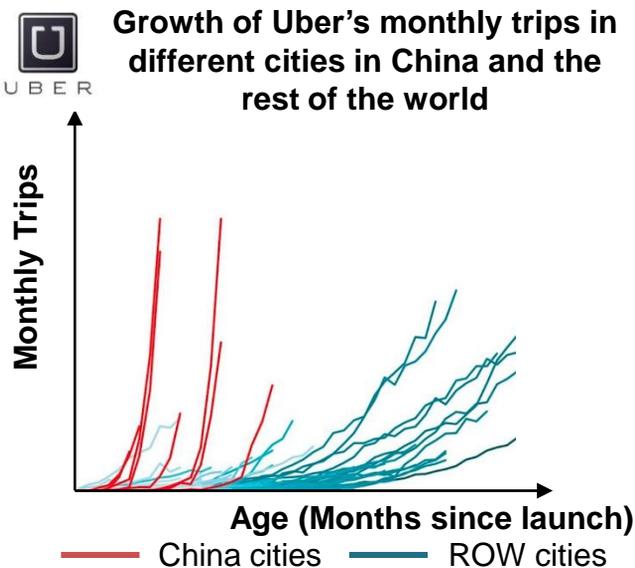
On-demand mobility services in China are not only absorbing the taxi markets, but also impacting the traditional automotive industry. The following are three cases of disruption.

Uber, founded in August 2009, is now valued at more than USD 50 billion as of July 2015. It is positioning itself as a personal logistics company, moving people, goods and services from point A to point B. Covering over 200 cities worldwide, four of the company’s largest cities worldwide (in terms of rides per day) are in China and they are growing at a much faster rate than any other cities in the world. Uber’s CEO, Travis Kalanick, understands the importance of localization and Government relations management in China, saying that he wants to build Uber into a “real Chinese company”. Exhibit 3 illustrates the accelerated acceptance of on-demand mobility services in China.

Didi-Kuaidi, Uber’s major competitor in China, is handling three million rides per day in China. Started as two competing taxi-hailing service platforms backed by

Exhibit 3

The Accelerated Acceptance of Mobility on Demand in China



Exponential Growth of Uber China

- Uber drivers in China are completing almost **1 million trips per day across 11 cities** in China
- **Guangzhou, Hangzhou and Chengdu** have surpassed New York as Uber’s **top 3 cities globally** in terms of the number of rides booked
- In particular, Chengdu is now **479x the size that New York** was at same number of months post launch
- Uber is planning to **invest over USD 1 billion in China in 2015** and is putting China as the “**No. 1 priority**” of its global strategy
- Uber’s valuation has now surpassed **USD 50 billion (July 2015)**

Source: Uber; Gao Feng analysis

Tencent and Alibaba respectively in 2012, they have scaled up aggressively by offering price subsidies to users. After the merger in February 2015, they have extended their service to chauffeur services, peer-to-peer ride-sharing, on-demand shuttle bus and designated driving. As the CEO Cheng Wei recently described, “Didi-Kuaidi aims to create a mobile transport ecosystem that will displace private car ownership and become a part of the daily life of Chinese citizens”.

Another example is **Beijing HengYu New Energy Vehicle Rental Company**, an electric vehicle (EV) car rental joint venture established by Beijing Auto Industrial Corporation (BAIC) and Foxconn. Echoing the Government's initiative to promote NEV adoption, the company has launched an EV-sharing pilot named **GreenGo** in Beijing in 2014. The Ministry of Science & Technology was the first to announce adopting GreenGo as the mobility service for Government's officials, pioneering a “Business-to-Government” model. GreenGo is now available to general public and has set up 30 service points, with over 25,500 members and 1,600 NEVs in Beijing.

These emerging service-oriented players are causing major disintermediation in the automotive value chain in China. Chinese consumers are quickly adopting such concepts as fractional or timeshared vehicle ownership and on-demand mobility services, which address major urban mobility pain points. It shows a fundamental shift from under-utilized, full-time ownership toward more flexible, cost-effective mobility solutions.

Different from the automakers' traditional business model that emphasizes on one-off vehicle sales, dealership network and hardware technological research and development, these new players are service-centric, Internet-enabled, platform-based, dynamically matching demand and supply, asset-light with high utilization rate of resources, and data-driven. Leveraging big data and analytics, they are attempting to achieve “segmentation of one” – offering personalized services to each individual consumer. It allows them to build a sticky, subscription-based service platform that is capable of generating recurring revenue from value-added services.

Facing potential disruptions, traditional auto manufacturers and suppliers will have to answer the following strategic questions:

1. What will the future automotive industry look like?
2. How will the vehicle ownership model change in China and what are the economic impacts of disruptions? What does this mean for our business in China and globally?
3. What role should we play in the future mobility ecosystem? What are the capability gaps? What does it take to leapfrog?
4. How can we expand from our traditional product-driven perspective and adopt a user-centric mindset to innovate new service-oriented business models?
5. Should we partner with Internet technology companies to jointly build a digital mobility ecosystem? What is the collaboration model?

Chinese business model innovations

Leading Chinese digital giants – Baidu, Alibaba, Tencent and Xiaomi - have formed ecosystems to leverage complementary capabilities across multidisciplinary business partners and business divisions.

Alibaba, the leading e-commerce giant in China, has established the Alibaba Automotive Division. It leverages its own digital ecosystem of online-to-offline (O2O) services (e.g. automotive e-commerce, online payment and entertainment services) to tap into the automotive aftermarket. It has a comprehensive portfolio of solutions and partners that can provide a holistic suite of services covering the end-to-end vehicle ownership lifecycle and mobility value chain. In March 2015, it announced partnership with Shanghai Automotive Industry Corporation (SAIC) and jointly invested USD 160 million to develop connected cars.

Tencent, the largest online social and gaming company in China with over USD 200 billion market capitalization, has teamed up with Foxconn (a major manufacturing partner of Apple) and China Harmony Auto to develop smart electric cars. Tencent has also partnered with People's Insurance Company of China (PICC) and Shell to launch LuBao, an on-board diagnostics (OBD) device that captures driving data for the purpose of usage-based insurance (UBI).

Similar cross-boundary collaborative partnerships between automotive and Internet companies are prevalent in China. Further examples include Beijing Automotive Industry Holding Co., Ltd. (BAIC) and LeTV (an online media content producer and distributor); BAIC and Didi-Kuaidi; Chery, Pateo and Yidao; BMW and Baidu and Baidu and Uber.

By building ecosystems, they are able to jump over capability gaps and leapfrog to emerging opportunities that were previously beyond the boundaries of their core competencies. We call this a “multiple-jumping” strategy¹. Such ecosystem play attempts to create additional value through synergistic relationships and co-evolution with the partners.

With these diverse forms of business models and partners coexisting in one ecosystem, these firms enjoy strong network effects and create stronger entry barriers – of course, up to certain limits – making it more difficult to be disrupted by other new or incumbent disruptors.

¹ *China's Disruptors*, by Edward Tse, Portfolio / Penguin, 2015

Implications for Global Companies

As China ushers in a new era of personalized mobility, driven by the rise of on-demand mobility services and technological advancement in electrification and “Vehicle to Smart Device” (V2X) connectivity, how will it affect global automakers, suppliers and other players in the value chain? How should they position themselves to cope with disruptive forces that are reshaping the rules of competition?

Essentially, automakers and suppliers should consider positioning China at the core of their global strategy. China's massive market size, coupled with a consumer demand for connectivity while backed by a strong push by the Government, are prompting the exponential rise of on-demand mobility services and thereafter New Energy Vehicle (NEV) adoption. Vehicle manufacturers should leverage this growing opportunity in China to expand their core hardware business to include emerging smart and Internet-connected new mobility services.

Tier 1 spare parts and electronics suppliers must work closely with automakers to understand the latest Chinese consumer trends as well as their evolving mobility needs. They must be able to answer such questions as “What is the future of connected mobility?”, “What are the driving forces in China that influence consumers' mobility needs and

habits?”, and “What does the future connected lifestyle look like?”.

The next generation of vehicles designed for on-demand mobility services and car sharing will not only be optimized for high utilization and cost-effective maintenance, but also for the efficiency and convenience of delivering goods, services and people. This will fundamentally change the demand profile for hardware suppliers.

There are already many collaborations in the auto industry. Besides forming JVs with Chinese automakers to develop NEVs such as the Daimler-BYD joint venture to produce the Denza EV and the BMW-Brilliance Zinoro brand, global automakers are also working with Chinese technology companies and adapting their vehicles to market-specific requirements in China. The following are some examples:

- Ford has announced that it is making its vehicles compatible with Tencent's Chelian, and enabling QQ, music, streaming video, and other services to be available to Ford owners while in the car
- BMW and Baidu are teaming up to research and develop autonomous vehicle technologies and prototypes
- Audi, Mercedes, Hyundai and Shanghai GM have teamed up with Baidu to integrate CarLife with their in-vehicle infotainment systems – a system comparable to Android Auto from Google or CarPlay from Apple

Outside China, global automakers are in a constant quest for global strategic partnerships to strengthen their leadership in connected mobility solutions. For example, Daimler, BMW and Audi came together to buy the software company Here, a global leader in the mapping and location intelligence business, from Nokia. This joint acquisition signals their quest for strategic leadership in cartography and mapping software intelligence, a crucial competence to guide the future generations of autonomous vehicles. In order to establish this mapping intelligence as a global open platform, the German OEMs have invited Ford, Fiat Chrysler, General Motors, Toyota, Renault and Peugeot Citroën to co-invest in the future development of Here.

Global automakers, suppliers and mobility solutions providers are in a strategic race for multiple partnerships in the connected mobility market in China, competing and cooperating simultaneously with partners like Baidu, Huawei, Alibaba, Tencent, Google, Apple, and others. Given the disruptive nature of the Chinese market, where both NEV development and digital ecosystem players like Alibaba (Ali Auto Division, Alipay, Taobao, Tmall etc.) are demonstrating “multiple-jumping” patterns to launch new services within cross-industry alliances, and foreign players like Google and Apple are still trying to form robust systems in China, there are some key challenges to consider for global automakers before entering the connected mobility space:

- **Embrace an “Internet mind-set”** to cope with speed, innovation and ambitions of Chinese entrepreneurs to create disruptive business models. Develop capabilities to compete in an ambiguous and uncertain environment, while simultaneously driving forward and innovating in a win-win-win (win-X) ecosystem of shared customer loyalty between asset-based and data-based intelligence.
- **Co-develop a new shared data ownership and data security governance model** to maximize command over “computers on board” and the embedded software. Today's automobiles can have up to 100 microprocessors in the engine control unit, airbag module, instrument panel, ABS module, transmission controller, telematics unit, and other systems which control safety, quality, emissions and entertainment performance. Mobile connectivity is also key to supporting real time diagnostics and scheduled maintenance. Future generations of self-driving cars with collision avoidance systems will greatly increase the importance and complexity of on-board software and hardware. Simultaneously, the diversity of Chinese Internet of Vehicles (IoV) car services providers (car sharing, navigation services, auto insurance, web credit, finance/ leasing services, software applications, cloud services, multimedia services, etc) will

require access to the central car computer bus in order to offer “big data” derived services to the driver and the passengers in the car. Thus, co-development of a shared/ collaborative data security and privacy governance framework between relevant global and Chinese IoV partners will be needed to deliver high-quality and secure solutions.

- **Managing multiple partnerships within competitive and cooperative Chinese mobility ecosystems** and considering national initiatives such as the “Made in China 2025” and “Internet Plus” programs, to deliver vertical, horizontal and vertical-horizontal connectivity solutions.

Business model transformation often requires new organizational capabilities. Global automakers should embrace a start-up mindset which encourages internal corporate innovations, trial-and-error experimentation, autonomy, and open crowd-sourcing of ideas and resources. It requires a team of visionary leaders who are able to recognize future opportunities and take bold risks in a chaotic environment. It also requires significant joint efforts and alignment between the China team and global headquarters. Finally, building collaborative partnerships with local Chinese companies, effective Government relationship management, and hiring local entrepreneurial talent are also critical to success.

Digital disruptions in China's automotive industry are real and happening right now. China is the major battleground for dominance of the 21st century automotive industry. It is also an incubator for disruptive business model innovations. Digital technology is driving the future of the automotive industry, and the commercialization pathway for these technologies will travel through and may indeed originate in China. Global automotive manufacturers and suppliers must act now in order to ensure they remain relevant in the future world of smart and connected mobility.

About the authors

Edward Tse is founder and CEO of Gao Feng Advisory Company. A pioneer in China's management consulting industry, Dr. Tse built and ran the Greater China operations of two leading international management consulting firms for a period of 20 years. He has consulted to hundreds of companies – both headquartered in and outside of China – on all critical aspects of business in China and China for the world. He also consulted to the Chinese government on strategies, state-owned enterprise reform and Chinese companies going overseas. He is the author of over 200 articles and four books including both award-winning *The China Strategy*(2010) and *China's Disruptors* (2015) (Chinese version «创业家精神»).

Bill Russo is Managing Director and the Automotive Practice leader at Gao Feng Advisory Company based in Shanghai. With 15 years as an automotive executive, including over 11 years of experience in China and Asia, Mr. Russo has worked with numerous multi-national and local Chinese firms in the formulation and implementation of their global market and product strategies. He was previously Vice President of Chrysler North East Asia, where he managed the business operations for the Greater China and South Korea markets. Prior to this, Mr. Russo was Head of Product & Business Strategy for Chrysler. He also has nearly 12 years of experience in the electronics and IT industry, having worked at IBM Corporation, and formerly served as Vice President of Corporate Development at Harman International.

Chee-Kiang Lim is a Principal at Gao Feng Advisory Company. He has over 18 years of experience, including 10 years of consulting experience in strategy development and operational improvement for large multinational corporations. He has advised the Singapore Government on its Smart City strategy and implementation. Besides consulting for various automotive clients in China, he also has deep expertise in the oil & gas, mining and high-tech industries in China, Southeast Asia and Australia. He has previously worked in telecoms and high-tech start-ups in the Boston area and the Administrative Service of the Singapore Government.

Alan Chan is a Senior Consultant at Gao Feng Advisory Company based in Shanghai. He specializes in digital strategy, business model transformation and innovation implementation. He has worked in both multinational organizations and start-ups across the Chinese Mainland, Hong Kong and the United Kingdom.

Gao Feng Advisory Company (www.gaofengadv.com) is a pre-eminent strategy and management consulting firm with roots in China coupled with global vision, capabilities, and a broad resources network. We help our clients address and solve their toughest business and management issues -- issues that arise in the current fast-changing, complicated and ambiguous operating environment. We commit to putting our clients' interest first and foremost. We are objective and we view our client engagements as long-term relationships rather than one-off projects. We not only help our clients "formulate" the solutions but also assist in implementation, often hand-in-hand. We believe in teaming and working together to add value and contribute to problem solving for our clients, from the most junior to the most senior.

Our senior team is made up of seasoned consultants previously at leading management consulting firms and/or ex-top executives at large corporations. We believe this combination of management theory and operational experience would deliver the most benefit to our clients.

Our name Gao Feng is taken from the Song Dynasty Chinese proverb Gao Feng Liang Jie. Gao Feng denotes noble character while Liang Jie refers to a sharp sense of integrity. We believe that this principle lies at the core of management consulting – a truly trustworthy partner who will help clients tackle their toughest issues.

