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Dianrong: Marketplace Lending, Blockchain, and "The New Finance" in China

Technology is the DNA of Dianrong.

— Soul Htite, Founder & CEO of Dianrong

Soul Htite, Founder and CEO of Dianrong, one of the largest online peer-to-peer (P2P) lending platforms in China, completed his speech with a smile on his face. He was one of the key speakers at RISE in Hong Kong, a preeminent technology conference in Asia, and talked about Dianrong's recent fintech initiatives, which aimed to create better financial service offerings using technology. Considerable progress had been made at the company, but Htite's mind remained fixated on the recent issues that the company had been confronting.

On July 12, 2017, Dianrong announced the acquisition of the asset-origination operations of Shanghai-based Quark Finance, augmenting Dianrong's asset management capabilities across China.[1] Quark Finance operated 71 borrower service centers in 47 Chinese cities, providing comprehensive loan underwriting data collection and servicing. The acquisition also included Credit Studio, a platform providing data analysis through automated and human interactions to achieve mass-production credit evaluations and processing.

In March 2017, Dianrong had also announced the development of **blockchain technology**[a] for supply chain finance.[2] Blockchain, a frontier technology that had generated a lot of hype around the world, especially in the fintech space with US$ 1.53 billion of investments from banks, business and governmental organizations from 2013 to 2017,[3] was rapidly gaining prominence. Dianrong aimed to create the first blockchain platform for supply chain finance in China. The goal was to provide capital to smaller suppliers in the supply chain, and provide enhanced visibility and transparency of supply chains for large multinational manufacturers.

[a] Blockchain was a self-sustaining, peer-to-peer ledger technology with an integrated set of computer codes for managing and recording transactions without the involvement of any central authority. (See the "Blockchain Note" of Harvard Business School by Prof. David Yoffie for more details.)

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The company had made several recent forays into other related sectors, with their creation of "DR Group" as an umbrella corporate structure that included all wholly-owned businesses, joint ventures, and partnerships. This rebranded group structure encompassed the various aspects of "The New Finance," leveraging fintech innovation to deliver value for borrowers, lenders, and investors. The DR Group included the flagship Dianrong operations in China, as well as other regional and global business activities. (See **Exhibit 1** for more details.) However, whether the company should pursue diversification aggressively at this stage in order to capitalize on the current market opportunities was far from certain. Recent advances at the company, while promising, were complicated by the uncertainties in the political and regulatory landscape. The Chinese government had recently announced sweeping reforms for the P2P lending market. While Dianrong had robust compliance systems in place, the general perception and market sentiment towards the sector were not favorable, as the domestic Chinese market had recently witnessed a wave of fraudulent cases in the P2P sector, including Ponzi schemes and investment scams that took advantage of investors.

Dianrong found itself at a crossroads. How should the company leverage its advantage in technology and position itself in the market? Which sectors within its larger umbrella structure were the most promising avenues to focus on? Was Dianrong tackling too many sectors and problems at once? Htite's view was that in order to truly succeed in China a technology company had to "create" much of the ecosystem and infrastructure oneself, as opposed to in the US where companies could simply "provide add-ons" to existing firms and capabilities. But the reality of trying to excel in so many different areas was daunting. Taking a seat at the front row at the RISE conference, Htite took a sip from his coffee cup, and started to prepare for his upcoming investor meetings.

Industry Overview

The Traditional Banking Industry in China

Based on statistics from a Bank of China research report, assets and liabilities of China's commercial banks posted double-digit growth rates of 15.6% and 15.3% from RMB 155.8 trillion (US$ 22.6 trillion) and RMB 144.3 trillion (US$ 20.9 trillion) respectively as of the end of 2015,[4] while the economy continued to grow at a stable yet slower pace of 6.7% in the third quarter of 2016.[5] The banking system handled savings deposits of RMB 49 trillion (US$ 7 trillion),[6] and the assets of the five major Chinese banks[b] accounted for 55% of total bank assets.[7] However, the outlook of the traditional banking industry was drawing concerns, as the majority of China's banks were state-owned, and capital naturally flowed directly to large state-owned enterprises, which crowded out the funding for small and medium enterprises (SMEs) that were increasingly starved of credit to grow. According to the 2016 Blue Book of Internet Finance, China's slowing economic growth did not bode well for SMEs, and had potentially contributed to an "increase in the risk of loan defaults."[8] Not only was the application process for a bank loan tedious, complex and time-consuming,[9] traditional banking services relied heavily on the build-out of physical branches with highly-trained professionals and financial advisors servicing clients. The banks tend to focus on working with SOEs or real- estate companies on large deals so their underwriting and operational costs can be diluted over a larger loan amount, and SMEs and individuals were often underserved.

Problems in the Chinese financial sector were further compounded by the lack of an appropriate system-wide credit-profiling mechanism. China's Credit Reference Center was currently in charge of the nation's credit-profiling system.[10] While profiles of over 800 million individuals had been collected,

[b] The five major banks were the Industrial and Commercial Bank of China (ICBC), Bank of China (BoC), China Construction Bank (CCB), Agricultural Bank of China (ABC) and China Industrial Bank (CIB).

many such profiles contained only basic information such as names and identification numbers. In fact, merely 350 million (less than a third of the total number of Chinese adults) had credit records, with the rest rendered "credit invisible."[11] In contrast, only about 14% of the U.S. population lacked a credit score.[12]

The Rise of Peer-to-peer Lending

With the emergence of the Internet, the financial sector was one of the most digitized industries globally.[13] Referring to the application of new technology and innovation in the financial sector, the term "fintech" was coined in the 1980s.[14] While the U.S. had witnessed waves of startups in the sector, the development of China's fintech space had lagged that of its Western counterparts, as the Chinese financial services sector gradually modernized along with the liberalization of the economy. (See **Exhibit 2** for more details.) The number of P2P lenders and total transaction volume in China was much larger than those of the United States and Europe combined. Along with nine other regulatory agencies, the People's Bank of China (PBOC) released a set of guidelines in July 2015 implicitly acknowledging the issues of accessibility presented by traditional financial institutions, and the promising potential of fintech in addressing them.[15] The macroeconomic environment was also conducive to the emergence of fintech, especially P2P lending, in China. Rapidly growing domestic spending patterns, coupled with relatively limited financing options, had created opportunities for P2P platforms connecting borrowers and investors.[16]

P2P lending became popularized in 2011 as the Chinese leadership encouraged the application of fintech to broaden the reach of financial services to small businesses and individuals. In 2016, the transaction volume of P2P lending in China surpassed RMB 2.8 trillion (US$ 406 billion), representing an increase of 138% from 2015. But the sector's growth had slowed down to slightly more than half of that in 2014 and 2015, according to a report by Shenzhen-based financial portal P2P001.[17] China's P2P lending space had experienced explosive growth as it was "too easy to attract investments," according to Michael Zhang, Chairman of the Beijing-based Puhui Finance (a P2P lender).[18] Since 2007, the number of P2P platforms had ballooned nationwide, as P2P offered an alternative fundraising channel for SMEs in dire need of capital, while lenders were enticed by higher returns offered by P2P lenders.[19] Abner An, Founder of Daokoudai, another Beijing-based P2P platform, added that "there was no entry barrier to start a P2P business [at the beginning]," and anyone could "spend RMB 40 (US$ 5.8) to buy some [P2P] software from Taobao…[c] to start an online lending business without any regulator's scrutiny."[20]

Since 2014, the entire Chinese peer-to-peer (P2P) industry had descended into a period of turmoil, where hyper-growth became the norm, quality of industry professionals declined rapidly, and questionable transactions emerged.[21] Escalating market competition pressured firms to take on risky projects, which eventually led to a downward spiral in the P2P space (i.e. "a race to the bottom"). The absence of a comprehensive regulatory framework resulted in a series of scandals, including deceptive practices, fraudulent claims, and business collapses. Retail investors in China lost billions of dollars in 2016 when certain P2P platform operators disappeared with investors' cash. In January 2016, police detained more than 20 people associated with a Ponzi scheme after the founder of Ezubao (a P2P platform) allegedly scammed over 900,000 investors of RMB 50 billion (US$ 7.2 billion)[d] across the country.[22]

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[c] Taobao was a Chinese online shopping website similar to eBay and Amazon that was operated by Alibaba Group.

[d] Based on an exchange rate of 6.9 Chinese Yuan (RMB) per United States Dollar (US$), according to foreign exchange quotes from OANDA Corporation.

A Vital P2P Regulatory Framework

To better regulate the sector, the Chinese government stepped in and intervened in August 2016 with the "Interim Measures for Administration of Peer-to-Peer Lending Information Intermediaries," published jointly by the China Banking Regulatory Commission (CBRC), Ministry of Public Security, Cyberspace Administration of China, and the Ministry of Industry and Information Technology.[23] (See **Exhibit 3** for more details.) With P2P platforms defined as "information intermediaries" rather than "financial institutions," the official document detailed a negative list of P2P business activities.[24] P2P platforms were barred from taking public deposits, creating asset pools, and providing any forms of guarantee for lenders. The new rules explicitly prohibited online lenders from guaranteeing principal or interest on loans they facilitate, nor were they allowed to market wealth management products or issue asset-backed securities.[25] The instigated measures also required P2P lenders to appoint banks as their custodians to safeguard investors' money, with full disclosure of how their clients' funds were used.[26] All this was easier said than done, however, with only 183 platforms establishing custodian accounts at commercial banks,[27] while another 122 were in the process of signing a custodial agreement by the end of 2016.[28] Battered by the turmoil and chaos in the P2P space, banks had shown lukewarm response to the custodian business.[29] Also, as P2P platforms were now considered online information intermediaries, they had to secure the Internet Content Provider (ICP) license to continue operations in China, but so far fewer than 50 P2P operators met this requirement.[30] The policy measure also spelled out the loan size limits for P2P lending, with RMB 200,000 (US$ 29,000) from one lending platform and RMB 1 million (US$ 145,000) across platforms in total for the amount an individual could borrow. For an institution, the limits were RMB 1 million (US$ 145,000) and RMB 5 million (US$ 725,000) respectively.[31]

With the new rules, "regulators were trying to turn P2P into a supplement of the banking industry [to minimize risks]", explained Xianyong Wu, Chief Executive at Shenzhen-based Touna Financial Services.[32] Jianpeng Deng, Vice President of the Internet Financial Innovation Research Institute, stated that "the current regulations increased the operating costs of P2P lending platforms" and that the majority of P2P lending firms "would likely vanish in the next two or three years."[33] A report co-published by Beijing Bureau of Financial Work and Nanhu Internet Finance Institute detailed how the explosive growth of P2P in recent years "exposed a multitude of problems," and "P2P operators and regulators would face stern challenges to ensure a healthy growth of the P2P sector."[34]

The Dawn of a New Era

While it was expected that the number of active users of P2P would surpass nine million in 2016,[35] the industry continued to be clouded by uncertainties. The Chinese government initiated a review of P2P lenders in late 2016 with spot checks by provincial-level financial service offices, assessing risk management, operational scale, IT infrastructure, investment sources and shareholders' credibility before giving P2P lenders the green light to continue operations.[36] While the deadline for implementation of the new PBOC P2P rules was extended for a year, many platforms were expected to close down in March 2017 when Chinese authorities completed the review of the credentials of 3,000 P2P lending operators, which might trigger a run on deposits.[37] Industry insiders estimated that merely 200 P2P companies would survive Beijing's investigations.[38]

The impact of the P2P debacle was bleeding to other industries. A case-in-point was P2P's contagion effect on China's real estate sector. During the height of the P2P boom, P2P firms occupied a lot of China's prime real estate. This was no longer the case, however, with P2P lenders vacating office buildings since the nationwide crackdown on fraud in the sector.[39] For instance, "vacancy rates in Grade A office buildings in the Futian and Luohu districts in Shenzhen went up in the first quarter, as a rising number of P2P companies closed up or surrendered their tenancy," as detailed in a Cushman

& Wakefield report.[40] "Some high-end office buildings did not welcome P2P companies now. They worried that potential fraud from this sector would hurt the image of the building," explained Qiang Hu, a property agent based in Shenzhen.[41] Local authorities in Shenzhen, Shanghai and Beijing had also ceased the registration of new firms with names containing words such as "finance", "P2P," and "online lending," while promotional activities (e.g. celebrity endorsements and media advertisements) of P2P lending were prohibited.[42]

According to Yin Zhentao, Secretary General of the Research Center for Financial Law and Regulation under the Chinese Academy of Social Sciences, proper fintech policies and regulations would help guide the sector to "standard-compliant growth."[43] At the same time, "capricious policymaking could be dangerous," said Yan Yipan, Chief Executive of the law firm Zhejiang Panyuan, and added that "the government needed to have a better understanding of what P2P was. Heavy-handed regulation might undermine the long-term growth of the fintech sector."[44] Establishing a regulatory framework for the fintech sector was one of the top priorities of the Chinese Government,[45] which sought to strike a balance between technological innovation and societal stability.

The Beginning of Dianrong

Headquartered in Shanghai, China, Dianrong had branches in more than 30 cities across the country. Dianrong originated more than $500 million in monthly assets for 4 million retail lenders. With loans totaling RMB 29 billion (US$ 4.3 billion), and a non-performing loan rate of 2.3%, the platform was ranked third in the country, and first in terms of compliance, transparency and technology, according to the P2P statistics website Wangdaizhijia. The company had a comprehensive system and infrastructure in place with more than 5,000 employees at the end of 2Q17, which included more than 600 fintech engineers and hundreds of risk-management professionals.

Founded in 2012 by Soul Htite and Kevin Guo, Dianrong combined strengths in both engineering and legal, similar to the Lending Club[e] in the United States. Htite had solid technical expertise and contributed international management and consumer finance experience to the duo, while Guo's legal knowledge guided the company to focus on legal and compliance as top priorities from day one. Dianrong announced its series A financing in early 2014, with Northern Light Venture Capital leading the round. Tiger Global Management, which also invested in Yahoo, JD.com[f] and other prominent Internet companies spearheaded the subsequent B round of investment in early 2015. The company raised US$ 207 million in its recent series C-round of funding (an industry record in terms of funds raised for such a round) led by Standard Chartered Bank, along with other investors including China Fintech Fund, Bohai Leasing (now Bohai Financial Investment Holding), and Max Giant Capital. The company was named in 2016 to the executive directorship of the National Internet Finance Association of China led by the People's Bank of China. Dianrong's series D-round materialized in 2017, led by GIC, the Singaporean sovereign fund, along with CMIG Leasing Holdings Limited and Simone Investment Managers.

Technology remained a core strength of the company, with senior management directing a lot of attention towards blockchain, artificial intelligence, and data analytics, utilizing latest technologies to augment its product and service offerings. (See **Exhibit 4** for the background of the senior management

[e] A peer-to-peer lending company headquartered in San Francisco, Lending Club was the first an online lending platform to register its offerings as securities with the Securities and Exchange Commission (SEC), and to offer loan trading on a secondary market.

[f] JD.com, also known as Jingdong and formerly called 360buy, was a Chinese e-commerce company headquartered in Beijing. It started as an online magneto-optical store, but later diversified into electronics, mobile phones, and computers.

team at Dianrong.) The company offered a broad array of products, with loans as small as RMB 10,000 (US$ 1,500) and as large as RMB 1 million (US$ 150,000), targeting entrepreneurs, small businesses, as well as suppliers. The company enjoyed a competitive advantage in terms of its technology with notable developments such as automated credit assessment, facial recognition capabilities, as well as algorithm-driven asset syndication and capital allocation technologies.

The Technology Edge

Dianrong's technology traced its roots to Lending Club, a peer-to-peer lending company headquartered in San Francisco. As the former CTO of Lending Club, Htite applied his expertise to further develop Dianrong's technology, and localized it for the Chinese market. The company now had technological capabilities that were "beyond" that of Lending Club.

When Dianrong first started in China, it noticed that the domestic market lacked the adequate infrastructure for online lending. In the United States, credit bureaus[g] held the credit history for 95% of the population. In China, however, such a system was almost non-existent. To effectively serve investors and borrowers across various devices (e.g. computer terminals and mobile phones) with varying payment amounts, Dianrong had to coordinate among disparate payment channels and put in place a settlement process in the back end. Dianrong found itself having to create the infrastructure required for such an integrated system from scratch in China.

Since its founding four years ago, Dianrong had a comprehensive system and infrastructure in place with over 600 technicians to support its operations in credit analysis.

- **Payment**: Teaming up with a host of third-party payment solution providers, Dianrong allowed borrowers to make repayments automatically. Borrowers could repay smaller amounts with their mobile phones, and larger sums with their computer, providing a seamless customer experience across various channels. The integrated approach to payment was optimized in terms of transaction costs and rate of payment success, resulting in transparent and traceable cash flows in the payment process.
- **Account management**: Dianrong had a robust user account (i.e. "wallet") management system. Each account showed the history of recharge and top-ups, relevant investments, debt transfers, case withdrawals, and perks received from promotional activities. The process of matching investors and borrowers could be challenging, as it often involved highly-fragmented technologies that may not be compatible with one another. Each loan on Dianrong's platform might have tens of thousands (or hundreds of thousands) of investors, meaning that every transaction entailed extensive record management, with records that had to be updated in every user's account simultaneously.
- **Credit profiling**: Dianrong utilized data from domestic third-party information providers to improve its risk management capabilities, with data sources including the Internet, publicly-available data, third-party partners' user and transaction data, and third-party credit institution's data. The company's data partners included Zhima Credit,[h] Experian, Wind

[g] In the United States, the big three credit bureaus were Equifax, Experian, and TransUnion.

[h] Zhima Credit, also known as "Sesame Credit," was a social credit-scoring system developed by Ant Financial Services Group, an affiliate of the Chinese Alibaba Group.

Information[i] and other industry-leading credit institutions. Armed with data from various sources and platforms, along with its own insights, Dianrong was looking to form its own credit-rating system in the long term.

- **Customer information collection**: Unlike traditional banking firms that mostly still relied on paper for documentation purposes, Dianrong leveraged the Internet and technology to gather information on its customers. Through the company's app, users could complete the entire identity verification process online. Customers first submitted a photo of their ID, the authenticity of which a third party would help to verify. Users would then be asked to submit selfies via the app, after which the system would use facial recognition algorithms to confirm their identity. Moreover, the system also asked users for their mobile phone call logs, which were used to provide additional security by comparing frequent contacts with the emergency contacts provided by the customers. Other information, such as social security details and provident fund account information was collected from government websites. In addition, with users' consent, the system would utilize GPS tracking capabilities to gather information on the geographic activity of users. Dianrong's offline customer service team also utilized the company's app to gain insights into customers with information such as credit-application approval status, loan application records and repayment history. (See **Exhibit 5** for details.) Aside from managing the team's commission, the app for the customer service team came with a pre-configured "black list" that would issue warnings about potential issues.

- **Automatic credit assessment**: Dianrong had developed an automated credit-scoring system to facilitate the transactions on its platform. The process of vetting loan applications entailed numerous steps, including automated ones (e.g. system verification), and manual ones that were segmented into modules. Each module was assigned randomly to a loan officer, with the system yielding credit ratings, loan prices, and other statistics at the end.

- **Debt collection management**: The company also had a robust debt-collection management system, with loan records and system updates connected to third-party debt collectors. The regular debt collection analysis and reports generated also aided in the assessment of debt collection officers, which also determined their reward.

- **Customer acquisition**: Technology also helped further Dianrong's customer acquisition efforts. Unlike traditional financial institutions which mainly relied on offline channels to engage customers, Dianrong had devised an Internet-advertisement tracking system, which logged advertisement exposure, users' clicks, as well as each step of the entire platform registration process. Armed with this technology, "every step was clear and traceable," said Jing Pan, Chief Marketing Officer of Dianrong. "By tracking the churn rate of every step in the process all the way to the point of actual purchase, the company could determine the effectiveness of its marketing efforts in terms of product, channels, and creativity." Dianrong also leveraged technology to make its offline branches more productive and cost-efficient.

- **Customer service**: Dianrong had established its own call center management system tailored for the Internet era. On the one hand, the system offered functions including IP phone, tracking, calling and account access. On the other hand, online services provided by the company's app were also consolidated within WeChat, the popular social media platform in China. Should issues arise from either investors or borrowers, the company's app provided a wealth of

[i] Often known as the "Bloomberg of China," Wind Information was the market leader in the provision of real-time fundamental data, exchange data, earnings estimate data, market data in China.

information for potential questions, and could direct specific questions to dedicated customer service representatives.

Products & Services

Dianrong's platform was created in a modularized fashion which was common in the modern Internet era. Each module was relatively independent, with components that could be re-assembled, re-configured, and re-arranged. All this offered a customizable, scalable, flexible solution that could quickly adapt the technology to and industry's and customers' changing needs and preferences. The company differentiated itself from the competition with a comprehensive product line. The company was reportedly the only one in the industry with products spanning a wide spectrum, ranging from RMB 10,000 (US$ 1,500) to RMB 1 million (US$ 150,000), including:

- **Online loans**: Dianrong's platform offered loans averaging RMB 10,000 (US$ 1,500) online. Borrowers could submit loan applications, along with the relevant personal information, via Dianrong's mobile app. Subsequently, both the application vetting and loan distribution processes were completed online.
- **Consumer loans**: Consumer loans were another product on Dianrong's platform, with an average loan size of RMB 75,000 (US$ 11,000). An offline servicing team helped to collect information, vet online applications, and distribute the loans. The company offered these consumer loans primarily to high-quality (i.e. near prime[j]) customers at a low interest rate.
- **Cash advance loans**: Dianrong also provided cash advance loans with an average size of RMB 350,000 (US$ 51,500), focusing on the retail, and food and beverage industries with steady cash flow. The vetting process was conducted by connecting to the merchants' POS machines, WeChat Pay and Tencent Pay accounts, and additional data provided by third-party payment companies. Backed by an automatic daily repayment mechanism, these cash advance loans had a low interest rate as well as a low bad-debt rate.
- **SME loans**: The company also offered small and medium-sized enterprise (SME) loans with an average loan size of RMB 350,000 (US$ 51,500), with an offline service team collecting credit-related information and going on site visits for data verification purposes.
- **Supply chain finance products**: Supply chain finance products, with loan size reaching RMB 1 million (US$ 150,000), utilized the blockchain technology connecting suppliers among lower tiers[k] within various manufacturing ecosystems and conducting automated credit vetting. All this helped to keep the bad debt rate at a minimum.

Core Technology on the Lender Side

Powering Dianrong's massive computing power was Tuan Tuan Zhuan (TTZ). Launched in June 2014, the TTZ core technology had the capability to allocate investor capital across hundreds of thousands of loans in real-time. With just 100 RMB, lenders could have their investment spread across 230,000 individual loan assets. In the first three months after launch, a total of RMB 100 million (US$ 15 million) from 9,128 lenders was invested using TTZ. Over the last three years, TTZ had processed a

[j] "Near prime" referred to the relatively high-quality customers who might not have collateral.

[k] "Lower tier" suppliers were those beyond tiers 1 and 2 of the supply chain.

cumulative volume of RMB 34 billion (US$ 5.1 billion) and generated investment returns of RMB 1.1 billion (US$ 165 million) for lenders as of June 2017, with an annual growth rate of 188%.

With loans provided for 1.7 million users so far, Dianrong helped facilitate transactions between investors and borrowers directly, with the use of the proprietary app TTZ. With Dianrong's mobile app, statistics such as loan contracts and details, borrower's information (after excluding all confidential information), vetting materials, repayment record, debt collection record, were available in real time to each investor. The level of transparency and disclosure was unprecedented in the industry, making Dianrong one of the leaders of the industry in terms of information disclosure and transparency.

Retail Focus: Diversified Demographics

Since its inception, Dianrong adopted a rigid retail customer strategy and had employed a pure B2C model that connected with consumers directly. This younger cohort of customers was all about mobile. They used third-party payment accounts, and lived on social media and eCommerce platforms. 95% of Dianrong lenders accessed their accounts through the mobile app. Dianrong also operated one of the largest and most popular WeChat channels in China dedicated for financial education.

Dianrong did not target high-net-worth investors, who typically expected much higher returns and higher-cost personalized customer service models. They also tended to switch from investment to investment seeking incremental improvements in alpha or investment returns. In comparison, Dianrong lenders viewed the company as an attractive savings channel alternative. As such, lender expectations for investment returns were more moderate, currently below 7%. And Dianrong lenders were loyal, opting to stay far longer with the company and its easy, reliable mobile interface. For many, Dianrong was their first investment experience, both online or offline. Dianrong's focus on individual retail investors and SMEs also aligned well with new rules from Chinese regulators that limited P2P lenders to smaller loan amounts and durations.

Dianrong had employed a direct-to-consumer brand strategy, which had translated into lower loan-asset acquisition costs. And the company's tight underwriting standards and automated data analysis and processes had consistently generated a pool of lower-risk, reliable borrowers. Non-performing loans consistently hovered around 2%. Of the 4 million registered retail lenders of Dianrong, 75% were between 18 and 38 years old, and were evenly dispersed geographically across the nation. The diversity and consistency of Dianrong's borrowers and lenders provided a stable and highly predictable customer base. On average, Dianrong customers invested RMB 11,000 (US$ 1,600) for their first investment on the platform. Subsequent investments averaged RMB 30,000 (US$ 4,400) in the first five months, and then increased by an incremental RMB 1,200 (US$ 175) on average every month afterwards.

Ushering in an Era of "The New Finance"

The fundamental difference Dianrong made in China's financial technology (fintech) transformation was to radically shift from previous financial services and banking technology to the next generation fintech solutions. The old generation of technology and new generation varied in three major ways:

- **Cloud Computing**: The old generation was based on processing units, software, and system integration that relied on high performing hardware. The new generation of cloud-based technology was used by Internet companies such as Google, Amazon, and Facebook. The computing powers at the cloud was infinitely scalable, less expensive, and on demand.

- **Multiple-to-Multiple Data Processing Structure**: The essential database structure of the traditional finance was based on a one-to-many architecture. All decisions were made centrally. Various data points all had to report back to the central database and wait for the decisions to be made and distributed to the data points again. While the new peer-to-peer model was based on a multiple-to-multiple transaction model. Each data point was able to make independent decisions, which dramatically improved the speed of data processing.
- **Microservices**: In a microservices architecture, services and applications were focused and modular, making it fast, simple and efficient to assemble the right pieces for a tailored solution.

The infrastructure and data processing capabilities enabled Dianrong to process significantly more transactions faster and cheaper. In 2017, Dianrong processed 400 billion individual transactions every day. For lenders, this meant that Dianong was able to tabulate the transaction on a much smaller unit (at 0.00000001 RMB) than traditional banking. Someone with as little as 100 RMB could easily diversify one's investment into 10,000,000 loans. Dianrong lenders effectively gained the same computing power as a large financial institution. For each investment with Dianrong, lenders had a direct transactional relationship and detailed contract with each borrower.

The adoption of microservices meant that Dianrong could update its platform on a daily basis without any interruption of the business. Banks and other financial institutions usually updated their systems only a few times a year and required business operations to be suspended in the process. Using modularized architecture also allowed Dianrong to customize or create new products and services in an independent, integrated, and reliable manner. This also meant that the company could easily export parts of its platform to external partners.

Dianrong was leveraging technology to transform the financial industry, enhancing efficiency and improving quality. Dianrong's transformation of the industry was exemplified by three of its foci, namely "Improved Finance," "Enabled Finance," and "Created Finance," collectively known as "The New Finance." The ultimate objective was to offer the masses the same access, flexibility, and tools that large institutions and professional investors currently enjoyed, so as to create financial freedom for individuals and small businesses that were underserved by traditional banks and lenders.

Improved Finance: Automation

"Improved Finance" referred to the automation of financial operations. The use of technology permeates almost all aspects of Dianrong, from customer acquisition to data collection to loan-application vetting to credit analysis to lender-borrower matching to loan distribution to repayment and management. With technology as part of the company's DNA to resolve "logistical issues" that might arise in operations, Dianrong was able to provide products and services that were more affordable, faster and better.

Another "Improved Finance" initiative was a comprehensive business intelligence (BI) tool that was devised after four years of development at Dianrong. The usage of the tool permeated the many divisions at the company, from risk management to marketing to customer service to operations. With a hierarchical management authorization protocol, the BI tool tailored the content displayed according to users' division and position, and generated reports for staff members every morning and pushed to their mobile phones for execution and follow-ups. For instance, with the BI tool, the risk management team had a holistic view of the statistics (e.g. national and regional distributions) of overdue loans in real time. This empowered the risk management team to make managerial decisions promptly when needed, and help monitor the performance of the customer service team.

Enabled Finance: New Risk Management Capabilities

"Enabled Finance" mainly pertained to the risk management field. With technology came computational capabilities that far exceeded that of the human brain. Ample opportunities in the peer-to-peer lending space were emerging because of the vast amount of data that could help augment the credit assessment process, and yielding a low cost, expedited, and accurate vetting procedure. The data used included industry publications and reports, Internet-usage statistics, law records, credit profiles and scores, travel data, e-commerce transaction records, phone usage activity and call logs, and social media information. All this data was massive yet unstructured, and was often difficult to be processed with traditional data-analysis techniques.

Since the end of 2015, Dianrong has devised artificial intelligence and data analytics tools, using massive amounts of incomplete and unstructured data to develop better models that would make even better predictions. Artificial intelligence helped to analyze multi-dimensional data models, processing untreated complex borrower data and yielding insights and results based on pattern recognition. Dianrong's artificial intelligence model learned from new data and improved continuously. Results and insights generated were fed back into the model, which yielded new parameters to help enhance the predictive model further. Model updates were no longer performed manually (usually every month) as in the case of traditional financial institutions, and the system would self-adjust and update itself in real time continuously.

Dianrong also introduced a pioneering technology known as the "Knowledge Chart," which stored and analyzed the information of customers using charts. The company managed to use a graphical representation to depict the relationships among all borrowers and investors, and applying artificial intelligence to uncover any suspicious or fraudulent issues that might arise. For instance, a "Knowledge Graph" could depicting how one high-risk fraud loan might have more than 50 layers of information detected. The system provided a visual evaluation showing how high-risk the loan would be for Dianrong. (See **Exhibit 6** for more details.) On the other hand, with a fraudulent loan previously detected by Dianrong's technology team, another "Knowledge Graph" could show how a new applicant was connected (via data including phone number and call logs) to the fraudulent case contact. As a result, the new applicant would be treated as high-risk. (See **Exhibit 7** for more details, with the brown circle denoting the fraudulent loan.)

Created Finance: Blockchain & Supply Chain Finance

Supply chains were inherently complex, involving multiple parties such as raw materials suppliers, refiners, manufacturers, distributors, and all the way to the consumers. For instance, Foxconn, the manufacturer of Apple iPhones, had thousands of suppliers manufacturing components ranging from lens covers to cable connectors to mesh adhesives. Each company, however, had its own database confined within its own silo and lacked the ability to communicate with one another, resulting in a lack of coordination across the whole supply chain marred with redundancies and inefficiencies.

With a lack of bargaining power resulting from the opacity of the supply chain, many small and medium enterprises (SMEs) were often at the mercy of large manufacturers (e.g. Foxconn).[46] In addition, with insufficient credibility, these suppliers often had to scramble for the much-needed capital to survive and sustain their businesses, especially when traditional banks turned them away due to a lack of transparency, accountability, and scale. The inability of similar upstream suppliers to secure the necessary funding could often lead to disruptions in the production process. These operational gaps could be disastrous to cash-strapped SMEs, resulting in a death spiral that could cause shutdowns or even complete closures of production facilities.[47]

A case in point: A company responsible for a key component of the iPhone could fail to secure the necessary funding for operations and development due to a lack of proof that the company was indeed a supplier of the supplier of Apple. The further away up in the supply chain a firm was from Apple, the more opaque the information became, and the more exacerbated the situation became. (See **Exhibit 8** for an illustration of the iPhone supply chain.) In the traditional supply chain model, there was no telling whether a piece of metal produced by a factory near a China village was actually the one of the components for a cable connector within the iPhone due to all the crisscrossing relationships. Similar challenges could spell doom to the viability of many SMEs in the ecosystem.

All this seemed to present a daunting and unsurmountable challenge, until blockchain came into the picture.

Chained Finance

Also known as a distributed ledger technology, "blockchain was a technology applicable across sectors such as finance… and supply chain."[48] In the traditional supply chain model, "the three primary areas of pain are visibility, process optimization, and demand management," said Brigid McDermott, Vice President of Blockchain Business Development & Ecosystem at IBM. "Blockchain provides a system of trusted records that addresses all three."[49] One of the key applications of blockchain was supply chain finance. An important but often undervalued use case of blockchain, supply chain finance referred to the extension of short-term credit to SMEs that were suppliers to large blue-chip corporations,[50] thereby reducing the working-capital frictional costs across the supply chain.

Dianrong had made its foray into the supply chain finance space as well,[51] and had teamed up with FnConn (a subsidiary of Foxconn Technology Group, the world's largest assembler of electronic devices for Apple)[52] to launch China's inaugural blockchain platform "Chained Finance" with a vision to use technology to overcome the current obstacles. (See **Exhibit 9** for the ownership structure of Chained Finance.) Conventional models of data management had so far been a hindrance for supply chain finance companies, and traditional banking services covered merely an estimated 15% of suppliers and the majority of the 40 million SMEs unserved.[53] With a proprietary credit pricing model,[54] Chained Finance aimed to triple financing access for global supply operators.[55] Soul Htite, Founder and CEO of Dianrong, elaborated on the promises of the blockchain technology used in Chained Finance:

> Blockchain is revolutionizing the finance industry and offers seamless solutions to any company operating and financing complicated supply chains. The complexity and scale of supply chain finance has posed major challenges in ensuring adequate funding and efficient operations. Chained Finance creates a unique ecosystem that will provide supply chains with easier access to funding at competitive rates. In return, supply chain operators will gain greater visibility of their suppliers and the many layers of finance embedded in the process.[56]

With a successful pilot and a completed proof of concept, Chained Finance had spearheaded the creation of US$ 6.5 million in loans for supply chain operators so far.[57] Blockchain enabled market participants to bypass the middlemen, thereby improving transparency, reliability and accountability, and in turn lowering the chance of financial failures.[58]

A technologically (and geographically) agnostic platform, Chained Finance would first focus on the electronics, auto-manufacturing, and garments industries because of the relatively shallow pool of suppliers.[59] "By using the Chained Finance platform, every payment, every supply chain transaction, can be more transparent, manageable and easily authenticated," highlighted Jack Lee, Executive Director and CEO of FnConn. "Chained Finance will provide timely, efficient support to far more

suppliers of all sizes. It will also help ensure the timely delivery of products to end customers and improve efficiencies across the entire supply chain."[60] The 3.7 million investors at Dianrong would also gain access to the loan assets originated by Chained Finance, diversifying the investment options on the P2P lender's platform.[61]

Broader Implications

By offering a unified, immutable, and transparent ledger, the blockchain technology had the potential to flip the inequality-exacerbating paradigm of traditional finance that "advantaged the advantaged and disadvantaged the disadvantaged" upside down. With blockchain also came an ultimate single source of truth (i.e. an immutable database) providing end-to-end visibility for industry participants along a supply chain.[62] The benefits were profuse, ranging from error reductions to cost savings to inventory management enhancements.[63]

Commenting on the impact of blockchain on supply chain finance, Sergio Rodriguera Jr., Chief Strategy Officer of The Credit Junction[1] said, "The first is large multinationals are increasingly seeing the importance of ensuring their suppliers, especially SME suppliers, have access to capital to fulfill orders and avoid supply chain disruptions. Second, non-bank lenders have stepped in to offer supply chain financing solutions where traditional sources have been unable to help, again, SMEs due to the cost of onboarding or serving larger customers."[64]

Harnessing the power of blockchain could bring about transformative changes to the management of supply chain by empowering SMEs, enhancing transparency, and reducing inefficiencies. Current supply chain management technologies were disorganized, outdated, and archaic.[65] A pioneer in the application of blockchain in supply chain finance, Dianrong aimed to help companies revamp their supply chains with emerging technologies.

A Quest for More

Dianrong's recent transformation involved the creation of an umbrella corporate structure with "DR Group" at the helm, with wholly-owned businesses, joint ventures and partnerships under one brand. (See **Exhibit 1** for more details.)

"Credit Factory" came from Dianrong's acquisition of Quark Finance's Credit Studio in July 2017.[66] With Credit Studio, Dianrong was able to scale its overall asset-generation operations significantly. Credit Studio platform provided data analysis and automated anti-fraud filters to achieve mass-production credit evaluations and processing. Leveraging Dianrong's technology to minimize manual operations in the financing approval process, Credit Factory helped to lower operational risks, expenses and processing time. Dianrong had also acquired an online small-loan license in China, which allowed the company to provide individuals and SMEs additional loan options at larger amounts, resulting in the creation of the "Small Loan Business" division.

The company was also forming joint ventures for Chained Finance and Hanwha Group. Aside from the Chained Finance initiative to develop blockchain applications, Dianrong and Seoul-based conglomerate Hanwha Group created a joint venture to explore the online lending market in Korea in November 2015.[67]

[1] Based in New York City, The Credit Junction was a data-driven asset-based lending platform attempting to change commercial lending by creating a real-time flow of data from the borrower to the lender.

Adding to DR Group's already expansive reach of industry verticals were partnerships with FinEX Asia and Suzhou Bank's P2P Platform. The company's ambitions extended beyond Asia as well with a partnership with FinEX Asia, a global fintech platform connecting Asian investors with high quality, low volatility assets in the United States.[68] Dianrong was also teaming up with Suzhou Bank,[m] with the former's fintech infrastructure providing real-time data, investment and risk-management tools, and data security to the borrowers and lenders on the Suzhou Bank Marketplace Lending Platform.[69]

The Road Ahead

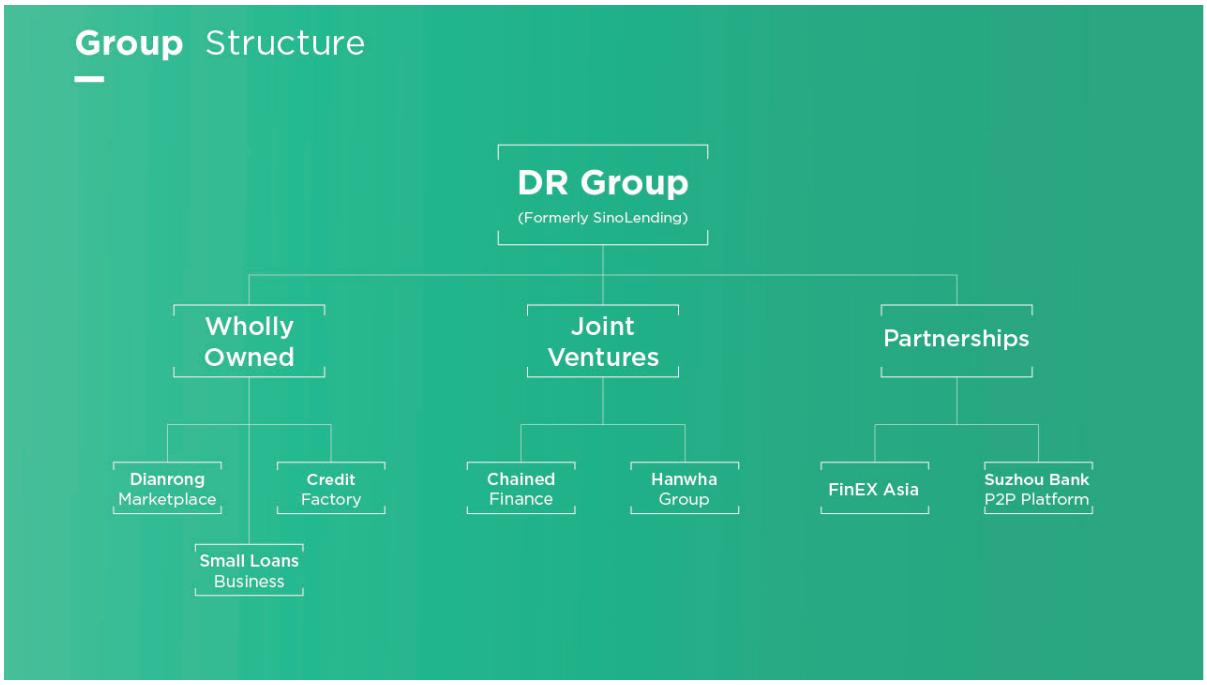
As Htite made his way out of the RISE conference at the Hong Kong Convention and Exhibition Centre, he was joined by Pan as they made their way back to Dianrong's office in Central, where several other executives were awaiting their arrival. It was time to iron out the details of a strategy to take the company to the next level. Similar to Google's transformation into a technology conglomerate with a new public holding company, Alphabet Inc., Dianrong was planning to transform itself with the introduction of "DRGroup," a holding company under which various subsidiaries would fall. While Dianrong did enjoy an advantage in technology, maintaining superiority in technological developments in the future was easier said than done.

A host of uncertainties still loomed large. The manner in which the company could engage and work with regulators to advance the firm's initiatives as well as the overall industry's development could be challenging and contentious. The current state of the infrastructure in the industry was equally unforgiving, which added to Htite's lengthy list of challenges to tackle. The situation in China was fundamentally different from that in the West, with the development of a lot of systems and protocols, such as those in credit profiling, still nascent. Given the many verticals that the company was diversifying itself into, coupled with the various challenges that the company had to confront and the rapid rate of expansion and developments at Dianrong, the question of whether the company was overly ambitious remained a valid one.

As the former CTO of Lending Club, Htite was of course no stranger to using technology to solve problems and create value. But should the company keep diversifying into other related and synergistic sectors? If so, what should the company's approach be, and how should Htite optimize its strategy in the long run? Was Dianrong overly ambitious? And would the company be spreading itself too thin with all the initiatives including "financial improvements," "financial realization," and "financial creation?" Remaining steadfast in the core of its business, i.e. P2P lending, could be a viable strategy; but hedging its bets and diversifying to other related sectors could be a sound decision as well. How should the company make full use of its competitive edge in technology? And what could be the potential pitfalls and challenges? Most importantly, what should Htite do now?

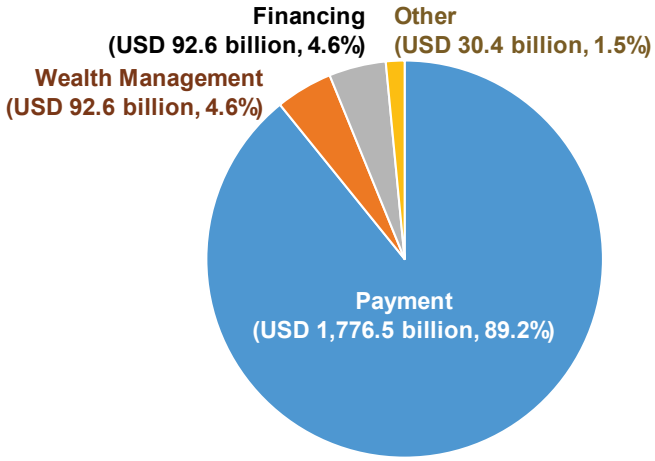
[m] Founded in 2004, Suzhou Bank provided commercial banking services in Suzhou, China, and operated a network of 128 service outlets.

Exhibit 1 DR Group Corporate Structure



Source: Adapted from Dianrong's company presentation.

Exhibit 2 China Financial Technology Sector Overview



Compared with the banking industry, Internet finance has a smaller scale but higher growth rate, e.g. mobile payment transactions in 2015
- Third-party: About RMB 12 trillion (USD 1.8 trillion)
- Banks: About RMB 150-200 trillion (USD 22.8-30.4 trillion)

Wealth Management	RMB (100 million)	USD (billion)	%
Fund Sales	6,000	91.1	98%
Other Wealth Management Products (Trust, PE, etc.)	100	1.5	2%
Total	**6,100**	**92.6**	**100%**

Financing	RMB	USD	%
Small & Micro Loans	2,500	38.0	41%
P2P	3,500	53.1	57%
Crowdfunding	100	1.5	2%
Total	**6,100**	**92.6**	**100%**

Other	RMB	USD	%
Insurance	165	2.5	8%
Cloud, Direct Banking & Others	1,835	27.9	92%
Total	**2,000**	**30.4**	**100%**

Source: Casewriters' recreation based on Joseph Luc Ngai, John Qu, Nicole Zhou, Xiao Liu, Joshua Lan, Xiyuan Fang, Feng Han, and Vera Chen, "Disruption and Connection: Cracking the Myths of China Internet Finance Innovation" July 2016, http://www.mckinsey.com/~/media/McKinsey/Industries/Financial%20Services/Our%20Insights/Whats%20next%20for%20Chinas%20booming%20fintech%20sector/Whats-next-for-Chinas-booming-fintech-sector.ashx, accessed March 2017.

Exhibit 3 Operational Requirements of P2P Lending Platforms

Requirements	Observations
Filing requirements After obtaining its business license: • Making a filing with the relevant local financial supervisory authorities • Applying to the MIIT or other relevant telecommunications authority for a telecommunications business permit (ICP license)	• No filing thresholds. The Interim Measures seek to regulate platforms through continuous supervision • Local financial supervisory authorities will have authority to evaluate and categorize platforms, publish their assessment results and filing records
Data management • Match finance counterparties in accordance with the contractual terms agreed with them • Collect, analyze and release for public record information on transactions • Make various background checks on and review the risk credentials of transaction parties, the authenticity of information provided by borrowers, and the authenticity of proposed financing projects • Protect borrowers' and lenders' information, and maintain records of transaction information and the online communication logs for five years	• Domestically-collected information must be stored, processed and analyzed in China and cannot be transmitted abroad. Foreign-invested platforms may need to refine their data management systems if they currently transfer data overseas. More detailed implementing rules pending • Platforms are also required to comply with other relevant regulations on information security, anti-money laundering and counter-terrorist financing so will need to ensure that their legal and compliance functions are on-top of these fast-changing areas

Business scope
• Prohibited from engaging in the following activities:
  • Taking deposits from members of the public or creating asset pools
  • Conducting offline promotion of financing projects
  • Providing guarantees for borrowers (unless facilitated through a third party)
  • Selling wealth management products
  • Transferring debts by issuing asset-backed securities
	• Negative list approach adopted to regulate platforms' scope of business activities
	• Most restrictions reflect the nature of platforms as information intermediaries and seek to distinguish them from traditional lenders such as commercial banks and investment funds
	• Interestingly, the transfer of debts has not been completely prohibited, as a significant number of platforms are currently performing these services

Management of funds • Must separate its own funds and funds of lenders and borrowers • Engage a qualified financial institution as a third-party banking custodian • Sign a funds custodian agreement with each borrower, lender, guarantor and banking custodian	• CBRC has issued a consultation draft of Business Guidelines for P2P Fund Custodians, which detailed the regulation of the management of funds lent on P2P lending platforms. If these rules are enacted in their current form, smaller platforms may be barred from operating in the P2P market in China

Source: "P2P lending in China enters into a regulated era." August 29, 2016, http://www.linklaters.com/Insights/AsiaNews/LinkstoChina/Pages/P2P-lending-Chinaenters-into-regulated-era.aspx, accessed March 2017.

Exhibit 4 Company Management

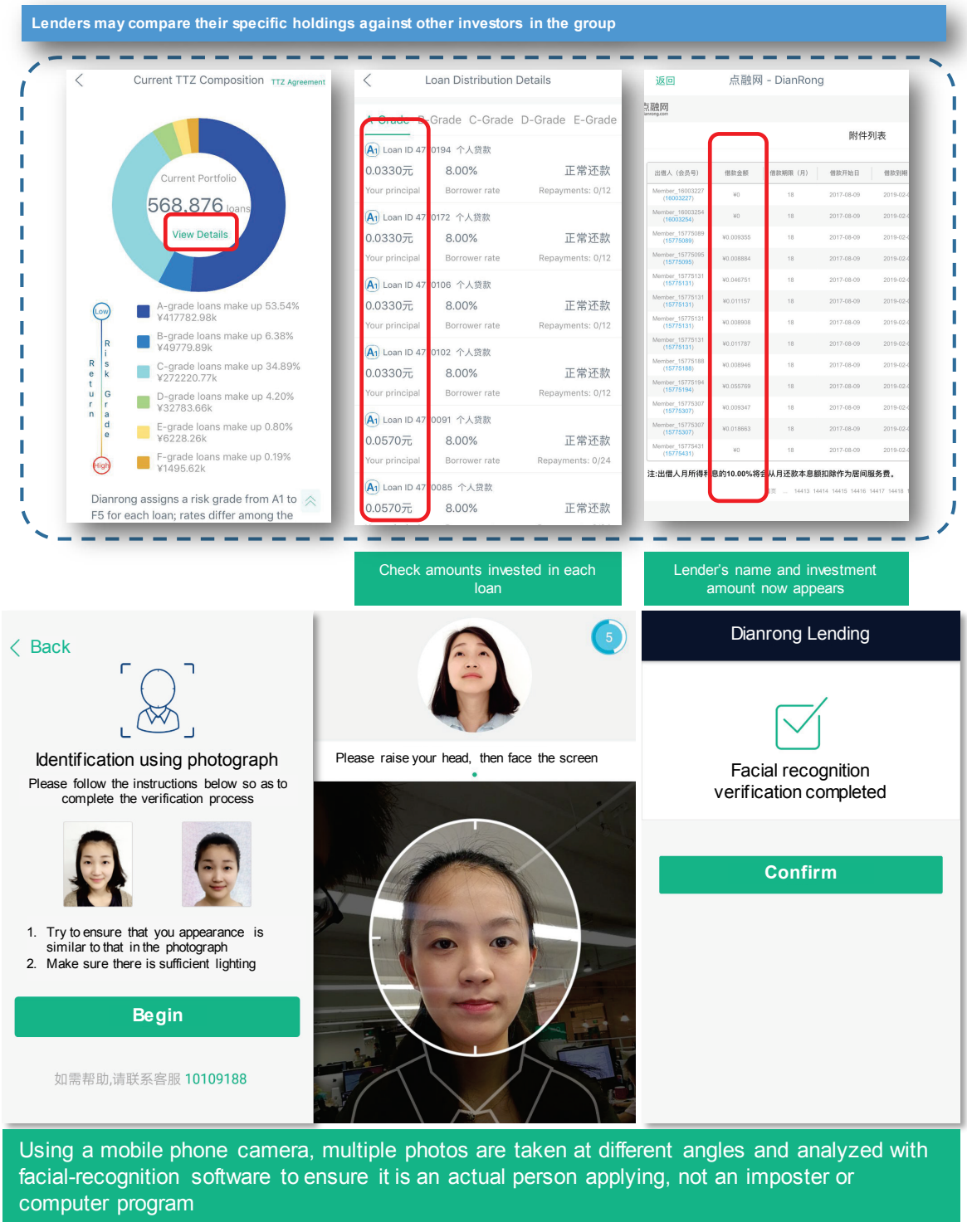
Name & Title	Biography
Soul Htite Founder & CEO	Soul is the founder and CEO of Dianrong. Prior to co-founding Dianrong in 2012, Soul co-founded Lending Club, the world's largest and benchmarking financial technology company. He served as the Head of Technology until 2011. Soul led all the design and development efforts of Lending Club's award winning online lending platform. Soul spent the earlier part of his career building enterprise software at Oracle Corporation. His focus was in real-time online services and system design for high availability and fault tolerance. Soul holds a master's degree in Computer Science from the Université de Montréal.
Kevin Guo Founder & Co-CEO	Kevin is founder and co-CEO of Dianrong. Prior to co-founding Dianrong, Kevin was a managing partner of Yulan & Partners, a well-known law firm in Shanghai, from 2001-2011. For more than 10 years, he provided legal counsel to leading multinationals, including Siemens, Google, and Microsoft on intellectual property matters. Before that, Kevin advised a number of venture capital funds on Internet finance and investment activities. Kevin serves on numerous boards, including the Shanghai Youth Federation, the Huangpu District Youth Federation, and the Shanghai Finance Institute. He also serves as a legal expert for the Internet Branch of the Insurance Association of China, and an entrepreneurial mentor for Top 50 Achievers of China Credit Information Industry and Global Entrepreneur Leadership Program of PBC School of Finance, Tsinghua University. Kevin holds a B.S. in International Economics and a Juris Doctorate from Eastern China University of Politics and Law, and a Masters of Finance from Remin University of China.
Jing Pan Chief Marketing Officer	Jing is the Chief Marketing Officer (CMO) of Dianrong. As CMO, Jing is responsible for marketing, branding, public relations and customer acquisition. Before joining Dianrong, Jing was a founding management team member of AdChina, the largest advertising technology platform at the time that is now part of Alibaba's advertising business. Jing was featured in the Campaign magazine's "40 under 40, 2016 Asia", and "Women to Watch, 2012, Asia-Pacific." In 2011, as a member of the Chinese delegation, she spoke at the United Nations Internet Governance Forum on the topic of the Chinese internet advertising industry's governance practice. Jing holds a Master of Business Administration from Harvard Business School and a Bachelor of Arts from Beijing Foreign Studies University.
Xuxia Kuang Chief Operations Officer	Xuxia is the Chief Operations Officer (COO) of Dianrong, a leader in online marketplace lending in China. Xuxia is responsible for the day-to-day operations of the Dianrong marketplace and, as a member of the executive team, develops and executes the company's growth strategy. Xuxia has almost two decades of experience in the financial and technology industries. Prior to joining Dianrong, she worked in the investment banking divisions of Merrill Lynch and Morgan Stanley, responsible for mergers and acquisitions, where she oversaw nearly US$ $100 billion in deals. Xuxia received an MBA from the Wharton School of the University of Pennsylvania, majoring in finance and strategic management. She completed her undergraduate studies at the Massachusetts Institute of Technology with a double degree in economics and computer mathematics.
Yawen Cui Chief Financial Officer	Yawen is Chief Financial Officer (CFO) of Dianrong. In this role, he oversees all aspects of Dianrong's financial operations, including financial reporting, Treasury and auditing. Yawen has more than twelve years of financial management experience, including accounting, financial reporting and internal controls. Yawen is a Certified General Accountant (CGA) in Canada. Yawen holds an MBA from the University of Birmingham and a Masters of Mathematical Finance from The University of Hull. He completed his undergraduate studies in Economics at The Central University of Finance and Economics.

Name & Title	Biography
Ling Kong Chief Technology Officer	Ling has over 10 years of experience in strategic planning and team management in the technology industry. As an entrepreneur, he began his career with the core technical staff at Packeteer, before helping build information protection startup, Code Green Networks. Ling holds a Bachelor of Science in Symbolic Systems with a concentration in Human-Computer Interaction from Stanford University. He is also a guest lecturer at Peking University.
Bryan Pang Chief Risk Officer	Bryan is the Chief Risk Officer of Dianrong. In this role, Bryan is responsible for assessing and mitigating significant competitive, regulatory and technological threats to capital, credit and earnings. He is specifically responsible for risk management, underwriting, policy and analytics, credit operations, post-loan management and collections. Bryan has nearly 20 years of experience in financial institution operations, marketing, and risk control. He is a leading authority in various types of credit-risk management for retail, small businesses and supply chain finance. Bryan obtained his Bachelor of Accountancy Degree from Nanyang Technological University in Singapore in 1993 and his MBA (Finance) from University of Leicester in the UK in 2005.
Jian Sun Chief Business Officer	Jian served in the life insurance and credit departments of large financial enterprises such as Ping An Group. He was also a co-founder of several microcredit companies and has creatively integrated the online and offline asset businesses, and established nearly 200 branches. Jian is proficient in the framework and management of credit sales teams and financial management teams. He has also achieved much in the design of financial products, sales risk management and risk control.
Long Hsiang Loh Executive Officer	Long joined Dianrong after 18 years with Standard Chartered Bank. He held key leadership positions in Standard Chartered, including Chief Credit Officer of Global Markets; Global Head of Markets & Institutions Risk Management; General Manager of Shanghai Branch; Co-President of Corporate Banking; and Deputy CEO of Standard Chartered China. During his tenure as deputy CEO, he oversaw corporate strategy, business expansion, human resources, risk management and administrative affairs for Standard Chartered China. In 2013, Long Hsiang was named "Shanghai Top 10 Financial Innovation Leader." A seasoned finance executive, Long Hsiang is a certified Financial Risk Manager by GARP. He currently serves as an advisor to US-China Global Investment & Trade Alliance.
Tracey Li Vice President Wealth Management	Tracey has worked in finance for over 12 years, most recently as president of Jiuxin Capital before Dianrong. She possesses a wealth of knowledge in financial products and has a track record of delivering high returns on investments by analyzing key economic cycles and events that impact on the economy. As a team leader, she has led teams to complete over RMB 1 billion in investments, yielding strong returns for investors. Tracey is a certified VCS investor accredited by Shanghai Jiaotong University.
Lili Zhou General Counsel & Secretary of the Board of Directors	Lili is General Counsel and Secretary of the Board of Directors for Dianrong. As General Counsel, Lili is responsible for the legal and compliance affairs of Dianrong, with the aim to make Dianrong a leading industry player in compliance and transparency, and to effectively protect the interest of Dianrong's customers. Lili holds an LLB degree from Fudan University. She is also an arbitrator of Shanghai International Arbitration Center.

Source: Dianrong website.

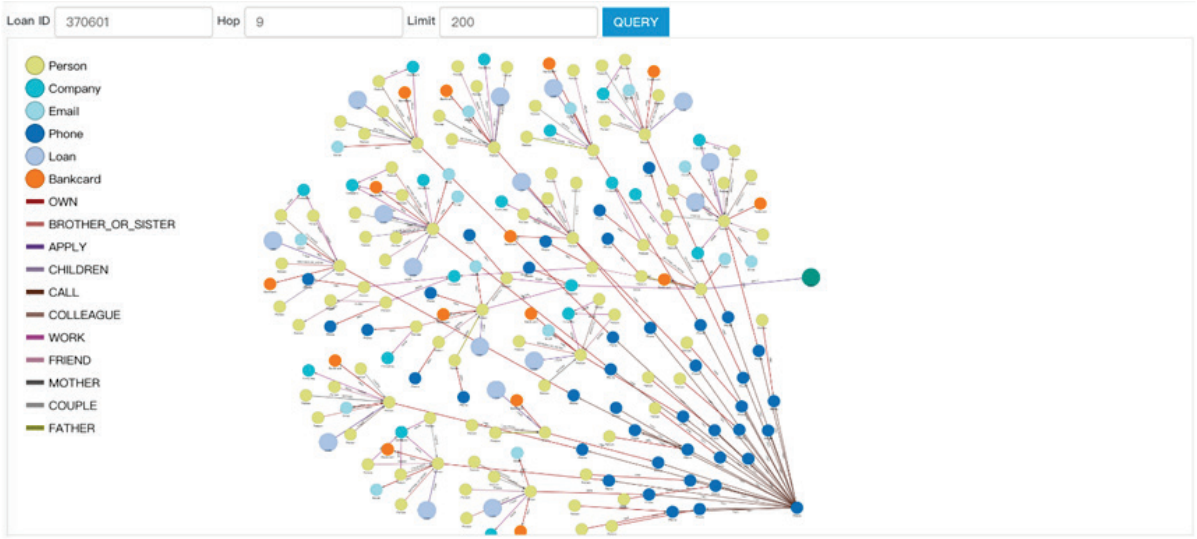
Exhibit 5 Dianrong App Illustrations

Exhibit 5 (continued)



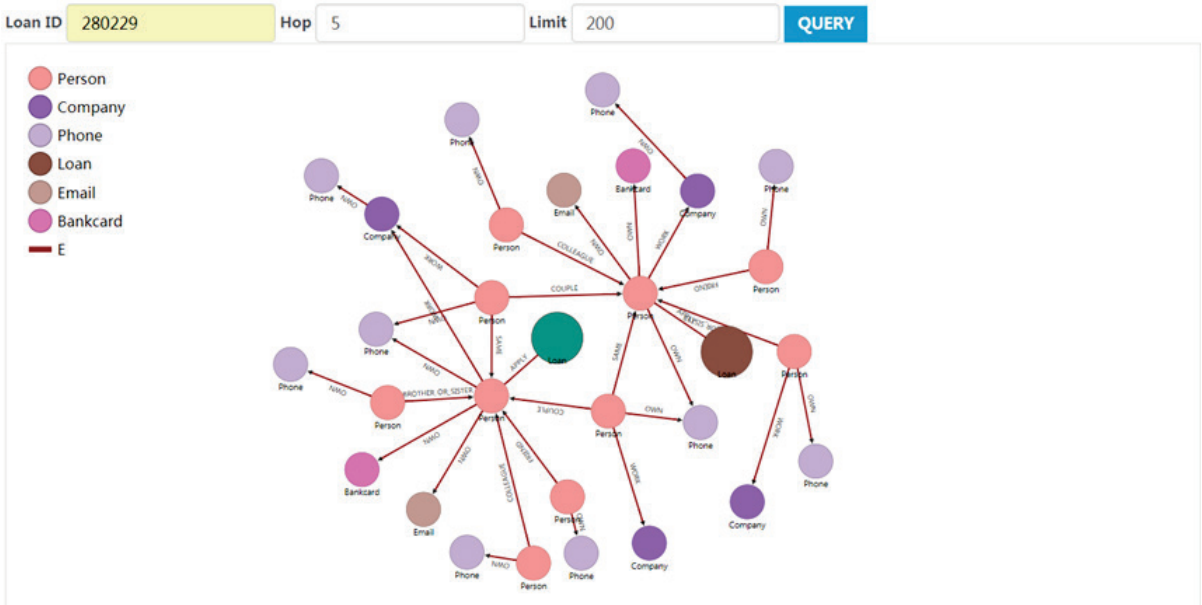
Source: Adapted from Dianrong's company presentation.

Exhibit 6 Knowledge Graph Sample A



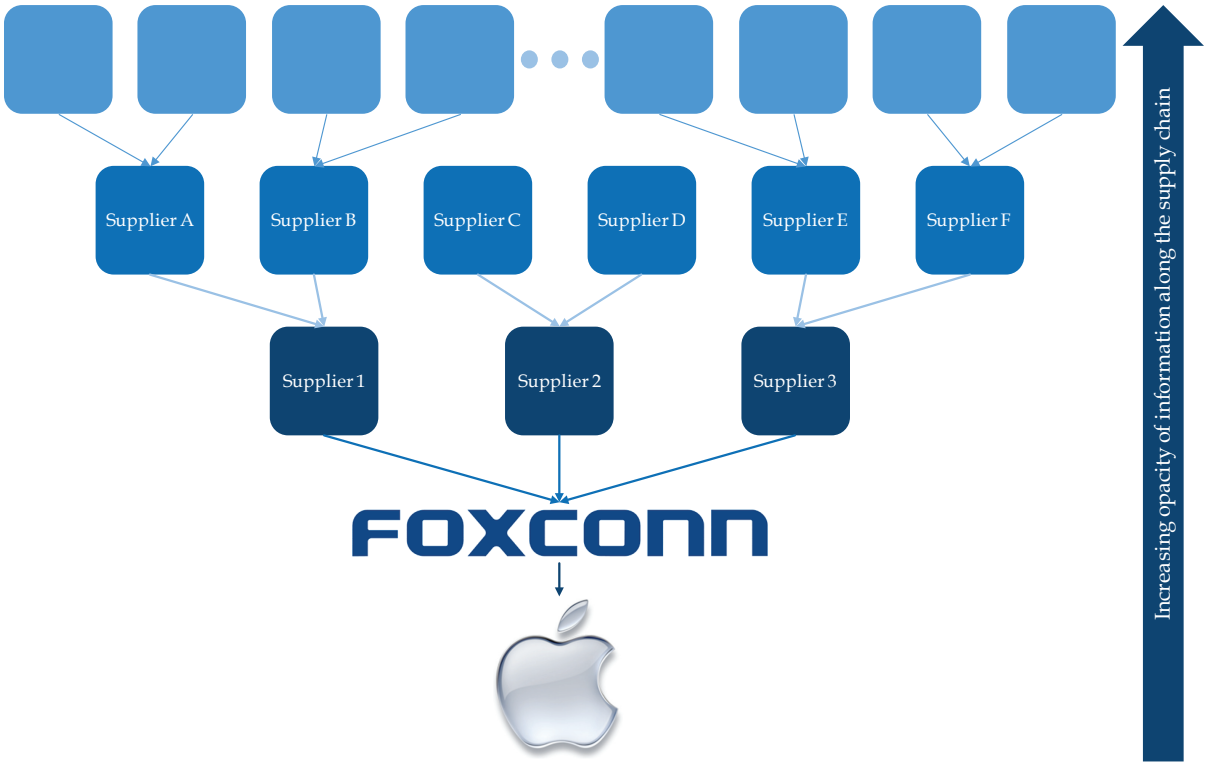
Source: Adapted from Dianrong's company materials.

Exhibit 7 Knowledge Graph Sample B



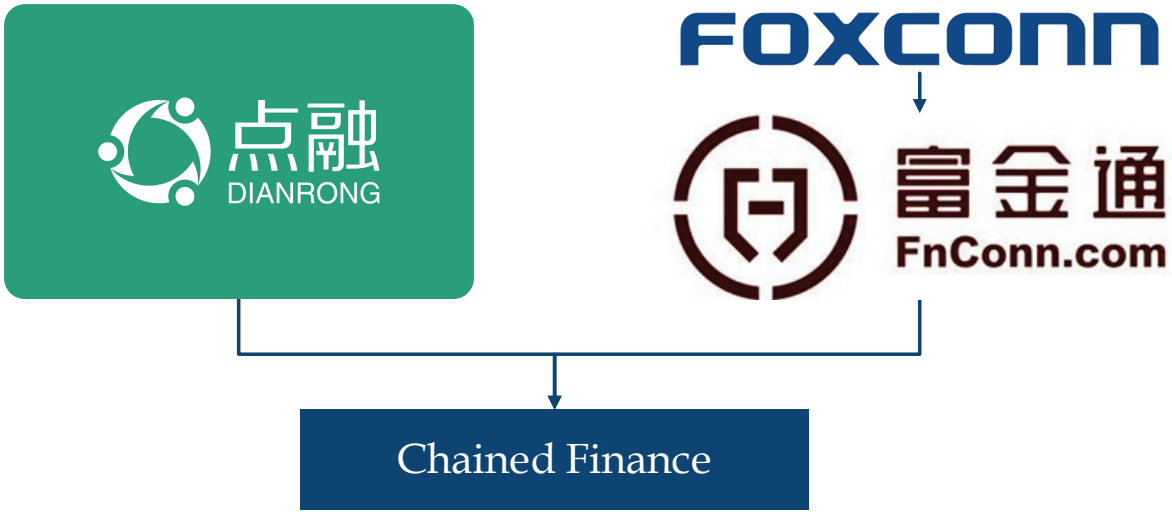
Source: Adapted from Dianrong's company materials.

Exhibit 8 Illustration of the iPhone Supply Chain



Source: Adapted from Dianrong's company presentation.

Exhibit 9 Ownership Structure of Chained Finance



Source: Adapted from Dianrong's company presentation.

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