Law, Policy and Monetization in Intellectual Property

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Edited by

Randall R. Rader, Thomas Voit, Kenichi Nagasawa, Kwang-Jun Kim and Mei-Hsin Wang

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FOREWORD

Hao Ma, President of The International Association for the Protection of Intellectual Property (AIPPI) and President of China Council for the Promotion of International Trade Patent & Trademark Law Office (CCPIT)

It is my great pleasure meeting and getting acquainted with Professor Mei-Hsin Wang in AIPPI World Congress held in Milan in September 2016. I feel honored to be invited to write the "Foreword" for the book *Law, Policy and Monetization on Intellectual Property*, of which many authors are AIPPI esteemed members. The topics in this book cover the trendy technologies such as LED, transgenic technologies, online payment, AR/VR, and smart vehicles, in addition, IP management of licensing, litigation, merger and acquisition; and patent alliance operation are elaborated with true cases for industries to extract the essences for their own benefits.

As an overall indication of the innovation strength, intellectual property plays a very important role in the promotion of innovation, economic and social development of a nation. Intellectual property is also well recognized as the basic principle and tool in the communication and exchange of economy and trade, science and technology as well as culture and art worldwide. Intellectual property facilitates countries and people to utilize and share the results of innovation and to give people a better life and a bright future. With the globalization of economy, intellectual property will plays an even more prominent role in the realization of the innovation, coordination, green, opening up and sharing development.

Apart from the enormous resources and economic market, China has a long history of innovation and creativity, not only the traditional heritages such as south-point chariot (指南车), seisomograph (地动仪), gunpowder, paper technology, but also the Nobel winning scientific findings on artemisinin (青蒿素), the penetrating investigation of the

so-called parity laws which has led to important discoveries regarding the elementary particles, the pioneering work in the discovery of a heavy elementary particle of a new kind, the development of methods to cool and trap atoms with laser light, the discovery of a new form of quantum fluid with fractionally charged excitations, the groundbreaking achievements concerning the transmission of light in fibers for optical communication, and the contributions concerning the dynamics of chemical elementary processes, etc.

China established its intellectual property system in early 1980s. With over 30 years' development, China has not only established a well-developed intellectual property protection system which covers all aspect of intellectual properties and conforms to international principles, but also made great achievements in the creation, utilization, protection and administration of IPRs. China is now implementing its National Intellectual Property Strategy to effectively promote the utilization of IPRs, carry out stricter IPR protection, stimulate the development of new technologies, new industries and new formats, and enhance the level of international cooperation in the area of intellectual property.

Being the first Chinese President of the International Association for the Protection of Intellectual Property (AIPPI) in its 120-year history, I have witnessed the development of intellectual property system in China and the close cooperation between AIPPI and China. Founded in 1897, AIPPI is a truly international association with more than 60 national and regional groups and over 9000 members from more than 100 countries and regions. During its 120-year history, AIPPI promotes the value of international IP protection, supports international conventions and agreements in IP protection, compares national laws and fosters their harmonization and improvement. AIPPI helped China to establish its first IP association AIPPI Chinese Group in 1982, before China's first Trademark Law and first Patent Law were promulgated. With the support of AIPPI, China began to learn more about intellectual property and its importance and increase the international cooperation in the area of IP.

I firmly believe that this book can be used as a tool to educate IP professionals to learn intellectual property practice, benefit industries to deploy their business strategies, help governments to formulate

intellectual property policies and finally promote the international exchange and harmonization in the area of intellectual property.

Prof. Randall R. Rader, Ex-Chief Judge of United State Court of Appeals for the Federal Circuit

Over the past decade or two, corporate and business strategy has shifted markedly due to a better understanding of the value components of commercial enterprises. Decades ago corporations measured their value by assessing the worth of their manufacturing facilities and real estate holdings. Today corporations realize that the better measure of value lies in assessing the worth of their intellectual property.

Patents, trademarks, copyrights, trade secrets, and general know-how are more central to corporate worth than even the manufacturing plants that produce the products. With that understanding, acquisition and protection of intellectual property becomes essential to success, and even survival, in the modern marketplace.

Actually this shift makes great sense. Any corporate officer or director, given the choice between losing a manufacturing plant or the team of experts that created and maintain that plant, will choose to lose the plant itself. Those officers will reason that with inventive and innovative employees, they can quickly rebuild the plant (and maybe even improve it). On the other hand, without the expertise and knowledge of the managers and inventors, the plant itself will quickly fall into disrepair or declining productivity cycles.

Ironically, as intellectual property has taken its rightful place at the top of the corporate value chain, the government and judicial entities that grant and protect this vital value component have undergone perpetual, and at times, dramatic, change. Many nations have created new courts to handle the technical challenges of protecting and giving proper value to the various forms of intellectual property. And within every nation, the doctrines of intellectual property have shifted continuously. This entire publication attests to the importance of intellectual property and to its constant change in the search for the best policies to govern this central component of business value.

The chapters that follow will provide great insight into the shifting doctrines of important areas like standard essential patents or compulsory licensing or trademark protection, and more. The presentations show that nations often adopt principles to govern intellectual property without reference to the same policies in other nations.

Of course this variance in intellectual property policy from one nation to another creates another distinct problem. Modern markets are global. Every commercial enterprise recognizes that its success depends on meeting international demands - both market demands for efficient products and production and legal demands that protect its vital corporate assets. If the laws and institutions that protect the central component of corporate value vary drastically from one locale to another, of course the law can frustrate, rather than facilitate, the efficient operation of the market. Thus, legal institutions that are accustomed only to resolving local disputes now face the need of understanding international market forces.

Without that understanding, local decision makers could put requirements on their own domestic businesses that compromise their ability to compete in the global market. For that reason, this book takes on special importance because it highlights the need for local decision makers to fit their decisions into a greater global construct for protecting the most vital component of corporate value - intellectual property.

Judge/Prof. Thomas J. R. Voit, Germany Federal Patent Court

This book on "Law, Politics and Revenue Extraction on Intellectual Property" would not have become reality without the relentless efforts of Professor Dr. Mei-Hsin Wang to bring together a group of experienced scholars and practitioners in the field together in an attempt to create an as broad as possible overview of the current discussion concerning "hot spots" of intellectual property. Having worked together with Professor Wang for many years in teaching and practice of IP and in particular its commercialization, it has been a pleasure for me to join the illustrious circle of friends and colleagues, who she has assembled to contribute to this work.

Prof. Kwang-Jun Kim, Licensing Executive Society Korea President

Intellectual Property has a critical impact on businesses, both local and international, by providing businesses big and small with the tools needed to protect their technology and investments, thereby encouraging innovation, and to distinguish the origins of its products from those of its competitors, thereby encouraging higher quality of goods and services. Properly managed and used, they are tools that can increase any company's bottom line. This ambitious book will assist in getting the most available out of intellectual property. It gathers together a wealth of information and topics include not only those that are the bread and butter of a basic intellectual property practice, such as trademarks, copyrights and patent prosecution, strategies, portfolio management and infringement but also encompass more specialized subjects such as IP leaded merger and acquisition, and patent alliance management. Each is tackled in a unique way offering the reader insights and ideas that are not only intellectually stimulating but which are also of practical use. In doing so, this work touches on subjects that are of interest not only for intellectual property practitioners, but for a wider audience, such as innovators seeking to better understand how to protect their innovations and businessmen and women searching for ways to better understand how they can use intellectual property to benefit their businesses.

Mr. Kenichi Nagasawa, head of Intellectual Property, Canon

It is a great pleasure for me to contribute a forward to this book. The book deals with the latest intellectual property related issues including nation-specific problems and worldwide interest, both academically and practically. Without any limitation, the speakers and authors could freely choose any valuable topic in which they are confident. Thus, the variety and the quality of the presented articles are guaranteed. I firmly believe that the publication would be meaningful to introduce and share the outcomes of the successful discussions all over the world.

Furthermore, this book would be a great help not only to the interested scholars, judges and lawyers, law-makers, investors and enterprisers, but also to the young students who will lead the world in the future.

Prof. Hang-Dong Wu, Honorable President of China IP Law research Association, Law Committee in Ministry of Education (China), Ex-president & current Chief Officer of IP Research Centre in ZhongNan University of Economic and Law

It is the 12th year anniversary of the IP research Centre in ZhongNan University of Economic and Law. This book witnessed the friendships among our esteemed colleagues globally and China progress both on IP development and technology advancement in many chapters, such as Xiaomi, BYD, HuaWei, ZTE, Lenovo, Alibaba, Tencent, etc. For my entire career, I work with government officials to set up internationally harmonized IP laws and support the enforcement of IP laws. I further encourage my faculties to well educate our younger generations and support industry needs on IP strategies and applications. China is a friendly and civilized country with abundant cultural heritages, manpower and natural resources, I sincerely hope the world can approach China with sense and sensibility, China is willing to work with the rest of the world to invent and manufacture affordable and environmentally friendly goods towards the better future.

Prof. Mei-Hsin Wang, Fellow of Royal Society of Chemistry UK, National Yunlin University of Science & Technology, Taiwan

Working with Cambridge Scholars Publishing is indeed a pleasure, this book is a token of friendships for all editors and contributors from different continents and cross generations. For senior fellows, they are the legends who build the foundation and history for intellectual property, while the young contributors share the modern practices on intellectual property and strategies for emerging technologies based on global patents intelligence. Readers shall benefit from this book to manage intellectual property rights with new idea, in addition, bring the world better technologies with fair and reasonable price. Sincerely hope our friendships will soon bring us together for another meaningful book.

Nevertheless, I would like to thank for the supports and encouragements from friends, parents, and my special thanks to my PhD supervisor-Sir. Charles W. Rees and my tutor - Prof. Margaret Goodgame in Imperial College London; my LLM supervisor - Prof. Len-Yu Liu in National ChengChi University, my tutor-Prof. Cheng-Er Lin and Law School president - Prof. Wei-Da Pan in SooChow University, and my mentor - Prof. YP Jou, for showing their passions on teaching and research, how

intellectual property ecosystem will change the world, nevertheless, their faith on seeking the justice.

Nevertheless, we highly appreciated that InQuartik and Questel provide Patentcloud and Orbit for patent analysis in this book.

INTRODUCTION

TRADEMARKS AND DESIGN WITHIN THE EUROPEAN UNION: A SHORT OVERVIEW

THOMAS J. R. VOIT
GERMAN FEDERAL PATENT COURT

One product – many rights

Nearly all of the products around us are protected by various kinds of rights, if you look at your mobile phone as an example, the manufacturer's name[1] may be protected as a trademark as well as the name of the product model; while the startup tone might also be protected as a trademark. The software and the manual to operate a phone could be protected by its copyright, including additional ringtones. The hardware itself might be the subject matter of a protection by patent law, and the form of the overall phone could be protected by design law.

As one can see, there are different kinds of protections for the products around us; all of these rights have different requirements and different objectives.

The differences for the scope of protections between the trademark law and patent law can be distinguished by two key features: firstly, the protection by trademark has no time limit;[2] and secondly, the cost, which is relatively inexpensive compared to patent protection.

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[1] In most cases it is not the real manufacturer, but the vendor.
[2] Its protection period is set at 10 years, and can be renewed every 10 years without limitation.

Trademarks

Almost everything can be registered as a trademark, such as words, symbols, logos, three-dimensional marks, colors, sound marks and so on.

Recently, the European Court of Justice decided that even a retail store's design may be registrable as a trademark.[3] The main requirement that must be fulfilled for a trademark is distinctiveness; that means a trademark is required to be sufficiently different from existing trademarks.

On the other hand, a trademark must not be descriptive, and must not contain misleading declarations.

In addition, a trademark needs to be used, otherwise it may be cancelled. Essentially, the owner needs to provide evidence of use in the event of a lawsuit being filed.

National and Community Trademarks

Within the European Union, an applicant can choose to file a national trademark, which is valid only in the country of registration and/or a community trademark, which is valid in all member states of the European Union.

The registration process takes place before the national registration offices for national trademarks, and before the Office for the Harmonization in the Internal Market (OHIM).

Regarding the validity of both categories, a possible infringement will be judged by national courts, i.e. the validity will be judged by the Federal Patent Court for German trademarks and by the European Court of Justice if community trademarks are involved.

Granting Procedure

In both categories of trademarks, the examination by the national offices and the OHIM are limited to their formalities. Contrary to the examination

[3] ECJ, Case C-421/13, Apple Inc. vs. Deutsches Patent und Markenamt, 10th July 2014.

for a patent, there is no substantive examination for trademarks.

Whether a trademark is identical to, or similar enough to be confused with, another trademark, has to be decided in an opposition proceeding before the competent office.

Design Protection

Another means of protecting the appearance and/or the formality of a product is design protection. Within this chapter, I will concentrate on registered community design (RCD) and unregistered community design (UCD).

Unregistered Community Design (UCD)

Unregistered Community Design (UCD) is a form of protection given for a period of three years. This starts from the date on which the design was first made available to the public ("disclosure") within the European Union. After three years, the protection will be ended and an extension cannot be applied for.

Since there are no further requirements to be fulfilled other than an individual character[4] and a disclosure, it is the first choice for all fashion products, in particular for clothing products. For this type of product, the time-limit of three years for design protection should be sufficient.

If it comes to a lawsuit regarding the validity of an UCD, the entitled person will need to prove the individual character.[5]

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[4] See the definition in the decision of the ECJ, case C-345/13 Karen Millen Fashions Ltd vs. Dunnes Stores (Limerick) Ltd., 19th June 2014: "The overall impression which that design produces on the informed user must be different from that produced on such a user not by a combination of features taken in isolation and drawn from a number of earlier designs, but by one or more earlier designs, taken individually".

[5] See decision of ECJ in case C-345/13 (footnote 4): "It must be interpreted as meaning that, in order for a Community design court to treat an unregistered Community design as valid, the right holder of that design is not required to prove that it has individual character within the meaning of Article 6 of that regulation, but need only indicate what constitutes the individual character of that design, that is to say, indicates what, in his view, are the element or elements of the design concerned which give it its individual character".

Registered Community Design (RCD)

Registered community design, which is valid for a first period of five years from the date of filing, can be renewed to provide protection for a further five years, up to an overall limit of twenty-five years. As with all other registered rights, the RCD requires an application to be made at the OHIM. Examination by the OHIM is limited to formalities.

All cases of infringement, and the appraisal of protectability, are eventually reviewed by a court to deal with any dispute.

Conclusion

Since the marketing and sales of goods is becoming increasingly competitive, the protection of industrial property rights also becomes increasingly important. Hence, rights such as trademarks and design protection could be worthy of consideration as a relatively inexpensive amendment to patent and utility model rights.

PART I:

MONETIZATION ON INTELLECTUAL PROPERTY FOR SMART TECHNOLOGIES

CHAPTER ONE

INTELLECTUAL PROPERTY TRADING AND INTELLECTUAL PROPERTY COMMERCIALIZATION IN A GLOBAL PERSPECTIVE

KWANG JUN KIM
LICENSING EXECUTIVE SOCIETY KOREA

Introduction

The recent trend of Intellectual Property (IP) transaction and commercializing by Asian companies has important implications in IP business.

After the smartphone war between Samsung and Apple, it became evident that patent issues are a critical factor for many global operating companies. In this regard, the Asian Intellectual Property market is a place that requires our attention.

Recent trends indicate the following scenarios:

First, the intellectual property transaction market in licensing and sales/acquisition is growing in the region. For example, some companies, including Japanese companies, are now increasingly ready and willing to unload their patents, and many Chinese companies are stepping-up to buy these patents.

Second, an increasing number of companies are using a variety of mechanisms to acquire intellectual property, including technology merger and acquisition (M&A).

Third, unlike in the United States, governments are playing an important role in setting up and operating Intellectual Property businesses.

The Trend of Intellectual Property Trading and Intellectual Property Commercializing by Asia's Companies

In the Asian Intellectual Property market, Japan is considered a prime source. For example, Panasonic patents are known to have been transferred to Inventergy,[1] Sisvel,[2] Hera Wireless, Optis (Optis Technology LLC) and WiLAN.[3] In 2013, over 900 patents for image sensors, semiconductor packaging, LED were transferred to WiLAN. In 2014, over 500 patents for 3G and 4G technologies were transferred to Inventergy. Another Japanese company, NEC, has been actively monetizing its patents. In 2012, it was reported that NEC sold patents for flat panel display technology to Hon Hai/Foxconn for $122 million. In 2014, NEC sold over 3,800 patents for 3G, 4G and other smartphone technologies to Lenovo.

Other Japanese companies, including Hitachi, Sony, Renesas Electronics,[4] Mitsubishi Electric, Fujifilm,[5] and Rhom[6] are also known to have sold their patents to companies such as IPCom,[7] Acacia Research,[8] Apple, Samsung Electronics, Google, Hon Hai/Foxconn,[9] WiLAN, Inventergy, and Lenovo. Japanese companies also provided patents to IP Bridge. IP Bridge is an IP transaction company, which was set up with funding from the INCJ (The Innovation Network Corporation of Japan). The table below shows IPs held by IP Bridge, provided by various companies. The technology of the patents covers smartphones, video codec (MPEG-LA patent pool), and automobiles.

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[1] Inventergy company website: http://www.inventergy.com/, visited on 5th August 2017.
[2] Sysverl company website, http://www.sisvel.com/, visited on 5th August 2017.
[3] Wilan company website, http://www.wilan.com/home/default.aspx, visited on 5th August 2017.
[4] Renesas Electonics company website, https://www.renesas.com/en-eu/, visited on 6th August 2017.
[5] Fujifilm company website, http://www.fujifilm.com/, visited on 7th August 2017.
[6] Rohm Semiconductor company website, http://www.rohm.com/web/global/about-rohm, visited on 6th August 2017.
[7] IPCOM website, http://www.ipcom-munich.com/home_en.html, visited on 6th August 2017.
[8] Acaciar Research website, http://acaciaresearch.com/, visited on 6th August 2017.
[9] Hon Hai/Foxconn group website, http://www.foxconn.com/, visited on 6th August 2017.

Assignor	Country	Number of US patent assets assigned
Panasonic	Japan	836
NEC	Japan	100
Sanyo (Panasonic)	Japan	88
Visteon	United States	42

Table 2-1: Patents held by IP Bridge. Source: IAM blog

Chinese companies have also been active in IP transactions. Huawei, a multinational telecommunication company, has been buying patents from various companies such as Sharp, IBM, Red Sky Subsea,[10] Soapstone Networks,[11] and NCR Corporation. In 2014, Lenovo, a multinational computer technology company, bought 21 patent families of 3G, LTE for $100 million from Unwired Planet, who previously acquired these patents from Ericsson. About a month after this earlier transaction, Lenovo again purchased 3,800 patents for 3G and LTE standards from NEC.

Companies have also been acquiring important patents through a variety of mechanisms. In 2013, Avago, a Singapore-based manufacturer of electronic components, acquired LSI for $6.6 billion. In 2015, Avago again acquired Broadcom for $37 billion. After these two acquisitions, Avago now owns a considerable number of patents, which include 20,034 US patents and 3,800 patent applications. This represents a significant force in the LED and semiconductor industries. Avago IPO was conducted in 2009 at NASDAQ, previously named Agilent, which is an IC (Integrated Circuit) design house that belonged to Hewlett Packard, renamed after the acquisition by KKR[12] and Silver Lake.[13]

[10] Red Sky Subsea registration information in the UK, https://beta.companieshouse.gov.uk/company/03812088, visited on 7th August 2017.
[11] Soapstone Networks information on Nasdaq, http://www.nasdaq.com/markets/ipos/company/soapstone-networks-inc-76307-2641, visited on 7th August 2017.
[12] KKR website, http://www.kkr.com/, visited on 6th August 2017.
[13] Silver Lake website, http://www.silverlake.com/, visited on 6th August 2017.

Company	US Patent Elite 2015 rank	Grants	Applications
Avago	178	2,138	284
LSI	55	7,905	997
Broadcom	39	9,991	2,519
Post-merger	*13 (projected)*	*20,034*	*3,800*

Table 2-2: Patents are allocated in Avago, LSI and Broadcom, before and after mergers. Source: IAM blog

In 2015, the Chinese-led investment consortium GoScale Capital intended to purchase an over 80% stake in Lumileds of Philips, including more than 600 patent families for LED; if successful, this is likely to lead to the birth of a LED powerhouse in China; however, it was withdrawn in 2016 due to an intervention from the CFIUS (The Committee of Foreign Investment in the United States). Also, in 2014, Songguo Electronics,[14] controlled by Xiaomi, acquired 4G-related technology from Datang Telecom subsidiary Leadcore for $16.8 million.

IP Funds of Asian Governments

Since Intellectual Ventures and Acacia Research have proved that patents alone can be a foundation for business, other NPEs, such as RPX[15] and AST (Allied Security Trust),[16] also appeared on the market and enjoyed success. There are now numerous NPEs across the globe. While the NPEs market was developing in the West out of mostly private funding, Asia did not witness the creation of NPEs until Intellectual Discovery.

In 2000, Intellectual Discovery was created in Korea as a response to the threat to Korean industry posed by the likes of Intellectual Ventures and Acacia. Intellectual Discovery now holds over 3,800 patents and IP investment funds greater than $500 million. Following in the footsteps of Intellectual Discovery, Japan's INCJ created IP Bridge[17] in 2013 with $27.8

[14] Multi-million dollar deal demonstrates the strategic value of holding IP in China, http://www.iam-media.com/blog/detail.aspx?g=366bf02d-df50-458c-822c-2ee3f53d97eb, visited on 6th August 2017.
[15] RPX company website, https://www.rpxcorp.com/, visited on 7th August 2017.
[16] AST company website, http://www.ast.com/, visited on 7th August 2017.
[17] IP Bridge company website, http://ipbridge.co.jp/eng/, visited on 7th August 2017.

million. IP Bridge had been buying patents from Japanese companies, such as Panasonic, NEC and Sanyo. China also followed suit by creating Beijing IP in 2014. Beijing IP aims to buy patents to protect Chinese companies from patent infringement litigation.

Unlike Intellectual Ventures, Acacia and RPX, Intellectual Discovery, IP Bridge and Beijing IP share clearer strategic purposes, such as the protection of the industry from IP threats, and the enhancement of national competency. Unlike privately funded NPEs, the primary goal of these national IP funding companies is not necessarily to monetize patents. Their governments are satisfied if they serve to protect their industries.

The Driving Force of Asian Companies' IP Trading and IP Commercializing

Patents have strategic value if a company aims to be a global player rather than a domestic player. For example, Lenovo acquired Motorola Mobility patents from Google and the personal computer business and X86 from IBM before entering the mobile phone, global PC and server markets. Xiaomi is a relative newcomer in the smartphone market. To bolster their patent portfolio quickly, Xiaomi acquired around 1,900 patents from Microsoft and Intel, in a move designed to enter the global market. With the acquisitions of LSI[18] and Broadcom[19] patents, Avago[20] will most likely also become a force in semiconductor IPs.

[18] LSI information, http://phx.corporate-ir.net/phoenix.zhtml?c=203541&p=irol-lsiinfo, visited on 20th October 2017.
[19] Broadcom company website, https://www.broadcom.com/, visited on 8th August 2017.
[20] Avago company information (renamed after acquisition of Broadcom and LSI, while keeping Broadcom as corporate name, https://www.broadcom.com/, visited on 20th October 2018.

CHAPTER TWO

CASE STUDY ON RECENT MERGER & ACQUISITION IN ASIA

MEI-HSIN WANG, KWANG JUN KIM, VALENTINE NENAJDENKO
NATIONAL YUNLIN UNIVERSITY OF SCIENCE AND TECHNOLOGY, INTELLECTUAL DISCOVERY, MOSCOW STATE UNIVERSITY

Introduction

The recent landscape of IP trading and IP commercializing shows, under strategic consideration, that many operating companies apply options such as M&A, or technology transfers with IP transactions to enhance corporate competency. Therefore, there have been major acquisitions taking place recently. In April 2016, Sharp signed an agreement with Foxconn (Taiwan) for a 3.5 billion USD investment in preference to an offer from INCJ (Japan).[1] In March 2016, Toshiba sold Toshiba Medical System Corp. to Canon for 6.2 billion USD;[2] thereafter, Toshiba Lifestyle Products and Services Corp. were sold to Midea Group Co. (China) for 480 M USD (53.7 billion Japanese yen) with the license of 40 years' branding and over 5,000 patents.[3] In February 2016, Syngenta agreed to a takeover by the China

[1] Sharp agrees to Foxconn's $6.25 billion takeover bid, http://www.marketwatch.com/story/sharp-agrees-to-foxconns-625-billion-takeover-bid-2016-02-24?rss=1, visited on 22nd February 2016.
[2] Toshiba Selling Medical, Consumer-Electronics Units to Raise Cash, http://www.wsj.com/articles/toshiba-to-sell-medical-unit-to-canon-for-6-1-billion-1458202907, visited on 5th April 2016.
[3] Toshiba announced the transfer of White Home Appliances to Midea for 53.7B Yen, http://china.nikkeibp.com.cn/news/sino/77512-201604010936.html, visited on

National Chemical Corporation for 43 billion USD after its serial acquisitions. The China National Chemical Corporation previously acquired Pirelle for 7.1 billion Euros[4] in August 2015, and again took over Krauss Maffei Technologies GmbH for 925 million Euros in January 2016.[5] With Chinese government support, EQT[6] sold EEW Holdings GmbH (EEW) to Beijing Enterprises Holdings Limited[7] for 1.438 billion Euros in February 2016. EEW is a corporation that runs 19 Waste Incineration Power Plants. Nevertheless, Haier (China) acquired the GE Appliance Business for 5.4 billion USD in January 2016.[8]

In the western world, Microchip Technology Inc. acquired Atmel for 3.56 billion USD in January 2016.[9] Lam Research Corp. merged KLA-Tencor Corp. for 10.6 billion USD in October 2015.[10] Nantong Fujitsu Microelectronics Co. acquired two of the Advance Micro Device (AMD) factories at 370 million USD in China and Malaysia in October 2015.[11] Western Digital acquired SanDisk for 19 billion USD in October 2015,[12] which was further supported by an investment of as much as 3.375 billion

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5th April 2016.

[4] China Chem acquired Giant tire company- Pirelli approved, http://finance.sina.com.cn/chanjing/gsnews/20150806/020422888376.shtml, visited on 22nd February 2016.

[5] Chem China company information, http://www.chemchina.com.cn/en/, visited on 20th October 2018.

[6] EQT company website, http://www.eqt.se/, visited on 5th April 2016.

[7] Beijing Enterprises Holdings Limited, http://www.behl.com.hk/en/global/home.php, visited on 20th October 2018.

[8] China's Haier to Buy GE Appliance Business for $5.4 billion, http://www.wsj.com/articles/chinas-haier-to-buy-ge-appliance-business-for-5-4-billion-1452845661, visited on 22nd February 2016.

[9] Microchip Technology to Acquire Atmel, http://finance.yahoo.com/news/microchip-technology-acquire-atmel-214100165.html, visited on 22nd February 2016.

[10] The no. 3 semiconductor device company shot, Lam Research merged KLA-Tencor for 10.6 B USD, http://finance.technews.tw/2015/10/21/lam-research-buy-kla-tencor/, visited on 22nd February 2016.

[11] China company acquired factories from AdvanceMicro Device for expansion, stock prices of ASE Group and SPILdropped, http://news.cnyes.com/20151019/201510191200290062516l0.shtml, visited on 22nd February 2016.

[12] 19 b USD! WD acquired SanDisk, http://finance.technews.tw/2015/10/21/western-digital-announces-acquisition-of-sandisk/, visited on 22nd February 2016.

USD from TsingHua Holdings,[13] though the investment of Western Digital from TsingHua Holdings was interfered with by the CFIUS and withdrawn in early 2016. TsingHua Holdings previously acquired a 51% share of H3C technologies from HP at a cost of 2.3 billion USD in May 2015.[14]

Following the globalization policy in China, the Chinese government provided the potential company list for domestic leading companies to consider their mergers and acquisitions. Apart from mergers and acquisitions, TsingHua Holdings planned a smarter strategy to become a major shareholder by investing 25% of equity share in potential companies. In October 2015, 19.4 billion NTD was proposed to invest in Powertech Technology Inc. (Taiwan),[15] 56.8 billion NTD in Siliconware Precision Industries Co., Ltd (Taiwan) and 11.97 billion NTD in ChipMOS Technologies Ltd. (Taiwan) in December 2015.[16] However, sharing similar concerns as the CFIUS, the Taiwan government did not approve these three investments. Instead, these investments from TsingHua Holdings were successfully turned into affiliations with the above-mentioned companies in China, further confirming the determination of China to control key technologies.

Under the pressure caused by the vigorous actions of TsingHua Holdings, Micron acquired Inotera Memories at the price of 130 billion NTD in December 2015.[17] NXP Semiconductors (NXP) sold its Radio Frequency Power business to Jianguang Asset Management Co. Ltd. ("JAC Capital")

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[13] Is TsingHua Unigroup not rich, 26 b RMB loan to acquire WD? http://finance.technews.tw/2015/10/20/uins-loan/, visited on 22nd February 2016.
[14] H-P to sell 51% of Chinese Data-Networking Unit to Tsinghua Holdings, http://www.wsj.com/articles/h-p-to-sell-51-of-chinese-data-networking-unit-to-tsinghua-holdings-1432181103, visited on 22nd February 2016.
[15] Powertech Technology Inc. forms a strategic Alliance with Unigroup, http://www.pti.com.tw/ptiweb/Pressrelease/PTI%20Press%20Release%20_English_%2020151030.pdf, visited on 22nd February 2016.
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for $1.8 billion USD[18] in May 2015. After the above-mentioned deal was approved in November 2015, NXP further merged with Freescale at the price of 4 billion USD[19] in March 2015. Nevertheless, Intel acquired Altera at the price of 16.7 billion USD in June 2015.[20] Avago merged with Broadcom for $37 billion on 28 May 2015,[21] and continued to acquire LSI for 6.6 billion which was announced in December 2013 and closed on 6 May 2015.[22] There were also some dramatic bidding competitions, such as Fairchild turning down the offer from Chinese buyers (China Resource Microelectronic Ltd and Hua Capital Management Co., Ltd.) while concluding a deal with On Semiconductor's for 2.4 billion USD in February 2016.[23]

In former times, criticisms of China were mainly related to their dumping of inexpensive products worldwide, or the abuse of low-paid workers and the mass manufacture capacities in China. Due to the weakening of the Chinese currency since 2015, it is not only China's impact on global economics that is under fire, but the monopoly behind vigorous overseas investments, such as mergers and acquisitions by Chinese companies or consortia. The phenomenon of high-tech mergers and acquisitions is much more than New Year's or Christmas shopping. We hope researchers, engineers and enterprises can all benefit from the information shared in this chapter and facilitate the introduction of better technologies on the market.

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Background

There are various circumstances in which merger and acquisition becomes appropriate, such as stimulating the economy during recession, or slow growth phase, eliminating competitors, acquiring technology or businesses, etc. In 2016, the total number of mergers and acquisitions reached an 8-year high, but it was also accompanied by the fall of many legendary companies, such as Sharp and Fairchild.[24] The most popular fields to pursue M&A are cloud-computing, application software, system infrastructure and semiconductors. What is a fair price for a patent and a good merger and acquisition deal? These are the questions that people often ask and can be addressed through pricing analysis; or the simple answer would be one based on demand and/or the urgency of the situation.

Referring to "The 2015 Brokered Patent Market" that collected the data from over 400 deals, the average price for a single patent asset was 189,880 USD, with a range between 16,950 USD and 925,000 USD; whereas the average US-issued patent could be valued at 276,680 USD with a range between 30,000 and 1 million USD, respectively.[25] However, with government support and the growing capital market, corporations in China are greatly motivated to participate in M&A for global market considerations, technological enhancement, the transference of assets abroad, minimizing the impact of the weakening Chinese currency, or hidden reasons that are common to money laundering or reducing the risk of political prosecution, etc. In 2015, the domestic M&A in China reached 568.8 billion USD, with 63.7% growth; whereas overseas mergers and acquisitions climbed to 102 billion USD, with 88.6% growth, wherein the high-tech merger and acquisition shared 18.8% of the total deal amounts with 171.6% growth, respectively.[26]

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The Japanese government also encouraged overseas mergers and acquisitions. The Japan Bank for International Cooperation plays an important role in international financial operations (IFO), which operate in developed and developing countries for loans and equity participation, whereas overseas economic operations (ODA) operate mainly in developing countries for long-term and low-interest loans. Japan policies focused on building infrastructure, regulation support, investments on education and research, technology development, market exploration, tax reduction, financial support, etc. Japanese corporations always follow government policies. Suntory Holdings became the third largest wine corporate after the merger of Bean Inc. in USA, at the price of 16 billion USD;[27] the Dai-ichi Life Insurance Company acquired Protective Life in USA for 5.708 billion USD in 2014, Panin Life from Indonesia at the cost of 337 million USD, and Tower Australia Group Ltd for 99.6 billion Japanese yen in 2010;[28] and Otsuku Pharmaceutical purchased Avanir Pharmaceutical in USA at the cost of 3.5 billion USD.[29] Softbank acquired ARM, which has the biggest reach in semiconductor and designs core engines embedded in chips for 32 billion USD in July 2016.[30]

Compared to the rest of Asia, South Korea has been less aggressive in overseas M&A events over recent years because it has already developed a stable global market with a leading position in various industries.

Facing domestic limitations on population and resources, Singapore is more aggressive in overseas merger and acquisition, more particularly investments in international banking and the pharmaceutical industries being the mainstreams. In 2015, Avago acquired Broadcom at the price of 37 billion USD; previously, Avago had merged with LSI in 2013 at the cost

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