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CHINA'S IQ (INNOVATION QUOTIENT)

TRENDS IN PATENTING AND THE GLOBALIZATION OF CHINESE
INNOVATION



THOMSON REUTERS™

“INNOVATION IS A KEY COMPONENT
OF OUR BUSINESS STRATEGY ... THERE
IS NO BUSINESS STRATEGY WITHOUT
INNOVATION AND NO INNOVATION
WITHOUT BUSINESS STRATEGY.”

*-Terry Gettys, EVP of R&D
Michelin*

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INTRODUCTION AND BACKGROUND

Intellectual Property is a central plank of China's national strategy as it pushes to become an innovation-driven economy. Effective IP protection is also necessary for China to successfully continue on that journey. Although there is recognition at the national level of the importance of IP, this does not always translate down to the enterprise level. Major Chinese corporations are making strides in embracing and using IP as an integral part of their business strategy as they seek to drive revenue growth, gain market share and deliver cost benefits through the protection of innovative technology. But as data in this report shows, this is still the exception rather than the rule.

This document is the fourth in the continuing series "Patented in China," which aims to provide insight and understanding of China as an emerging global economy and how that growth is being driven by attempts to harness the tremendous potential of human and natural resources through innovation and the global IP system.

The first report, "Patented in China: The Present and Future State of Innovation in China," was published in 2008. We examined the emerging

innovation landscape and drivers behind growth in innovation at that time, as well as identified techniques for monitoring future trends.

We then produced a sequel to that report in 2010, which updated the trends and observations of the original version based on analysis of more recent data. We also provided additional insight into alternative IP rights in China and an analytical assessment of the quality of Chinese patenting.

The third report, "Chinese Patenting: Report on the Current State of Innovation in China," was published in 2011. In addition to providing updated analyses of findings in previous reports, we focused on the development of Chinese innovation in specific technology areas and reviewed the fledgling trend of globalization.

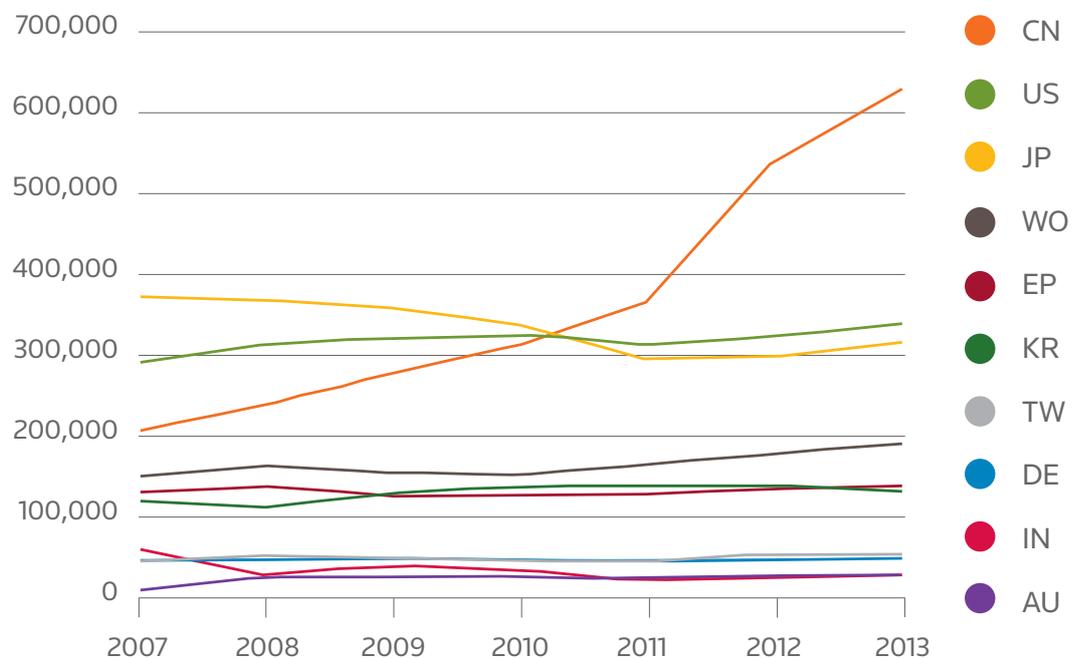
This current report provides updated analysis and commentary on the innovation landscape covered in previous reports, and also offers insight into the litigation environment in China, as well as challenges Chinese corporations face – and best practices they follow – as they seek to expand their operations and markets in the global arena.

GENERAL CHINESE PATENTING TRENDS

Quantity of Inventions

China continues to overshadow other countries in the volume of its patent applications published each year.

Chart 1:
INVENTION PATENT APPLICATIONS 2007-2013



Source: Derwent World Patents Index® and Thomson Innovation®

Chart 1 shows the volume of published invention applications (excluding utility models and designs) from 2007 to 2013 for China compared to other major global patenting regions.

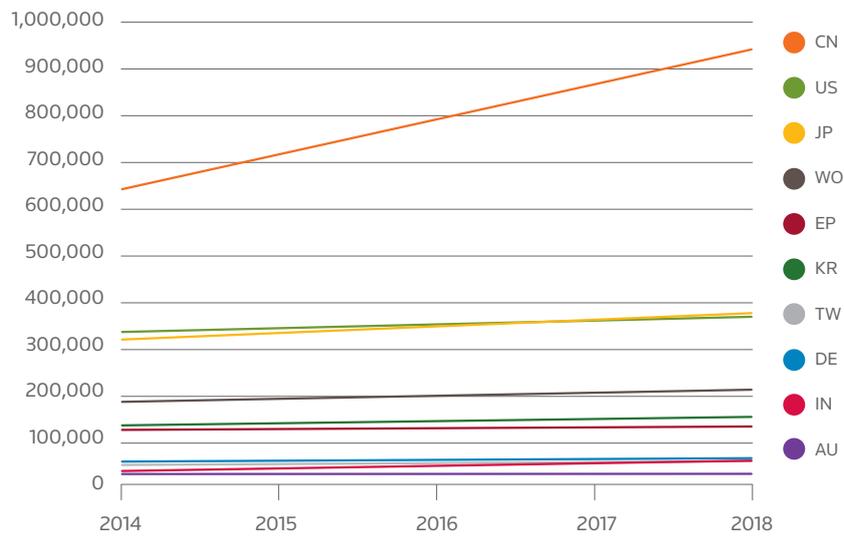
The growth in output is driven by the 12th Five-Year Plan and the associated Chinese National Patent Development Strategy (2011-2020), which outlines

specific patent targets including the goal that “by 2015 the annual quantity of applications for patents for inventions, utility models and designs will reach two million.” At current run rates, China is set to meet this target.

This is a familiar trend in China that shows no sign of slowing.

PROJECTED VOLUMES OF INVENTION PATENT APPLICATIONS

Chart 2:
PROJECTED VOLUMES OF INVENTION PATENT APPLICATIONS

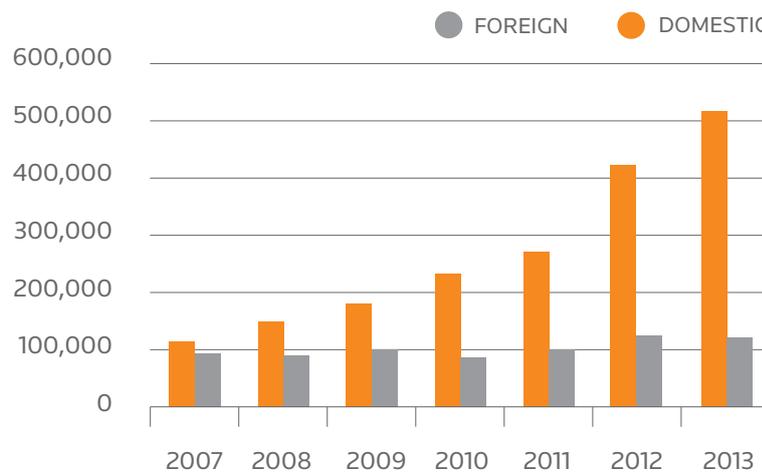


Projecting the current annual volumes of published patent applications, China will continue to outstrip other regions to produce over 900,000 invention patent applications in 2018, as shown in Chart 2.

Source: Derwent World Patents Index and Thomson Innovation

DOMESTIC VS. FOREIGN PATENTING

Chart 3:
CHINESE INVENTION PATENT APPLICATIONS WITH DOMESTIC AND FOREIGN PRIORITY



The surge in innovation that we see is increasingly being driven by domestic entities. From roughly parity in 2007, last year around 80 percent of Chinese patents originated from China.

As Chart 3 illustrates, this trend is now familiar and shows no sign of slowing.

Source: Derwent World Patents Index and Thomson Innovation

Quality of Inventions

China saw a 16.3 percent increase in published patent applications in 2013 compared to 2012, a trend that has been continuing for the past several years, driven by China’s objective of transforming the economy from a manufacturing base to a knowledge base – the transition from “Made in China” to “Invented in China.” There is, however, a question as to the quality of these patents.

The perception of low quality inventions described in Chinese patents may in part be due to the substantial use by Chinese inventors of the utility model and design patent options that exist. Chinese innovation is protected roughly in equal measure by the three available rights (in

2013, according to SIPO, there were applications for 825,136 inventions, 892,362 utility models and 659,563 designs).¹ Utility models in particular require a lesser standard of novelty than invention patents (they are not subject to substantive examination; in principle it is possible to obtain a utility model patent on the wheel) and so are likely to be of lesser quality than invention patents.

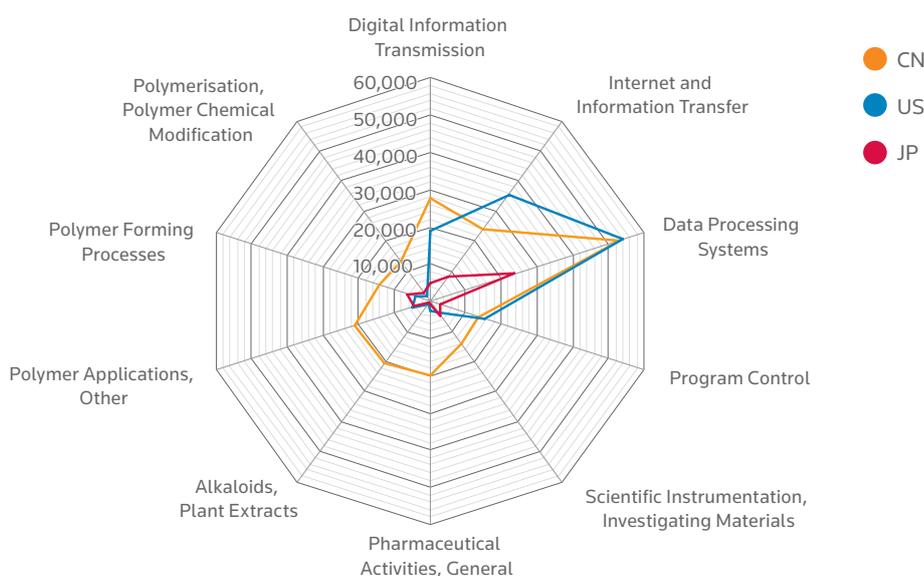
In order to truly assess the quality of inventions, it is better to compare like with like, so that in the following analyses, we consider only those inventions described in invention patents from China and comparative regions.

TECHNOLOGY PROFILE COMPARISON

What is the distribution of Chinese invention patent applications across different areas of technology compared to the United States and Japan?

In Chart 4, the top 10 technology areas by volume of inventions in 2013 (broken down by five-character Derwent manual codes) are shown for China (orange), the United States (blue) and Japan (red).

Chart 4:
CHINESE INVENTION PATENT APPLICATIONS COMPARED TO U.S. AND JAPAN



Source: Derwent World Patents Index and Thomson Innovation

¹ SIPO English website statistics at <http://english.sipo.gov.cn/>

For China, the technology profile breaks down roughly into two general areas – digital computing/processing/communication technology and pharma/natural product/polymer technology. Data processing systems top the technology breakdown followed by digital information transmission, and Internet and information transfer. The second main area is alkaloids/plant extracts and pharma activities, general.

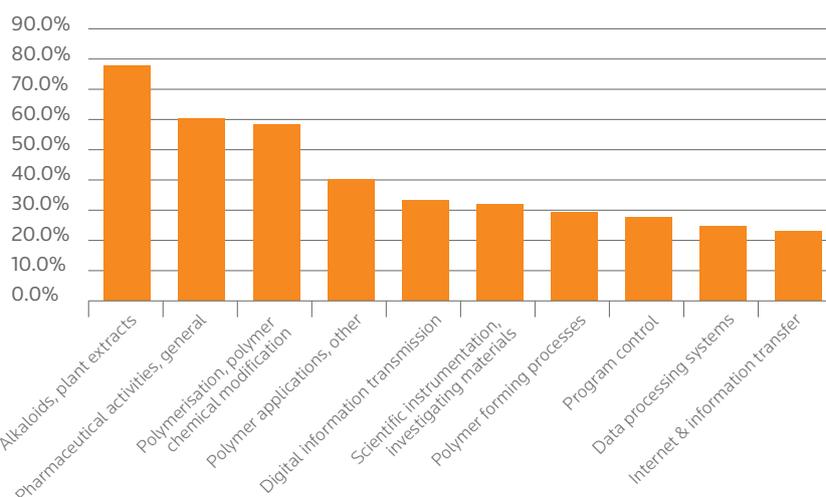
China has a portfolio of innovation in the digital computing/processing/communication tech sectors comparable to those of the United

States and Japan in these technology areas. China mirrors them in terms of its robust and comprehensive protection by corporations and universities. Japan has the same profile as the United States, but at a slightly lower level.

The big difference is in the pharma/natural products (alkaloids) sectors. China is much more dominant in this area by volume.

This is even more apparent if we look at China's global share of patent volumes in each technology sector, as shown in Chart 5.

Chart 5:
CHINA'S GLOBAL SHARE OF PATENT VOLUMES



Source: Derwent World Patents Index and Thomson Innovation

China has nearly 80 percent of the world share in patents for alkaloid/plant extracts and approximately 60 percent of global share for pharmaceutical activity, general patents.

It turns out that the alkaloids/plant extract sector is made up of thousands of traditional Chinese medicine patents. Moreover, these are predominantly developed by thousands of individual inventors with a handful of patents each, rather than large portfolios maintained by universities or corporate entities.

Chinese medicines have been in use for more than two thousand years. It doesn't seem unreasonable that China would want to claim the rights to these in the largest market in the world for this technology. But, the IP is likely to be of a lesser quality since these are developed and maintained by individual inventors.

In general, the quality of Chinese innovation depends on the technology sector considered, and the nature of the organizations conducting that innovation.

IMPACT OF CHINESE INNOVATION

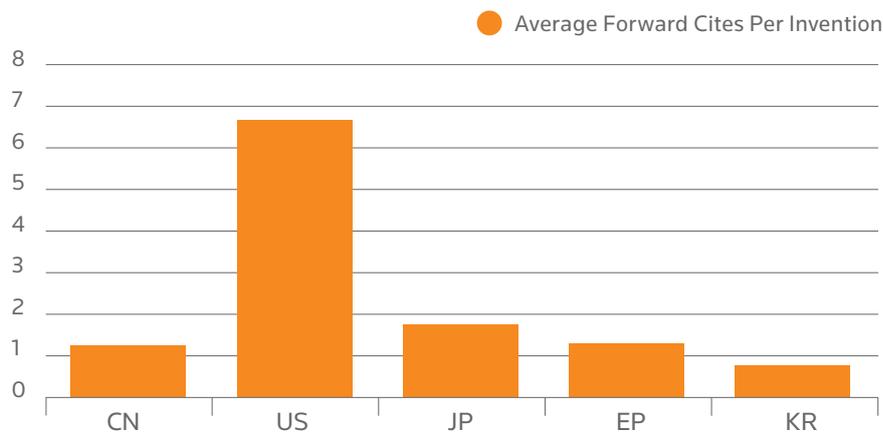
It is widely accepted that the more often an invention is cited by later published inventions, the more valuable that invention is perceived to be by others. This is not a flawless measure, since an invention may be highly cited as the wrong way to solve a technical problem, but looking at the forward citation rate of an invention is generally a useful indicator of how good that invention is.

The impact of China's innovation on later technological developments can be measured by looking at inventions published in 2008 in the field of "data processing," a major focus of interest globally. Analysts consider the number of times

these have been cited by later published inventions and compare that with the other major regions of the world: the United States, Japan, Europe (as measured by EP patents) and South Korea.

Chart 6 illustrates the average number of citations to data processing inventions published in 2008 (the ratio of total forward citations 2008-date to total number of inventions 2008). This shows that, of the 13,000 Chinese invention patent applications published in "data processing" in 2008, later published inventions cite these inventions on average 1.17 times each.

Chart 6:
FORWARD CITATIONS FOR DATA PROCESSING INVENTIONS 2008



Source: Derwent World Patents Index and Thomson Innovation

Although far behind the United States for the same metric (6.72 average forward cites per invention), this citation rate compares favorably with Japan (1.82 average forward cites), Europe (1.31 average forward cites) and exceeds the South Korean rate (0.76 average forward cites). Of course, language may have some effect here, since Chinese, Japanese and South Korean inventions will be published in the local language and are likely to be cited only

locally, although the analysis includes citations to all family members for each invention, so that equivalents in English are likely to be cited internationally if they are of significant importance.

The data seems to point to the increasing importance and quality of Chinese invention patents, at least in the high-tech area of data processing.

PATENT LITIGATION IN CHINA

The data and analysis in this section is provided by Rouse, an international firm that specializes in IP and provides a full range of IP services and solutions from strategic consultancy to IP management, enforcement and commercialization, for clients ranging from start-ups to some of the world's largest owners of IP assets. Rouse produces the renowned China IP Litigation Analysis service CIELA (www.ciela.cn). This is an innovative IP litigation analysis service

developed by Rouse based on a deep statistical analysis of more than 28,000 IP judgments including patent, trademark, copyright and unfair competition cases since 2006. CIELA data covers infringement and administrative appeal decisions from 128 IP courts in 48 cities.

The analysis below provides an overview of the invention and utility model patents' civil infringement landscape.²

Patent Right Enforcement

The last eight years have seen a significant growth in the volume of patent litigation in China, as shown in Chart 7. The number of cases filed almost tripled from 2006 to 2013. The slow growth before the new patent law in 2009 and the acceleration

after then suggests that the legal changes have brought greater certainty for patent owners.

Similar growth rates are seen in decided cases, though lagging a few years behind filings.

Chart 7

ACCEPTED AND DECIDED CIVIL PATENT INFRINGEMENT CASES BY THE COURTS



Source: CIELA by Rouse

The role of the courts in mediating settlements is significant. Almost two thirds of patent cases conclude in this way, without a reasoned decision. Appealed decisions count against judges in their

performance metrics and this in itself functions as a driver of mediated settlement to end patent disputes.

² Trend information for acceptance rates for civil patent infringement is sourced from Supreme People's Court (SPC) and the State Intellectual Property Office (SIPO) data and white papers. Decided cases are estimated based on the total number of concluded IP cases multiplied by the weightings of accepted patent cases for that same year.

Foreign party treatment, geographical differences and comparison of technical sector information has been sourced from CIELA.

Out of all cases where compensation was awarded, approximately 95 percent of the awards were statutory compensation awards, i.e. awards in the judicial discretion up to a given maximum, now RMB 1,000,000. The analysis in this report excludes compensation awards based on other types such as: loss of profit, illegal income and royalty income, in order to provide the truest comparison between variables.

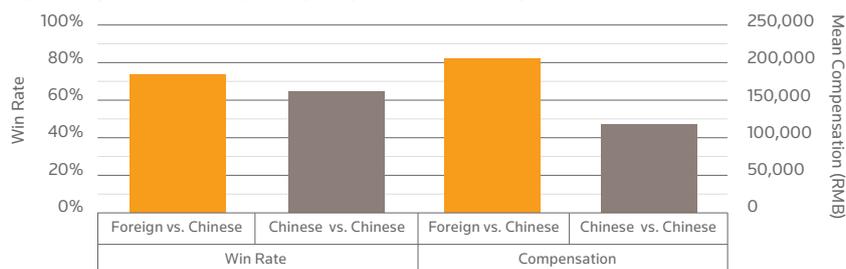
Foreign Party Treatment

China is commonly perceived as an 'unlevel playing field' for foreign litigants. However, analysis of patent cases decided would suggest otherwise, as shown in Chart 8.

Foreign plaintiffs in patent litigation win materially more often against domestic defendants than domestic plaintiffs do: a 75 percent win rate against a 63 percent win rate since 2006.

Chart 8

WIN RATE AND MEAN STATUTORY COMPENSATION COMPARISON—FOREIGN AND DOMESTIC PLAINTIFFS



Source: CIELA by Rouse

The average statutory compensation award for a foreign plaintiff also exceeds that of a domestic plaintiff by 72 percent.

While a conclusion that Chinese courts actually favor foreign plaintiffs should be cautiously avoided, the data challenges common perceptions.

Geographical Differences

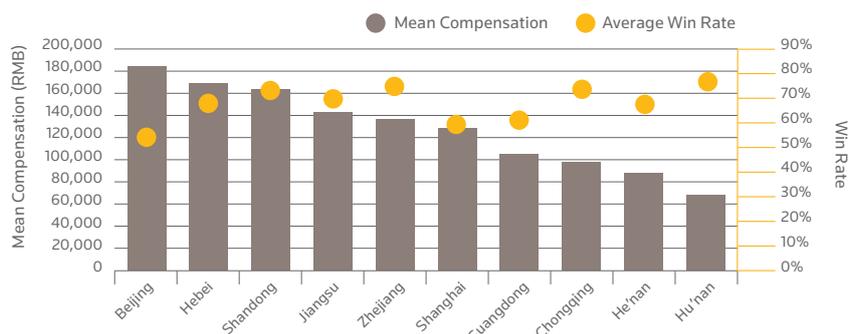
Courts across China are becoming more and more experienced in handling patent litigation, with notable variations in their outcome.

Today, patent owners should give real consideration to enforcing their rights outside of the 'traditional' venues of Beijing, Shanghai and Guangzhou. The courts in Shandong, for instance, have comparable average awards of statutory compensation, but find for the patentee almost 20 percent more than do the Beijing courts.

Flexible jurisdiction rules offer alternatives as to the venue for plaintiffs in many cases. Beijing remains the most experienced jurisdiction (probably the most sophisticated, as well) and has the highest average award of statutory compensation in China. But win rates for patentees in Beijing are among the lowest in China, as shown in Chart 9.

Chart 9

MEAN COMPENSATION AND WIN RATES BY PROVINCE/MUNICIPALITY



Source: CIELA by Rouse

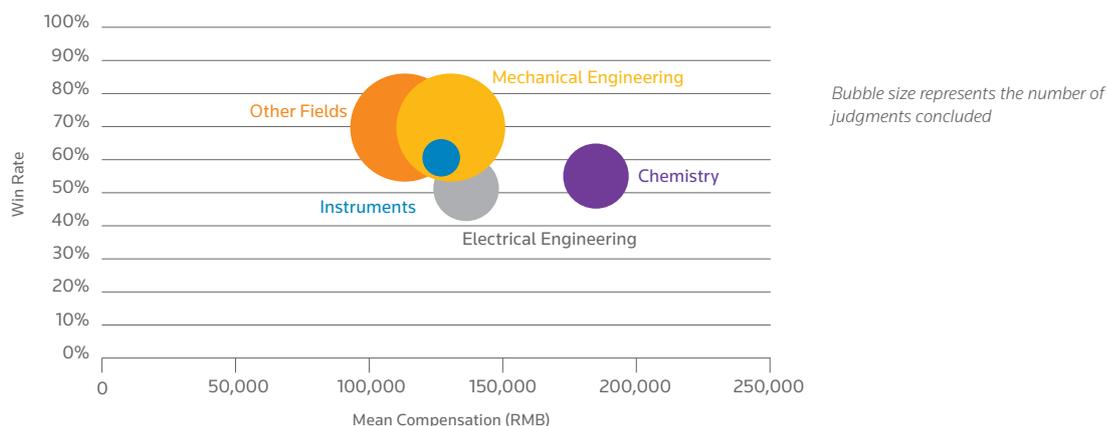
Comparison of Technical Sectors

'Lower-tech' patent infringement cases still dominate the landscape, with mechanical engineering and other fields (including civil engineering) representing almost two thirds of all

decided patent cases since 2006, as illustrated in Chart 10. This is to be expected in a developing economy.

Chart 10

MEAN COMPENSATION AND WIN RATE BY TECHNICAL SECTOR



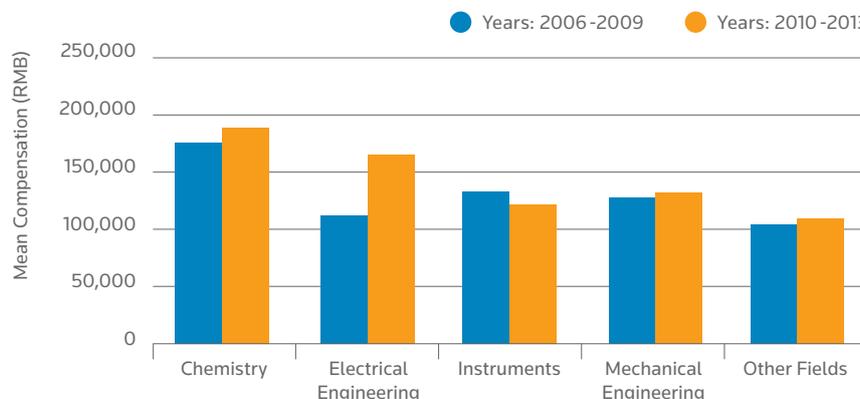
Source: CIELA by Rouse

Notable in this period are both the growth in litigation in the more complex technical fields of chemistry and electrical engineering, and the increase in statutory compensation awards in the same fields, outstripping the same in other fields. Indeed average court awards of statutory compensation in chemistry cases exceed all other

fields by more than 37 percent. Absolute value of the awards remains low (RMB 183,975, roughly USD \$30,000), but the trend is clearly increasing and punitive levels of statutory compensation – as now present in trademark law – should be introduced in the next round of amendments to patent law.

Chart 11

MEAN COMPENSATION TRENDS BY TECHNICAL SECTOR



Source: CIELA by Rouse

CHINA LOOKING OUTWARD

There is tremendous, rapidly growing patent activity in China driven by domestic entities across the full range of technology sectors. These innovations are of comparable quality to other global regions as measured by profile and impact in the high-tech areas of digital computing/processing/communication technology.

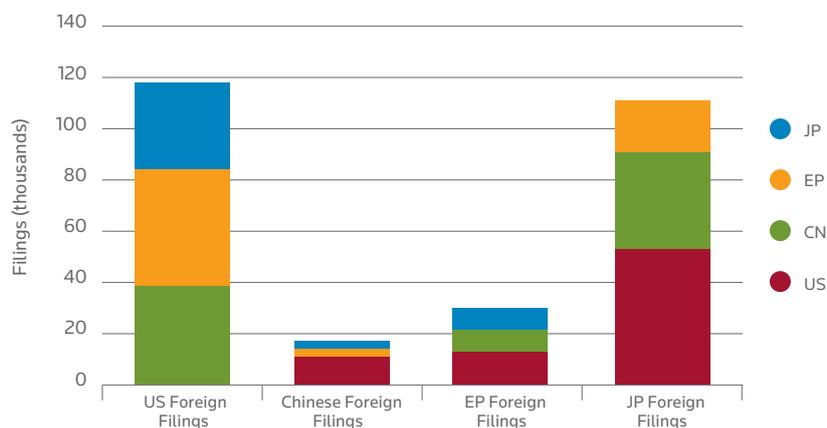
However, for China to achieve full membership in the global innovation community, it must look beyond national borders and compete on a global scale with other countries. Later in this paper, the challenges of achieving such a transition are considered. However, for now, we look at evidence to determine to what extent Chinese enterprises are beginning to set their sights beyond the near horizon.

INTERNATIONAL FILING BY CHINESE ORGANIZATIONS

A measure of the extent of globalization of innovation is to look at the international patent filing activity of Chinese enterprises outside the domestic market. Chart 12 shows the foreign filing activities for four selected patent offices (EPO - Europe, JPO - Japan, SIPO - China, and USPTO - United States) for 2013.

For each region, the number of patent applications originating in that region (priority country), which are published in the other three regions respectively in 2013, are counted. For example, for China, of a total of 33,000 patent applications with Chinese priority published elsewhere, 10,800 were US, 3,500 were EP and 2,600 were JP.

Chart 12:
FOREIGN FILINGS BY SELECTED REGIONS



Source: Derwent World Patents Index and Thomson Innovation

China published the least number of foreign patent applications in 2013, with approximately 33,000 (just 5.3 percent of total Chinese patents) compared to Japan (over 140,000 or 36 percent

of total patents) and the US (over 180,000 or 51.1 percent of total patents). The USPTO and WIPO together account for 81 percent of China's 2013 foreign filings.

Chart 13:
PERCENT FOREIGN PATENTS PER REGION 2008 VERSUS 2013

Region	% filed abroad 2008	% filed abroad 2013	Difference 2008 - 2013
China	5.4%	5.3%	-0.1%
US	54.9%	51.1%	-3.8%
Japan	29.2%	36.0%	6.7%
EPO	26.5%	24.8%	-1.7%

Source: Derwent World Patents Index and Thomson Innovation

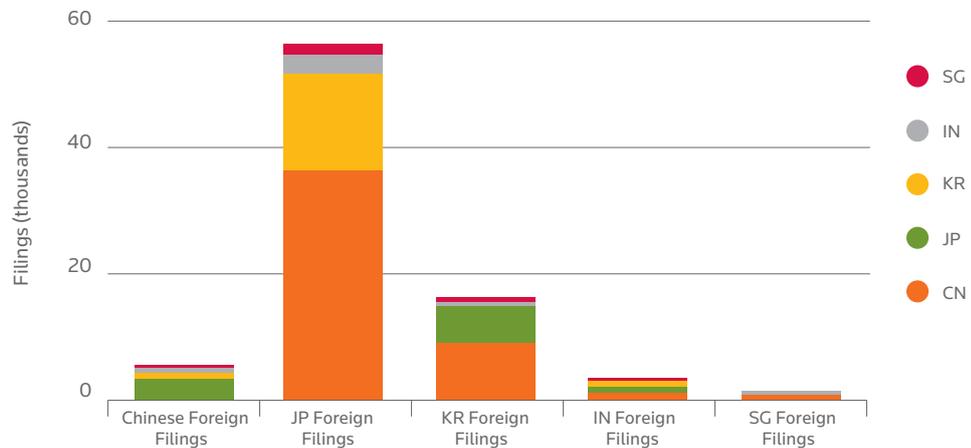
The general trend is that the United States, Europe and China are filing less globally in 2013 than in 2008, while foreign applications originating from Japan are increasing. From 2008 to 2013, China shows flat growth in seeking foreign protection for inventions. Although absolute numbers of Chinese inventions filed abroad have grown from 13,005 in 2008 to 33,222 in 2013, overall patenting has

grown from 239,663 in 2008 to 629,612 in 2013; while the proportion has remained at just over 5 percent.

This is one area that needs to be addressed as China seeks to drive economic value from its intellectual assets.

INTERNATIONAL FILING IN ASIA

Chart 14:
2014 PATENT FILINGS ABROAD FOR CN, JP, KR, IN AND SG



Source: Derwent World Patents Index and Thomson Innovation

As shown in chart 14, very small numbers of Chinese inventions are filed elsewhere in Asia. By contrast, significant numbers of Japanese and Korean inventions are filed in China. It seems that

Japan and South Korea perceive China to be an important local market, whereas the converse does not appear to be true.

TOP TECHNOLOGY AREAS FOR FOREIGN FILINGS

For inventions with Chinese priority which contain patent applications published outside China in 2013, the technology sectors (as classified by the Derwent Manual Codes to the five-character level)

were analyzed to identify the top nine technology areas of domestic innovation for which protection is being sought outside China, as shown in Chart 15.

Chart 15:

TOP TECHNOLOGY AREAS FOR FOREIGN FILINGS

Technology	Number of foreign filed inventions	Percentage of foreign filed inventions
Digital information transmission	6333	23.76
Data processing systems	3237	12.14
Internet and information transfer	2745	10.3
Transmission systems (general)	2061	7.73
Telephony	1661	6.23
Program control	1135	4.26
Passive displays	1131	4.24
Substrate processing for semiconductor device mfr.	935	3.51
Electrical engineering (other)	902	3.38

Source: Derwent World Patents Index and Thomson Innovation

Four of these are the same technology areas highlighted in the overall analysis of Chinese innovation by technology shown in Chart 4. Note also that all of the top technology areas here are in the high technology areas of computing, communications and semiconductor devices. China's burgeoning international presence in

these high-tech industries is clearly backed up by globalization of its IP in these areas.

Chart 16 shows where protection for this innovation is being sought outside China. International protection for 74.6 percent of the foreign filed top technology areas is being sought via the PCT route, 49.8 percent directly in the United States, 22.5 percent directly in Europe and so on.

Chart 16:

DISTRIBUTION OF FOREIGN CHINESE PATENT FILINGS

Country (region)	Total number of foreign filed inventions	Percentage of foreign filed inventions
WIPO	21630	74.6%
USA	14427	49.8%
EPO	6509	22.5%
Taiwan	4342	15.0%
Japan	3794	13.1%
South Korea	2494	8.6%
Hong Kong	1675	5.8%
Australia	1380	4.8%
India	1373	4.7%

Source: Derwent World Patents Index and Thomson Innovation

TOP INTERNATIONAL FILING CHINESE COMPANIES

The analysis in Chart 17 shows the top 10 Chinese companies seeking protection internationally for their innovation and reflects the previous findings

that high-tech industries are in the vanguard of Chinese globalization.

Chart 17:

TOP CHINESE COMPANIES SEEKING INTERNATIONAL PROTECTION

Company	Total inventions 2007-2013	Ranking by number of inventions filed outside China	Percentage of foreign filed inventions
Huawei	33627	1	42.9%
ZTE Corp	33884	2	36.6%
Shenzhen Huaxing Optoelectronic	2447	3	69.5%
Alibaba Group	1448	4	84.3%
BOE Technology Group	6015	5	19.6%
Lenovo	3972	6	27.5%
Tencent	4186	7	23.5%
BYD Co Ltd	7651	8	6.8%
SMIC	5482	9	9.1%
Sany	3655	10	9.5%

Source: Derwent World Patents Index and Thomson Innovation

In 2012, ZTE became the top filer at WIPO for PCT patent applications. Huawei was fourth on the same list.³

³ "Chinese Tech Company ZTE #1 in PCT Patent Filings" by Thijs van der Toom on October 10, 2013 at http://www.innovativechina.com/2013/10/chinese-tech-company-zte-1-pct-patent-filings/?goback=%2Egde_3772578_member_5794007140385435652#%21 (accessed July 12, 2014)

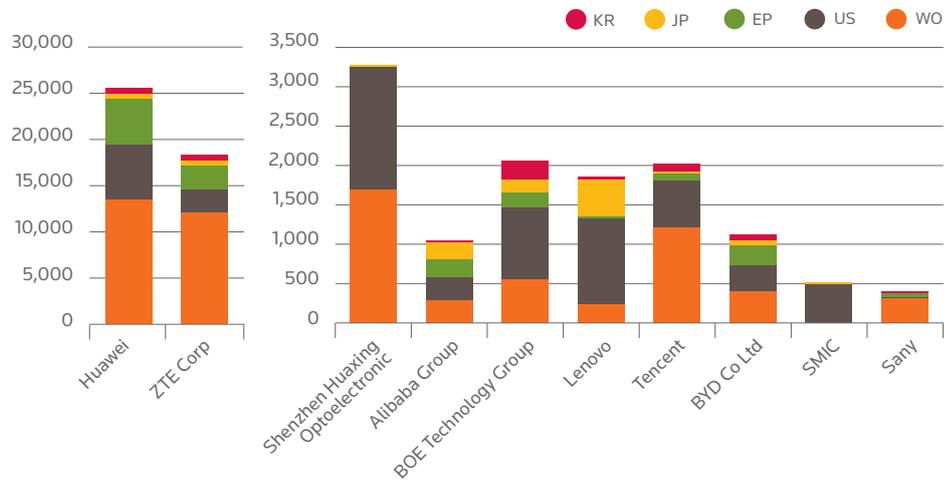
WHERE THE TOP 10 FILE

Chart 18 shows the major regions where the top 10 Chinese organizations seen in Chart 17 publish patents to seek protection for their inventions outside China.

Huawei and ZTE Corp have published an order

of magnitude more patents than the other eight companies, so the chart is split in two to show the relative numbers more clearly. Inventions may be filed in more than one other region, so totals exceed those indicated in Chart 17.

Chart 18:
TOP REGIONS FOR FOREIGN FILING BY CHINESE COMPANIES



Source: Derwent World Patents Index and Thomson Innovation

GLOBALIZATION OF CHINESE CORPORATIONS: CHALLENGES

Globalization Strategy: General Considerations

Business is increasingly being conducted on a global scale. The attraction of finding new markets to generate fresh revenue, accessing highly educated workforces with specialized skill sets to enhance innovation, and reaching production efficiency combined with economies of scale are key drivers of this trend. But globalization is not without its challenges.

There are risks in entering new territories associated with lack of knowledge of the local business, cultural, legal and regulatory environment that can cause management challenges if not planned for upfront.

For example, entering a new market by acquiring an existing company with strong presence in the local market of interest brings with it several considerations – working with the local company to understand their business, adjusting to the local environment by understanding how local people think and understanding their needs, and giving a level of autonomy to the local operation to execute strategic plans.

Intellectual property rights are another issue that companies have to face when going abroad. It is very important that all laws, especially commercial and legal, are respected. A sound knowledge of local laws is essential and can best be achieved by working with regional agents because they have the knowledge of the IP environment.

A successful globalization strategy should seek to address questions such as:

- What is the extent of the opportunity in the chosen global market?
- What is the nature and scale of the competition in the chosen global market?
- What is the appropriate extent of market presence in the chosen global market?
- How can that presence best be built?
- What are the best locations around the world for the various value-add activities?
- How best should global presence be converted into global competitive advantage?

Challenges of Globalization

With respect to intellectual property rights, the challenges facing Chinese enterprises in globalizing their innovation fall into three broad areas:

- Establishing protection for innovation
- Maintaining an IP portfolio
- Protecting IP rights

ESTABLISHING A PORTFOLIO

There is an increasing awareness that a comprehensive portfolio of intellectual property, and specifically patents, can bring substantial value to an organization. A well-constructed patent portfolio can be used for a range of business objectives such as protecting R&D investment, establishing market position, generating revenue either by direct exploitation or licensing, and securing cross-licensing or settlement agreements.

China is the global leader in patent application volume, but the majority of its patenting is domestic in nature. There is a recognized need for Chinese enterprises to develop strategies for globalization of IP in order to increase penetration of international markets. If Chinese enterprises are to become truly global players, they need to proactively build up patent portfolios internationally to protect R&D results, mitigate existing patent risks, and build presence and freedom to operate abroad.

MAINTAINING A PORTFOLIO

Once an international portfolio is established, there is a need to actively manage it to optimize value, minimize risk and reduce costs. Chinese enterprises need to strengthen management and control of patent risks to reduce or eliminate the adverse effects. This requires an effective innovation and IP management system.

Effective maintenance of an IP portfolio is an ongoing process that requires regular and systematic attention. General best practice involves the use of a portfolio review group that convenes regularly to review and make decisions about patents in the portfolio. These can include decisions about which patents should be maintained either for defensive purposes or as potential bargaining chips in negotiations, or those that may be suitable to use for generating revenue either through licensing or disposal through sale of the assets, or those that no longer have a purpose or value to the organization and should be allowed to lapse.

Establishing an effective patent portfolio should form part of an IP strategy that is aligned with the organization's business objectives. Building a comprehensive patent portfolio can however be very expensive. A practical approach may be to focus on obtaining a few quality patents initially that cover key products and technologies that align with a business's strategy.

This is traditionally achieved by direct investment in R&D and obtaining protection of resulting innovation. But an effective portfolio can also be built or supplemented by other means, including licensing-in technology where appropriate (and available), through merger and/or acquisition with organizations holding key technology, or by partnering with other organizations including creation and participation in patent pools.

However the portfolio is built, it should form part of an IP strategy that aligns with the key business goals of the company. Clear business goals provide a long-term blueprint to guide the development of a valuable patent portfolio.

Such a review body will generally consist of business stakeholders including marketing, sales, business strategy and R&D as well as legal counsel and information decision support professionals.

Decisions about how best to utilize the protection afforded by a patent portfolio rely on a sound and accurate understanding of both technology and commercial landscapes. For example, a key input could be a map of the business that depicts the landscape of competitive IP. Another key input is a facilitated collaboration with business leaders, marketers, engineers and legal counsel. There are many sources of input that vary depending upon the specific technology area, and the business objectives of the company. The desired output is an actionable strategy that aligns IP goals with the company's overall business direction.

PROTECTION OF IP RIGHTS

Once a portfolio has been established and an effective process to maintain it through regular review and active management of the assets is in place, robust protection becomes critical to realizing the strategic objectives of maximizing value and minimizing risk.

That protection is achieved through actively maintaining a watch for potential problems through:

- Patent landscaping to identify competitors and technology trends
- Patent and trademark watching to identify potential infringement
- Rigorous enforcement where necessary through effective patent litigation

There is a recognition that Chinese enterprises need to more proactively build up a patent portfolio to protect the fruits of R&D investment, mitigate existing patent risks, and establish and maintain freedom to operate in chosen technology areas and markets. This will ultimately establish and expand core competitive advantage in these areas.

Global Best Practices: IP and Business Strategies

IP strategy should be an integral part of business strategy and nowhere is this more true than in developing a strategy for globalizing the business.

Competitive advantage in the market can be gained by aligning IP strategy with technology R&D strategy and business operation strategy through a high level of intellectual property management.

Global Best Practices: When to File Internationally

In deciding whether to globalize a domestic innovation, protection of the invention in appropriate markets should be carefully considered as an important part in achieving success in those markets. Therefore, decisions about what innovation should be protected, and where, need to be based on multi-dimensional analysis:

- Target/potential market for product based on claimed invention
- Competitive landscape in target markets
- Protection environment/culture in target markets

Best Practices and Views from Chinese Sources

1. GOVERNMENT: GUANGDONG INTELLECTUAL PROPERTY OFFICE

The Guangdong Intellectual Property Office (GIPO) is responsible for patent-related work and coordination with external parties on intellectual property matters; it also supervises the conduct and management of the patent market as well as promoting and providing education about intellectual property. It conducts training programs on intellectual property, deals with patent disputes, and investigates and takes enforcement actions against patent infringers.

GIPO is at the center of the drive to transform the Chinese economy from "Made in China" to "Created in China." Intellectual property strategy plays an integral part of achieving this through implementation of the "innovation-driven development" strategy. Ultimately, the role of intellectual property in promoting industrial development can only be effective if intellectual property strategy is implemented at the enterprise level. As part of the government, GIPO is focused on further strengthening the guidance and support to enterprises in the following ways:

- First, to provide support to enterprises in building a high-quality intellectual property portfolio and seeking protection of that portfolio. This is a necessary prerequisite to implementing an effective intellectual property strategy and gaining control over core industrial development and key technologies.
- Second, to continue guiding enterprises to improve intellectual property management capabilities to meet the requirements of sustainable and global development. In recent years, the introduction and implementation of enterprise intellectual property management standards and the guidance to enterprises for intellectual property management standardization are important targets for the work of State Intellectual Property Office (SIPO).
- Third, to support enterprises in realizing the economic value of intellectual property through effective management of intellectual property assets. The government aims to create the mechanisms and policy environment for intellectual property application, guidance and support enterprises to exploit intellectual property assets, participate in market competition and cooperation at home and abroad by utilizing intellectual property, and realize enterprise development advantages.

2. CORPORATE: HUAWEI

Huawei is a leading global information and communications technology (ICT) solutions provider. Through dedication to customer-centric innovation and strong partnerships, Huawei has established end-to-end capabilities and strengths across the carrier networks, enterprise, consumer and cloud computing fields. Huawei is committed to creating maximum value for telecom carriers, enterprises and consumers by providing competitive ICT solutions and services. Its products and solutions have been deployed in over 170 countries and regions, serving more than one third of the world's population.

Since its foundation in 1987, Huawei has been committed to independent innovation by investing no less than 10 percent of its sales revenue in technology R&D every year. In this way, the company has developed core technologies as well as core intellectual property rights. As a result of continuous long-term investment and accumulation, Huawei has been leading the industry in terms of product development.

Looking to the future, Huawei aims to become the ICT industry leader. This poses big challenges for Huawei's technological innovation. How can they continuously advance technologies and better serve customers to create more value for them? How can they effectively adapt to changes and achieve sustainable development under the background of the ever-changing technologies and customer needs? These are the questions to be answered.

To address these challenges, Huawei has taken the following approach:

First, Huawei continuously invests heavily in technology R&D. In 2013, its R&D investment reached CNY 30.672 billion, accounting for 12.8 percent of the annual revenue. The R&D investment totals more than CNY151 billion over the past decade.

Second, Huawei has been attracting global talent and established 16 research centers in countries such as Germany, Sweden, the United States, India, Russia, Japan, Canada, Turkey and China. About 70,000 employees are engaged in product and solution R&D, accounting for 45 percent of the company's total employees.

Third, Huawei is committed to open innovation. By cooperating with various stakeholders, it is able to make full use of global resources and further develop innovation created by the best universities and research institutes in the world. In line with the strategy of customer-centric innovation, Huawei has established 28 joint innovation centers with leading telecom operators and has enabled customers to gain competitive advantage as well as business success by providing them with cutting-edge solutions.

Last but not least, Huawei has been increasing R&D investment in basic technology. The establishment of the 2012 Laboratories shows commitment to addressing the challenges brought about by the seismic information technology advances of the future.

3. CORPORATE: GREE ELECTRIC

Gree Corporation is one of the largest and most innovative companies in China. Through 19 years of development, it has established itself as a global leader in residential and commercial air conditioning solutions. Its trademarks of "Gree" and "Rossini" held by the Corporation were recognized as China's well-known trademarks by the State Administration for Industry and Commerce in January 1999 and February 2004, respectively. In 2003, Gree Corporation achieved total operating revenue of RMB 19.842 billion, occupying 88th place among China's top 500 enterprises and 15th place among Guangdong's top 50 enterprises.

Gree's international filing strategy has three considerations:

- Determination of which inventions are applicable for international filing
- Timing of international patent filings
- Selection of countries in the target markets

During patent application in China, patent engineers will assess each domestic patent application from several dimensions including the scope of protection, patent stability and importance of a product corresponding to the patent. They will then determine whether to propose international patent applications based on the strength of the assessment results.

Precise timing of international filing is very important so as not to provide competitive advantage to others through early disclosure. According to the quality of patent drafting, scope of geographic coverage and continuation of follow-on R&D, Gree will determine the way to file the application (through the Paris Convention or PCT), as well as the opportune moment for such an international application.

When determining specific countries in which patents will be applied for, Gree mainly takes the following aspects into account: product sales territory, key competitive markets, countries with larger consumer markets or potential ones for patented products, countries with greater production capacity of such products, and countries with larger trading markets for similar products. Gree will apply for patent protection in the corresponding countries if one or more of the above conditions are satisfied.

4. CORPORATE: BEIQI FOTON MOTOR COMPANY

Beiqi Foton Motor Co., Ltd. (Foton) was founded in 1996. Headquartered in Beijing's Changping district, Foton has registered assets of nearly USD 500 million and employs approximately 40,000 staff worldwide. Foton is an established automotive industry leader in China. R&D facilities are located in China, Japan and Germany. In 2012, Foton had a gross turnover of RMB 50.867 billion and sold over 621,000 units, making it the top-selling commercial vehicle manufacturer in China.

When deciding on worldwide application for an invention patent, Foton consider the following aspects:

- Application countries/regions
- Application methods
- Application categories

In determining which countries and/or regions to file in, the following elements are considered:

- Target or potential market landscaping of products that relate to technical solutions of patent application
- Competitors' patent landscaping of products that relate to technical solutions of patent application
- The protection environment of intellectual property for the target countries/regions

Foton usually applies for international patents via PCT, but will apply via the Paris Convention under the following circumstances:

- When there is a clearly defined target market in only a few countries
- When granted patent protection is required as soon as possible
- When it is not possible to apply via PCT, such as for an appearance design

There are some elements that need to be considered when deciding on the category:

- Related legal rules for target countries/regions
- Planned patent technology solutions for application
- Whether a patent needs to be granted as soon as possible

5. LAW FIRM: CCPIT

CCPIT Patent and Trademark Law Office is one of the largest and oldest full-service intellectual property law firms in China. The firm has 279 patent and trademark attorneys, among whom 69 are qualified as attorneys-at-law. CCPIT provides consultation, prosecution, mediation, administrative enforcement and litigation services relating to patents, trademarks, copyrights, domain names, trade secrets, trade dress and other intellectual property-related matters. Headquartered in Beijing, CCPIT has branch offices in New York, Tokyo, Munich, Hong Kong, Guangzhou and Shanghai.

Chinese companies are increasingly aware that in going global, patent competition depends less on the number of granted patents than on the effectiveness of enterprises' intellectual property

management. That is, they can ultimately gain competitive advantage in the market by closely integrating their patent strategies with technology R&D strategies and business operation strategies through a high level of intellectual property management.

With an increasing number of Chinese enterprises participating in international competition in the future, patent agencies should shift their major business from conventional patent application to a full range of capabilities, including: patent search, patent application, patent mining, patent layout, patent protection, infringement litigation, response to announcement of invalidation, transfer of patent licensing, patent pledge financing, patent capitalization, patent standardization, establishment of patent pool and due diligence.

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To find out more about our patent and IP management services in China, or to learn more about any of the details covered in this report, contact:

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