Intellectual Property Management And Technology Licensing

Guide for Policymakers and Managers of Research and Development Institutes

UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific
Asian and Pacific Centre for Transfer of Technology (APCTT)

*The shaded areas of the map indicate ESCAP members and associate members.**

The Economic and Social Commission for Asia and the Pacific (ESCAP) serves as the United Nations' regional hub promoting cooperation among countries to achieve inclusive and sustainable development. The largest regional intergovernmental platform with 53 Member States and 9 associate members, ESCAP has emerged as a strong regional think-tank offering countries sound analytical products that shed insight into the evolving economic, social and environmental dynamics of the region. The Commission's strategic focus is to deliver on the 2030 Agenda for Sustainable Development, which is reinforced and deepened by promoting regional cooperation and integration to advance responses to shared vulnerabilities, connectivity, financial cooperation and market integration. ESCAP's research and analysis coupled with its policy advisory services, capacity building and technical assistance to governments aims to support countries' sustainable and inclusive development ambitions.

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FOREWORD

Technological advancements have provided opportunities for economic development of countries - transforming businesses, societies and lives of people. Fostering advancements through development, deployment and diffusion of technologies requires strong and enabling innovation ecosystems. In national innovation systems, Intellectual Property (IP) is a key driver for encouraging, protecting and monetizing innovations and their commercialization. Effective management of IP is crucial in the context of achieving the Sustainable Development Goals (SDGs), in particular SDG 9 (build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation).

Intellectual property is a strategic asset for research and development (R&D) institutes and enterprises, and is critical to their success and sustainability. Major types of IP assets include patents, utility models, trademarks, trade secrets, industrial designs, copyrights, geographical indications and new varieties of plants. IP plays a significant role in helping businesses to gain and retain their innovation-based advantages while taking innovative technologies to the marketplace with reduced risks and/or optimized profits. IP is considered essential for the survival and growth of small and medium enterprises (SMEs). It is also important to protect the IP of inclusive and grassroots innovations, which offer innovative solutions to address local issues and challenges.

Managing IP for optimal commercial utilization has been a challenge for technology-based organizations, especially in the developing economies. The reasons include limited awareness, knowledge and skills to manage IP and to reap its commercialization benefits. Due to these limitations, the innovators and enterprises may be unaware of the value or benefits of their IP, or may expose themselves to unforeseen market risks. It is therefore important that the policymakers, R&D organizations and enterprises strengthen their knowledge and skillsets to use various IP management tools and practices and establish clear policy mandates and strategies for IP management and technology licensing.

Recognizing the needs of stakeholders in the member States, the Asian and Pacific Centre for Transfer of Technology (APCTT) has developed this guidebook to support them in managing and utilizing IP in more efficient and profitable ways. It is designed to support policymakers and managers of R&D institutes, and focuses on IP management and technology licensing tools and practices including examples and case studies. Through this publication, APCTT aims to promote an enabling environment for the development and transfer of technologies in the Asia-Pacific region for inclusive and sustainable development.

We sincerely hope that this guidebook would benefit policymakers and relevant stakeholders in enhancing their knowledge on the tools and practices of IP management and technology licensing for commercial success as well as contribution towards the achievement of SDGs.

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Abbreviations and Acronyms

3D	Three Dimensional
ADR	Alternate Dispute Resolutions
AI	Artificial Intelligence
AMD	Advanced Micro Devices
APCTT	Asian and Pacific Centre for Transfer of Technology
AST	Allied Security Trust
AUTM	Association of University Technology Managers, Inc.
B2B	Business to Business
CA	Canada
CBD	Convention on Biological Diversity
CCMT	Climate Change Mitigation Technologies
CIPAM	Cell for IPR Promotion and Management
CNI	National Confederation of Industry
COVID-19	Corona Virus Disease 2019
CRISPER	Clustered Regularly Interspaced Short Palindromic Repeats
CSI	Cottage and Small Industries
CSI 300	Capitalization-weighted Stock market Index
DIP	Department of Intellectual Property
DNA	Deoxyribonucleic Acid
DPDT	Department of Patents, Designs and Trademarks
DUS	Distinctness, Uniformity and Stability
EDP	Economic Development Policy
EMBL	European Molecular Biology Laboratory
EPO	European Patent Office
FDI	Foreign Direct Investment
FIR	First Information Report
FTO	Freedom to Operate
GAO	Government Accountability Office (US)
GDP	Gross Domestic Product
GE	General Electric
GI	Geographical Indications
GII	Global Innovation Index
GM	General Motors
GPS	Global Positioning System
IAM	Intellectual Asset Management
IC	Integrated Circuit
ICAR	Indian Council of Agricultural Research
ICTSD	International Centre for Trade and Sustainable Development

IDA	International Depository Agency
IIT	Indian Institute of Technology
IMI	Innovative Medicines Initiative
INPASS	Indian Patent Advanced Search System
INR	Indian Rupee
INSEAD	Institut Européen d'Administration des Affaires
IP	Intellectual Property
IPAIRS	Indian Patent Information Retrieval System
IPIC	Intellectual Property for Integrated Circuits
IPM	Intellectual Property Management
IPMS	Intellectual Property Management System
IPR	Intellectual Property Right
JV	Joint Venture
JVC	Victor Company of Japan Ltd
LDC	Least Developed Country
M&A	Merger and Acquisition
MCQ	Multiple Choice Question
MMB	Mahyco Monsanto Biotech
MSME	Micro, Small and Medium-sized Enterprises
NDA	Non-Disclosure Agreement
NHLS	National Health Laboratory Service
NL	The Netherlands
NPE	Non-Practicing Entity
PAE	Patent Assertion Entity
PCT	Patent Cooperation Treaty
PHC	Patent Holding Company
PPH	Patent Prosecution Highway
PPP	Public Private Partnership
PRC	People's Republic of China
PRO	Public Research Organization
Q&A	Question and Answers
R&D	Research and Development
RPX	Rational Patent Exchange
S&P 500	Standard and Poor's 500
SDG	Sustainable Development Goal
SME	Small and Medium Enterprises
STEP	Social Technological Economic Political
STI	Science, Technology and Innovation
SWOT	Strengths, Weaknesses, Opportunities and Threats
TB	Tuberculosis
TFP	Total Factor Productivity

TKDL	Traditional Knowledge Digital Library
TL	Technology License
TLT	Trademark Law Treaty
TM	Trademark
TRIPS	Trade-Related aspects of Intellectual Property Rights
TT	Technology Transfer
TTL	Technology Transfer and Licensing
TTO	Technology Transfer Office
UGC	University Grants Commission, India
UN	United Nations
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNESCO	United Nations Educational, Scientific and Cultural Organization
UPOV	International Union for the Protection of New Varieties of Plants
US	United States (of America)
UCT	The University of Cape Town
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

CHAPTER

1

Introduction

This chapter introduces the

- *current system of economy and the role of Intellectual Property (IP) in innovation and development;*
- *international and national frameworks for providing an enabling system for promoting IP and knowledge building; and*
- *supporting policy recommendations.*

"Intellectual property as a policy exists to create an enabling environment for – and to stimulate investment in – innovation; to create a framework in which new technologies can be traded around the world and shared. The economic imperative at the heart of innovation is fundamental to the process of societal transformation that the Sustainable Development Goals aim to achieve." – Francis Gurry, Director, World Intellectual Property Organization (WIPO)

1.1 Intellectual property in the innovation ecosystem

An innovation ecosystem is a combination of two distinct economies: (1) the knowledge economy comprising knowledge producers, which is driven by fundamental research; and (2) the commercial economy comprising knowledge users, which is driven by the marketplace[1]. Knowledge economy concept was recognized in the 1960s with computers entering the market and changing the way markets worked. The definition of the knowledge economy has been fluctuating with time. Knowledge economy can be currently defined as production and services based on knowledge-intensive activities that contribute to an accelerated pace of technological and scientific advance[2]. Thus in this economy, constant innovation is a necessity due to the rapid obsolescence of such knowledge-based products and services.

Innovation is a key determinant of long-term economic growth. The development of new products and processes makes businesses earn more profits and be more productive. At the same time the users benefit as new goods and services become available and existing ones become more affordable. Moreover, innovation also contributes to society's welfare and in refining the quality of life. While it is evident that quality of life may not be easily measured economically.

The foundation of an innovation ecosystem is laid down by investment of resources in the knowledge economy which is driven by fundamental research. The resources can be provided through private, government or direct business investment. The other aspect of the innovation ecosystem is the commercial economy which is driven by the marketplace. The two economies are linked as the financial resources needed for a knowledge economy are sourced from the profits of the commercial sector. In the commercial economy, an innovation ecosystem is said to be thriving and healthy when such investments are subsequently replenished by innovation induced profits. At that point, the two economies (knowledge and commercial) exist in balanced equilibrium and the innovation ecosystem is deemed to be healthy[3].

The Intellectual Property System acts as a reliability bond between the two economies, knowledge and commercial, strengthening the progress of innovation and business at the same time. The IP system plays a significant role in helping a business in gaining and retaining its innovation-based advantage while taking innovative technology to the marketplace with reduced risks. IP rights provide opportunities to get investors for funding, licensing and various

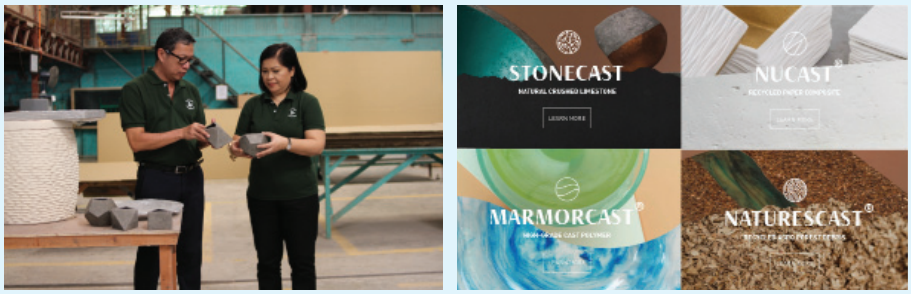
types of strategic business partnerships or alliances for monetizing the new creations. IPRs further provide a strong negotiating position in the process of getting into business partnerships such as licensing agreements, joint ventures (JVs), mergers & acquisitions (M&A) and technology transfers.

The importance of having an IP system work for a business can be seen from the example of the Philippines company, Nature's Legacy ®, which continues to innovate using various natural raw materials e.g. agroforestry debris — branches, twigs, tree barks etc. to create innovative products and utilizes the IP system to grow its business (Box 1.1).

The Global Innovation Index[4] (GII) is a leading reference which aims to measure an economy's innovation performance. The GII has evolved into a valuable benchmarking tool that can facilitate public-private dialogue where policymakers, business leaders, and other stakeholders can evaluate innovation progress on an annual basis.

The Global Innovation Index 2019, in its 12th edition, was co-published by Cornell University, Institut Européen d'Administration des Affaires

Box 1.1: IPR used for sustainable business development



Nature's Legacy co-founders Pedro and Catherine Delantar with their innovative products and registered trademarks of their product lines.

Nature's Legacy is an award-winning manufacturer that transforms natural resources into patented sustainable materials to create inspired pieces for the home, for business and for life. The research and development (R&D) efforts of the company is focused on ensuring production sustainability by using raw materials that are naturally abundant. One such innovation is a simulated cast stone product that resembles Mactan stone using calcium carbonate (a common substance found in all rocks) as the main component mixed with resin as a binder. Five unique variants were created for which patents and utility models were registered which were crucial for success in the export market for Mactan stone-based products.

Nature's Legacy products have continued to expand, and the company now exports its products to Europe, the USA, the Middle East and Asia. Nature's Legacy sales have increased from Philippine pesos(₱) 29 million (approximately US $ 646,000) in 1998 to ₱95 million (approximately US $ 2.12 million) in 2002, with sales reaching over ₱100 million (approximately US $ 2.23 million) in less than 10 years after the company was launched. The company has received several recognitions and continues to grow by creating knowledge and generating international revenues.

(Source: www.natureslegacy.com)

(INSEAD), and the World Intellectual Property Organization (WIPO, a specialized agency of the United Nations). GII Knowledge Partners believe in the role of innovation in increasing the competitiveness of nations, enabling economic growth, driving societal changes and building the foundation of a country's future.

The core of the GII Report includes ranking of world economies' innovation capabilities and results. The GII is one of the benchmarks that help policymakers better understand how to stimulate and measure innovative activities and is considered as the main driver of economic and social development[5]. For example, the GII 2019 ranked 129 economies based on 80 indicators[6], from traditional measurements like research and development investments and international patent and trademark applications to newer indicators including mobile-phone app creation and high-tech exports. The indicators for knowledge and technology outputs and creativity used in GII rank calculations include IPR activities of the country. They can be (i) patent applications filed by residents, both at the national patent office and at the international level through the PCT; (ii) utility model applications filed by residents at the national office; (iii) trademark applications by residents at the national office; (iv) industrial designs included in applications at a regional or national office; (v) patent publications, etc.

The Global Innovation Index 2019 results show different areas of innovation being led by different countries, each having its own unique value proposition[7]. The ranking changes with the changing ecosystems in the country, e.g. the Philippines GII ranking jumped to 54th in 2019 from its previous ranking of 73rd, as it is continuously taking steps to improve its innovation ecosystem (Box 1.2).

Intellectual property, as per WIPO, refers to creations of the mind: inventions; literary and artistic works; and symbols, names and images used in commerce. IP is usually divided into two categories: 1) Industrial Property Rights includes patents for inventions, trademarks, industrial designs and geographical indications;

Box 1.2: The Philippines Innovation Act[8] to strengthen innovation and GII ranking

In April 2019, the Philippines implemented a new law that would enhance the nation's innovation capacity as measured by WIPO's Global Innovation Index (GII). Officials from the National Economic and Development Authority (NEDA), the Department of Trade and Industry (DTI), and the Department of Science and Technology (DOST) brought into force the Implementing Rules and Regulations (IRR) of the Philippine Innovation Act. One of the new law's goals is to implement an action agenda for the development of the country's capacity for and success in innovation as measured by the GII.

The new Philippines law created a National Innovation Council (NIC) headed by the Philippine President to lead initiatives and establish the country's vision and long-term goals for innovation. It also adopts a regionally inclusive approach to innovation efforts, including an Innovation Fund and Filipino Diaspora programs.

WIPO co-organized with DOST's Technology Application and Promotion Institute (DOST-TAPI) a Technical Meeting and High-Level Conference on the Global Innovation Index (GII) in the Philippines in February 2020. Aside from an in-depth session on the GII methodology to discuss the country's innovation ranking and performance, WIPO has been organizing side meetings with Philippine innovation ecosystem stakeholders for discussions to explore and deepen IP and development cooperation initiatives in the context of innovation.

and 2) Copyright, which covers literary works including software, films, music, artistic works and architectural design.

The World Trade Organization (WTO) has a specific agreement on IPRs, Trade-Related Aspects of Intellectual Property Rights (TRIPS), which has been in force since 1995 and is to date the most comprehensive multilateral agreement on intellectual property. The TRIPS Agreement requires all WTO members, with few exceptions, to adapt their laws to have global minimum standards of IPR protection. In addition, the TRIPS Agreement[9] also requires fulfillment of certain obligations for the enforcement of intellectual property rights.

The TRIPS Agreement helps in establishing the general provisions and basic principles of multilateral trading system applicable to international intellectual property without discrimination based on nationality. Further, TRIPS agreement also provides for settling of disputes on intellectual property between members of the WTO. One additional objective of the TRIPS Agreement is that IP protection should contribute to technical innovation and the transfer of technology. This contribution

Table 1.1: TRIPS/WTO Agreement signatories in the Asia-Pacific region (June 2020)

S. No.	Country	Signatory to WTO/TRIPS
1	Bangladesh	Yes
2	Bhutan	Accession in progress
3	Cambodia	Yes
4	People's Republic of China	Yes
5	Hong Kong, China	Yes
6	India	Yes
7	Indonesia	Yes
8	Islamic Republic of Iran	Accession in progress
9	Japan	Yes
10	Kazakhstan	Yes
11	Democratic People's Republic of Korea	Yes
12	Kyrgyzstan	Yes
13	Lao People's Democratic Republic	Yes
14	Malaysia	Yes
15	Myanmar	Yes
16	Nepal	Yes
17	Pakistan	Yes
18	Philippines	Yes
20	Republic of Korea	Yes
21	Russian Federation	Yes
22	Singapore	Yes
23	Sri Lanka	Yes
24	Thailand	Yes
25	Uzbekistan	Accession in progress
26	Viet Nam	Yes

should be such that both producers and users are benefitted.

TRIPS provides for various flexibilities, which may be incorporated while framing a TRIPS compliant IP legislation such as compulsory licensing, parallel importation, data protection, research use and other exceptions to patentability, etc. as per the concerned nation's requirements.

Table 1.1 shows that 25 countries (including a special administrative region) in most of the Asia-Pacific are part of the TRIPS agreement.

1.2 International arrangements related to IP

There are many global arrangements related to IPRs in force as on date. Table 1.2 provides a non-exhaustive list of various multilateral arrangements[10] related to IPRs currently in force.

The Patent Cooperation Treaty (1970) makes it possible to seek patent protection for an invention simultaneously in many countries by filing an "international" patent application. Paris Convention (1883) is for the protection of industrial property and applies to industrial property in the widest sense, including patents, marks, industrial designs, utility models (a kind of "small patent" provided for by the laws of some countries), trade names (designations under which an industrial or commercial activity is carried on), geographical indications (indications of source and appellations of origin) and the repression of unfair competition. The Berne Convention (1886) is for the protection of literary and artistic works, which has the unique feature of providing copyright protection without actual registration.

Besides these major arrangements, there are others as well such as the (i) Washington Treaty (1989) on intellectual property in respect of integrated circuits; (ii) Budapest Treaty (1977) on the international recognition of the deposit of microorganisms for the purposes of patent procedure; (iii) Convention for the Protection of Producers of Phonograms (1971) against unauthorized duplication of their phonograms; and (iv) Rome Convention (1961)

Table 1.2: International Treaties/Arrangements related to IPRs

S. No.	International Treaty/ Arrangements on IPRs	Related IP area
1	The Paris Convention for the Protection of Industrial Property, 1883	IPR
2	The Patent Cooperation Treaty (PCT), 1970	Patent
3	Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), 1995	IPR
4	The Berne Convention for the Protection of Literary and Artistic Works, 1886	Copyright
5	The Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, 1977	Patent
6	The Madrid Agreement Concerning the International Registration of Marks and the Protocol Relating to the Madrid Agreement, 1891	Trademark
7	Lisbon Agreement for the Protection of Appellations of Origin and their International Registration, 1979 and its Geneva Act, 2015	GIs
8	The Hague Agreement Concerning the International Deposit of Industrial Designs, 1925	Designs
9	The Trademark Law Treaty (TLT), 1994	Trademark
10	Universal Copyright Convention, 1925	Copyright

for the protection of performers, producers of phonograms and broadcasting organizations.

The Nairobi Treaty on the Protection of the Olympic Symbol (1981) restricts the use of Olympic symbol for commercial purposes (in advertisements, on goods, as a mark, etc.) without the authorization of the International Olympic Committee. The Marrakesh treaty (2013) facilitates access to published works for persons who are blind, visually impaired, or otherwise print disabled, thereby having a humanitarian and social development dimension for copyrighted material.

The international agreements, which lead to uniformity in the protection and enforcement of intellectual property rights, contribute to the promotion of technological innovation and to the transfer and dissemination of technology. The TRIPS agreement, for example, requires the developed country members to provide incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging technology transfer to the least-developed country (LDC) members[11]. This obligation is to enable creation of a sound and viable technological base for the LDCs. Although TRIPS Agreement did lay a base, there exist other modes of trans-border transfer of technology too, such as:

- Trade;
- Foreign direct investment;
- Licensing;
- Movement of people; and
- Cross-border information flows[12]

The existing literature robustly supports the view that trans-border technology transfer increases by growing trade, especially in capital-goods imports, foreign direct investment, and licensing of production rights to share access to intellectual property.[13] Access to global technologies has also found to be enhanced by incoming patent applications and both temporary and permanent migration of technically skilled workers.[14]

The Patent Cooperation Treaty has led to the creation of PCT-Patent Prosecution Highway (PPH), for faster examination of patent applications in different PCT countries, as well as led the way to several bilateral PPH agreements between national patent offices[15].

The National laws when formulated for protection and enforcement of IPRs are not only required to meet the requirements as laid out in the international arrangements that they are party to, but also need to consider those, which they are not a party to considering where the innovation is to be commercialized. The role of national governments in promoting IP innovation and development thus starts from the enactment of the laws itself.

Taking the case of the People's Republic of China ("China"), the major laws which govern trans-border technology transfers include the Foreign Trade Law, the Administrative Regulations for the Import and Export of Technology, the Administrative Measures for the Registration of Technology Import and Export Contracts, and the Administrative Measures for Technologies the Import of Which is Prohibited or Restricted. In pursuance to these, "an act of transferring technology" in or out from China, by way of trade, investment or economic and technological co-operation, is defined as the import or export of technology[16].

China has regulated trans-border technology transfers since the beginning of the 1980s, to protect their domestic companies who were not sophisticated in such transactions[17]. China has thus divided technology into three categories – prohibited, restricted and free.

Technology import and/or export falls into the category of prohibited or restricted for reasons like national security, the public good, human health, protection of the environment, etc. Once prohibited, the technology can neither

be exported nor be imported. In case the technology falls within the restricted category, then special approvals must be taken for the transfer. The rest of the technologies are freely tradable.

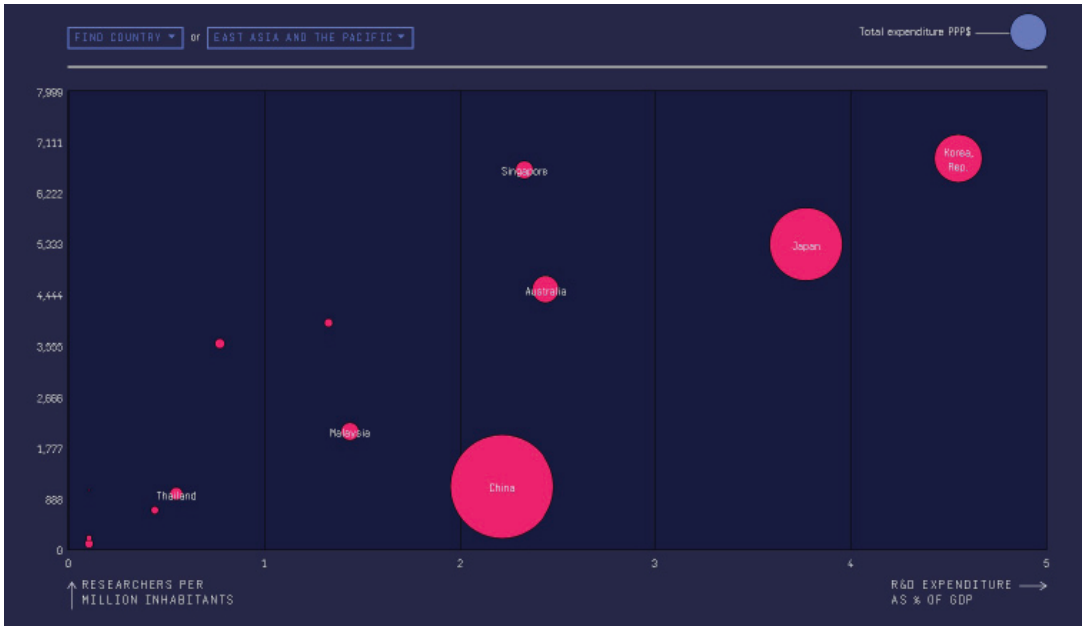
On March 18, 2019, China announced amendments to its laws on joint ventures and the Regulations on Administration of Technology Import and Export which were to come into force with immediate effect[18]. The changes resulted in the elimination of some of the restrictions around trans-border technology transfers which have had the impact of broadening the scope of freedom in contracts from then on. Thus, the impact of multinational agreements on the national trade and policy for the transfer of technology is self-evident.

1.3 Innovation and Sustainable Development Goals

On 25 September 2015, the United Nations adopted the 2030 Agenda for Sustainable Development, transitioning from the previous 15-year Millennium Development Goals of 2000. This new agenda is universal with 17 Sustainable Development Goals (SDGs) and 169 targets applying equally to developing and developed countries. The goals balance economic, environmental and social development along with human rights, peace and security. The progress towards reaching the goals is required to be monitored regularly. Innovation is recognized as key to achieving the objectives of Agenda 2030 of the SDGs.

To achieve the SDGs, all stakeholder groups need to take ownership. The focus of scientific research in many countries is now aligned towards problem-solving to tackle the pressing developmental challenges. This shift in research priorities can be seen with research funds being allocated to the applied sciences. Also, investments by both governments and businesses are increasing in the development of 'green technologies' and 'green cities'. However, basic science and applied science are interconnected and interdependent, complementing each other in providing innovative solutions. An adequate investment

Figure 1.1: Researchers per million inhabitants and R&D expenditure as percentage of GDP in Asian countries in 2018



Source: http://uis.unesco.org

in both basic sciences and applied research and development is therefore critical to reaching the goals of Agenda 2030.

SDG 9 requires the countries to pledge to build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. In particular, Target 9.5 calls upon them to encourage innovation and substantially increase the number of researchers, as well as public and private spending on research and experimental development. There are two indicators to monitor this target: Research and Development (R&D) expenditure as a proportion of Gross Domestic Product (GDP) and researchers (in full-time equivalent) per 1 million inhabitants. Figure 1.1 shows these indicators for Asian countries in the year 2018.[19]

Global spending on R&D has reached a record high of almost US$ 1.7 trillion.[20] About 10 countries account for 80% of spending. Towards the SDGs, countries have pledged to substantially increase public and private R&D spending as well as the number of researchers by 2030.

The cross-cutting nature of science, technology and innovation (STI) across all of the SDGs cannot be underestimated. For instance, the contribution of women in R&D and higher education in science, technology, engineering and mathematics (STEM) fields indicate the gender equality and literacy parameters as well. Therefore, already some governments have started realizing and implementing policy initiatives for inclusive and sustainable development.

1.4 National Government's role in promoting IP for innovation and development

Once the importance of IP and innovation is understood by a nation, the efforts towards establishing a vibrant IP regime is the first step. The government has a significant role in establishing a conducive environment for innovation and creativity. The building of modern infrastructure for a strong framework of intellectual property rights along with provisions to protect public interest is required to develop an IP system, which is fair and balanced.

Updating legislation to align with the international regime, and simplification of procedures and practices of IP offices with modern IP administration creates the basis for an IP culture of the nation.

The government initiatives towards sensitization of industry, stakeholders, enforcement agencies and the public through various awareness generation programs are the starting step towards this pro-innovation mindset creation. The Indian government for example is promoting the slogan: 'Publish and Perish, Patent and Prosper', to highlight the importance of patenting before publication.

Innovations have always been important to governments. The first and most basic reason is that the government provides protection to the inventors with patents and other tools. In the United States, the role of government is deeply embedded in their constitution. Article 1, Section 8 of their constitution provides that the congress shall have power to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.[21] Few companies are in a position to capture benefits from fundamental research they might fund on their own. In many fields, fundamental research requires resources available only to governments and the largest companies. Innovation depends on more educated workforce being employed. Therefore, more the innovations, more the employment, and the government policies can lay a strong foundation for innovation.

There are various policy initiatives that the governments can take to promote technology innovations and the IP ecosystem for innovation such as:

Box 1.3: Indian Government innovation initiatives

The government of India declared 2010-2020 as the "Decade of Innovation" for which the roadmap was prepared by the National Innovation Council, thus creating a cross-cutting system to provide mutually reinforcing policies and methodologies to implement and boost innovation performance in the country.

An India Inclusive Innovation Fund was designed to "combine innovation and dynamism of enterprises to solve the problems of the bottom of the pyramid in India." Further Grassroots Technological Innovation Acquisition Fund (GTIAF) was founded to help the technologies that may take a long time to blossom into products or services and would not have any future impact, except in the specific context in which they originated, unless they are blended with other technologies from the formal or informal sectors. Some of the technologies may not have much commercial potential at all, but they are open to social diffusion. The National Innovation Foundation (NIF) acquires the rights to such technologies, which are then licensed at low or no cost to small entrepreneurs. Some of these technologies enter the public domain and are transmitted to communities whose members make use of them. The idea here is that the State and not innovators should subsidize society. Though NIF acquires the rights to a given technology, innovators still retain their right to use their innovations in any way they want at their level. If the NIF is able to license it to a third party for a higher sum or generate more revenue, these funds are shared with the innovators even though they have licensed the rights. Volunteers can contribute to pooling technologies to generate value-added products, use social media to create wider awareness and translate non-monetary practices into local languages. NIF has acquired rights of seventy-eight technologies of fifty-eight innovators from fourteen states at the cost of INR Three million five hundred and fifty thousand. Plans are being chalked out for social diffusion/dissemination of these technologies in relevant pockets of the country.

(Source: https://nif.org.in/GTIAF)

Government dedicated spending on research and development: Apart from the public research organizations (PROs), if any player in the private sector does not have sufficient means to carry out research and development, the government funds such work directly. This can provide financial support to research and development done at companies, universities and government run laboratories. Government spending on R&D produces technology that is available for public use. The IP created by such government funded R&D should be identified and protected as appropriate.

Tax breaks for research and development: The government may closely scrutinize the research projects, to give companies a reduction in taxes depending on how much budgeted R&D expenditure they use up. This is a cost-effective policy for stimulating private sector investment. The expenses related to IP protection could be considerably high when creating an IP portfolio in foreign countries. The tax breaks for R&D expenses along with IP protection and enforcement related expenses will promote IP creation.

Promotion of entrepreneurship and innovation culture: Government policies to promote scientific interest and understanding across all sections of society will develop innovation culture. The Indian Government took many initiatives[22] in this area, some of which are shown in Box 1.3. The promotion of entrepreneurship will focus on the commercial aspects of the

innovations, thereby creating awareness of the importance of IP from a business pespective.

Encouragement of collaboration: Internal as well as external sharing of knowledge needs to be encouraged by way of enabling policies for technology transfer. Participation in international projects can be facilitated to gain access to advanced research in cutting edge areas of science to gain global experience and competitiveness in high-technology areas. IPRs being key to technology transfer, all parties to the collaborations would benefit from strong IP protection.

Clearly codified and enforced laws for innovation/IP: National innovation and IP policies and strategies need to be reflected through legislation and judicial measures. Strong IPR enforcement regime provides confidence and motivation for innovation and IP protection. Thus, a strong IP legislature is the fundamental requirement for a country to have an effective IP protection regime.

Infrastructure development: IP System can be developed by a couple of simple steps-strengthening IP offices and building IP infrastructures. The training of the IP officials and providing search engines to them is the foundation of a robust IP system. Emphasis on capacity building and human resource development by establishing a National IP Academy (based on the requirements of the country under study) to increase the competency of IP stakeholders, including practitioners such as advisors, lawyers, engineers, patent and trademark agents, and strategists, etc.is another step taken by various governments. Promotion of IP awareness campaigns, information awareness activities, development of information materials on IP protection and enforcement are also helpful.

The governments have realized that today's modern era is rooted in IP, thus appropriate reforms and policies are framed to encourage IP in the nation to encourage the tremendous growth it is accompanied by. There are several other initiatives that a government can take such as having top ministerial commitment and involvement in the issues of innovation, patenting, IP and entrepreneurship, including patent and reform work and IP institutional design and legislation.[23] Each country's government would need to look into their own requirements and take actions accordingly.

1.5 SUMMARY

The key learning of the chapter is summarized here under:

The Global Innovation Index (GII) provides comprehensive references for measuring an economy's innovation performance. Many countries are using its parameters for setting targets for growth and improvement of its rankings.

The IP system plays a significant role in helping a business to gain and retain its innovation-based advantage while taking innovative technology to the marketplace with reduced risks. The existence of IP rights provides opportunities to get investors for funding, licensing, and various types of strategic business partnerships or alliances in monetization in today's global scenario.

There are various multilateral arrangements currently in place related to IPRs at the international level.

The national/local government's role in promotion of innovation and creativity could be further enhanced by providing strong IP protection and enforcement legislations, building modern infrastructure for IP administration and creating IP culture of the nation. With innovation being an integral part of the Agenda 2030, the national government as well as the stakeholders have a crucial role to play for achieving the SDGs.

Intellectual property rights are a small part of the total knowledge produced by an organization. Innovation related knowledge is not only subjective, but it can also be transferred. IP, especially patents, serve as powerful instruments of strategy to share/transfer such innovation and to strengthen an organization's technological administration.[24]

The next chapter introduces the various types of IP and their significance in the innovation system.

SUGGESTED READINGS

Evolving Properties of Intellectual Capitalism. Ove Granstrand. 2018 Edwin Elgar Publishing

Global Innovation Index www.wipo.int/gii

https://www.wipo.int/export/sites/www/about-ip/en/iprm/pdf/ch5.pdf

International Treaties and Conventions on Intellectual Property

Overview of TRIPS Agreement. https://www.wto.org/english/tratop_e/trips_e/intel2_e.htm

The Economics and Management of Intellectual Property. Ove Granstrand. 1999. Edwin Elgar Publishing.

DISCUSSIONS POINTS

1. What do you understand about the innovation ecosystem, knowledge economy and intellectual capitalism?
2. What role does your national government play in fostering an innovation-based economy? List the framework and incentives provided by your local government.
3. Review the basis of calculation of Global Innovation Index criteria. Map your organization on the various parameters of GII.

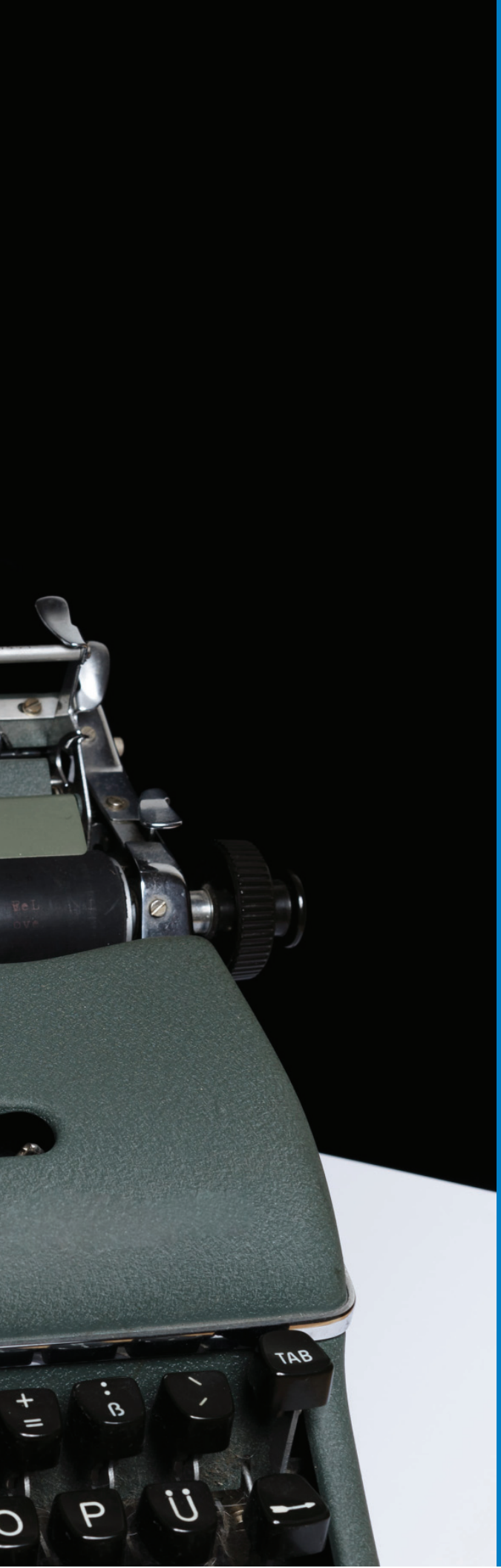
MULTIPLE CHOICE QUESTIONS

1. **The important parameter(s) of Knowledge Economy would include**:
   a) Products
   b) Services
   c) IP
   d) Innovation
   e) All of the above
2. **The country comparison of innovation published by WIPO is:**
   a) Human Development Index
   b) Misery Index
   c) Global Innovation Index
   d) GDP deflector index
   e) Happiness Index
3. **The existence of which of the following is the foundation for having IP protection and enforcement**:
   a) IP Legislature
   b) IP Manager
   c) IP Policy
   d) IP Culture
   e) IP Knowledge
4. **IPRs provide means to monetize innovation and attract investment:**
   a) True
   b) False
5. **This is not an international arrangement related to IPR:**
   a) Patent Cooperation Treaty for Patents
   b) UPOV for Plant varieties
   c) Budapest Treaty for Micro-organisms
   d) Convention on Biodiversity Diversity for Biological Resources
6. **Sustainable Development Goal 9 requires the countries to promote inclusive and sustainable industrialization and foster innovation.**
   a) True
   b) False
7. **Patent Cooperation Treaty - Patent Prosecution Highway (PCT-PPH) is a system to enhance, by global cooperation, the efficiency of examination of IPR application for:**
   a) Trademark
   b) Patent
   c) Design
   d) Copyright
   e) Geographical Indications
8. **Nairobi Agreement is an international arrangement related to:**
   a) Sports
   b) Copyright
   c) Trademark
   d) Emblem
   e) Design
9. **Local Government Policies have no role in achieving the Goals related to inclusive and sustainable development for promoting industrialization and innovation:**
   a) True
   b) False
10. **Singapore is among the top 5 Asian countries with respect to R&D expenditure:**
    a) True
    b) False

ENDNOTES

1 Jackson 2013
2 Powell and Snellman 2004
3 Ibid
4 Global Innovation Index 2019. https://www.wipo.int/global_innovation_index/en/2019/
5 Global Innovation Index 2019, Creating Healthy Lives—The Future of Medical Innovation, Key Findings. https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2019_keyfindings.pdf
6 The Global Innovation Index (GII) Conceptual Framework.https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2016-annex1.pdf
7 Ibid
8 Innovation and Startup Act: The Republic Act 11337 (Approved April 26, 2019)
9 WTO 1995
10 WIPO Administered Treaties; except TRIPS which is part of WTO
11 TRIPS Article 66.2
12 Fink, Carsten, 2011
13 Wolfgang Keller, 2004
14 Keith Maskus, 2016
15 https://www.wipo.int/pct/en/filing/pct_pph.html
16 Lu Lei and Han Yufeng, 2016
17 Jing H and Xia J, 2019
18 Ibid
19 http://uis.unesco.org/
20 Ibid
21 U.S. Constitution - Article 1 Section 8; https://www.usconstitution.net/xconst_A1Sec8.html
22 Abhyankar, R. 2014
23 Granstrand, 2018
24 https://www.wipo.int/edocs/pubdocs/en/intproperty/944/wipo_pub_944_2011.pdf


COPYRIGHT CLAIM



CHAPTER

2

IP Assets: Identification and Protection

This chapter discusses the different types of IP Assets that support knowledge economy, and provides key features to identify, protect and exploit

- *Patents*
- *Trademarks*
- *Copyrights*
- *Confidential Information*
- *Other IP*

2.1 Types of IP assets that support knowledge economy

Although IPRs have existed for decades, a real awareness and appreciation of IP issues has been noticeable only after the TRIPS agreement of WTO came into picture in 1995. It not only helped by making all parties overhaul almost every IP law to harmonize with international standards, but made developing countries take steps to promulgate IP legislation in order to support growing areas of development.

Prior to TRIPS, IPRs were mainly prevalent in only four forms namely Patents, Copyrights, Trademarks, and Designs. The Patents to protect various inventions, Copyrights to protect artistic and literary works along with performers' and broadcasters' rights, Trademarks for goods and services and Design protection for aesthetic appearance of articles, were fairly well established. Trade Secrets did exist but their awareness as intellectual property (IP) was very low. However, changes were required to provide global standard protection in most jurisdictions.

The recognition of Confidential Information as intellectual property in relation to business trade secrets and technology know-how is becoming more and more popular. Other forms of IPRs that are now well established are Plant Variety Rights, Geographical Indications and Semiconductor/IC layout designs.

Technology transfer, including cross-border technology transfer, is affected positively by stronger IPR regimes. The empirical relationship between IPRs protection and economic growth is difficult to establish. However, there have been studies to look into the impact of IPR on the total factor productivity (TFP) growth rate and technology transfer through the importation of capital goods. The results reflect the positive effect of technology transfer through international trade on the TFP growth rate of developing countries. Further, a positive and statistically significant effect of the import of capital goods is seen on the TFP growth rate, and also of IPRs protection on the import of capital goods. IPRs protection has an indirect positive impact on TFP growth rate by attracting foreign technologies incorporated in products.[25] Thus IPRs, along with trade liberalization, ease of technology transfer and human capital investment can also be said to have a positive effect on foreign direct investment (FDI).

From a technology perspective, it is easy to assume that the main IP would be patents. However, in today's knowledge economy and global accessibility, the value of branding and copyrights is no less than patents. An introduction to each of these IP assets follows in this chapter.

2.2 Patents

A patent is the title given to the intellectual property that is granted as a right to protect

new inventions. A patent, which is granted in a specified jurisdiction, gives its owner an exclusive right to prevent others from exploiting the patented invention in that jurisdiction for a limited period of time without his or her authorization, subject to a number of exceptions. Therefore, patents are territorial and for a limited period, usually for 20 years.

The term "**invention**" may be defined as a new solution to a technical problem. Other approaches to defining "invention" can also be found in national laws. For example, Indian Patent Law defines invention as: *"invention" means a new product or process involving an inventive step and capable of industrial application.*[26] Moreover, many national laws exclude such material as scientific theories, aesthetic creations, schemes, and rules and methods for performing mental acts from the definition of invention. These activities do not aim at any direct technical result but are rather of an abstract and intellectual character.

In order to get a patent, an inventor or other eligible person has to file an application for each jurisdiction in which he wants protection and meet certain substantive and formal requirements. Patents in each jurisdiction are independent of each other i.e. the application, grant or cancellation of a patent in one jurisdiction does not have an automatic effect for the same invention in any other jurisdiction.[27]

The social purpose of patent protection is to provide an incentive for technological change, and in particular, for further investment into R&D in order to make new inventions. As a condition for obtaining protection, patent applicants must disclose certain details of the invention as provided in the application for protection. This would help others to study the invention and thus build on the technology contained in it. The patent system thus aims to contribute to the promotion of technological innovation and to the transfer and dissemination of technology.

The patent system enables the patent owner to limit the extent to which others can use the patented invention during its term of protection. Thus, it is vital to find in the patent system a proper balance between these considerations. Such a balance can be found, *inter alia*, through appropriate ways of defining and structuring commercial relationships and other mechanisms for the development, transfer and dissemination of technology, including various approaches to licensing and R&D contracts.[28]

There are three substantive conditions recognized as the **basic tests of patentability**:

1. Novelty – the invention is new;
2. Inventive step – the invention involves an inventive step; and
3. Industrial applicability – the invention is capable of industrial application.

   There is also a fourth fundamental requirement to obtain a patent:
4. Written description – sufficient disclosure of the invention.

As patents are territorial, a patent applicant is required to request for a patent in each jurisdiction of his business interest. With each jurisdiction having its own administrative procedures, it is a burden on the applicant. To ease such burden, TRIPS provides for various mechanisms such as claiming of 12 months' priority right, non-discrimination of foreign applicants, minimum patent term, defined patent rights for processes and products, clear exclusions options, etc. Further, WIPO administers the patent cooperation treaty which allows for filing of a single international application, saving the applicant from the hassle of filing in various countries within 12 months of first filing. The first filing date is considered as the priority date.

The PCT application filings have increased tremendously year after year since its inception 40 years ago. The PCT system provides for an international publication and an international search report, thereby enabling patent search

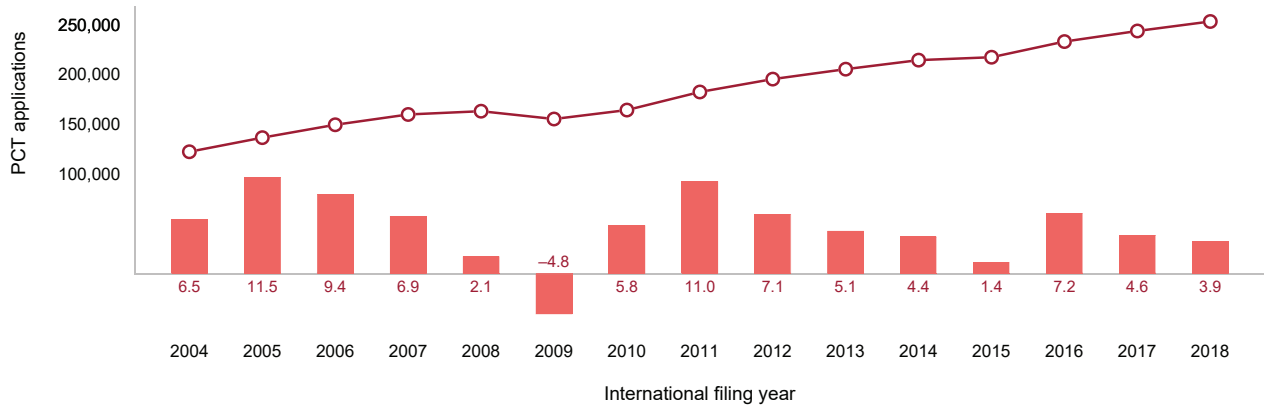
and international cooperation in examination of national phase applications. There are several Patent Prosecution Highway (PPH) programs currently in place to help in expediting the grant of patents by member countries.

The 2018 report of PCT applications published by WIPO[29] indicates the steady growth in the PCT application filing trend since 2004 (Figure 2.1).

Moreover, the WIPO report also indicates that the maximum PCT application filings were from Asia followed by Europe and North America (Figure 2.2).

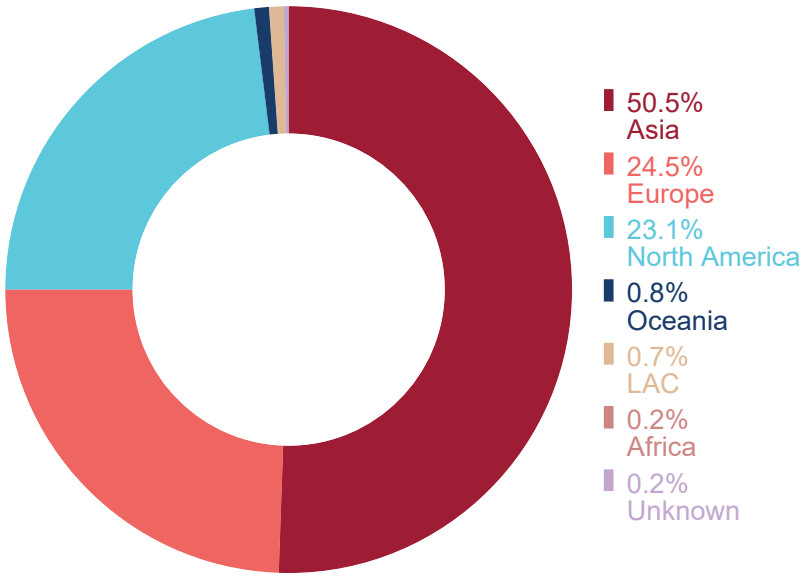
The nations at the forefront in number of patent applications being filed are China, USA, Japan, the Republic of Korea, and the European Patent Office (EPO) in 2018 (Figure 2.3).

Figure 2.1: PCT applications filing trend 2004-2018



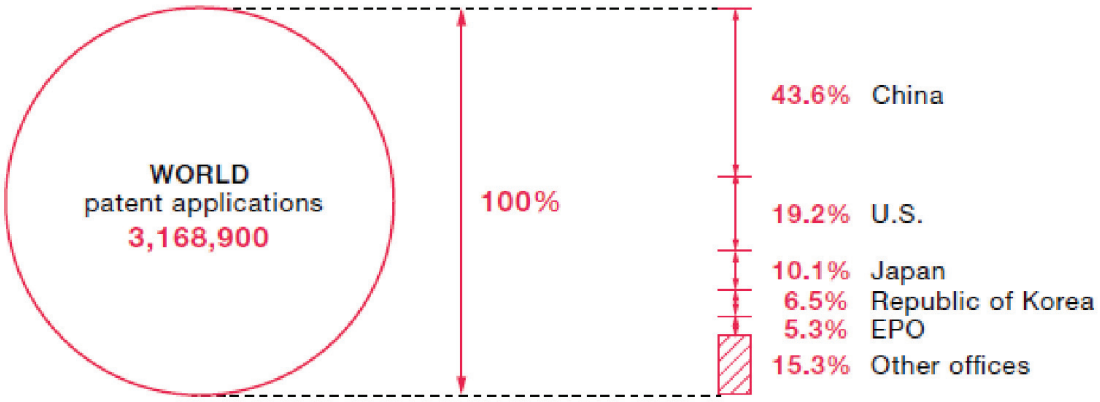
Source: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_901_2019.pdf

Figure 2.2: Region-wise PCT applications filing 2018



Source: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_901_2019.pdf

Figure 2.3: PCT applications filed by top 5 countries 2018



Source: https://www.wipo.int/edocs/infogdocs/en/ipfactsandfigures/

The PCT applications are filed mainly in the electronics sector. Figure 2.4 indicates top 20 PCT applicants of 2018. In the next section, Figure 2.5b shows the logos of some of the major patent filers in the world.

There are several incentives within the patent administration system itself which can deal with societal causes such as promoting technology transfer for environmentally sound technologies. Some examples of patented inventions are telephone, lightbulb, sewing machine, safety pin, paper clip, solar pane, etc. It may be noted that simplicity is no bar to an invention being patented. Patents in modern technology domains include those in mobile phone, drones, bluetooth, GPS, 3D Printer, Virtual Reality, self-driving cars. In the Biotech sector, the buzzing patents are related to CRISPR-gene editing. In the Pharma sector, Aspirin was

Figure 2.4: Top 20 PCT applications filers of 2018 compared to 2017

Ranking	Change in position from 2017	Applicant	Origin	Published PCT applications		
				2016	2017	2018
1	0	HUAWEI TECHNOLOGIES CO., LTD.	China	3,692	4,024	5,405
2	2	MITSUBISHI ELECTRIC CORPORATION	Japan	2,053	2,521	2,812
3	0	INTEL CORPORATION	U.S.	1,692	2,637	2,499
4	1	QUALCOMM INCORPORATED	U.S.	2,466	2,163	2,404
5	–3	ZTE CORPORATION	China	4,123	2,965	2,080
6	2	SAMSUNG ELECTRONICS CO., LTD.	Republic of Korea	1,672	1,757	1,997
7	0	BOE TECHNOLOGY GROUP CO.,LTD	China	1,673	1,818	1,813
8	–2	LG ELECTRONICS INC.	Republic of Korea	1,888	1,945	1,697
9	1	TELEFONAKTIEBOLAGET LM ERICSSON (PUBL)	Sweden	1,608	1,564	1,645
10	4	ROBERT BOSCH CORPORATION	Germany	1,274	1,354	1,524
11	0	MICROSOFT TECHNOLOGY LICENSING, LLC	U.S.	1,528	1,536	1,476
12	3	PANASONIC INTELLECTUAL PROPERTY MANAGEMENT CO., LTD.	Japan	1,189	1,280	1,465
13	–4	SONY CORPORATION	Japan	1,665	1,735	1,342
14	3	SIEMENS AKTIENGESELLSCHAFT	Germany	1,138	1,063	1,211
15	–3	HEWLETT-PACKARD DEVELOPMENT COMPANY, L.P.	U.S.	1,743	1,519	1,170
16	5	SHARP KABUSHIKI KAISHA	Japan	1,205	963	1,132
17	23	GUANG DONG OPPO MOBILE TELECOMMUNICATIONS CORP., LTD	China	80	474	1,042
18	–2	KONINKLIJKE PHILIPS ELECTRONICS N.V.	Netherlands	1,137	1,077	1,033
19	1	DENSO CORPORATION	Japan	986	968	998
20	5	LG CHEM, LTD.	Republic of Korea	671	850	969

Source: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_901_2019.pdf

patented in 1900 and the process for mass production of penicillin was patented in 1945. A number of drugs are currently patented in several jurisdictions, including Sitagliptin, Rituxan, and Glivec.

2.3 Trademarks

A trademark is a sign or a combination of signs that is used to distinguish the goods or services of one enterprise from those of another.[32] The owner of a trademark has the exclusive right to use it in the marketplace to identify certain goods or services, and to authorize (or license) others to use it in return for payment or other benefits.

The trademark system protects producers against unfair competition from other producers seeking to free ride on the goodwill and positive reputation earned by the trademark owner. By providing a certain guarantee that a trademarked product or service originates from or is authorized by the trademark owner, trademark protection also facilitates consumers' choices when purchasing certain products or using certain services. Consumers often rely on trademarks to recognize the Source Company and to distinguish the product from similar goods that are produced by other enterprises. Trademarks therefore help consumers to reliably identify and purchase a product or service. The consumer preference could be that of personal taste, quality or other characteristics. The consumer preference is expected on the basis of previous purchases or through advertising or word-of-mouth recommendation. Thus, trademarks protect an undertaking's goodwill, as well as the consumers, against confusion and deceptive practices.

The Trademarks themselves are crucial to an organization as they have their own brand value and help in creating brand loyalty. Some of the top brands that are easily recognizable are shown in Figure 2.5a (Logos of Toyota Motor Corporation of Japan, and General Electric and McDonald's Food Company of USA) and Figure 2.5b (Logos of companies Huawei, Intel, Sony and Phillips, filing details of which are listed in Table 2.4).

The trademark registration system was developed over time as a way of clarifying the existence and scope of trademark rights, and as a way of putting other traders on notice about those rights. In the past, trademarks were mainly registered and protected for goods. The registration of trademarks for services ("service marks") was optional under the Paris Convention, and few countries provided for registration of such marks. However, with the rise of the service economy and the resulting importance of trademarks in distinguishing services, the TRIPS Agreement stipulated that

Figure 2.5a: Logos of top brands (Trademarks)

Figure 2.5b: Logos of some of the major patent filers in the world

service marks should be protected in the same way as trademarks for goods.

In general, trademarks are registered and protected with respect to certain goods and services. Some well-known examples are "FedEx" (owned by FedEx Corporation, USA) for document delivery services, "TOYOTA" (owned by Toyota Motor Corporation, Japan) for automobiles and related services, and "SAMSUNG" (owned by Samsung Electronics Co. Ltd., the Republic of Korea) for consumer electronics.[33] The owner generally only enjoys the exclusive right of use of the registered trademark with respect to the same or similar products for which it is registered. For example, a trademark registered for hairdressing services would not, normally, be enforceable against use of the mark on a new range of irrigation equipment.

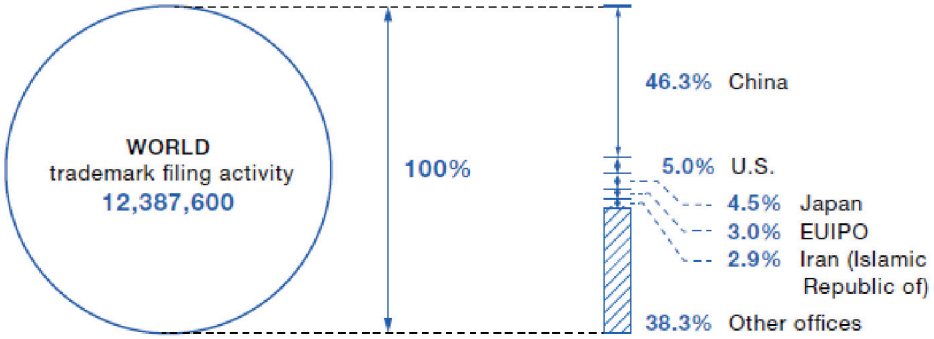
While **trademark rights** are typically acquired by the registration of a sign as a trademark, some countries make these rights available without registration, simply based on use. In some jurisdictions, such unregistered trademark rights are referred to as common law trademarks. The TRIPS Agreement only obliges Members to accord rights to the owner of registered trademarks. However, it explicitly recognizes Members' entitlement to make trademark rights available without registration based on use, and it also provides for protection for well-known marks that are not registered.[34]

Any sign, or any combination of signs, capable of distinguishing the goods and services of one "undertaking" from those of other undertakings must be eligible for trademark protection[35]. These signs could be words including personal names, letters, numerals and figurative elements. These could also be combinations of colors, as well as any combination of signs with emphasis on distinctiveness, i.e. the ability of these signs to distinguish products of one enterprise from those of others. The signs could be distinctive by being visually perceptible or having a distinct smell or sound or feel, i.e. non-traditional trademarks. Each country can determine as to what would be considered as distinctive in its own jurisdiction. The registration of collective and certification marks (Box 2.1) may also be allowed by national laws.

The notion of a **trade name** is interpreted in different ways and the term "business name" is sometimes used as a synonym. The term brand name is also used for identifying the business or product or product line. Neither the Paris Convention nor the TRIPS Agreement specify in detail the level of protection that must be applied for trade names, so national practice can differ considerably. But it is clear that no specific formalities are required to protect trade names, and that essentially the same protection must be available to foreign nationals' business names as for those of domestic nationals. Typically, a brand name is registered as a trademark along with several other trademarks used for the said brand.

Trademark rights, like other IPRs, are territorial, which means that they are in principle valid only in the jurisdiction where they have been registered or otherwise acquired (except for well-known marks, See Box 2.1). To be protected in different countries, therefore, a mark needs to be registered in each individual jurisdiction. To go through separate procedures for trademark registration in many countries can be expensive and administratively complicated. A number of international treaties dealing with aspects of national and international registration have therefore been concluded by WIPO, to facilitate and harmonize registration in multiple jurisdictions. For example, the Trademark Law Treaty and the Singapore Treaty harmonize national and regional registration procedures, the Madrid Agreement and the Protocol relating to the Madrid Agreement facilitate multiple registrations in a number of jurisdictions, and the Nice Agreement and the Vienna Agreement establish international classification systems relevant to trademarks. It may be noted that a

Figure 2.6: Top 5 Trademark application receiving IP offices in 2018



Source: https://www.wipo.int/edocs/infogdocs/en/ipfactsandfigures/

mark registered in one class need not be eligible to be registered in another class. The trademark filings from People's Republic of China lead the way with 46.3% of the world TM filing activity[36] (Figure 2.6).

The owner of a registered trademark has the exclusive right to prevent all third parties, who do not have the owner's consent, from using in the course of trade identical or similar signs for goods or services identical or similar to those in respect of which the trademark is registered where such use would result in likelihood of confusion.[37] The initial registration and each renewal of registration of a trademark is for a term of not less than seven years and the registration can be renewable indefinitely.[38] Thus trademark rights, in contrast to patent rights, can last for an indefinite period of time, provided the rightful owner renews the registration at the expiry of each term and pays the requisite renewal fees. Moreover, cancellation of a trademark can only occur after an uninterrupted period of three years of non-use.[39]

Interestingly, no compulsory licensing of trademarks is permitted as per Article 21 of the TRIPS Agreement and therefore, governments cannot permit the use of a trademark without the authorization of the rghts holder.

The top brands are easily recognized throughout the world. For example, some company names that have become recognized as brands are Apple Inc., Google LLC, Microsoft Corporation, Facebook Inc., and Amazon.com Inc.[40]

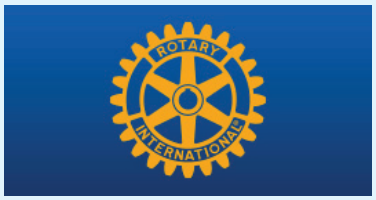
2.4 Copyrights

Copyright is a legal term describing rights given to creators for their (i) literary, musical, dramatic and artistic works; (ii) pantomimes and choreographic works; and (iii) pictorial, graphic and sculptural works. Therefore, copyright protects original works of authorship fixed in any tangible medium of expression. The protection covers a wide variety of artistic and expressive works, including books, blog posts and software codes. An important limitation is that copyrights only protect expression and not an underlying idea, product or invention that is described in the work of authorship and will not protect useful products or articles.

The main social purpose of protection of copyright is to encourage and reward creative work. The income generated by copyright may allow authors to dedicate themselves to creative work. Copyright can also help to justify the considerable upfront investment often entailed in the creation of certain types of works, such as films.

Box 2.1: Different types of Trademarks - Collective Marks, Certification Marks, Well-Known Marks

A **Collective Trademark** is a trademark owned by an organization such as an association, used by its members to identify themselves with a level of quality or accuracy, geographical origin, or other characteristics set by the organization. There marks are valid even if such organizations do not possess an industrial or commercial establishment. A collective trademark can be used by many persons, rather than just one individual concern, provided that such persons belong to the association. Examples Chartered Accountants and Rotary Club members can use the following marks:



A **Certification Mark** on a commercial product indicates the existence of an accepted product standard or regulation and a claim that the manufacturer has complied with the same. In a certification mark the owner of the trademark certifies the characteristics of the goods or services but does not sell the goods or services themselves. Certification marks may be used by anybody who complies with the standards defined by the owner of the particular certification mark. The organic certification in Cambodia, Nepal and Lao PDR marks are exemplified below.

A **Well-known Trademark** is a popular mark, logo or a symbol that represents a brand and also, it's hard earned goodwill and reputation. A trademark becomes a well-known mark depending on the degree of recognition it receives in the relevant sector; the duration of recognition; the extent & geographical area of recognition; and the value associated with it. Tata Motors and Kangaro Stationeries marks have been recognized in many countries as well-known marks:

Copyright is thus the economic backbone of cultural industries. Performers are also protected for their creative work. Protection of phonogram producers and broadcasting organizations safeguards the investments required to produce sound recordings and the financial and organizational resources needed to bring a broadcast to the public. Historically, the original domain of copyright was literature, art and other cultural activities. More recently, it has provided protection to new areas such as computer programs and databases. The economic importance of copyright has greatly increased in knowledge-based economies. Copyright protection is also available for derivative works and certain other categories of works such as the official texts of a legislative, administrative or legal nature, and official translations of such texts.[41]Though in practice, most governments do not have restrictions on reproducing such official texts.

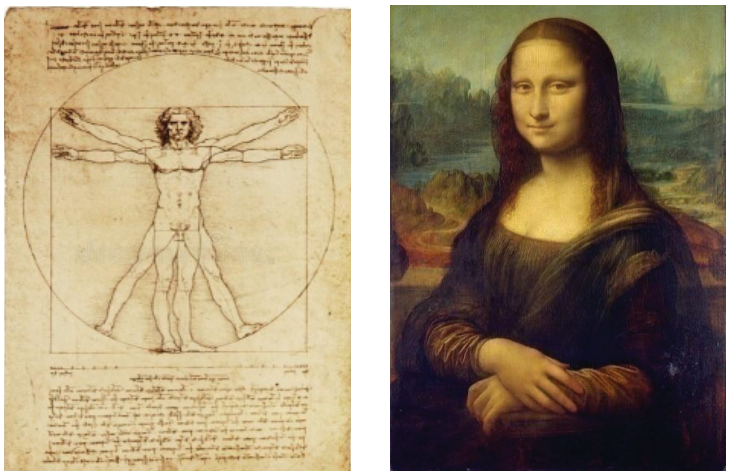
There is no formal requirement of registration of copyright. The author's expression of original idea therefore receives automatic copyright protection[42] under the Berne convention incorporated into TRIPS. Further, there is a provision of enjoyment and exercise of copyright in the country where protection is claimed, as being independent of the existence of protection in the country of origin.[43]

The rights under copyright are two-fold: (i) economic rights, which allow authors to extract economic value from the utilization of their works by reproducing, rendering, translating, performing, broadcasting, etc; and (ii) moral rights, which allow authors to claim authorship and protect their integrity. Although, it may be noted that there are no obligations under the TRIPS Agreement with respect to moral rights.

The minimum term[44] Copyright protection is the remainder of the life of the author and fifty years after his or her death, or more simply "life plus fifty years", except for photographic works and works of applied art, where the minimum term is 25 years from the making of such works. This is because the creativity and originality of the authors of the copyrighted works can be considered timeless (Figure 2.7).

Publications of scientific literature, sketches of the drawing related to any laboratory or factory, architectural drawing, client lists, databases, scientific repositories such as those of gene sequences are essential elements of today's scientific community. Therefore, copyright is very much relevant to scientists who are authors of such material. But on the other hand,

Figure 2.7: Copyright works of Leonardo da Vinci



© Leonardo da Vinci

progress of science is based on building upon the existing knowledge base, and copyrighted material with respect to such information could be a hindrance[45], if not seen holistically.

2.5 Other IP rights

a. Confidential Information: Trade Secrets/ Know How

Any information developed by a company through expenditure of time, effort and capital, unknown to others in competing businesses, and which gives an advantage to the company over such competition is called a trade secret. Ideas, Concepts, Trade secrets and Know-How are kinds of confidential information which give a competitive advantage to businesses as against their competitors.

The formula for Coca-Cola is a well-known example. Substantial resources need to be used for production of a secret by its owner, and it will be of interest to him only if it is kept as a secret.[46]

The law of confidential information and trade secrecy exists through common law principles like law of torts, restitution, agency, quasi-contract, property and contracts. The broad elements on which an action under law of torts is based are:

(a) that there is information which is secret;

(b) the said information has been disclosed to another under conditions of confidentiality;

(c) the confidant has misused the information; and

(d) which causes or is likely to cause damage to the business or goodwill of the owner.

The law of breach of confidence requires subsequent "use or disclosure" and the acquisition of information.[47]

A **trade secret** of a business is therefore that which is not generally known or easily accessible. Ideas and concepts may fall under trade secret and know-how protection as they may contain useful and technical information required for the manufacture of a product or related to the enterprise, customers, etc. which is not accessible to the public and not already patented.

Know-how can be defined as a package of non-patented practical information, resulting from experience and testing. In addition, know-how has to be "*secret, substantial, identified and valuable*". It is composed of information with economic value, not accessible to the public, transferable and non-patented. In addition, know-how should be characterized and/or described on a material support.

Trade secrets are secret or proprietary information of commercial value. These are not covered by specific statutory provisions as other types of IP are, although there could be aspects of contract law, or employment law that might be relevant in a particular case. The level of protection conferred to trade secrets varies significantly from country to country. Indeed, trade secret represents an interest for its holder, which is often a competitive advantage.

The TRIPS Agreement builds on the Paris Convention to introduce specific obligations to protect undisclosed information. Accordingly, its Article 39.2 obliges Members to protect information that:

- is secret (not readily accessible to persons within the circles that normally deal with the kind of information in question);
- has commercial value because it is secret; and
- has been subject to reasonable steps under the circumstances, by the person lawfully in control of the information, to keep it secret.

The TRIPS Agreement requires that a natural or legal person lawfully in control of such undisclosed information must be able to keep it secret. The person should have the possibility of

preventing it from being disclosed to, acquired by, or used by others without his or her consent. The information should not have been acquired in a manner contrary to honest commercial practices such as -breach of contract, breach of confidence, and inducement to breach contract or confidence. There should be no acquisition of undisclosed information by third parties who knew, or were grossly negligent in failing to know, that the above-mentioned practices were involved in the acquisition.

Unlike other intellectual property rights, such as patents and copyright, for which the term of protection is finite, the protection of undisclosed information continues unlimited in time as long as the conditions for its protection continue to be met, i.e., it meets the conditions mentioned above.

In most of the cases, such information falls under the scope of civil law and unfair competition law. In addition, some countries also provide penal sanctions for persons who fraudulently disclose an industrial secret. Most of the countries not having a specific trade secret law recognize trade secrets under contract law and/or competition law.

Examples of trade secrets include: Coca Cola formulation, New York Times best seller list, Google search engine algorithm, blend of herbs and spices used in Kentucky Fried Chicken (Figure 2.8).

Figure 2.8: Companies having famous Trade secrets

b. Geographical Indications

Geographical indications (GI) are defined as indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin.[48]

As GIs lead to the source of the goods, it may be considered as a subset of trademarks related to the geographical source.

Quality, reputation or other characteristics of the good essentially have to be due to the geographical origin. In other words, there must be a direct linkage between the place identified by the geographical indication and these features. For example, Rice in one part of a country may possess a particularly different aroma.

It may be noted that, in principle, meeting only one of the three requirements – quality, reputation or other characteristics – can suffice for eligibility as a geographical indication.

National jurisdictions use a variety of different legal means to protect geographical indications. In some nations, most laws of general application focusing on deceptive or unfair business practices are typically available for the protection of GI without the need to comply with prior procedures and formalities; whereas others, such as most forms of *sui generis* GI protection, generally require compliance with formalities and procedures necessary to secure prior recognition of the geographical indication as eligible for protection.

Examples of GIs include: Tequila with specific rules for production of the spirit in Mexico; Darjeeling Tea which originates in Darjeeling, India; Cuban cigars which are made from tobacco leaves grown in Cuba and roughly rolled into shape; Champagne which is produced from grapes grown in the Champagne region of France; Taita Basket with specific weaving by basket makers in Kenya; Kashmir Pashmina, the hand woven pashmina shawls in Kashmir, India; Khirsapat mango from Bangladesh etc. (Figure 2.9).

Figure 2:9: Examples of GI - Taita Basket of Kenya and Khirsapati mango of Bangladesh

Source: https://www.wipo.int/ipadvantage/en/details.jsp?id=10875

Source: https://bdnews24.com/business/2019/01/27/khirsapat-mango-becomes-third-bangladesh-product-to-get-gi-recognition

c. Designs

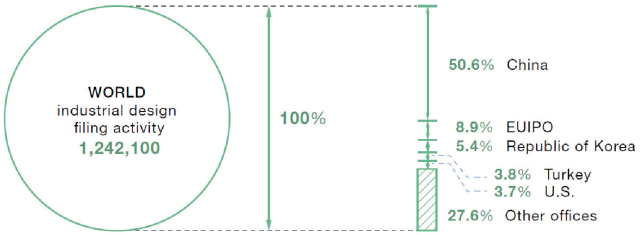
The term "industrial design" is generally understood to refer to the ornamental or aesthetic aspect of an article rather than its technical features. Designs can consist of three-dimensional features such as the shape of an article, or of two-dimensional features such as patterns, lines or colours. Industrial designs are present in a wide variety of industrial products including medical instruments, watches, jewelry, electrical appliances, and vehicles.

According to Article 25.1 of the TRIPS Agreement, industrial design protection must be available for designs that are:

- new or original; and
- Independently created.

Further design protection can be provided for designs that are neither new nor original if they do not significantly differ from known designs or combinations of known design features. The additional requirement of independent creation allows for a cumulative application of novelty and originality as is the case under certain national laws. The design protection should not extend to designs dictated essentially by technical or functional considerations. Many products to which designs are applied are not themselves novel and are produced by many manufacturers such as belts, shoes or screws. If a design for one such article, for example, screws, is dictated purely by the function which the screw is intended to perform, it would not generally be eligible to be protected as an industrial design. The design application filings have been very high in Asian countries. Figure 2.10 shows the numbers for 2018 with China receiving the maximum filings.[49]

Figure 2.10: Percentage shares of total design filing activity by the top five IP offices



Source: https://www.wipo.int/edocs/infogdocs/en/ipfactsandfigures/

The duration of protection for designs is at least 10 years.[50] The date of protection could vary from the date of creation, or the date of application or the date of grant under specific industrial design laws.

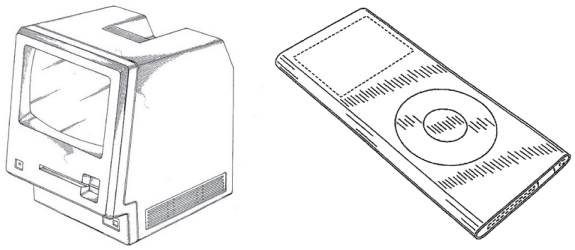
The owner of a protected industrial design has[51]the right to prevent third parties, who do not have the owner's consent, from making, selling

or importing articles bearing or embodying a design which is a copy, or substantially a copy, of the protected design, when such acts are undertaken for commercial purposes.

Protection of products such as furniture and clothing is an example of how designs and copyrights protect the same product differently. Design of furniture is often aesthetically pleasing and artistic. The physical design of furniture cannot be protected by copyright and will have to be protected by designs. Fabric designs are protected by copyright and these works do not lose their protection when applied to useful articles. Therefore, the pattern of fabric on a couch or a carving on a wooden chair would be protected by copyright, but the physical design of the furniture would be protected by a patent and/or design. In the field of science and technology, designs supplement the patent protection of innovation.

The **examples of designs** - the registered designs of two Apple Inc. products are depicted below (Mac 128K and iPod) in Figure 2.11.

Figure 2.11: Line drawings of registered designs of Apple



Source: http://www.ustpto.gov

d. Semiconductor/IC layout designs

There are several other forms of IP. Each one of them has its unique protection as per the industry. The Semiconductor and Integrated Circuit layout designs is one such crucial component of the engineering field that is recognized as IP and protected in many jurisdictions through national laws.

The layout-designs ("topographies") of integrated circuits are protected[52] in accordance with the provisions of the Treaty on Intellectual Property in respect of Integrated Circuits ("IPIC Treaty").

An integrated circuit (or a "chip") is an electronic device that incorporates individual electronic components within a single "integrated" platform of semiconductor material, usually silicon, configured to perform a complex electronic function. Typically, an integrated circuit comprises active elements such as electronic switches and gates (like transistors or diodes) and passive electronic components (such as resistors and capacitors). Broadly, integrated circuits are classified into microprocessors and memories. A microprocessor typically performs information-processing functions because it has logic circuits capable of electronically performing them. Memories enable storing and retrieval of data. An integrated circuit is thus formed when a miniaturized electrical circuit is embodied within a chip. All the active and passive components are created in the semiconductor wafer during the fabrication process itself and are therefore inseparable once the chip has been produced.

A layout-design, also known as an integrated circuit topography, is defined[53] as the three-dimensional disposition, however expressed, of elements at least one of which is an active element, and some or all of the interconnections of an integrated circuit, or a three-dimensional disposition prepared for an integrated circuit, is intended for manufacture. A layout design is therefore the three-dimensional layout of an integrated circuit, i.e. the arrangement in a chip, usually made of semiconductor crystal of active and passive electronic components.

Article 4 of the Treaty on Intellectual Property in Respect of Integrated Circuits (IPIC Treaty) as incorporated in the TRIPS Agreement recognizes that nations can decide the manner in which they will implement this protection

of layout-designs in their national law and explicitly mentions the possibility to achieve such protection through copyright, patent, utility model, industrial design or unfair competition law, or any other law or combinations thereof.

e. Plant Variety

Plant varieties which are distinct and have stable uniform characteristics are altogether another kind of IP, which is also envisaged in TRIPS. The plant breeding and agriculture domain would lack incentive if in the current IP regime there is no protection accorded to their innovations.

The Article 27.3(b) of TRIPS allows exclusion from patent protection for inventions of plants and animals. However, it provides that the nations that do not provide patent protection for new plant varieties are required to protect plant varieties through an effective *sui generis* system.

The main *sui generis* system for the protection of plant varieties at the international level is contained in the convention establishing the International Union for the Protection of New Plant Varieties (the UPOV Convention[54]). UPOV has been specifically adopted for the process of plant breeding and has been developed with the aim of encouraging breeders to develop new varieties of plants. The UPOV system of plant variety protection came into being in 1961 and its current convention is of 1991.

UPOV Convention has 75 members[55], with a major increase in membership between 1992 and 2003 from 20 to 50 countries. Since 1992, the cumulative number of plants protected has risen from just over 20,000 to around 1,32,403 in 2018.

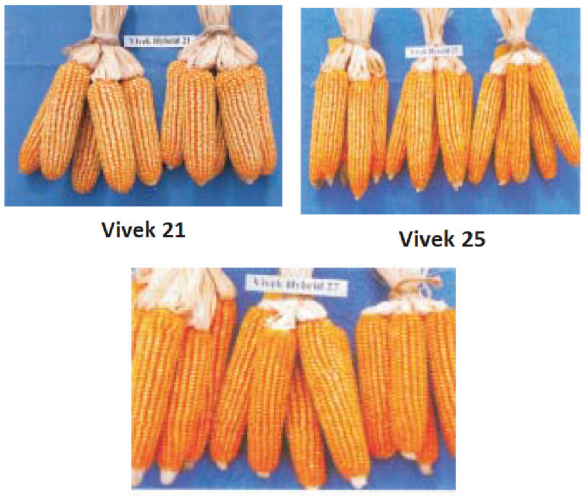
Breeders are granted Plant Variety Protection (PVP) if the new varieties of plants are:

- distinct from existing, commonly known varieties;
- uniform;
- stable; and
- new i.e. not been commercialized prior to certain dates established by reference to the date of application for protection.

There could be possibility of registration of plant varieties that are not new, such as those claiming priority from foreign countries and have been commercialized for a specified term, say 6 years as per Indian law for trees and vines. The term of protection in the case of a plant variety, including that of trees and vines, is usually 15 to 25 years depending upon national legislations. Research exemptions are provided to ensure development of new varieties and is not hindered by the registration of plant varieties.

Under the regime, protected varieties of plants are still available for private or non-commercial acts, or experimental acts. Farmers are eligible in some national jurisdictions to use protected varieties on their own holdings for propagating purposes. For example, Maize plant varieties available in India (Figure 2.12) can be accessed from Indian Council of Agricultural Research (ICAR).[56]

Figure 2.12: Maize plant varieties



Source: Kaul, J. et al. 2010

f. Utility models

Utility Models are specifically mentioned here as they are critical to innovations and IP registrations in some jurisdictions. A utility model is an exclusive right granted for an invention, which allows the right holder to prevent others from commercially using the protected invention, without his authorization, for a limited period. In its basic definition, which may vary from country to country when available, a utility model is similar to a patent. In fact, utility models are sometimes referred to as "petty patents" or "innovation patents".

The main difference between utility models and patents is that requirements for acquiring a utility model are less stringent than those for patents. While the requirement of "novelty" is always to be met, that of "inventive step" or "non-obviousness" may be much lower or absent altogether. In practice, protection under utility models is often sought for innovations of a rather incremental character which may not meet the patentability criteria. In some countries, utility model protection can only be obtained for certain fields of technology, but only for products and not for processes.

Also, the term of protection for utility models is shorter than that for patents and varies from country to country. It is usually between 7 to10 years without the possibility of extension or renewal. The registration process for utility models is often significantly simpler and faster, taking, on average, six months and they are much cheaper to obtain and to maintain compared to patents. However, only a small but significant number of countries and regions provide the option of utility model protection. Most of the utility model patents are in the mechanical field.

2.6 SUMMARY

The key learning from this chapter is:

There are different types of IP assets, and their identification and protection is essential in the knowledge economy-patents to protect inventions; Copyrights to protect artistic and literary works along with performers and broadcasters rights; Trademarks for goods and services; and Design protection for aesthetic appearance of articles. The IPRs help in cross-border technology transfer.

Patent is granted as a right to protect new inventions in a specified jurisdiction, providing its owner an exclusive right to prevent others from exploiting the patented invention for a limited time period, usually for 20 years.

The basic requirements of patentability are

- Novelty,
- Inventive step,
- Industrial applicability, and
- Sufficient written description of the invention.

International patent applications, as per WIPO, show a steady growth since the last two decades, indicating continued increase in awareness of this IP right. Designs and Semiconductor/IC layout designs are innovations which may seem to be close to patents in terms of them also protecting innovation; however, each have their distinct criteria for registration and terms of protection. Utility

models are available for inventions which may or may not qualify for a patent. Several exclusions from patentability and compulsory licensing provisions are available with respect to patents for avoiding monopolistic rights.

Trademark is a sign or a combination of signs that is used to distinguish the goods or services of one enterprise from those of another and the owner has the exclusive right to use it to identify their goods or services, or to authorize (or license) others to use it. Trademark rights are typically acquired by registration or sometimes simply based on use. Trademark rights are territorial rights with the exception of "well-known marks". There is no compulsory licensing of trademarks as per Article 21 of the TRIPS Agreement.

Geographical Indication is another IP right wherein the identification of the product is based on the specific geographic location.

Confidential Information, usually the Trade Secrets and Know How of an organization, are very critical IP for a technology-based company. The law of confidential information and trade secrecy exists through common law principles like law of torts, restitution, agency, quasi-contract, property, and contracts. Different countries have different ways of recognizing this form of IP. However, the onus to keep the information confidential is on the rightful owner. The term of protection is till the information becomes public and enforcement is usually difficult.

A plant variety developed by a breeder can be protected provided the variety is novel, distinctive, uniform and stable. The term of protection in the case of a plant variety, including that of trees and vines, is usually 15 to 25 years from the date of registration of the variety. Several exemptions are provided to ensure development of new varieties which is not hindered by the registration process.

Though the current publication introduces the major forms of IP assets whose laws are critical for technology transfer, it is pertinent to remember that there are several other factors which are in play during technology transfer. These factors vary based on the industry sector, type of business transaction, the territorial jurisdiction and national laws of various IP assets. Further, the non-IP laws which come into picture in relation with the IP assets, such as competition related legislations, domain name protections and e-commerce related activities, as well as regulatory provisions, such as genetic diversity[57] related protocols, also need to be kept in mind. The IP of an organization therefore needs to be seen holistically, and strategy to manage and commercialize the same is to be formulated carefully.

SUGGESTED READINGS

https://www.wipo.int/edocs/pubdocs/en/intproperty/489/wipo_pub_489.pdf

Mrad, Fatma (2017). The effects of intellectual property rights protection in the technology transfer context on economic growth: the case of developing countries, *Journal of Innovation Economics & Management*, vol. 23, no. 2, pp. 33-57.

WIPO Intellectual Property Handbook. 2004.

DISCUSSION POINTS

1. What is the role of patents in technology-based innovation? Is the term of protection available for patents sufficient to provide leverage to the innovator organizations in different industry sectors e.g. Pharmaceutical industry, Telecom industry and Automobile industry for its exploitation to the fullest extent?
2. Identify the trademarks used in your organization. Categorize them as registered and not registered.
3. What are the different intellectual property rights that a locally grown tea company can acquire for its distinct tea-based business?

MULTIPLE CHOICE QUESTIONS

1. **Which type of intellectual property is not considered as industrial property?**
   a) Patent
   b) Trademark
   c) Copyright
   d) Design
2. **Bill Gates said that IP has the shelf-life of a banana. What is the protection period available for a patent?**
   a) 10 years
   b) 14 years
   c) 20 years
   d) 25 years
   e) Lifetime of creator
3. **Utility Models are mandatory protection to be made available in accordance with the TRIPS Agreement.**
   a) True
   b) False
4. **Design registration is available for the protection of:**
   a) Functional design of an article
   b) Aesthetic appearance of an article
   c) Line diagram of an article
   d) Improvement of an article
   e) None of the above
5. **Technology-based innovation has its intellectual property mainly in the form of:**
   a) Patents
   b) Know-How
   c) Trade Secrets
   d) Patents and Trade Secrets
   e) All of the above
6. **Geographical Indication can be licensed.**
   a) True
   b) False
7. **The illegal copying, distribution or use of software is called:**
   a) Software Piracy
   b) Spamming
   c) Phishing
   d) Counterfeiting
8. **Which of the following is NOT a necessary criterion for protection of the copyright holder?**
   a) The work satisfies the requirement of originality
   b) The work does not have to be produced in a tangible form - e.g. thoughts qualify
   c) The work is of a type that is protected under the copyright law
   d) The work is of a type that is considered a copyright in the Berne convention

9. **Geographical Indication is a right that can be claimed by:**
   a) An individual
   b) A Community
   c) An Inventor
   d) A Country
   e) None of the above

10. **Compulsory License can be granted for Trademarks.**
    a) True
    b) False

ENDNOTES

25 Mrad, Fatma. The effects of intellectual property rights protection in the technology transfer context on economic growth: the case of developing countries , Journal of Innovation Economics & Management, vol. 23, no. 2, 2017, pp. 33-57.
26 Section 2(1)(j) Indian Patent Act 2005
27 Article 4bis Paris Convention
28 WTO Module V: https://www.wto.org/english/tratop_e/trips_e/ta_docs_e/modules5_e.pdf
29 https://www.wipo.int/edocs/pubdocs/en/wipo_pub_901_2019.pdf
30 https://www.wipo.int/edocs/pubdocs/en/wipo_pub_901_2019.pdf
31 WIPO statistics database, September 2018
32 WTO Module III
33 Detailed classification systems of goods and services for the purposes of trademark registrations provided as per Nice Agreement and the Vienna Agreement
34 Article 6bis of the Paris Convention and Article 16.2 and 16.3 of the TRIPS Agreement
35 Article 15.1 of the TRIPS Agreement
36 WIPO Statistics Database, September 2018 https://www.wipo.int/edocs/pubdocs/en/wipo_pub_943_2018.pdf
37 Article 16.1 of the TRIPS Agreement
38 Article 18 of the TRIPS Agreement
39 Article 19 of the TRIPS Agreement
40 Forbes 2019 Top brands
41 Article 2(4) of the Berne Convention
42 Article 5(2) of the Berne Convention
43 Ibid
44 Article 7(1) of the Berne Convention
45 Reichman and Okediji 2012
46 Harv. J. Law and Technology, 1995
47 Breach of Confidence, Law Commission of England and Wales, Working Paper No. 58 (Her Majesty's Stationary Office, 1981), para 5.1.
48 Article 22.1 of the TRIPS Agreement
49 WIPO statistics 2018
50 Article 26.3 of the TRIPS Agreement
51 Article 26.1 of the TRIPS Agreement
52 Articles 35 to 38, Section 6 of Part II of the TRIPS Agreement
53 Article 2(i) of the IPIC Treaty
54 UPOV Convention 1968, 71, 91
55 UPOV Gazette No. 108 – December 2015
56 Kaul, J. et al. 2010
57 See Convention on Biodiversity CBDhttps://www.cbd.int/


Where are your users?
Sessions by country
Czechia
85.2%
Slovakia
10.8%

CHAPTER

3

IP Strategy and Management Tools

This chapter introduces the various tools used in IP management, and highlights the importance of IP policy and strategy that would need to be designed for aligning the related organizational IP with its R&D and goals. Further, IP portfolio development, its audit and valuation, due diligence and other analytics for IP value proposition leading towards commercial exploitation are discussed in detail.

A policy is a temporary creed liable to be changed, but while it holds good it has got to be pursued with apostolic zeal. - Mahatma Gandhi

3.1 IP policy

Intellectual Property once generated and protected as described in chapter 2, would lead to a distinct IP portfolio of an organization as per the specific industry. The generation and protection of IP itself requires proper planning as technology-based industries spend a huge amount of money in the research and development of its innovations. How well the IP plan is aligned with the business goals will lead the IP portfolio generation and IP management (IPM) contribution to the success of the business.

Identifying and creating IP and bringing research results to the next stage of development, have become institutional objectives for many universities and public research institutes. Therefore, an institutional IP policy is a prerequisite for successful commercialization of the innovations.

The IP policy of an institution, whether public or private, is a formal document which typically deals with:

- ownership of IP;
- procedures for identification, protection and management of IP;
- procedures for use of IP with consideration of third party IPRs;
- procedures for collaboration with third parties; and
- guidelines on the sharing of benefits arising from IP exploitation.

Without a formal policy regulating the ownership and use of IP rights, the different stakeholders in an institution such as researchers, technicians, students, visiting researchers, and their commercialization partners such as industrial sponsors, consultants, non-profit organizations, small and medium enterprises (SMEs), governments, will have no guidance on how to make decisions concerning IP. A clear IP policy is therefore crucial for successful IP management and ultimately to reap the commercialization benefits.

The setting up of IP Policy and management system would depend on various external factors, especially the stage at which the development of the country is.

To understand country enabled IP policies better, the case study of universities in India and technology transfer in the Republic of Korea are discussed in Box 3.1 and Box 3.2 respectively.

An example of IP Management is that of the Indian Institute of Technology, Bombay, India where the Institute has adopted an Intellectual Property Management System (IPMS). They did this through the creation of an IP Policy[58]. The vision of the IPMS is “to be the fountainhead of new ideas and of innovators in technology and science". With the mission to create an ambience in which new ideas, research and scholarship flourish, IPMS aims to create the leaders and innovators of tomorrow. The document provides for creation of an IPR Cell, a body within the institute created by virtue of an IP Policy that helps “administer IP creation, research and education, and spin off firms."

Box 3.1: Enabling IP policies in universities in India

India's science and technology infrastructure is sizable, with over 250 university science and technology departments, 400 national laboratories, 800 engineering colleges and 1,300 in-house R&D units in the industrial sector. While most Indian universities are aware of IP related issues, there is a need for government incentives to explore their own potential to create and protect intellectual property. In countries where universities are strategically pushed by their Government to create and protect their IP, they become central players in innovation and patenting.

In 2005 the University Grants Commission (UGC), a statutory body and the chief funding body for Indian universities, released draft guidelines for awareness, protection and management of IP rights in the Indian university system. Further, a draft legislation with respect to the state funded university projects is currently pending before the Indian Parliament which specifically addresses the issue of intellectual property within universities.

The UGC guidelines state that universities have the responsibility to set up IP management cells, which would manage the entire IP portfolio of the university and have the authority to file patent applications and enter into related agreements on behalf of the university. All inventors would have to go through the cell when applying for patent protection for inventions. The guidelines also recommend that universities grant non-exclusive licenses unless exceptional circumstances justify the grant of an exclusive license. In substance, the guidelines are similar to the Bayh-Dole model already adopted in the United States.

As the progressive guidelines take shape, many Indian national universities have taken the initiative in formulating their own management policies to tap, control and protect their intellectual property. The leaders in the field are the Indian Institutes of Technology in Bangalore, Delhi and Bombay, each of which has its own set of IP policies to exploit its own potential while forging alliances with industry to raise and share revenue.

As per the Annual Report 2014-2015[59] from the Office of the Controller General of Patents, Designs, Trademarks and Geographical Indications, Government of India, the IIT's collectively had the highest number of applications for patent filings amongst Indian Universities. IIT Bombay alone has seen a substantial growth in patent filings since 2008 and saw about 128 applications filed in 2015-2016.[60]

The Republic of Korea's experience indicates that the majority of important or crucial information needed to solve technical problems in the mature technology stage were obtained through reverse engineering. It also highlighted the role of FDI and foreign licensing for technology transfer.

Nevertheless, on shifting to the intermediate technology stage, IPRs become important even for local firms when countries have accumulated sufficient indigenous capabilities with extensive science and technology infrastructure.

A standard management system may not suit the requirements of every country and every organization, given the different goals of organizations. For example, the IP requirements of a market-oriented organization would be very different from the IP issues faced by an educational institute. Furthermore, it is important that the enterprises adopt an efficient IP management process that would

Box 3.2: Enabling IP policies in the Republic of Korea

The Republic of Korea had difficulty in technology transfers and indigenous learning activities in the early stage of industrialization, when learning used to take place through reverse engineering and duplicative imitation of mature foreign products.[61]

The firms in the Republic of Korea entered the "mature technology" stage in the 1960s and 1970s in which it acquired, assimilated, and improved generally available mature foreign technology through "duplicative imitation". They then reached the intermediate technology stage in the 1980s and 1990s through intensive indigenous efforts to strengthen their technological capabilities and focused on "creative imitation" which was possible because of the lenient IPR.[62]

With the increase in local wages and competitive threats in the labour-intensive production, the Republic of Korea had to shift their emphasis from labour-intensive mature technologies to relatively more knowledge-intensive intermediate technologies in the 1980s. To tackle this challenge, the local firms across industrial sectors largely focused their technological efforts on three major areas:

a. foreign technology transfer through formal mechanisms;
b. the recruitment of high caliber human resources from abroad; and
c. local R&D efforts.[63]

Policies were amended accordingly.

Foreign patent owners started to keep close eyes over the technologies in the "intermediate stage". Because these technologies still play an important role in expanding their international business activities and ensuring their competitiveness. The Republic of Korea, hence, began to use more formal routes to acquire new technologies, such as FDI and foreign licensing. Patent statistics show an increase in patenting activity in the country during this period, including a significant increase in the number of local patents registered.[64]

Many foreign subsidiaries, both wholly owned and joint ventures, play an important role in transferring technology to developing countries in the form of FDI; which also counters the argument that FDIs face deterrence in nations with weaker patent rights.

suit their requirements. While data on IP filings are available, the empirical analysis of IP Management practices is something that needs to be studied in greater detail and that too, specific to industry types.

3.2 Intellectual property management

The secret to winning is constant, consistent management. - Tom Landry

The term "IP Management" refers to the administration and organization of intellectual property matters in institutions such as companies, public or private research institutions and any other entity such as universities engaged in the creation and commercialization of IP rights. The rights include, depending on the jurisdiction:

- registered patents, trademarks, designs and utility models;
- unregistered rights including copyright in research documents, computer programs, database and database rights, internal invention disclosures prior to filing patent application;

- any other right such as domain names, rights in the name of an institution, etc; and
- rights that have been acquired by way of a license or assignment from third parties.

For public research institutions and universities, IP awareness plays a central role in prospects for commercialization of assets as well as for reasons of strengthening research and teaching. Thus, a proper IP management scheme allows universities, in general, to enhance freedom of operation by enabling technology transfer and establishing a patent culture.

Important aspects of IP management therefore refer to:

- continuous monitoring of IP being created;
- the establishment of ownership of IP rights and its documentation;
- the collation and documentation of existing rights;
- the preparation of licensing contracts and other agreements; and
- the establishment of non-disclosure and IP audit policies.

The organization of IP functions in institutions is a central aspect of IP management. There could be various types of IP organizational structures such as:

- a *centralized organization* with a single corporate IP department for all sub-business units;
- a *decentralized organization* where the IP functions are integrated into each business units;
- an organization where the IP management is an *independent* unit; or
- an *externalized organization* where IP management is basically accomplished through external services such as patent attorneys and law firms.[65]

3.3 IP portfolio and IP audit

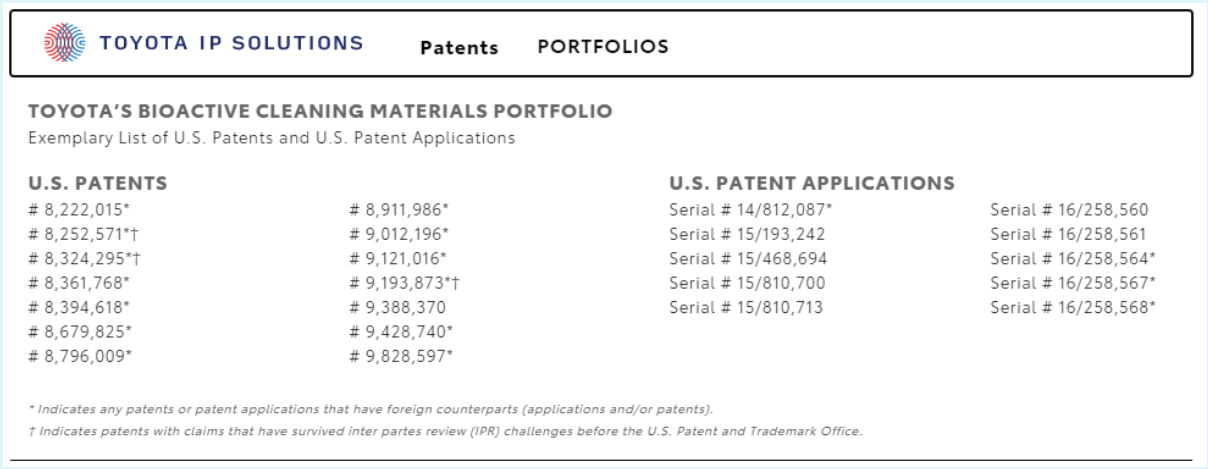
Every organization should maintain a comprehensive **IP portfolio** which is a document or database where information on IP is collated and organized. Its main purpose is to allow easy access to information about the existing IP rights. It enables organizations to align business strategies using IP portfolios as a central point for the purposes of exploitation, valuation and enforcement of rights.

There is no standard approach as to how an IP portfolio should be managed as it would be unique as per the specific needs of the organization. For example, the focus of a university with different areas of technology departments would be very different from an institute specializing in a distinct area of technology.

Having developed an IP portfolio, its efficient management becomes critical for increasing its effectiveness and reducing the costs of maintenance of the IP portfolio. Also, a good IP portfolio provides the owner competitive advantage and makes the business attractive for investors. Protecting and maintaining IPR, especially patents, involves high costs as well. Therefore, strategic decision making based on IP information to ensure greatest protection, and marketing value within the desired budget, is crucial and provides efficient competitive intelligence.

The IP portfolio of a company may be segregated based on the types of IPs as well as categories of different technologies for ease of management. For example, Toyota Motor Corporation, Japan, whose main IP portfolio is in automobiles, can categorize its patent portfolios based on technology such as hybrid car portfolio and electric car portfolio. In fact, the subsidiary research of Toyota is made available separately for license as a specific technology portfolio (Box 3.3).

Box 3.3: A patent portfolio of Toyota Motor Corp., Japan available for licensing



TOYOTA IP SOLUTIONS Patents PORTFOLIOS

TOYOTA'S BIOACTIVE CLEANING MATERIALS PORTFOLIO

Exemplary List of U.S. Patents and U.S. Patent Applications

U.S. PATENTS

# 8,222,015*	# 8,911,986*
# 8,252,571*†	# 9,012,196*
# 8,324,295*†	# 9,121,016*
# 8,361,768*	# 9,193,873*†
# 8,394,618*	# 9,388,370
# 8,679,825*	# 9,428,740*
# 8,796,009*	# 9,828,597*

U.S. PATENT APPLICATIONS

Serial # 14/812,087*	Serial # 16/258,560
Serial # 15/193,242	Serial # 16/258,561
Serial # 15/468,694	Serial # 16/258,564*
Serial # 15/810,700	Serial # 16/258,567*
Serial # 15/810,713	Serial # 16/258,568*

** Indicates any patents or patent applications that have foreign counterparts (applications and/or patents).*

† Indicates patents with claims that have survived inter partes review (IPR) challenges before the U.S. Patent and Trademark Office.

This patent portfolio is for innovative compositions of enzymes that are capable of breaking down organic materials, making stains and spills much easier to clean. Initially, this technology was developed by Toyota researchers for exterior and interior surfaces of automobiles, but realized that its uses can be expanded further to paint and coatings, furniture wax, cleaning solutions, windshield wiper fluid etc. These effective yet gentle enzymes can remove insect bodies, fingerprints and other debris from the surfaces of automobiles. Once in contact with organic materials, the enzymes instantly begin to break down the materials. With more effective dispersion of the enzymes throughout the selected medium and higher levels of enzyme activity, they can deliver enhanced cleaning power with speed and ease.

(Source: https://www.toyotaipsolutions.com/)

IP portfolio management is usually undertaken through various means, of which IP Audit is the most significant, besides IP Due Diligence and IP Valuation.

IP Audit

An intellectual property audit is a systematic review of a company's IP assets and related risks and opportunities. IP audits can help (i) preserve, assess and enhance IP; (ii) correct defects in IP; (iii) identify risks of the company's product or services infringing another's IP; (iv) put unused IP to work; and (v) implement best practices for IP assets management. A thorough IP audit involves not only a review of the company's IP assets but also its IP-related agreements, procedures, policies, and competitors' IP assets as well.

The IP audit requires review of all IP-related information available with company managers responsible for research, development, sales, and marketing as well as IP creators, external experts and contributors, if any. IP audit is a review procedure of the intellectual property owned. It is systematic in nature to ensure that the IP assets are assessed, problems are rectified, risk management takes place and best practices as required are implemented. All the related agreements, compliance procedures and relevant policies of that company's IP assets are taken up for consideration, so that all the uncovered, unused or under-utilized assets can be identified, and the threats can be eradicated.

Box 3.4: Takeda IP strategy based on patent portfolio audit in Japan

One of the prominent pharmaceutical companies in Asia, Takeda Pharmaceutical Company's patent portfolio in 2000 comprised of 3500 patents which was reduced in 2008 to almost half, with less than 1900 patents. This reduction in patent portfolio reduced the company's liabilities and saved millions of dollars over the lifetime of these patents.

In 2011, faced with the impending loss of patent protection on certain leading products, Takeda unveiled its mid-term plan to achieve sustainable growth. Takeda acquired IDM Pharma Inc, USA, Millennium Pharmaceutical Inc., USA, and Nycomed International Management GmbH, Switzerland followed by URL Pharma Inc., USA (2012), Multilab Indústria e Comércio de Produtos Farmacêuticos, Brazil (2012), Ariad Pharmaceuticals, Inc., USA (2017) and TiGenixNV, Belgium (2018). This provided significant boost to the Takeda patent portfolio and a stronger innovation platform to the business.

Through this process of careful portfolio pruning and considered acquisition, Takeda has transformed itself to become an IP powerhouse. The Competitive Impact of Takeda had increased from 1 (which is the PatentSight database average) to an impressive 3.6, increasing its portfolio to around 1800 patent families. With the field of Pharmaceuticals being dominated by big companies, Takeda's acquisitions have changed the dynamics of the international market.

(Source: Mansfield, W. (2018). The Transformation into the New Takeda. Patentsight IP Analytics Blog https://www.patentsight.com/en/ip-analytics-blog/the-transformation-into-the-new-takeda)

Management of IP rights and ascertainment of IP value are part of the IP Audit. The inventory of IP assets so prepared is analyzed to determine further steps to be taken to achieve the goals of the business. This in turn helps in maintaining and improving the competitive position of the business in the relevant market.

Box 3.4 shows how auditing of IP portfolios by Takeda Pharmaceutical Company Limited of Japan in the last two decades has changed its market poition.

Another major part of IP management is the assessment of IP and its valuation. This is done for internal purposes such as accounting, R&D monitoring, and compensations for employees, as well as external purposes such as technology transfer, mergers and acquisitions (M&A), and patent disputes. To evaluate commercial value of their intellectual assets, many institutions conduct IP audits which classify IP in several groups. An example is the case of Dow who created a series of classification: (1) most valuable patents related to business; (2) patents without current use but potential value; and (3) patents without current or potential use.[66] However, it should be noted that due to the high number of variables influencing the value of an intellectual asset, one valuation method does not fit all. The way IP is perceived within institutions and which IP culture is adopted impacts IP management. Besides the need to align IP management to business, the involvement of top management in IP management is crucial and raises the general awareness for IP.[67]

Any company, which wishes to prosper, needs to efficiently manage its IP portfolio. For this reason, it is essential that every manager in the company, not just those working in the corporate legal department, appreciates and understands not only what IP is, but how it can be more effectively exploited.

In any institution it is important that its IP be aligned with its overall goals. Adequate use of IP in taking an invention to the marketplace is one of the aspects of IPR's which can help an organization to achieve its desired results. However, innovation requires a comprehensive understanding of how the IP rights can enable an organization to successfully use the invention. This gives the institution a competitive advantage. Further, it is equally important that in order to be commercially viable, the company does not infringe a third-party IP as disputes with regard to infringement can prove to be an extremely costly affair.

In *Adidas America, Incetalv. Payless Shoesource, Inc.*,[68] Adidas brought a trademark infringement suit against Payless in 2001 alleging that Payless was offering shoes with the famous Adidas signature three stripes mark. They were claiming that the use of the mark would cause confusion with consumers, which will have an adverse effect on the enormous goodwill Adidas enjoyed. With numerous appeals and judgments, the jury verdict found that Adidas' trademark was infringed and Adidas was compensated with 304.6 million dollars. Arrival at this amount required valuation of the IP, the trademark, and therefore IP valuation in each stage of IP is critical.

3.4 Importance of IP strategy

A successful organization requires management with checks and balances at all levels, and IP is no different. IP audit helps to inform the company about the intellectual property it owns so that it can make informed decisions with respect to its protection, development and exploitation. An IP audit related to development or use of new technology may include a determination as to whether particular technological improvements are likely to be patentable and if they are worth patenting. IP Audits help preserve and enhance the value of existing IP and identify new opportunities to profit from IP. It also teaches decision makers, innovators, and marketers about IP and how to proactively protect IP opportunities before they are lost.

In businesses, strategy is the action taken by managers to attain one or more of the organization's goals. It is like a general direction set for the organization to achieve a desired state in the future. Strategy results from the detailed strategic planning process and is about positioning and capability development of an organization. IP strategy based on the competitive environment, the institution's technology position, and its current market position are therefore vital for leveraging their IP to help in reaching the overall goals of the institution. The IP strategy should be in line with the vision and mission of the organization and the IP policy is expected to strengthen the strategy being pursued. IP strategy is therefore not expected to be static, but should be adapted as and when the internal and external factors conditions change.

The case of the Eastman Kodak Company ('Kodak')[69] is an example of how strategy

Figure 3.1: Innovations of KODAK

3.1a

3.1b

3.1c

decisions affect even the leading companies in the consumer photography business in the United States of America (Figure 3.1). Kodak was founded in USA by inventor George Eastman in the late 1800's.[70]Kodak introduced KODALITH Film and Plates, which replaced the collodion wet plates used in the graphic arts industry (Figure 3.1a). Kodak added a READY-MOUNT Service for 35 mm KODACHROME Film (Figure 3.1b) and also "V-Mail" was developed by Kodak as a system for microfilming letters to conserve shipping space during World War II (Figure 3.1c). However, even the innovations[71] made by the company could not save it from bankruptcy proceedings due to its poor strategy decisions.

The company grew to be a formidable player in the photography business in America when "it took photography out of the professional studio and into everyday life" by providing cost effective cameras to the public. Kodak was not only well known in the US but also had a strong international presence. It made substantial profits from its 35mm camera films. The company is also credited with the invention and introduction of the digital camera to the world.[72] The digital camera was invented in 1975 at Eastman Kodak by Steven Sasson and Gareth Lloyd, but was patented only in 1978. Although earning revenues from their patents, Kodak failed to commercialize and capitalize on their digital camera invention for over 25 years until 2001[73] , when it finally ventured into the market with the product it had originally invented. Kodak failed to consider its own intellectual property valuable, like the digital camera technology it had created, and their poor management decisions led to a lack of appreciation of how their own technology could have worked in their favor. Even though Kodak was aware that the digital camera would eventually become a consumer technology and will be accepted widely, it did not anticipate digital media toppling the traditional film, the way that it actually did.

3.5 Alignment of IP with R&D and institution goals

The management of IP is much more than the filing of applications for IP rights and maintaining the deadlines related to its prosecution or associated fee payments. The planning and management start from the very beginning when the IP is generated and continues till it expires or ceases to be of any use. Therefore, there are several aspects and means which are to be considered for effective IP management, starting with creation of vision of the institution.

As highlighted above, the IP Policy document sets the foundation of how the IP portfolio would be generated, maintained, audited and exploited. The fundamental requirement for the IP policy to be successful is to provide IP knowledge to the creators of IP, e.g. the R&D team members, which includes the lead researcher, the technician, consultants, apprentices, and any other person having any knowledge of the work in progress.

The universities and research institutions can find several guidance documents to be used as initial template of IP policy[74] which would help to formulate the basic document covering the scope of the IP Policy and its governance and operations. The following points are noteworthy while preparing the IP Policy:

- The IP policy should guide how and when to conduct training and capacity building for IP creators and managers.
- The marketing, licensing, collaborative research, contract negotiations, IP costs and revenue distribution etc. should be either in-house or outsourced based on the skill set available.
- The decision as to which IP to protect and which to publish and on what criterion should be spelled out.

- Most importantly, as already emphasized before, the ownership of registered IP as well as trade secrets should be crystal clear.
- All possible issues which can be envisaged based on the organization's specific needs are to form part of the policy document.
- Periodic revision of the policy document following the changes in market as well as the focus of the institution needs to be embedded within the policy document.
- Finally, guidelines on commercialization of IP and sharing of benefits arising thus should be provided within the policy document itself.

Most importantly all the guidelines and procedures should be in line with the vision of the institution as they will vary greatly based on the same. For example, IP Policy for an institution with the vision "Ensure food and income security for all, through technological innovations and sustainable agriculture"[75] would be very different from that of an institution with the vision "Will be a leading sustainable Chemistry Solutions Company serving customers based on innovative, science-led differentiated products and solutions"[76] or "To provide access to the world's information in one click".[77]

The alignment of the overall IP policy with the vision, mission and goals of the institution would synergize its growth and promote innovation. For technology driven institutions, the most important IP is patents and the associated know-how which is the secret IP and may be most valuable for the institution. Knowledge of patents, and search and analysis of patent data at the stage of R&D itself is another important IP management tool.

3.6 IP analytics and patent landscaping

The basis of innovation is R&D, which requires literature search and review as the first step of deciding what project is to be undertaken by a research institute. In case of private investors and government funding departments, literature review determines which project to fund, for no one wants to invest time, effort, money and resources into reinventing the wheel. Adding patent search to literature review adds more value in terms of getting access to published data on patents which may not have been published in peer review journals.

Patent databases, whether available at the official patent office websites or through paid portals, are a rich source of information besides the technology it discloses. The ownership of patent rights, its assignment to another party by the patentee, citation of a patent in different patents, names of the inventors (creators), the expiry date of the patent, patent classification, patent families, etc. are just few of the information which are available in patent databases that needs analysis to derive the required results. For example, if a technology company wishes to acquire its competitor, they would be searching all the granted patents as well as patent applications in the pipeline of the said company, as published at the patent office websites worldwide.

Patent search and analysis are based on the goal of the search, which can be many such as: novelty search, validity search, invalidity search, claim strength, patent strength, freedom to operate, due diligence, ownership, infringement analysis, entitlement, white space analysis, patent landscape report preparation, prior art search, potential licensee search, potential partnership search, technology scouting, creating patent pool, identifying patent thickets, etc.

A patent searcher would first need to define the goal of search and then devise the strategy to do the search. For example, a novelty search or prior art search is for a specific innovation, mainly to determine whether it qualifies the first patentability criteria i.e. being new all over the world. This would require search of all prior art documents including non-patent literature. On the other hand, patentability search is

done while preparing and before filing a patent application. It helps the applicant to decide whether or not to (i) file a patent application; or (ii) proceed with the patent application as drafted; or (iii) undertake further research and development to make further improvements to the invention for getting a stronger patent.

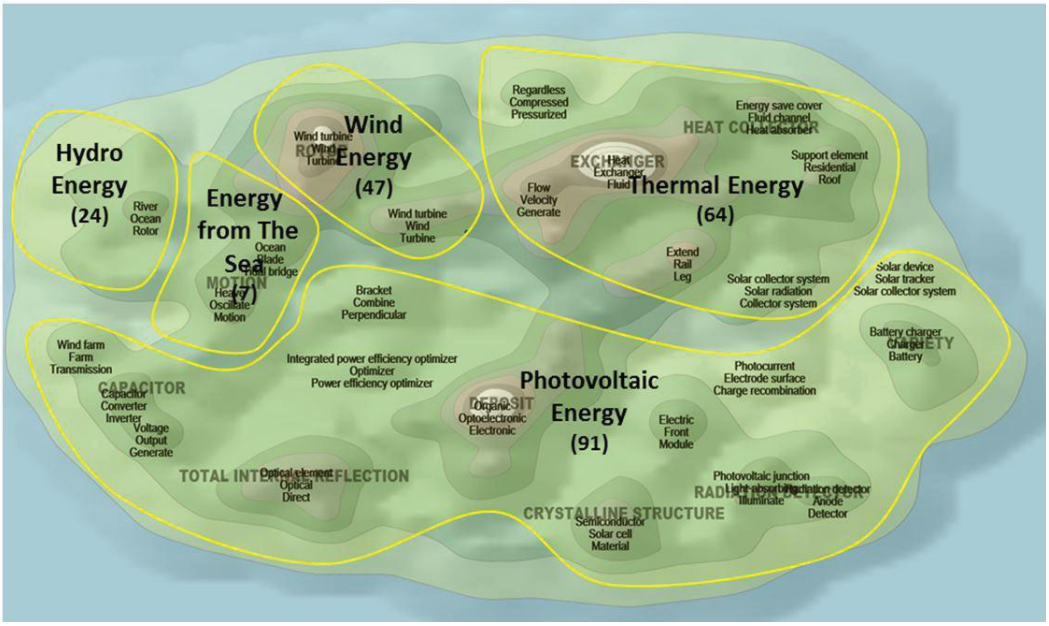
For R&D purposes, the state of art search, white space analysis and patent landscape preparation are mainly used for establishing the starting point and direction of new research and development projects. Infringement search, validity/invalidity search, patent search or claim strength search is used for taking enforcement as well as marketing decisions. Freedom to operate search helps to determine if any patent would be infringed by using the invention in question. Validity searches are also done because of current or anticipated litigation, in the context of licensing negotiations, or as part of the due diligence process for assessing the value of a patent. All the patentability criteria, basic as well as country specific, are reviewed for validity opinions. Entitlement or ownership search is another type of search which is done to find out the names of inventors, researchers or companies in whose names' patents are filed, issued or assigned. By analyzing the bibliographical data of numerous patent documents, it may be possible to identify the leading inventors, researchers or companies in a particular technology sector and to gain an insight into their research or patent strategies.

Patent landscape is very commonly prepared by searching specific patents of required technology and analyzing the results to provide a snapshot of the patent situation of a specific technology in the desired jurisdiction to help in policy discussions, strategic research planning, technology transfer, and assessing patent validity. The patent landscape, as the name suggests, is a visual treat and provides in-depth information at a glance to help take decisions with the support of pre-analyzed patent information. An example of patent landscape[78] is that of patented inventions in Climate Change Mitigation Technologies (CCMT) which evaluates the patented inventions of Canadian researchers and businesses in the area of CCMT. The report was prepared based on the patent classification code in the seven categories viz. 1. Transport; 2. Renewable Energy; 3. Buildings; 4. Traditional Energy; 5. Clean Energy Enablers; 6. Smart Grids; and 7. Carbon Capture. The purpose of the report was to highlight the areas where Canadians are most active and areas where the others may have a relative advantage globally.

Table 3.1: Top 10 Canadian researchers of climate change mitigation technologies

Inventor	Business or Institution	Category
Zaghib, Karim	Hydro-Québec (CA)	Clean Energy Enablers
Rich, David Gerard	BlackBerry Limited (CA)	Clean Energy Enablers
Guerfi, Abdelbast	Hydro-Québec (CA)	Clean Energy Enablers
Burke, Murray	Mascoma Canada Incorporated (CA)	Traditional Energy
Fradette, Sylvie	CO2 Solution Incorporated (CA)	Carbon Capture
Gauthier, Michel	Hydro-Québec (CA)	Clean Energy Enablers
Benech, Régis-Olivier	GreenField Ethanol Inc. (CA)	Traditional Energy
Benson, Robert A. C.	GreenField Ethanol Inc. (CA)	Traditional Energy
Sutarwala, T.S.H.	Sutarwala Taha Shabbir Husain (CA)	Clean Energy Enablers
Ashdown, I.E.	Koninklijke Philips N.V. (NL)	Buildings

Figure 3.2: Patent landscape of Canadian businesses in renewable energy



The top 10 Canadian Researchers identified in the report[79] working on CCMT are provided in (Table 3.1).

The renewable energy landscape map[80] of patent families linked to Canadian businesses revealed not just the top players but also the renewable energy focus (Figure 3.2).

The landscape report revealed[81] that the leading Canadian businesses patenting in CCMT are not among the world's top businesses and that they patent extensively in the subgroups related to Transport, a technology area in which they do not have a technological specialization. In general, both Canadian researchers and Canadian businesses are relatively specialized in CCMT technologies related to hydro energy, technologies to produce fuels from non-fossil origin, nuclear energy and carbon capture. Understanding Canada's technological strengths from the perspective of researchers and businesses helps policymakers develop targeted policies that can be designed to increase strength in the specific technology field of CCMT with the ultimate objective of advancing its innovation.

The above landscape report therefore shows how meaningful conclusions can be drawn from patent information. There could be several objectives of preparing a patent landscape report such as to define the R&D focus of companies, to track the technology advancements in a given technical field such as the Artificial Intelligence (AI) patent landscape report prepared by WIPO[82], to identify technology leaders and their IP strategies, to monitor R&D trends, to do white spaces analysis, etc. A white-space analysis is one of the key methods for strategic innovation to develop IP in a specific area. A gap or white-space is identified in a patent landscape within a sector which helps in taking strategic decisions on need-based resources/ information such as identifying a potential partner and/or researcher, exploring possible lucrative business opportunities, investing in specific areas of research or specific geographical market, identifying the valuable patents, etc.

It is clear that patent data can be used for several purposes, and therefore patent search and analytics skills are of great value to any technology-based organization. Patent data, combined with market related information,

provides an even deeper meaning for creation and exploitation of IP, as well as valuation and risk assessment related to an IP asset.

3.7 IP due diligence and risk evaluation

Due Diligence is defined as an evaluation, performed by investors or their agents, into the details of a potential investment or purchase, where such evaluation involves a verification of all the material facts relevant to the investment or purchase. Accordingly, IP due diligence is carried out usually by a prospective purchaser in relation to the IP assets of the target company or business. However, IP due diligence can also be carried out by a company on its own IP assets in preparation for a transaction such as a business sale or a major licensing deal as it will provide back-up for negotiations. Due diligence therefore is a part of IP Audit with a clear focus on concluding a specific IP transaction with another party so that the risks are mitigated.

The major areas evaluated in an IP due diligence are related to ownership and legal risks such as infringement action pending or probable. In case of technology focus due diligence, the relevance of the technology in the current market and in future, along with the validity and enforceability of the IP rights, is required to be assessed. If any risks are identified, the IP transaction would either fail to proceed or necessitate change in the deal strategy, the latter more likely if the expected risk has low monetary value and reduced probability of future occurrence.

The purpose of IP due diligence is to identify possible risks, to reduce or allocate risks and to provide a rational basis for better decision making with regard to all risks in accordance with the business plan. The potential sources of risk can be internal such as lapse of patent due to delay in payment of annuity fees, as well as external such as natural disasters, unforeseen regulatory requirements, market or operational risk, changes in social environment, currency rate fluctuations, media, technology changes, risks stemming from design process, legal actions, labour or workplace problem, change in legislation, etc.

Box 3.5: W and H questions to ask for IP due diligence

1. Why is the technology relevant?
2. When is the most appropriate time for the deal?
3. Who are the creators, owners, customers and competitors?
4. Where is the market with Freedom to Operate?
5. What is the IP landscape?
6. How is IP valuation to be done?
7. How much investment is expected?
8. What are the legal risks?
9. What's the catch– the hidden factors to be considered if any?
10. What should be the strategy for accepting, revising or rejecting the transaction?

Once all the potential risks are identified, they are to be categorized and prioritized. The cause and impact of each risk is to be assessed and then response strategy as per the business plan is to be formulated. If these risks can be mitigated, e.g. restoration of patent by payment of annuity fee, the transaction can move to the next level. However, if the risk is too high, e.g. the most valued patent cannot be restored, the transaction would not proceed. The alternative response based on risk category could also be re-negotiation. Yet another response could be to ignore the risks in view of other factors, such as unknown but valuable trade-secret of the target company, which came into light at the time of due diligence.

IP due diligence may also require a Freedom to Operate (FTO) analysis. This can be done to identify potential barriers or limitations to the manufacture and commercialization of the technology to be acquired. The FTO could help by identifying relevant third-party IP rights

and assessing the possibility of infringement of these IP rights by the prototype product or proposed process.

As each IP transaction is unique, there is no specific method of conducting due diligence. One may start with the basic framing of questions depending upon the type of IP and transaction envisaged such as the W and H questions for IP Due Diligence as provided in Box 3.5.

The purpose of conducting the IP due diligence should be clear from the beginning as it will help in completing the IP transaction with no surprises as the risk evaluation would be complete prior to the deal.

3.8 IP valuation

A True Valuation of an IP Asset is what the Market will pay for it. – Dr. John Turner

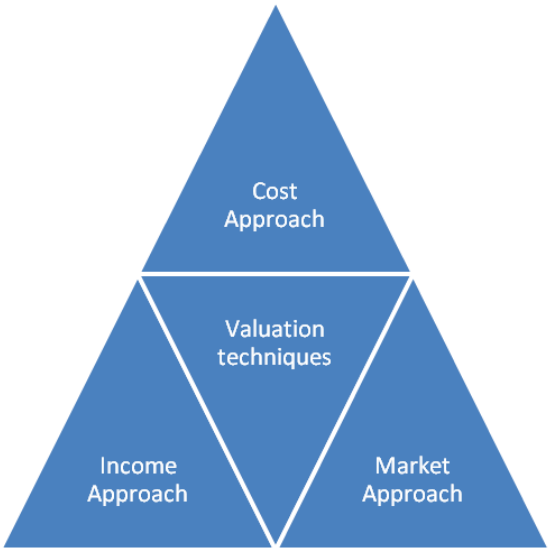
IP valuation is a process to determine the monetary value that is expected to be received from licensing or from sale or exchange of intangible assets such as patent, goodwill, trademark, technology, know how, trade secrets etc. There could be several reasons why the valuation may be required to be carried out such as fund raising, IPO launch, financial reporting, licensing in or out, investment for further development, etc.

As each IP asset is unique, there is no specific measure that can be used to assign a value to it. Each patent would have its own value and when compared to others, it may be more valuable or less valuable depending on the purpose of valuation. The valuator needs to start with the purpose of valuation and then plan the valuation strategy. The following would greatly impact the valuation approach to be chosen:

- Reason for valuation.
- What is to be valued (type of IP, license, and market position)?
- Which valuation method for calculation is most appropriate?
- Which information to use?
- For whom is the valuation done?

There are several factors therefore that influence IP valuation such as the premise of value, as the value of an IP asset would depend on the context or circumstances in which it is being valued. The value standard, reason for valuation, time and date of valuation, access to relevant data and information, reliance of data used, and the valuation method applied, all of these factor in while assigning a value to an IP asset. The market factors, the competition in the technology area, legal issues such as infringement litigation, validity objection before the patent office, the stress test score of the claims, the scope and validity of the patent are some other important factors to be considered for valuation. Thus, valuation of technology patent is as much a financial and legal exercise as it is a marketing exercise.

Figure 3.3: Different approaches for IP valuation



Several valuation techniques are recognized and there are certified patent valuation experts who quantify the future benefits and then calculate their present values using either the

cost approach, or the income approach, or the market approach (Figure 3.3).

Cost Approach is based on the intention of establishing the value of an IP asset by calculating the cost of developing a similar (or exact) IP asset either internally or externally. It seeks to determine the value of an IP asset at a particular point of time by aggregating the direct expenditures and opportunity costs involved in its development, and also considering the obsolescence of the IP asset. It is useful in situations where the IP assets can be easily reproduced, the income stream or other economic benefits associated with the IP asset being valued cannot be reasonably and/or accurately quantified, there is no direct cash flow being generated from use of the IP asset, etc. It helps to establish the maximum price for buying an IP asset when many candidates for substitution are available. Taking a hypothetical example, for drug A to get to market in two countries, a pharmaceutical company spends R&D cost of 1.6 billion US dollars, further spends patent registration and legal cost of 200 thousand US dollars, clinical trials cost of 1.9 billion US dollars, and labor and other costs of 300 million US dollars. All in all, the company spends a total of 3.82 billion US dollars. Thus, the value of the IP Asset related to the said product A is 3.82 billion US dollars as per the Cost Approach.

Market Approach is based on comparison with the actual price paid for a similar IP asset under comparable circumstances. It has often been used to establish "ballpark" values, especially for royalty rates. It reflects market perceptions and moods because it utilizes market-based information. It requires an active market, exchange of identical, similar or exchangeable IP assets and if not comparable, then variables to control the differences. For more accurate valuation, as much information as possible relating to nature and extent of rights transferred as well as the terms and conditions for using those rights should be available. It is the best method when we have to derive inputs for the income method. Also, it has been seen to be favored by tax authorities for deals with affiliates. The market approach is very often useful in the valuation of capital stock, other types of securities or an entire business enterprise. This approach is typically least effective for special-purpose machinery and equipment, most intangible assets and intellectual property, and properties highly restricted by zoning, environmental restrictions and other forms of regulation. Taking the example of the drug A, the price control regulations and labour/manufacture costs being different in the two countries, and also the market size being distinct, the market value of the IP asset in each country is found to be different, say in Country I it is 2.5 billion US dollars and in Country II it is 3.1 billion US dollars. Thus, the total valuation of the IP asset of the company for product A is 5.6 billion US dollars based on the Market Approach.

The Income Approach values the IP asset based on the amount of economic income that the IP asset is expected to generate, adjusted to its present-day value. This concept is better described by Campbell and Taylor, "It has often been stated, but bears repeating, that assets are only worth in the open market what they can earn, and the true measure of worth is the asset earnings when related to the risk inherent in the business situation."[83] This method is the most commonly used method for IP valuation. It is mainly determined by the amount of the income stream that can be generated by the property, an assumption as to the duration of the income stream, and an assumption as to the risk associated with the realization of the forecasted income.

It best captures the value of IP assets that generate relatively stable or predictable cash flows and is best suited for the appraisal of the contracts, franchises, securities, business enterprises, patents, trademarks, copyrights, licenses and royalty agreements. Taking the

same simple hypothetical example of the pharmaceutical company, if the drug A related IP is to be sold in say Country II, the income-based approach will evaluate various factors with respect to all the IP related to the said technology, which may also include process claims and trademarks besides the product patent. Thus, the expected annual revenues for the IP minus the expenses would first help to calculate the present value of future cash flows which would be extrapolated to the future years of the life of patent/IP. The sum would determine the value of the IP asset in accordance with the Income Approach after factoring in the risks related to infringement/litigation costs.

The cost, income, and market approaches are the basic tools of valuation. Virtually any type of property, not just IP assets, can be valued using these methods. Further, there are other approaches for patent valuation as well, which may be used as per the purpose of valuation such as Option-based Approach. One may even consider the apportionment of product value to patent or qualitative patent technology analysis to value a patent or a patent portfolio. A combination of any two or more patent valuation methods can be used to compare the values resulting from each to confirm/combine the conclusions or to highlight inconsistencies that should be investigated.

IP valuation approaches should rely on past experience as well as publicly available information related to licensing and royalty rates. Also, the focus should not be only on patents as other IP activities also impact a company's IP strategy such as comprehensive IP portfolio management including IP filing, transaction, licensing, and litigation activity. The purpose of valuation may vary such as for mergers and acquisition, financing, sale targeting and pricing, pre-litigation strategy, IP transaction, licensing, bankruptcy and solvency, financial restructurings, opinions, venture capital investment, financial reporting, tax reporting, transfer pricing, market assessment, and others. The valuation of own or other party's patents is the first step towards monetization of IP rights.

Many assumptions are required to be made for IP valuation and it is more of an art than science. Depending upon the valuation criterion chosen, the valuation of an IP asset can be as high as 20 times its calculated conservative valuation[84], and therefore valuation needs to be done only by experienced professionals.

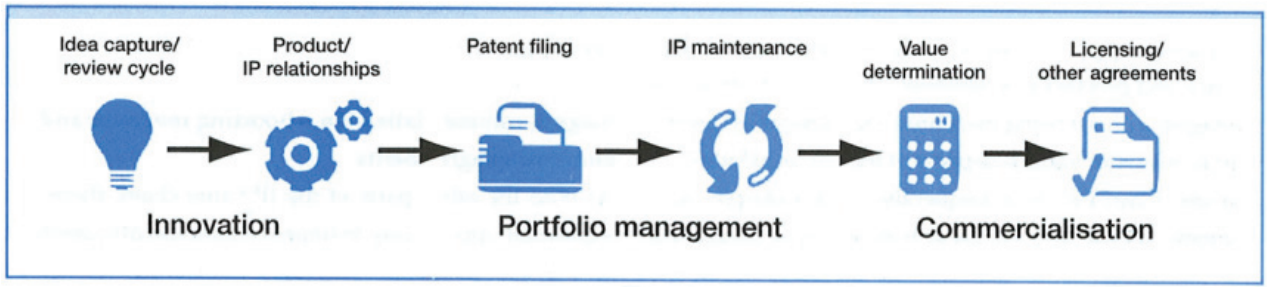
3.9 IP value proposition for commercial exploitation

The value proposition can redefine the business strategy of an organization. Patents in the area of new generation technologies provide distinct advantages to the organization. The complete IP portfolio, with all the IP assets, needs to be seen together for the sake of IP value proposition. Brand value is one of the key components of determining the IP value of an institution, with brand value being much higher than patent or other IP value in many instances. Also, trade secrets have to be carefully preserved as secrecy is at the very heart of a trade secret, and is what creates the value proposition.[85]

There are many ways that value proposition of patents can be exploited such as:

- Commercial exploitation by way of manufacture and sale by patent owner;
- Defensive licensing strategy against would-be infringers;
- Patent assignment or sale or auction;
- Setting up a new business to get the Idea to new markets;
- Forming a joint venture;
- Cross border patenting and attracting foreign investment;
- Giving free access to patent or patent portfolio;
- Use of patent as collateral for loan;

Figure 3.4: IP value chain model (Carson, 2008)



- In-licensing to strengthen own patent portfolio; and
- Out licensing:
  - License agreement to work the patent on royalty payment or lump-sum payment or both,
  - Non-exclusive or exclusive licensing,
  - Jurisdiction specific licensing.

IP Monetization usually means generation of revenue or the attempt to generate revenue by an organization by selling or licensing the patents it owns. However, the term has been used herein for other forms of IP exploitation as well which bring revenue or at the very least, some positive impact through its use.

Prior to proceeding with monetizing the IP, assessment of the strategic and commercial value of IP and determining the best course of action to be taken is a critical step. This would depend on various factors such as the patent owner's goals, business model, risk tolerance, financial ability, willingness, etc. as well as future predicted effects.

IP commercialization/monetization would be discussed in more detail in the next chapter. However, this is the most important aspect of the overall IP strategy of the organization as it leads to revenue generation and growth of the organization.

A value chain model (Figure 3.4) is a logical framework for IP management which follows the formulation and development of the intellectual property, acquisition through portfolio management, and commercialization.[86]

- Innovation creation - capturing, managing and protecting critical inventions to build IP portfolios
- Portfolio management - using IPM tools
- Commercialization

3.10 SWOT analysis for developing IP roadmap

IP management would be fruitful if the organization reaches its goals and there is overall growth. Hence, development of an IP Roadmap to keep climbing the ladder of success is essential.

SWOT analysis is one step towards this goal. SWOT is an acronym for Strengths, Weaknesses,

Table 3.2: Strategic options based on SWOT matrix (Weihrich, 1982)

	Strength	Weakness
Opportunity	Make the best use of the strength to take the opportunity? How?	Make it not miss the opportunity by the weakness? How?
Threat	Avoid the threat by the strength? How?	Make the threat not actually become it by the weakness?

Opportunities and Threats. Strength and Weakness are inward looking analysis that the business has to determine. Opportunities and Threats are outward looking analysis which determines the scope of the Intellectual Property in the given business environment.[87] An IP SWOT assessment should be kept strictly confidential. The assessment could be performed for the business as a whole and for key product lines/development initiatives. IP SWOT inputs could include an IP audit that entails an IP landscape survey to assess the relative IP holdings of competitive entities. It may also include a mode of competition analysis or the relative effectiveness of the various forms of IP. During SWOT analysis of a patent portfolio, the patents are studied and categorized revealing major insights related to each of the categories.

SWOT analysis is not limited to the examination of a portfolio of an organization alone; it could be conducted on portfolios of the competitors to either carry out market research or to determine threats of litigation from the competitors. Analysis can also be conducted for Countersue Risk Assessment, Competitive Analysis, Merger & Acquisitions or Out-licensing Programs. The SWOT analysis helps in arriving at strategic decisions based on the identified strengths, weaknesses, opportunities and threats by asking questions such as those depicted in Table 3.2.

The relevant questions to ask would include:

1. What enables the business to perform better than it would otherwise have?
2. What are the products/services still unprotected under the IP Regime?
3. Has there been any leak of confidential information?
4. What other uses might there be for a said patented invention? Can it be developed further?
5. What are the new technologies available with the competitors? Is there anything in the market space which undermines your IP?

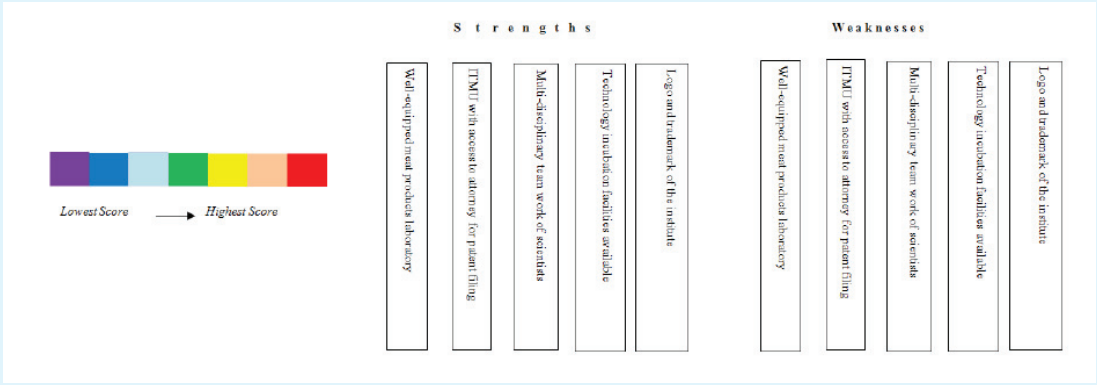
Further, there is also a STEP approach that helps determine the market forces and takes the conversation towards the environmental factors, helping or inhibiting (as the case may be) the growth of the business. STEP is an acronym of Social, Technological, Economic and Political factors. This approach is widely used for macro-level analysis of the market for possible opportunities of growth.[88]

Social and cultural factors like age and values may determine how the new product is going to perform in a particular market. A market with an ageing population would spend more on health care, and less on technology. Technological factors such as adoption of new technologies like the Artificial Intelligence, Drones, etc. would also impact the direction of the company's research area in future. Further, economic factors like growth rate, inflation, interest rates, etc. will also be of help while deciding the future course of action. Political factors and legal framework within which the business operates also play an important role in determining the future, and the direction of the business. There may be legislation aiding the growth of one sector, which would lead to favorable policies and opportunities in the said sectors, making it a lucrative area for research. But the decision to explore that area from the company's perspective would be a decision left to the executives to take.[89]

An example of SWOT analysis of the Intellectual Property Management System (IPMS) that performed the functions of intellectual property creation, protection, and transfer/ commercialization in a meat research agricultural institute (Box 3.6).[90]

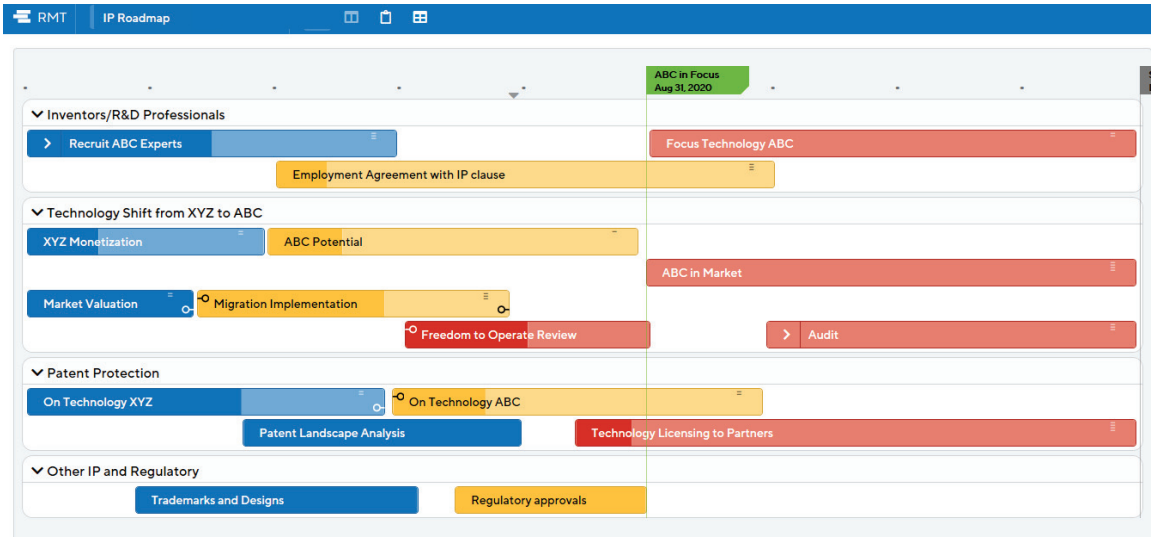
The top-rated key strengths included 'Institute Technology Management Unit with access to the attorney for patent filing' and 'Registered logo and trademark', whereas 'Inadequate technical/supporting staff' and 'Lack of a system for registering licensees in industries

Box 3.6: Weighted SWOT matrix showing strategies (S-O, W-O, S-T, W-T) for assessment of IPMS



Depending upon the purpose of SWOT analysis, specific guidelines can be made for the same. For example, the SLW Institute's guidelines for IP SWOT Analysis are a good beginning[91] towards identifying the strengths, weaknesses, opportunities, and threats of an organization and building its IP strategy or IP roadmap.

Figure 3.5: IP roadmap example



for commercialization' were the top-ranked key weaknesses.

The key opportunities included 'Joint ventures with outside organizations for product development, evaluation and up scaling' and 'Geographical Indication enabling provisions for traditional and unique meat products'. The most prominent threats were 'Lack of personnel with legal and commercial expertise in the veterinary field' and 'High cost of securing and maintaining IPR'.

Participatory SWOT analysis enriched with weighted SWOT matrix technique was employed to identify the best strategies to improve and develop the IPMS further.

IP roadmaps make it possible to define an IP strategy by understanding the company's business plan and vision, conducting a panoramic search of patent databases to understand the competitive context, and conducting SWOT analysis to define the strategy. IP roadmaps allow technology developments to be integrated with business planning, the impact of new technologies, and market developments to be assessed.

A hypothetical example of an IP roadmap which concluded that the strategy of the organization should be to change its business focus from its core technology XYZ to technology ABC is provided in Figure 3.5. The IP roadmap sets timelines for desired plans and its implementation to ensure protection of IP in future by focusing on the technology of the organization. It also provides guidance for the operational sub-units to take appropriate actions to meet the goals or milestones set in the roadmap.

3.11 SUMMARY

This chapter brings in limelight the business management aspects related to the IP of an organization which are essential in moving towards achieving the organizational goals in the future.

The complex network of various activities of IP and its importance in the organization calls for specialized professionals having knowledge in the field of management as well as technology, besides legal expertise for taking the decisions and formulating the plan of action.

Technology driven institutions have innovation at their core and hence IP is their most important asset. Therefore, to have a clear IP policy for the organization that empowers an IP culture in the organization can make a major difference in the growth of such institutions.

A value chain model is a logical framework which follows the formulation and development of the intellectual property, acquisition through portfolio management, and commercialization.[92]

The IP policy of an institution is a formal document. The policy typically deals with ownership of IP, procedures for identification, protection and management of IP, procedures for use of IP with consideration of third party IPRs, procedures for collaboration with third parties and guidelines on the sharing of benefits arising from IP exploitation. A clear IP policy is therefore crucial for successful IP management and ultimately to reap the commercialization benefits.

IP Management not just refers to IP portfolio which is a document or database where information on IP are collated and organized, but also refers to the administration and organization of IP matters in institutions dealing with continuous monitoring of IP being created, the collation and

documentation of existing rights, the documentation and preparation of licensing contracts and other agreements, establishment of non-disclosure or IP audit policies. A thorough IP audit involves not only a review of the company's IP assets but also its IP related agreements, procedures, policies, and competitors' IP assets as well.

IP management (IPM) system would include facilitation of business development through automated workflows for non-disclosure agreements, creation of standard templates, and clause libraries for licensing agreements, enabling management oversight, facilitating reporting on different business arrangements, enabling monitoring of agreements and relationships between different products, services and terms of service, managing payment reminders such as royalty payments, besides other unique business requirements of the organization.

Patent databases are a rich source of information besides the technology it discloses. Patent search and analysis are based on the goal of the search.

Patent landscape is the pictorial representation of patent search results and provides in-depth information at a glance to help take decisions with the support of pre-analyzed patent information. Patent search and analytics skills are of great value to any technology-based organization. Patent data combined with market related information, provides an even deeper meaning for creation and exploitation of IP, as well as valuation and risk assessment related to an IP asset.

Due diligence generally involves a verification of all the material facts relevant to the investment or purchase. Accordingly, IP due diligence is usually carried out by a prospective purchaser in relation to the IP assets of the target company or business. It can also be carried out for own assets in preparation for a transaction, such as a business sale or a major licensing deal. Due diligence can therefore be stated as a part of IP Audit with a clear focus on concluding a specific IP transaction with another party so that the risks are mitigated.

IP valuation is a process to determine the monetary value of that is expected to be received from licensing or from sale or exchange of intangible assets such as patent, goodwill, trademark, technology, know how, trade secrets, etc. Several valuation techniques are recognized and there are certified patent valuation experts who quantify the future benefits and then calculate their present values using various methods such as the cost approach, the income approach or the market approach.

The IP of the organization, whether registered as a right or not, needs to be catalogued, evaluated and updated regularly with regular audits. The management of the complete IP portfolio provides vital information to the business managers in making strategic decisions for the organization. The priority of IP audit is the alignment of patent assets with business strategy, followed by quality audit and review of patents, valuation, patent cost management and reduction thereof, and patent monetization and licensing. IP Monetization usually means generation of revenue or the attempt to generate revenue by an organization by selling or licensing the patents it owns. However, it can include other forms of IP exploitation as well which bring revenue or at the very least, some positive impact through its use.

Strategy is a general direction set for the organization to achieve a desired state in the future. Strategy results from the detailed strategic planning process, and is about positioning and capability development of an organization. Accordingly, IP strategy should be in line with the vision and mission of the organization and the IP policy is expected to strengthen the strategy being pursued.

An important factor for creating an IP Strategy is to have the background information necessary to take any strategic decisions of an organization. SWOT analysis is one such tool to provide the relevant data to enable informed decision making.

SWOT is an acronym for Strengths, Weaknesses, Opportunities, and Threats wherein Strength and Weakness are inward looking analysis and Opportunities and Threats are outward looking analysis, which determine the scope of the IP in the given business environment. SWOT Analysis is not limited to the examination of a portfolio of an organization alone; it could be conducted on portfolios of the competitors to either carry out market research or to determine threats of litigation from the competitors, countersue risk assessment, competitive analysis, merger & acquisitions or out-licensing programs.

IP roadmaps make it possible to define an IP strategy by understanding the company's business plan and vision, conducting a panoramic search of patent databases to understand the competitive context, and conducting SWOT analysis to define the strategy. IP roadmaps allow technology developments to be integrated with business planning, the impact of new technologies and market developments to be assessed.

SUGGESTED READINGS

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DISCUSSION POINTS

1. If you are the IP manager of a technology driven institution having an IP portfolio of 100 patents in one technical domain i.e. Agricultural Biotechnology, what would be your top five actions for the best management of the portfolio?
2. IP Strategy, IP Policy and IP Management are distinct but important aspects of an organization. Discuss reasons and interconnection.
3. Conduct a SWOT analysis of your organization's IP portfolio, or of an organization that you intend to invest in.

MULTIPLE CHOICE QUESTIONS

1. **IP Strategy needs to align with the overall business goals of the organization.**
   a) True
   b) False
2. **Patent databases are essential for patent analytics. The following database is not used for patent search:**
   a) Espacenet
   b) Patentscope
   c) IPAIRS
   d) EMBL
   e) INPASS
3. **Patent monetization and commercialization can be through various means. Patent value proposition can be achieved by:**
   a) License for royalty
   b) Sale for monetary gain
   c) Assignment for payment
   d) Free use license
   e) Mortgage for loan
   f) All of the above
4. **IP Due Diligence is conducted for:**
   a) Inventor compensation
   b) Portfolio cost saving
   c) Risk assessment
   d) Benefit Sharing
   e) None of the above
5. **IP management system ideally would include facilitation of business development through automated workflows for:**
   a) Annuity Payments
   b) Invention disclosure
   c) Royalty reminders
   d) Confidentiality Agreements
   e) All of the above
6. **A value chain model is a logical framework which follows the formulation and development of the intellectual property, acquisition through portfolio management, and commercialization.**
   a) True
   b) False
7. **IP strategy once decided for a particular time period is not to be changed in any circumstance to ensure growth and innovation.**
   a) True
   b) False
8. **SWOT Analysis for taking an IP strategic decision requires scrutiny of internal and external factors of an organization's:**
   a) Threats
   b) Weaknesses
   c) Opportunities
   d) Strengths
   e) All of the above
9. **IP Valuation can be conducted by following the:**
   a) Cost Approach method
   b) Market Approach method
   c) Income Approach method
   d) Any of the above
   e) None of the above
10. **IP roadmaps allow technology developments to be integrated with business planning.**
    a) True
    b) False

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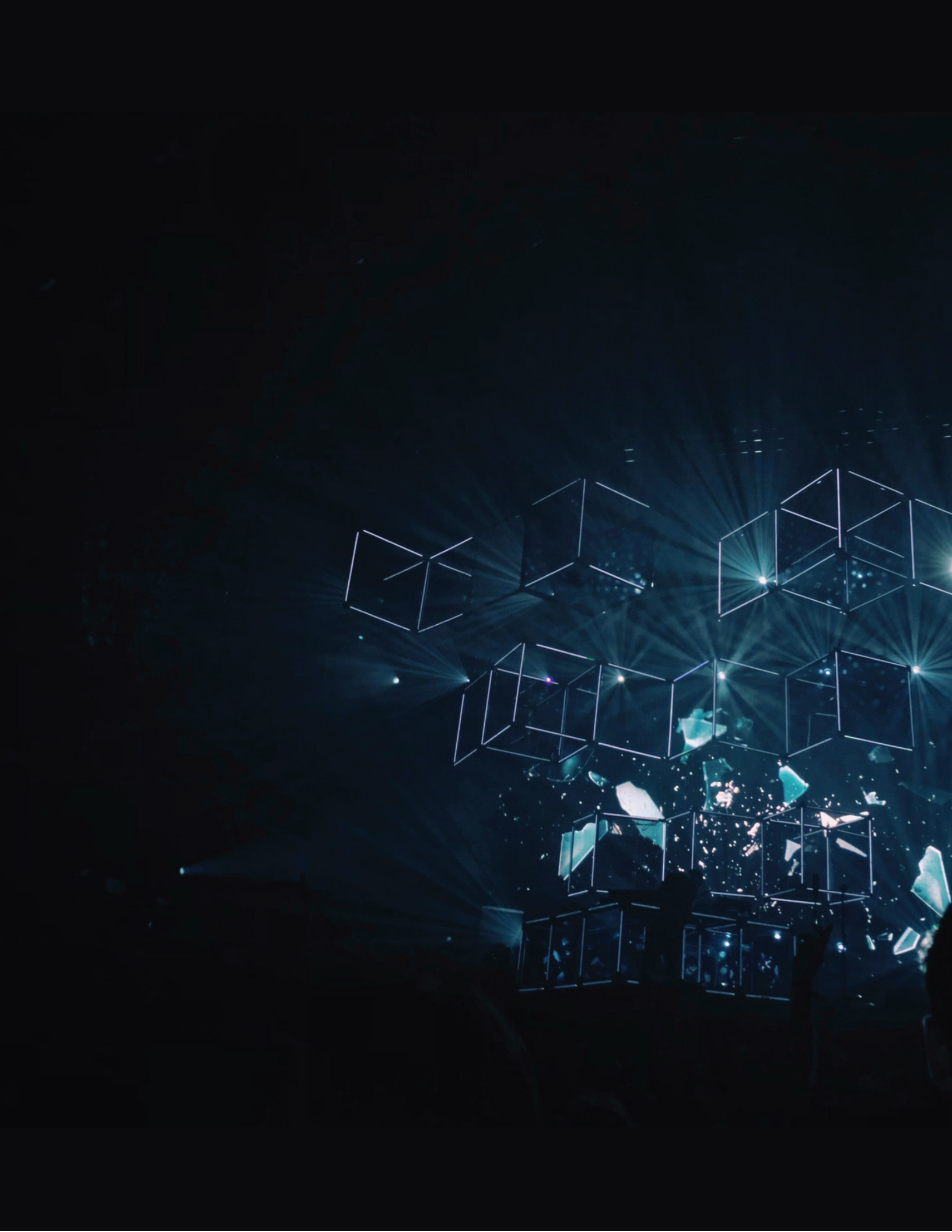


CHAPTER

4

IP Commercialization

This chapter focuses on:

- *the leveraging of IP assets for monetization while keeping the IP commercialization activities aligned with the business strategies.*
- *licensing-in and licensing-out of IP.*
- *IP license agreements, its important clauses and negotiations techniques for such licenses.*

4.1 Aligning IP commercialization and business strategies

Commercialization can be defined as the process of turning an invention or creation into a commercially viable product, service or process. It may require additional R&D, product developments, clinical trials or development of techniques to scale-up production prior to taking the results of research to market. This is important because not all innovators wish to take risk or have the resources, skills and appetite for risk in order to commercialize their own inventions or creations. Not all entities, whether academic institutions or innovative businesses, have the necessary financial and technical capabilities to take an invention or creation all the way to market by themselves. Therefore, owners of IP rights to an invention would need one or more commercial partners.

The IP commercialization strategy framework needs to be aligned to effectively support business goals. The IP assets can be leveraged best if the appropriate strategy is used to reach the target. Different and unique strategic styles can be devised based on the approach to innovation (i) driven by idea, research or analysis; or(ii) based on the environment where the business is functioning such as constant, flexible or fast changing; or even (iii) based on the IP rights owned by the organization such as breakthrough innovation, incremental innovation, or patent thickets. As mentioned in the previous chapter, the commercialization or monetization of IP can take place by several means (see chapter 3.9).

There are many interesting tools in the market for patent exploitation. Some of them are discussed below.

Public value proposition of patent: In case of public funded innovations, the public value proposition of patents needs to be considered. A recent paper[93] empirically demonstrates that multiple values are mobilized in patent documents with critical discussion on the theory and practice of patent valuation. There is a conceptualized private and public value proposition in research to provide a framework that can support further studies in value mapping. Patents are seen from the context of patenting, the content of patent documents and the potential economic and social impacts of patents for understanding private and public values in innovation. Extant patent valuation literature tends to overlook the public value of innovation even when both private and public value propositions are found in patent documents. Public value propositions are less frequent but more diverse. Analyzing private and public values in patents would offer tremendous innovation policy insights.

Patent market/auctions: Specialized marketplaces for patent transactions have emerged that allow direct observation of a patent's private value. A list of patent marketplaces is provided in Box 41.[94]

Ocean Tomo[95]: One of the most prominent marketplaces for patents is Ocean Tomo, a platform that offers periodical patent auctions. The Ocean Tomo Intangible Asset Market Value study supports the role of intellectual capital as the leading asset class in both S&P

Box 4.1: Patent marketplaces

- **Free Patent Marketplaces**

- PatentAuction.com
- Inpama.com
- Idea Buyer
- Patents.com Market Place (Ceased Operating)
- IP Marketplace
- PCTXS.Com
- Patent Mall

- **Paid Marketplaces**

IAM Market
Licentix(Ceased Operating)
Ocean Tomo Bid-Ask™ Market
USPTO eOG:P
Tynax Patent Library
- IPNexus.com
- IPwe
- Yet2.com
- IdeaConnection

- **Patent Brokerage Marketplaces**

ICAP Patent Brokerage
IP Investments Group
- IP Offerings
- Transactions IP

- **Programs where Patent Owners Can Sell Patents**

Google's Patent Purchase Portal
Marathon Patent Group(Ceased Activity)
- RPX
- Allied Security Trust (AST)

(Source: https://www.greyb.com/marketplaces-buy-sell-patents/)

500 and CSI 300 with contributions of 84% and 85% respectively in 2015 with continuous increase. The S&P 500 is a stock market index that measures the stock performance of 500 large companies listed on stock exchanges in the United States, whereas the CSI 300 is a capitalization-weighted stock market index designed to replicate the performance of the top 300 stocks traded on the Shanghai Stock Exchange and the Shenzhen Stock Exchange. Intellectual capital accounts for traditional IP assets, namely, Patent, Trademarks and Copyrights. Patent auctions, such as Ocean Tomo real time live auctions, are an interesting and exciting way of IP monetization in modern times.

IP as collateral for finance: In a knowledge-based economy, physical assets decrease in importance relative to IP assets[96], which in turn provides access to the latest and most innovative forms of technology and acts as barriers to entry by competitors. IP asset-based financing is thus becoming more common for technology firms in recent times. Even as valuation of intangible assets remains a challenge, the increase in IP license and royalty fees along with liquidation possibility of IP assets are making IP-backed financing popular. The example of a large patent collateral portfolio is that of Eastman Kodak Company's debtor-in-possession financing with Citigroup, USA availed in January 2012, using a portfolio of 7,741 patents, and the portfolio for a loan made to Xerox in June 2002, in which it pledged 7,442 patents to a syndicate of 13 banks. These transactions involved detailed documentation relating exclusively to patent collateral[97].In general, the market for IP-collateralized debt is primarily served by specialty lenders with only specific agencies accepting IP as collateral. For example, Malaysia Debt Ventures Bhd (MDV)

provides financing for companies in exchange for IP assets as collateral. MDV's RM200 million Intellectual Property Financing Scheme (IPFS) was introduced by the government in 2013 to assist the tech sector in its attempts to secure funding from financial institutions. The scheme has disbursed more than RM40 million in loans to companies in exchange of IP assets used as collaterals.[98]

Free access to patents: Patent owners have been choosing to give away their patents for free to the public due to various reasons such as financial, technical, by virtue of their being non-core patents, and sometimes social causes such as medical or environmental. TESLA and TOYOTA patents for electric vehicle related technology are made freely accessible by these companies. Open access software is another such example. Further, reasons[99] for providing free access could be:

- Economic reasons: the main motivations are reducing costs through saving R&D efforts as well as cost reduction in terms of maintenance fees and tax deductions.
- Technological reasons: profiting from network effects and avoiding 'throwing away' potentially valuable technologies that do not fit the firm's current strategy.
- Social reasons: access to green technologies and patents for the medical sector is provided in response to social responsibility. For example, AbbVie, USA, was one of the first pharmaceutical companies to respond to the crisis caused by the coronavirus (COVID-19) pandemic, in late January 2020. AbbVie donated a supply of its proprietary drug Kaletra/Aluvia (lopinavir/ritonavir) to the Chinese health authorities for use as an experimental treatment option and decided not to defend its patent rights on this HIV antiviral drug. AbbViealso issued a statement confirming its commitment as shown in Box 4.2.

Participating in this extreme form of open innovation by sharing know-how and IP free of charge can be a viable strategy in many industries to foster innovation in a sustainable manner.

4.2 Leveraging IP assets for monetization

Protection of IP rights is a key prerequisite for leveraging these intellectual assets to emerge as leaders in the market and reap the benefits of monetization. Well-designed IPR systems encourage innovators to disclose their knowledge so that future innovators can build on it, thereby helping to accelerate the rate of growth of innovation. The commercial value of a patent can be obtained after products are created out of the invention through manufacturing and such products enter the market to be made available for public utility.

In the present economics and IP strategy literature, competitive rivalry and cooperation have been viewed as distinct (even opposing)

Box 4.2: AbbVie statement – February 2020

"We are committed to making a meaningful contribution to efforts to combat this global public health crisis and continue to address urgent supply needs in several countries impacted by the outbreak. Our company is also working closely with the World Health Organization (WHO) and global health authorities to respond to the needs of patients impacted by COVID-19. Specifically, we have taken action through the provision of Kaletra/Aluvia as an experimental option for treatment of COVID-19, and through coordination with WHO, US NIH, and our industry partners. Our company is also exploring a potential research collaboration with the Innovative Medicines Initiative (IMI), which is exploring multiple potential COVID-19 treatment options."

strategy paradigms, categorized into two divisions: (i) Innovators and Copycats/ Competitors/Generics etc; and (ii) Innovator and Partners/Collaborators/License holders. However, rising evidence from academia and business practices provides numerous situations where firms engage in both competition and cooperation concurrently, or they alternate among these modes in sequential stages over time or in different market circumstances.[100] Some firms cooperate in one sphere, such as in R&D alliances or in cross licensing their patents, while competing fiercely in the marketplace (e.g., Intel Corporation and Advanced Micro Device (AMD), Samsung and Fujitsu Limited, Facebook Inc. and Yahoo, Inc). Others collaborate to strengthen their competitive position vis-à-vis other rivals, substitutes or third entrants, or to share upstream resources (e.g., Coca-Cola and Pepsi). Yet, most scholarship on cooperation (e.g., Dyer and Singh, 1998; Lavie, 2006; Kale and Singh, 2009) is not integrated with competition strategy (e.g., Barney, 1986; Chen, 1996; Silverman and Baum, 2002), leaving the interplay of cooperation and competition as a yet unfilled research gap.

The commercialization of IP with well-defined IP systems and IP management strategies can make a significant contribution to the revenues of the organization. A case study of such effective IP commercialization is presented in Box 4.3

Box 4.3: IP commercialization- The Siam Cement Group of Thailand

The Thai Company Siam Cement Group (SCG) is actively involved in IP creation, IP protection and IP commercialization. SCG also has collaborations with universities for research for social causes. SCG continuously supports the development of High Value-Added products and services (HVA) to increase competitive advantage and elevate industry performance. Therefore, IP management plays a crucial role in risk mitigation to prevent SCG's trademarks and innovations from being infringed. The IP division and IP management system at corporate and business unit levels are well established to prevent SCG from infringing others or being infringed. This includes organizing IP training for SCG employees to raise awareness and promote good practices. After years of IP strategy and IP management implementation, SCG received the "Asia IP Elite 2017" award for the fourth consecutive year at the IP Business Congress Asia 2017 Conference hosted by Intellectual Asset Management (IAM) representing SCG's achievement in IP management and IP systems which covers IP creation, IP protection and IP commercialization. This system is implemented from the beginning of research and development until new products and services are launched into the markets.

Recognizing that technology and innovation are key to good business, SCG has been emphasizing on research and development (R&D). In 2019, the business invested 1.4% of total revenue in R&D for 2,454 MB, and contributed with 33% of total revenue from subsidiaries towards HVA revenue. Moreover, there were 343 patents filed in 2019, an increase of 91 % from the previous year. One of their outstanding achievements in 2019 was to manufacture and commercialize special Polyethylene grades from SMX™ Technology for high-impact industrial film and for Intermediate Bulk Container (IBC) that has better strength and chemical resistance than generic grades. Furthermore, the business has been developing products exclusively for special purposes such as high corrosive resistant chemical container and high-pressure pipe, which will be commercialized in the future. The 2017 income statement of SCG clearly highlights that the income earned from the IP makes significant contributions to the company's revenues.

Income statement

For the year ended 31 December 2017

The Siam Cement Public Company Limited

In thousand Baht

	Note	2017	2016
Revenues			
Dividend income	4	22,876,077	24,067,112
Intellectual property income	4	2,744,223	2,808,115
Management fees for administration	4	2,556,116	2,550,347
Other income	17	2,558,968	2,120,770
Total revenues		**30,735,384**	**31,546,344**
Expenses			
Administrative expenses	18	(3,466,251)	(3,555,741)
Finance costs	4, 20	(2,484,332)	(2,434,766)
Total expenses		**(5,950,583)**	**(5,990,507)**
Profit before income tax		**24,784,801**	**25,555,837**
Tax expense	21	(348,729)	(329,470)
Profit for the year		**24,436,072**	**25,226,367**
Basic earnings per share (in Baht)	22	**20.36**	**21.02**

SCG Cement Co Ltd., along with the Department of Marine and Coastal Resources, Ministry of Natural Resources and Environment, have joined with Chulalongkorn University, to develop advanced materials for coral larvae settlement and natural coral planting by using a '3D Cement Printing Technology'. With the molding technology from SCG Cement Co. Ltd., new artificial coral models can be created as an augmented reality, by using recycled crushed concrete as a 40% substitute for limestone. The collaborative project includes the study, research, and development of material designs in accordance with academic principles. The goal is to restore the balance and enhance the sea fertility of Thailand's marine ecosystem, as well as maximize the benefits to society and environmental sustainability.

(Source: SCG Annual Report 2017 and 2019. https://www.chula.ac.th)

Intellectual property may be commercialized by various means within the overall strategy of the organization through:

1) Sale or assignment: where the patentee sells the ownership of the patent and thereby gives up all rights concerning the patent for a consideration; or

2) by entering into contractual business relationships such as licensing.

Licensing can be either exclusive in which exclusive right to exploit the invention is given to a sole licensee or non-exclusive licensing when the patentee gives license to more than one licensee to exploit the invention. Thus, the patentee grants exclusive or non-exclusive rights to the licensee for a consideration of royalty. The licensee then gets the right to manufacture and sell the product. The royalty may be variable or fixed depending upon the volume of sales. License can be either territorial or global. The business vehicle by which this is done may be by way of partnership, joint venture or spin-off company. The next section is about the various licensing methods, which are generally used by IP managers and technology transfer officers.

4.3 IP licensing

Licensing is a useful tool for transfer of knowledge and IP. It has helped to increase the value of patents substantially and has in turn led companies to file for more patents. It has also

boosted their licensing activity with positive effects on the diffusion of technology. The underlying technology gets protected by one or several patents, the product as a whole by one or more trademarks, and its outer appearance by a design mark or a design patent.

A license agreement is a partnership between an IP owner (licensor) and the person who wants to be authorized to use the IP rights (licensee) under certain terms and conditions. The considerations are usually a monetary compensation of a one-time payment or a running royalty, which is a percentage or share of the revenues gained from use of the invention. Companies can derive significant income from licensing, and licensing can offer flexibility in the way a business develops (Box 4.4).

Simply put, a license grants the licensee rights in property without transferring ownership of the property. IP licenses are an essential business tool that can have benefits for both parties. Licensing occurs in the context of various business and collaboration relations, such as mergers and acquisitions, joint ventures, research collaboration agreements, joint research and development arrangements,

Box 4.4: Case study - Vientiane Steel Industry Co., Ltd. of Lao People's Democratic Republic

Joint venture agreements have been important for the Vientiane Steel Industry Co., Ltd. (VSI) which was established in 1994 and is the oldest steel mill in the Lao People's Democratic Republic. Initially VSI's production was limited to deformed steel bars (rods of steel with surface ridges) and round steel bars made of imported raw material from the Russian Federation, the Republic of India, Japan, and the Kingdom of Thailand (Thailand). Within a few years, in1999, VSI diversified its products by establishing two new production plants. As a result of this expansion, VSI combined all segments of the company's business through the formation of the VSI Group in 2002. Thereafter it kept expanding by enhancing its capacity by collaborating with national and international partners. The company was founded as a joint-venture between investors from Lao People's Democratic Republic, Thailand and Hong Kong. With VSI's international partners each holding a 30 percent share of the company and the Laotians retaining 40 percent, the latter have had the responsibility of managing day-to-day operations. The joint venture, moreover, has been supported and promoted by the Laotian government's Department of Domestic and Foreign Investment – known at the time VSI was founded as the Foreign Investment Management Committee.

VSI diligently managed its IP assets and ensured that all relevant staff members were trained on IP matters via participation in national seminars. The company's corporate identity – the acronym VSI – was registered nationally as a trademark and was embedded on every steel product made by the company. The company's other products have similarly been branded with trademarks. For example, Lao Tile VTP Twin Elephants, a VSI trademark registered at the Lao Division of Intellectual Property, appears on the company's range of tile products.

The company has been in the process of establishing licensing agreements for VSI's trademarks with other mills. With the number of steel mills in Lao People's Democratic Republic dramatically increasing since the mid-2000s, such agreements will increase exposure of VSI brands and expand the company's market reach within Lao People's Democratic Republic.

(Source: WIPOASEAN/IP/BKK/06/DRAFT)

etc. and the terms or clauses of these vary considerably. Some of the licensing arrangements include:

- International License Agreement
- Software License Agreement
- Trademark License Agreements
- Brand Licensing
- Franchise Agreements
- Joint Venture Agreements
- Patent Licenses
- Technology Transfer Agreements
- Research Collaboration Agreements
- Material Transfer Agreements
- Compulsory Licenses
- Confidentiality Agreements
- Sub-Licensing Agreements
- Cross-Licensing Agreements

4.4 Licensing-in and Licensing-out

The organizations, both private and public, choose to team up with others for mutual benefit by way of outsourcing, joint ventures, consultancy or entering into strategic alliances for one or more business purposes. Businesses enter into these types of partnership arrangements as part of their endeavor to do everything legally and ethically possible to improve and sustain or increase profits. These arrangements require formal contractual arrangements that involve "licensing in" or "licensing out" of one or more types of IP. Often businesses do both, engaging in "cross licensing", where both parties license IP to each other. For example Microsoft Corp. of USA and Victor Company of Japan Ltd. (JVC) signed a patent cross-licensing agreement to further the development of each company's current and future product lines, which aimed to expand technological innovation and enhance the overall customer and consumer experience.[101] There are several reasons due to which a company may choose to proceed with cross licensing of IP Rights[102], such as the Apple-HTC 10 year cross licensing agreement after their patent dispute.[103]

A company that owns rights in a patent, know-how, or other IP assets, but does not want to engage in manufacturing of products, may decide on "licensing out" such IP assets to another company having better manufacturing capacity, wider distribution outlets, greater local knowledge and management expertise (the licensee). Thereby, the licensor continues to have the IP rights over the technology and gives out only a defined right to the use of that technology. "Licensing out" may be used to gain access to new markets, which are otherwise inaccessible.

One may wish to "license-in" to use another company's IP to develop one's own business and products. For instance, a small company may not have the resources to conduct research and development and hence decide to enter into a license agreement (licensing in) in order to gain access to technical advances, which would otherwise have been difficult for it. Sometimes, a business may get its products or services to market more quickly by "licensing in", instead of re-inventing the wheel.[104] A business may "license in" to tap into expertise that it does not have in-house.

4.5 IP license agreements

International license agreements are a norm in the global village of today's world setting. There are several strategies available to the innovator. The innovator may decide to market its IP protected product or service overseas and consequently enter into agreements with agents, distributors, overseas manufacturers, assembling entities, suppliers, collaborators, etc. These entities may or may not be granted rights on the IPRs such as patent, trademarks, designs, copyrights and trade-secrets associate with the product or service. The innovator organization may also decide to have a subsidiary, branch office, representative

office, joint venture, merger, acquisition, or do capital investment, etc. in the overseas market. The local laws and regulatory requirements would come into picture but addressed with local partners mainly for the local regulations and market culture. The local partner or the licensee will depend upon the innovator or the licensor for the capital investment and product knowledge. The two parties would therefore be dependent upon each other and have to address concerns such as confidentiality, competition, ownership, quality, payments, etc. while drafting the licensing terms/clauses.

4.6 License agreements clauses

License Agreements have certain typical clauses[105] in general and these include:

1. Name and Type of Agreement

   The title of the agreement which summarizes in general the nature of the agreement, such as Patent License Agreement, Cross License Agreement; Technology Transfer Agreement etc.

2. Parties to the agreement

   The names of the contracting parties as recognized under the law is clearly spelled out in the beginning of the agreement.

3. Date when the agreement would come in force

   The specific date marking the start of the contract between the parties.

4. What grant is being made by the Licensor

   Specifies the scope of the license of the defined technology/IP. These grants may include the right:

   - to reproduce
   - to display
   - to modify
   - to make derivative works (making new versions or entirely new products or technologies by modifying and enhancing licensed technology)
   - to use (for research and product development)
   - to make or have made (for manufacture by licensee or contractor)
   - to distribute or sell
   - to import

5. Jurisdiction

   The license agreement specifies whether the rights licensed are worldwide or limited to a designated country or countries, region, or other territory.

6. Confidentiality

   The confidential information being exchanged and the terms for using the same and keeping it confidential is defined in this clause. It defines whether know-how and trade-secrets are shared and if so, under what conditions. This clause can remain in force even after the termination of all other clauses of the contract for a specified period.

7. Obligations of licensor and licensee

   This clause defines what obligations the parties have other than the rights on the IP/ technology itself being granted license for, such as training, testing, marketing, clinical trials, meeting standards, IP maintenance, etc.

8. Sublicense terms

   The licensee can be given the right to sub-license the grant made by the licensor to a third party to do any or all of the rights granted by the licensor.

9. Exclusivity

   The grant by the licensor to a single licensee for a specific technology or IP or territory etc is an exclusive license. The licensor agrees not to grant the same rights to other licensees. A non-exclusive license provides the licensor an opportunity to license the same scope of the initial agreement to more than one licensee.

10. Non-compete provision

    The agreements can have terms for the parties to not to compete or not to acquire/ use competitive technologies which may cause harm to the other party. These terms

should be aligned with local competition laws.

11. IP maintenance

    The terms for maintenance of IP by payment of annuities and regular monitoring the portfolio during the term of the contract.

12. Force majeure

    The unforeseeable circumstances that may prevent from fulfilling the contract can be defined and subsequent actions can be listed.

13. Anti-corruption

    The term for the requirement of the parties to comply with all applicable laws relating to anti- bribery, anti-corruption and improper payments as per the policy of the contracting parties. This clause reassures the parties about the integrity of the other party.

14. Enforcement terms

    In case of infringement of the Intellectual property by a third party, how and what action would be taken, and by which party, is defined in this clause.

15. Dispute resolution terms

    The terms for resolution of dispute if it arises between the parties are outlined in this clause.

In case of international licensing, the cross-border legal, regulatory and cultural difference would also need to be considered while drafting the clauses. The following are some of the important clauses to be incorporated in license agreements:

1) Definition Clause: It defines the key terms. Specifically, in technology licensing, there are many key terms that vary somewhat depending on what sort of technology is being licensed (e.g. computer software, a semi-conductor invention, a pharmaceutical formula, etc.).

- The subject matter of the license, i.e. the details of the technology that is being licensed should be laid out, including the definition of the technology;
- How the technology is to be used (i.e. as a product, a formula, a specification, a protocol, a software program, etc;
- IP/Technology and right being defined in order to avoid a situation where a third party later claims that it owns the IP or technology and the licensor attempts to disclaim responsibility; and
- confirmation whether any other associated IP is included (for example, goodwill or trademarks)

2) License Grant: Identifying the parties to the license, whether licensing out or licensing in, kind of rights granted, scope of the license, whether licensee receives the right to future releases, versions and products, details relating to services and support/ spare parts and last but not the least, the associated information/ activities such as documentation, know-how, consulting and training.

3) Royalties and Payment: How much will the licensee pay for the use of the technology and on what terms.

4) Assistance and Training by Licensor: To what extent would the licensor assist the licensee inefficiently utilizing the technology.

5) Confidentiality: Whether know-how and trade-secrets are shared and if so, under what conditions.

6) Sole or multiple users: How many users can the licensee involve, specifically relevant in software licensing.

7) Limited Warranties and Indemnities: To lay out the extent of indemnity and warranties provided, e.g. Industrial Property Claims. Also, whether refund would be provided in case of cancellation of patent license.

8) Limitation of liability: Product liability in case of personal injury or property damage arising out of a defect in the product due to breach of contract or negligence.

Box 4.5: License fee sample clause

As compensation for the exclusive license granted by this Agreement, PARTY-A shall pay to PARTY-B a License Fee equal to the product of the License Fee Percentage multiplied by PARTY-A Revenue during the applicable measurement period. The initial License Fee Percentage shall be established at four percent (4%) for the period commencing on the date of this Agreement and ending on December 31,2020. The License Fee Percentage will be set for each subsequent calendar year commencing from year 2021 as set forth in this Section 4.5. On or before November 1 each year following the end of the third quarter, PARTY-A shall prepare a report showing an estimate of PARTY-A Revenue for the year ("Estimated PARTY-A Revenue") setting forth actual PARTY-A Revenue for the nine (9) month period ending on September 30 and projected PARTY-A Revenue for the last three(3) months of the year as forecasted by PARTY-A. A preliminary License Fee Percentage for the succeeding year (the "New Year") shall be established at a rate equal to the percentage in the table below corresponding to the total amount of Estimated PARTY-A Revenue as determined above:

License Fee Percentage	PARTY-A Revenue
(Dollars)	
4%	<299,500,000
5%	$299,500,000 to $3,925,000,000
6%	$3,925,000,000 to $4,950,000,000
7%	$4,950,000,000 to $5,775,000,000
8%	> $5,775,000,000

The new preliminary License Fee Percentage will take effect as of January 1 of the New Year. On or before March 31 of the New Year, PARTY-A shall submit to PARTY-B an audited income statement for the preceding year. A final License Fee Percentage for the New Year shall be established at a rate equal to the percentage set forth in the table above corresponding to the total amount of actual PARTY-A Revenue for the previous year. In the event the final License Fee Percentage for the New Year is different from the preliminary License Fee Percentage, the License Fee for the first two months of the New Year shall be recalculated using the final License Fee Percentage. If such recalculation results in a License Fee for such two month period that is less than the License Fee that was calculated using the preliminary License Fee Percentage, PARTY-A may apply such difference as an offset against future License Fees billed by PARTY-B. In the event such recalculation results in a License Fee for such two-month period that is greater than the License Fee calculated using the preliminary License Fee Percentage, PARTY-A shall pay the difference to PARTY-B on or before April 30. The final License Fee Percentage for the New Year shall be used to calculate the License Fee for all the remaining months in the New Year. Either Party also may request a review of the License Fee Percentage at any time it determines that a change in actual PARTY-A Revenue warrants a review and an accompanying change in the License Fee Percentage effective prior to the annual change described above. In the event of such a request a procedure similar to that described above shall be used utilizing actual revenue through the date of the request plus projected revenue through the remainder of the year as forecasted by PARTY-A. The change shall be effective as of the first day of the month following the month in which the review takes place. Both parties agree to complete the review within 30 days following the date of the request.

9) Term: Period for which the license is granted.

10) Termination: Under what conditions can either party terminate and what would be the consequences of termination.

These are some of the clauses peculiar to various IP license agreements apart from other clauses that are common for all other agreements. A hypothetical example of the license fee/royalty rates related clause is presented in Box 4.5.

It is clear that each license agreement would be unique and distinct as per the subject matter of the license and the parties' business strategy, and should be prepared so as to best utilize the territorial incentives by avoiding the barriers to cross-border licensing and following all government issued gudelines.

4.7 Negotiating licenses

For granting a license of any IP, the first step should be to assess the needs and objectives of the business and how licensing might help meet them. Before approaching the other party, it is important to understand the market for IP, and the potential benefits of licensing to the business and to the other party or parties. The licensor needs to think about the consideration for granting the license: is it purely for monetary gain (a lump sum and/or royalties), or some other commercial or other benefit, or both. Unless one has a realistic idea of the scope of the license and the worth of the IP before starting negotiation, the process of negotiations is likely to become time consuming and may flounder.

Ownership: Both or all parties should investigate whether the licensor has the legal right to license the IP and whether it is capable of being registered. The licensee should undertake thorough due diligence as well as investigations around the ownership and validity of the patents in question by searching the relevant registers.

Box 4.6: Confidentiality sample clause

All information of proprietary nature, including technology and know-how ("Confidential Information"), disclosed by one party (the "Disclosing Party") to the other party (the "Receiving Party") hereunder shall (a) be used solely and exclusively by the Receiving Party in a manner consistent with the licenses and rights granted hereunder; (b) be maintained in confidence by the Receiving Party; and (c) not be disclosed to any third party or used for any purpose except to exercise its rights and perform its obligations under this Agreement. The foregoing confidentiality obligations shall not apply if the Receiving Party can demonstrate by competent written evidence that such information: (i) is known by the Receiving Party at the time of its receipt and, not through a prior disclosure by the Disclosing Party, as documented by the Receiving Party's business records; (ii) is in the public domain other than as a result of any breach of this Agreement by the Receiving Party; (iii) is subsequently disclosed to the Receiving Party on a non-confidential basis by a third party who may lawfully do so; or (iv) is independently discovered or developed by the Receiving Party without the use of Confidential Information provided by the Disclosing Party, as documented by the Receiving Party's business records. Within thirty (30) days after any expiration or termination of this Agreement, Receiving Party shall destroy (and certify to the Disclosing Party such destruction) or return all Confidential Information provided by the Disclosing Party except as otherwise set forth in this Agreement. One (1) copy of the Confidential Information may be retained in the Receiving Party's files solely for archival purposes as a means of determining any continuing or surviving obligations under this Agreement. The confidential obligations under this Agreement shall survive this Agreement for a period of five (5) years.

Non-Disclosure Agreement: The licensor should think about asking the licensee to enter into a non-disclosure/confidentiality agreement before disclosing information. This is especially important where the IP is a patentable invention. In some cases, early disclosure may prevent the invention being patented. A non-disclosure agreement will also be important where the only means of protecting the IP is by keeping it confidential (as with trade secrets). The parties probably want to enter into a confidentiality agreement at the start of negotiations. Such agreements are legally binding commitments by one or both parties not to use or disclose to others the confidential information that they learn of during the negotiations. Such information may be technical prototypes, formulae, specifications, designs, scripts, experimental data or other technical information. It may also be sensitive business information such as customer lists, business plans and strategies, or employee information. The confidential information needs to be clearly defined to enable enforcement of such agreement. A sample clause on confidentiality is provided in Box 4.6. The confidentiality agreement enables one to examine the technology that is considered for licensing and thereby make good judgments about its specific nature, function, performance, and value.

Skills and Capacity: The acquisition of technology requires the ability to understand the particular area of technology. This also helps to negotiate effectively. But this process requires a determined approach on the part of the recipient of technology to acquire the necessary human capital with the specified expertise.

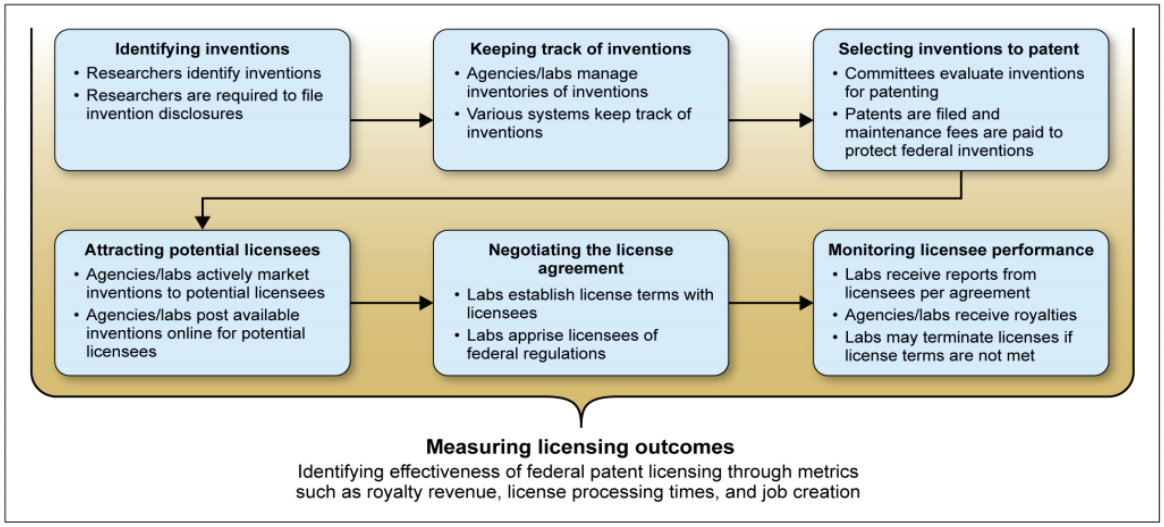
Agreement Terms: The issues that are agreed upon in a license agreement are called the "terms". What makes technology licensing intricate is that there are more key issues than in most other types of agreements. Also, for each key issue, there are many possible variations for how the issue can be resolved. An effective negotiator keeps a mental and written checklist of these key terms.

Royalty: One of the key elements in any license is the royalty aspect — the money one pays to the patent owner for the license to be granted. This can take many forms depending on how the parties wish the transaction to be structured. It is common to use the cost method by calculating how much the licensor has invested in developing the technology and the IP licensed, so that the valuation is based on the entire historical cost of technology development. Or some use income method, which involves calculating how much the parties expect to earn by the technology that is to be licensed and then dividing this up into percentages based on some notion such as how much each party deserves based on its contribution to the technology, the stage of development of the technology, market risk, marketing, inherent value, strength of the patent against litigation attack, competing technologies, and many other factors. The valuation of IP is not a simple exercise and one may need to take help of someone experienced in this area.

Payment terms: How will the licensee pay? There are two types of payments that are common in technology licensing: royalties and lump sum payments. These can be combined in different ways and taken together should reflect the fundamental calculation. For example, a royalty may begin at 2 percent of the average sales price, but decrease to 0.5 percent over the life of the agreement, reflecting the declining value of the technology. Lump sum payments may also be paid as "advances" against royalties.

Post Agreement Assistance: Whether a licensee needs support in the form of technical assistance, sometimes with know-how that often represents additional technical information needed to implement the technology. If not already disclosed in a patent,

Figure 4.1. Federal patent licensing process in the United States



Source: GAO analysis based on review of regulations and agency documentation. | GAO-18-327

the charges/fees for that would need to be negotiated and determined.

Written Contract: The terms of any license should always be recorded in writing and until the license agreement has been signed, all correspondence and negotiations about the terms of the license should be expressed to be 'subject to contract', i.e. not binding. Recording the terms in writing involves being completely clear about what both licensor and licensee want to achieve and have agreed. The act of reducing an oral agreement to writing will often reveal misunderstandings which need to be resolved before the license agreement is signed.

Negotiation Skills: Finally, if one does not like negotiating or is not a skilled negotiator, then finding someone who has the expertise to help negotiate should be the approach. Negotiating a license requires strategy and takes skill. Licensing negotiations can be stressful and yet can also be very satisfying. The terms and conditions on which IP is licensed are very varied. The licensor and licensee usually agree to those terms and conditions through negotiation. The outcome of those negotiations will depend on the relative bargaining power of the parties and the business strategy. In case of public funded institutes and universities, win-win negotiation is what is expected instead of the best-of-me attitude of most commercial businesses.

The licensing activity, along with negotiations, is to be embedded in the IPM system in accordance with the IP Policy. Clarity in the license agreement would benefit the parties, and consequently the consumer in the long run, and also avoid future disputes.

Example: An example is the Federal Patent Licensing Process in the United States (Figure 4.1). Once the license is granted, the updates and monitoring of the licensee performance is required to ensure that the necessary royalty payments are received and the license terms are met. The periodic review and assessment is a must in publicly funded research to ensure that the public fund is being used for the desired purpose and meeting the goals. The United States government measures licensing outcomes through metrics such as royalty revenue, license processing times, and job creation.

A sample non-exclusive license agreement which also includes material transfer is provided in Annexure 1.

4.8 SUMMARY

The commercialization of IP is the reason why IP rights are obtained by an organization. Protection of IP rights is a key prerequisite for leveraging these intellectual assets to emerge as leaders in markets and reap the benefits of monetization. The commercial value of the IP could be direct through monetary gains as well as indirect through creation of market reputation and standards. IP assets can be monetized by way of commercialization by self or through licensing partners. The IP commercialization strategy, therefore, needs to be carefully aligned to effectively support business goals.

The commercialization or monetization of IP can take place by several means such as market entry by IP owner, patent assignment or sale or auction, giving free access to patent or IP portfolio, use of patent as collateral for loan and using different types of licensing methods.

Besides the commercial value of patents, the public value proposition is also important when not seen from the context of patenting only. Patents are seen from the context of patenting, the content of patent documents and the potential economic and social impacts of patents for understanding private and public values in innovation.

IP owners can choose to give away their IP for free to the public due to various reasons such as financial, technical, by virtue of their being non-core patents, and sometimes due to social reasons such as medical or environmental.

Businesses can engage in both competition and cooperation concurrently. They may also alternate among these modes as per current strategy and business goals or circumstances such as forming R&D alliances or cross licensing while competing in the marketplace.

Licensing is a useful tool for transfer of knowledge and IP. A license agreement is a partnership between an IP owner (licensor) and the one who wishes to be authorized to use the IP rights (licensee) under certain terms and conditions. "Licensing out" may be used to gain access to new markets which are otherwise inaccessible and "licensing in" may be opted to use another company's IP to develop one's own business and products.

License agreements have certain typical clauses in general, however certain specific and distinct clauses based on agreed terms (after negotiations between parties) makes each agreement unique. Negotiating a license requires strategy and takes skill. Payment terms are usually the most negotiated aspect in an agreement. There are two types of payments that are common in technology licensing: royalties and lump sum payments.

The acquisition of technology IP requires the ability to negotiate effectively based on an understanding of the particular area of technology. This process requires a determined approach on the part of the recipient of technology to acquire the necessary human capital to better negotiate. An effective negotiator keeps a mental and written checklist of the key terms.

The outcome of negotiations depends on the relative bargaining power of the parties and the business strategy. In case of public funded institutes and universities, win-win negotiation is what is expected instead of the best-of-me attitude of most commercial businesses.

SUGGESTED READINGS

UK Intellectual Property Office,2011. IP Health Check: Licensing IP. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/320811/licensingbooklet.pdf

United Nations Economic Commission for Europe,2011. Intellectual Property Commercialization: Policy Options and Practical Instruments. http://www.unece.org/fileadmin/DAM/ceci/publications/ip.pdf

WIPO,2015. Successful Technology Licensing.https://www.wipo.int/edocs/pubdocs/en/licensing/903/wipo_pub_903.pdf

DISCUSSION POINTS

1. How can IP be commercialized by the IP owner without licensing of IP? Discuss two ways.

2. How can publication, instead of protecting and providing free access to certain IP rights, benefit the IP owner?

3. What are the concerns to be taken into consideration while initiating IP licensing activity? Discuss any three.

MULTIPLE CHOICE QUESTIONS

1. **Licensing-in of IP rights means gaining IP by way of licensing of the other party's**
   a) Patent Portfolio
   b) IP Portfolio
   c) Technology patent and know how
   d) Trademark
   e) All of the above

2. **Which Licensing Agreement clause is subject to local IP law applicable and not the terms mentioned in the license agreement itself?**
   a) Sub licensing of IP Rights
   b) Buy back of improvement
   c) Maintenance of IP Rights
   d) Jurisdiction of Dispute resolution
   e) Confidential information disclosure

3. **A value proposition of IP can be derived by providing it for free to third parties if it is aligned with the vision and mission of the organization.**
   a) True
   b) False

4. **An exclusive license to an IP for exploitation in a specific jurisdiction means:**
   a) IP owner cannot license same IP to any third party anywhere
   b) IP owner can license same IP to any third party anywhere
   c) IP owner cannot license same IP to third party outside specified jurisdiction
   d) IP owner can license same IP to third party outside specified jurisdiction
   e) IP owner can license same IP anywhere as part of another IP portfolio

5. **Which of the following can be licensed without being registered as an IP right?**
   a) Trademark
   b) Know How and Trade secret
   c) Patent Application
   d) Copyright
   e) All of the above

6. **Technology Transfer Agreement has to be a written contract.**
   a) True
   b) False
7. **The Cross Licensing Agreement requires the two parties to exchange their patent rights. Both the parties need to have an equal number of patents for entering into a cross license agreement.**
   a) True
   b) False
8. **In Cross Border Patent Licensing Agreement between party A and party B, the agreement has to be registered at:**
   a) Party A jurisdiction patent office
   b) Party B jurisdiction patent office
   c) Both A and B jurisdictions patent office
   d) Neither of A and B jurisdictions
   e) As per the license clause agreed jurisdiction
9. **The following methods can be used for monetization of IP rights on a patent:**
   a) Patent Sale
   b) Patent Auction
   c) Patent License
   d) Patent Assignment
   e) All of the above
10. **The negotiations of IP license agreement as well as valuation of IP asset is usually outsourced because:**
    a) Lack of skill set in organization
    b) Requiring Professional Approach
    c) Inventor is emotionally attached to IP
    d) Need for specialization
    e) All of the above

ENDNOTES

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94 Patent Marketplaces
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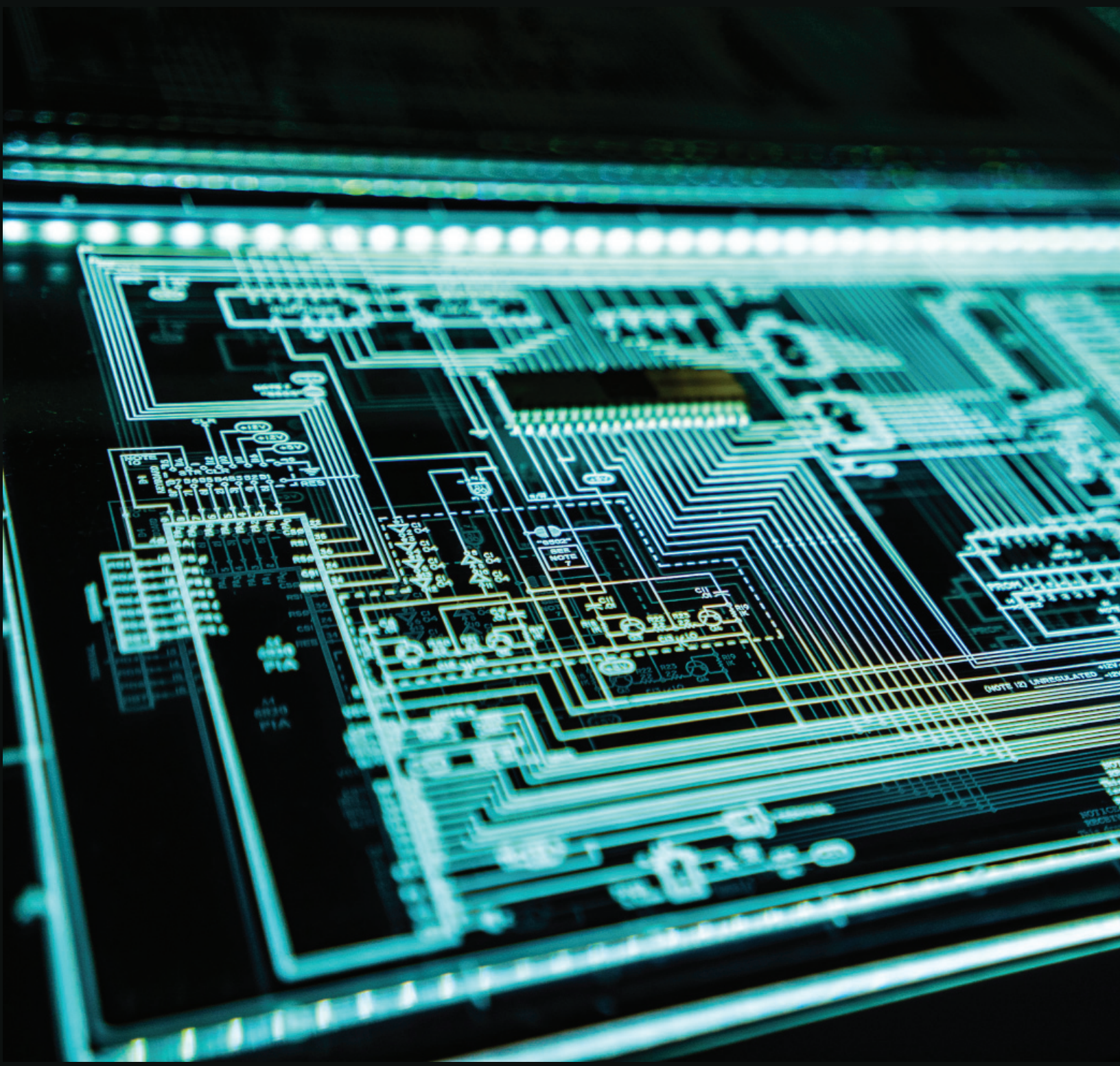
6820
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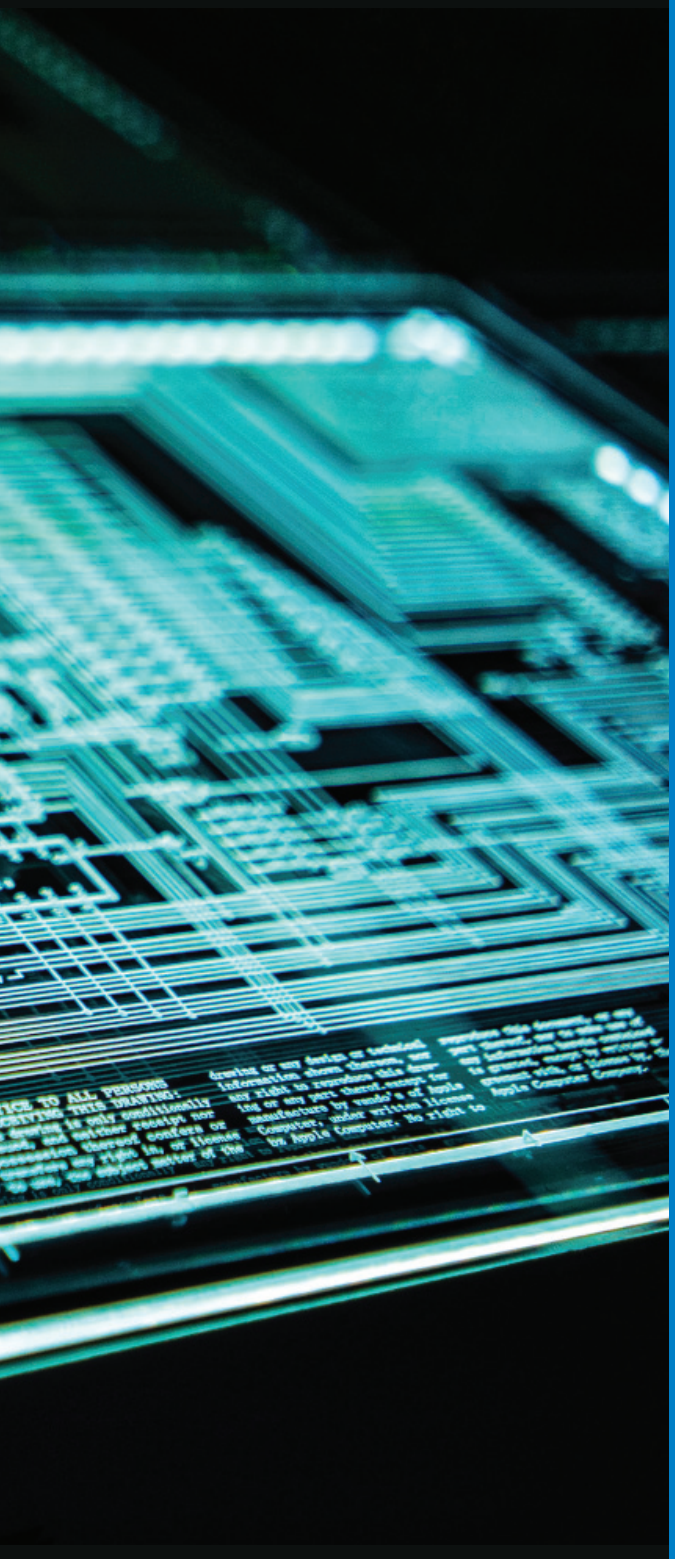

CHAPTER

5

Technology Transfer

This chapter deliberates on technology transfer for value creation and technology transfer licenses. Further, the importance of understanding Technology IP is seen from the perspective of the parties entering into the arrangement and the role of technology transfer offices. The specific clauses which concern technology transfer license agreement are discussed in some detail.

5.1 The role of technology transfer in value creation

Technological innovations are the game changers of developmental challenges, and act as catalysts for rapid knowledge creation and economic development.[106] In some cases, technology transfer involves the transfer of legal rights, such as licensing a government-owned patent to a private sector entity. Technology transfer also includes collaboration between private companies and federal labs, for example, in the testing of advanced batteries. In other instances, technology transfer involves the informal transmission of information, knowledge, and skills through person-to-person or organization-to-organization interaction.[107] Commercialization is the process of developing marketable products or services, and producing and delivering products or services for sale.

The advancement in technology has redefined the companies' operations and helped them in conducting business across sectors. Fundamentally, technology transfer involves the exchange of information. As technology gains increasing importance in competitive strategy; however, the information-exchange perspective becomes increasingly limited and value creation becomes more important through new-products and new-venture developments.[108]

In this digital era, technology has become valuable and also easily accessible. Therefore, it is likely to be imitated by potential infringers, thereby reducing the inventor's incentive unless there is some restriction to the access of innovation, which is possible through IPR. Strong IPR protection prevails in developed countries having inventors to engage in inventions, thus boosting economic growth.

With the world being a giant global village, the trans-border transfer of technology is a must and hence the role of the government cannot be denied. Taking the example of the People's Republic of China ("China"), the major laws which govern trans-border technology transfers include:

- the Foreign Trade Law;
- the Administrative Regulations for the Import and Export of Technology;
- the Administrative Measures for the Registration of Technology Import and Export Contracts; and
- the Administrative Measures for Technologies the Import of which is Prohibited or Restricted.

In pursuance to these, "an act of transferring technology" in or out from China "by way of trade, investment or economic and technological co-operation, is the import or export of technology". In this context, technology transfer includes "transfer of patents, transfer of patent filing rights, patent licensing, transfer of technical secrets, technical services, and other means."[109]

China has regulated trans-border technology transfers from the beginning of the 1980s, to protect their domestic companies who were not sophisticated in such transactions.[110] China thus divided technology into three categories – prohibited, restricted or free.

Technology import and/or export falls into the category of prohibited or restricted for reasons like national security, the public good, human health, protection of the environment, etc.[111] Once prohibited, the technology can neither

be exported nor be imported. In case the technology falls within the restricted category, then special approvals have to be taken for the transfer. The rest of the technologies are freely tradable.

On March 18, 2019, China announced amendments to its laws on joint ventures and the Regulations on Administration of Technology Import and Export which were to come into force with immediate effect.[112] The changes resulted in the elimination of some of the restrictions around trans-border technology transfers which have had the impact of broadening the scope of freedom in contracts from then on. These recent PRC legislations are aimed at creating a more equal and vigorous IP protection landscape for foreign investors.[113]

Even before the amendments, the need to upgrade the country's science and technology skills had created a demand for technologies and intellectual properties from the West. For example, during the period from 2002 to 2006, there had been over a hundred patent licensing contracts signed and registered with the State Intellectual Property Office each year, involving hundreds of thousands of Chinese patents. These contracts were between foreign companies and Chinese companies, in both directions. Chinese government, state-owned enterprises and universities are the main driving forces for technology transfer. Despite China's reputation in the protection of intellectual property rights, there has been an enormous knowledge base improvement regarding IPR and patent licensing in the past few years.[114] The role of Government initiatives in technology transfer cannot be underestimated. An example is that of the program Vidhata in SriLanka (Box 5.1).

Technology transfer does not have a universally accepted definition. In its broadest sense, it relates to a process of sharing knowledge. A simple definition of technology transfer

Box 5.1: Vidhata - Technology transfer in Sri Lanka

Vidatha is a mechanism initiated by the Ministry of Science and Technology of Sri Lanka to transfer technologies developed in government research institutes to rural areas and to solve technical problems of those areas. However, it was noticed that about 40% of the programme's participation in Vidhatha for three consecutive years (2005-2007) involved Kithul tapping technology. Kithul (Caryota Urens), also known as fish tail palm or toddy palm, is an indigenous plant, naturally grown in the wild in Sri Lanka. The Kithul industry in Sri Lanka has a history that dates back over 2000 years. It is a unique to Sri Lanka because though the Kithul tree is grown in other countries they didn't know the technology to tap the inflorescence and get the sap. Long before sugar came to the market. Kithul was the main sweetener in Sri Lanka. It was a cottage industry that produced treacle, jaggery and toddy. The Vidhata program not only provides modernization prospects to this industry but also the possibility of transfer outside the country. Other programs participating in Vidhatha include technologies related to agriculture sector (24%) and dairy products sector (15%). The majority (about 97%) of the technologies transferred were for individuals and small business sector. The reasons for this are that larger firms often have their internal source of technology development and SME sector is more eager to get and try new sophisticated technology. The program successfully witnessed 51 transfers by the institute to their existing business, while 77 participants used the technology to start a new business in the three-year period highlighting the contribution of Vidatha programs to develop entrepreneurs in Sri Lanka.

(Source: Mudalige et al. 2011)

would be "the process of transferring scientific findings from one organization to another for the purpose of further development and commercialization."[115]

Technology transfer takes different forms according to one's motivations and desired outcomes. The process of transferring a technology can generally be separated into different phases. The impact of intellectual property can differ in each of these phases. The main four phases are:[116]

a. As a precondition for any transfer, technology needs to be developed. It is therefore important to include this development phase into the analysis even though it is not part of the actual transfer of technology.
b. The identification of transfer needs and opportunities stands at the actual beginning of every transfer of technology. The transfer and exchange of information on the appropriate level is crucial at this stage.
c. Arrangements for undertaking the actual transfer are taken in the next phase. For proprietary technology, the existence of an enabling legal environment is a key issue during this stage.
d. The adaptation of transferred technology to local socio-economic and cultural conditions stands at the end of the procedure.

Technology development

As regards the development of technologies, incentives for innovation and technology generation are shaped by the legislative and regulatory conditions governing these technologies. The grant and effective protection of adequate IPR plays an essential role in this. On the other hand, a number of recent contributions have highlighted constraints and limitations of property right systems, which may generate obstacles that impede technology transfer, in particular to developing countries.

Identification of transfer opportunities

The identification of transfer needs and opportunities, through access to and exchange of information regarding the technologies, is an important initial step in the transfer process. In the case of technologies that are not easily copied, additional input of technical expertise with regard to the use of the technology and its adaptation to local circumstances is also relevant. An adequate design of institutions for the gathering and dissemination of information, at national and international levels, may substantially lower search costs for potential technology providers and users.

The actual transfer of technology

Arrangements for undertaking the actual transfer are of particular importance for proprietary technologies, and especially for those technologies that are easily copied. For such technologies, the existence of an enabling legal and institutional environment for arranging the actual transfer is often a crucial precondition. This is because of the nature of the mechanisms for such transfer and the desire by technology owners to secure adequate protection for their interests. It is not necessary that IP or patent rights exist for such transfers[117], though it will certainly help in the long run. The patented technology of an Israeli startup Kardome Technology ("Kardome") attracted such attention from Hyundai Motor Company, the automobile giant of the Republic of Korea (Box 5.2).

Technology advancements

The adaptation of transferred technology to local needs and circumstances is an important step and, in many cases, crucial for a successful transfer of technology. The identification of adaptation needs and the suitable tools for adaptation, through information-gathering and exchange, is an important element when identifying transfer opportunities, and will also be important during the actual implementation and adaptation phase. Furthermore, successful adaptation may require strengthening national capacities in research and development,

Box 5.2: Technology transfer: Hyundai of the Republic of Korea invests in Israeli voice tech company – Kardome

Kardome Technology ("Kardome"), an Israeli startup receivedseed round led by carmaker Hyundai Motor Company ("Hyundai") of Republic of Korea and with the participation of NextGear Ventures and the ATOORO Fund. Kardome was founded in January 2019 by serial entrepreneurs CEO Dani Cherkassky and Alon Slapak, with the goal of meeting the growing demand for reliable voice control technology from automakers and electronics manufacturers. Kardome intends to use the investment funds to accelerate the development of an innovative system for spatial isolation of voices in challenging acoustic environments, which will, among other things, be used by Hyundai vehicles and robots worldwide.

Kardome's robust voice AI technology is to be used by Hyundai in its cars to boost customer's value and gain competitive advantage by enhancing user experience and safety features.

Kardome's technology gives the machine better "ears" through algorithms that manage to isolate the user's voice, even in a noisy environment with multiple speakers and background noises that are active at the same time. Kardome's technology combines dedicated software with the use of microphones that exist in various products. It enables the implementation of a new generation of voice user interface, operating reliably even in noisy and multi-speaker environments, such as vehicles, public buildings, restaurants and even at home.

Hyundai, one of the world's leading automakers, invested directly in Kardome after a thorough comparative technical examination. The zero-touch interface that works reliably in a natural and noisy environment will benefit consumers as well as expand the company's global presence.

(Source: Israel High-Tech & Investment Report *January 2020; Patent US10,535,361)*

and continuous monitoring of the use of the technology.

5.2 Technology transfer licenses

The protection and licensing of IP rights is identified as a mechanism for transfer of technology. The crucial issue in respect of IP is to gain access to technologies that are required for development. The relationship between transfer of technology and IP stands high today. However, technology transfer is not possible without a valid IP right. In other words, valid patentable IP rights are a prerequisite for technology transfer.

A few decades ago, technology was available only in the developed countries. The developing countries sought transfer of technology through foreign direct investment. It was counter-argued that if a supplier of foreign technology, licenses the production to a domestic firm, rather than itself establishing manufacturing locally. Then it is evident that less foreign investment gets attracted. However, in this scenario, the overall result may be more beneficial to the domestic economy because of the indirect contribution to domestic technological capabilities. Strong IP regime is a prerequisite for high technology transfer (embodied in capital goods), but there is no guarantee that the domestic economy

will be capable of absorbing that technology as a basis for further innovation, hence such transfer of technology may not be sustainable. The ability of countries to absorb knowledge from such technology transfer and then make use of and adapt it for their own purposes is also of crucial importance. This in turn depends on the development of local capacity through education, R&D, and the development of appropriate institutions without which even technology transfer on the most advantageous terms is unlikely to succeed. The effective transfer of technology also often requires the transfer of "tacit" knowledge or "know how", which cannot be easily codified (as is the case in patent disclosures or instruction manuals).

According to a study, many countries have increased their exposure to foreign technologies by means of trade and FDI, while improving absorptive capacities to facilitate the dissemination of technologies and spillovers within the domestic economy. Most developing countries who were importers of technology have attained technological capabilities and become exporters of technology. Countries such as the Republic of Korea started at a low level of technological expertise forty years ago, comparable to many low-income countries today, but have now become innovators in their own right.

Initially technology transfer was happening through FDI from developed countries to developing countries through which they could achieve technological capabilities. The North-South technology transfer was expected, with the South always being at the receiving end. Trans-Pacific partnerships (TPP) came into picture for technology transfer as well. Later it took the form of Public-Private Partnership (PPP) as a mechanism for ensuring both the effectiveness of the intervention and the efficacy of the technology transfer operation.

Currently in many countries, transfer of technology involves not only public funded universities, but also government-funded laboratories.

Encouraging technology transfer from universities to the private sector has been identified in many countries as a desirable goal. Such transfers not only enhance the competitiveness of the private sector through access to innovative research results, but also ensure that university R&D results are made available to society. They do this through their commercialization by licensing. IP rights have been identified in many countries as a mechanism that provides necessary incentives for commercialization of university research results. Data from various countries show a marked increase in the number of patent applications filed by universities. National governments have enacted policies to promote university-industry technology transfer, and various universities have adopted formal IP policies and established technology transfer offices (TTO) to manage their intellectual property rights. TTOs are often responsible for marketing university technology and searching for commercial partners to license their protected technology. If commercial partners cannot be found and patented technology is not transferred to industry, patenting will only result in costs to the university. Hence it is important to identify the appropriate private partners for technology transfer.

Public research institutions have been accelerating the transfer of the technologies through patenting. In the US, this approach was encouraged by the introduction of the Bayh-Dole Act in 1980, and the policy has since spread to other countries as well. This has stimulated a flow of inventions from universities and promoted their commercialization, to the wider economic benefit of society. It has increased not just in patenting, but also licensing income and the number of start-up companies spun off from universities. In the year 2000, it was estimated that the gross royalty income for universities in the US amounted to $678

million, and that over 3000 start-up companies had been formed since 1980. The increase in patenting and licensing activity can also be attributed to the growth of biotechnology, combined with the outcome of the Diamond versus Chakrabarty case[118]. The Bayh-Dole Act of 1980 is the best-known piece of legislation that permits universities to retain intellectual property ownership over any new knowledge that results from publicly-funded research activities and, where possible, to commercialize that knowledge through licensing to industry or to start-up companies. This reduced the distance between the university laboratory and the market. Consequently, there is a higher chance of success for spin-offs. This new US model and its overwhelming success story in the biotech sector inspires other nations to stimulate their own university-industry relations.

The creation of companies based on university research (spin-offs) is considered an important avenue for commercialization of new technology. This is particularly seen when the nature of the technology is such that no current player in a particular market is willing to take the associated risk to take invention to market. Also, because the universities often lack the business expertise to support the creation of start-ups.

Currently there are various ways in which technology transfer is taking place: through FDI, PPP, university to private industry and private companies inter se, etc. In order to gain and retain its competitive edge, private companies these days use its IP assets in four ways through which technology transfer happens: (1) do everything in-house to create the needed IP in a standalone mode; (2) create a spin-off or a start-up business to nurture its IP in a focused manner; (3) merge with or acquire another business which has complementary IP; and (4) team up with others to share IP assets for mutually beneficial results.

5.3 Understanding technology IP

Since the first deliberate application of science to technology in the chemical industry, there has been a steady growth in science-content in chemical production. Science to technology in agriculture turned into agro-industrialization and mechanization that resulted into mass production of farm produce. The new era biotechnology impact is felt in agriculture, health and mining industry, as well as chemical and pharmaceutical sectors.

Electronics and communication technology brought about IT revolution, which impacted IPRs in many ways. Initially computer programs were marketed without patent protection because mathematical algorithms in computer programs were not protectable subject matter. When Visicalc was developed in 1979, the US patent office, relying upon Supreme Court case laws, took that position. Later, the US Supreme Court in the Diehr case found algorithms to be patentable subject matter. Since then, patents have been granted on computer programs.[119]

Therefore, it can be seen that each industry has its own specific technology and the expertise required to identify, catalogue and protect IP of these technologies. Another pertinent issue connected with patented technology is know-how. It represents additional technical information needed to implement the technology disclosed in the patent. Transfer of technology cannot take place only through patents without know-how.

Technology licensing is not necessarily synonymous with technology transfer. The fact that two parties reach a deal on licensing does not mean that the subject matter of the deal is actually transferred. Because technology licensing concerns not only knowledge that is expressed in writing, but also knowledge in the form of practical know-how or trade secrets (generally kept a secret). It becomes an actual transfer when the licensor delivers the technology and knowledge to the licensee and

the licensee learns how to effectively use, adapt and where possible improve the technology and knowledge. Ensuring the occurrence of knowledge transfer should be one of the major concerns of negotiators, in particular the licensees. Only when that occurs, an effective technology transfer takes place.

The University of Cape Town (UCT) has a success story of IP commercialization. The researchers Samuel Ginsberg and Francis Petousis developed the innovative Lumkani fire detection system for use in informal settlements where access to traditional emergency service responses is generally quite limited.

More than 3 million South Africans live in shacks made of highly flammable materials and arranged in dense settlements. The candles and paraffin stoves typically used for cooking, lighting, and heating pose a serious threat to residents of such settlements, especially as fires can spread quickly. Fire detectors that measure smoke levels are not suitable under such conditions because smoke generated by paraffin stoves can generate false alarms.

The innovative Lumkani fire detection system device measures the rate at which temperatures rise as opposed to detecting smoke. Low-cost and durable, it can be set up as a smart network of detectors located within a 40-meter radius of one another. If one device rings, the entire network can sound an alarm, thus enabling the community to rapidly respond to the fire. The connected devices monitor the health of the network and, in the event of a fire, send GPS coordinates to emergency service providers.

Lumkani Traders, a spin-off, was created to commercialize the technology. It protected the invention with the aid of a patent and a copyright. Lumkani has 10 permanent employees and, since November 2014, has manufactured and distributed more than 10,000 devices in South Africa. This case study underscores the potential value, for diverse stakeholders including employees, customers, and the government, of using IP tools to advance commercialization of public research outcomes.[120]

5.4 Technology transfer agreement

Challenges in technology transfer agreement

There are several challenges which are faced while drafting the technology transfer license agreement, especially when the researchers are very senior and prefer to spend time in what they understand and enjoy best, i.e. research work, rather than cataloguing and tracking of potential patentable inventions, leave aside drafting of terms of technology license agreement. The challenges of these competing internal priorities are further compounded

Box 5.3: Challenges in licensing and steps to overcome the chllenges

Selected Challenges in Licensing Federal Inventions and Steps Taken to Address Them

Challenges:	Steps to address challenges:
• Researchers not identifying potentially patentable inventions	• Training and incentivizing researchers to effectively identify potentially patentable inventions
• Using inadequate systems to track inventions	• Exploring ways to leverage capabilities of other agencies' systems that track inventions
• Difficulty processing license agreements	• Implementing special license agreements across labs to expedite process for startups

Sources: GAO analysis of relevant literature and agency and external stakeholder interviews. | GAO-18-327

if there are bureaucratic constraints, lack of resources and Valley of Death situations.[121]

Specialized professionals, with business as well as technical skills, are required from the invention identification stage to enable effective technology transfer. These professionals are technology transfer officers and their role cannot be underestimated. However, the actual researchers do need to have basic training to be able to identify the technology that needs to be patented first before publishing or just being used as a background IP for further research.

The United States has reviewed these challenges of federal funded inventions and suggested measures to overcome them as shown in Box 5.3.[122]

Also, measuring licensing outcomes[123] of US Federal funded research assists in assessment of the effectiveness of patent licensing efforts and to further help in:

(1) developing strategies to increase the usefulness and accessibility of information about federal technology transfer opportunities;

(2) listing all publicly available, federally owned inventions on a government database; and

(3) improving and expanding its collection of metrics for the Commerce Department's annual technology transfer summary report.

Role of Technology Transfer Offices (TTO)

The offices managing the technology, IP and its transfer, irrespective of what they are named in an organization, play a key role in the overall innovation management and commercialization. The typical roles of Technology Transfer Offices are described below.

1. Identifying the invention and filing of patent application

The patent licensing process begins with researchers identifying patentable inventions—a process that primarily relies on researchers disclosing their inventions to lab officials, mostly through the lab director or directly to an agency's technology transfer office. Once an invention has been identified and disclosed, the TTO needs to keep track of the invention to reach the stage of filing a patent application. The prior art novelty search would also be within the work purview of the TTO. The filing and prosecution of patents is to be done in coordination with the research department.

2. Finding potential licensees

The decision on whether to exploit the patent application, and when, would be based on careful due diligence. The patent assignment or licensing activity will begin with identification of potential partners interested in the technology. A variety of methods can be used to attract potential licensees, including those from industry, universities, and nonprofits. Examples include having an inventory of patented inventions online, publishing them in academic journals, or highlighting them at public events to further develop their inventions.

3. Drafting and negotiating technology transfer agreement

The TTO will engage a legal counsel for drafting and negotiating the terms of the patent license, sometimes with input from inventors as well. Negotiations are often an iterative process in which both the lab and the licensee request adjustments to the terms of the license.

Each agreement has to be individually tailored on a case-by-case basis in accordance with the specifics of the technology, licensee, and market conditions. Financial terms would also vary with each case and may include up-front fees, minimum payments, royalties (usually based on sales), and milestone payments, among others. Once the terms applicable to the license agreement are agreed upon by both parties, to the process of technology transfer would commence.

When a company is clear as to what terms it wishes to retain in a license agreement, it can

Table 5.1: Example of spin-offs created in 2019 from parent company

PARENT NAME	PARENT TICKER	SPINOFF NAME	SPINOFF TICKER	SPINOFF DATE	MORE INFO
DuPont (FKA: DowDupont)	DD (FKA: DWDP)	Corteva	CTVA	June 1, 2019	info
VF Corporation	VFC	Kontoor Brands	KTB	May 22, 2019	info
Novartis	NVS	Alcon	ALC	April 9, 2019	info
AP Moller Maersk	AMKBY	The Drilling Company of 1972 A/S	Copenhagen:DRLCO	April 4, 2019	info
DowDupont (Merger of Dow Chemical &	DWDP	Dow Chemical Company	DOW	April 1, 2019	info

create a template license agreement for the technology of interest and ask the other party to sign it on the said terms. There would not be much scope for negotiations in such a situation. For example, a pharmaceutical company template agreement made for its antiviral patented technology can be seen in Annexure 2.

4. Spin-off

A spin-off[124] is a newly founded company, cofounded by a university or research laboratory that owns the licensed technology, with the aim to leverage available academic knowledge for commercialization. Spin-offs help in taking the inventions to the market in a commercial set-up. The TTOs facilitate the establishment of the spin-offs. The recently created spin-off companies found online are listed in Table 5.1[125]:

The transfer of technology is not just a business transaction but also a legal contract. It requires technical exercises too. Hence each function needs to be done by trained professionals, either with the in-house technology transfer office (TTO) or outside consultants with technical as well as legal background.

5. Monitoring licensee performance

The TTO will request for periodic report of the commercialization of the transferred technology to measure the licensing outcome. The publicly funded organizations put added responsibility on TTO to report details of the transaction along with comparisons with the funds applied. TTOs therefore have a lot of action in technology transfer activities. The technology transfer activities of Tomsk State University of Russian Federation are well managed by their officers (Box 5.4).

An AUTM benchmarking report[126], using five of the most common measurements that broadly capture the overall performance of technology transfer offices along with a sixth key measurement of research expenditures, indicates that the TTOs are working with the same capacity while handling more work with progressing years. The measurement parameters used in the report to organize the data into peer groups was: Invention Disclosures, New Patent Applications, Licenses and Options, Gross Licensing Income, Start-Ups Formed, and R&D Expenditure. AUTM surveys regularly find TTOs in Israel to be performing very well (Box 5.5)

The functions of all TTOs are not identical. In some cases, they only deal with the management of IPRs, but in others, TTOs also market their technologies and search for companies that would sponsor university projects. Some TTOs are regarded as profit centers and are expected to be self-supporting, while others

Box 5.4: Technology transfer in Tomsk State University of Russian Federation

Tomsk State University (TMU) of the Russian Federation is a leader in filing patent applications and has a well-established technology transfer and management system. The Innovation Management in Science and Technology Department serves as the TTO and was created to develop the innovation infrastructure of Tomsk State University, aimed at improving the efficiency of commercialization with the results of scientific and technical activities. It contains the divisions of IP and Commercialization of Research and Development.

The TMU's TTO has the specific responsibility to support research faculty in obtaining patent grants, providing market and patent research for potential commercial technologies, monitoring license agreements and supporting the creation of spin-offs. TTOs face several challenges in attracting investors, establishing clear IP ownership, and governmental funding restrictions. The Tomsk Center for Technology Transfer has successfully functioned as an intermediary for several successful commercialization projects.

Technology Transfer from one party to another, whether said party is a university or industry or government, requires networking of the technology transfer personnel, preferably being part of a well-organized technology transfer system or office linked to the party. The Russian Technology Transfer Network was initiated in 2002 by Obninsk Center for Science and Technology, a leading Russian R&D center located in Obninsk, in a partnership with Koltsovo Innovation Center located in Novosibirsk Region. Eurasian Association of Technology Managers could be a potentially important network for university technology managers in the Eurasian region such as TMU.

In 2018, TMU had sponsored 558 patents and certificates for computer software and databases, 207 know-how items, 85 licenses for Russian companies and one international license covering 8 countries. 165 million Rubles of total revenue was generated from 34 small innovative enterprises. In total 857 IP assets (including 57 patents, 12 know-how and 68 computers, databases, and Integrated Circuit layouts) generated 256 million Rubles in revenue.

(Source: http://en.science.tsu.ru/)

are heavily subsidized by the institutes or even by the government. In either case, it is widely recognized that having a TTO as a central body to handle all issues relating to the transfer of technology makes it possible to professionalize technology transfer activities and enhance the bargaining power of the organization. It would be practically next to impossible for individual researchers to deal with all the necessary work associated with technology transfer. Nonetheless, the skill set of TTO is fundamental for effective technology transfer.

Some pertinent Technology Transfer License Agreement clauses are given below.

Box 5.5: Technology Transfer Offices in Israel

The Weizmann Institute, Israel's top research institution, is known for its blockbuster scientific discoveries which led to some phenomenal business success stories. Copaxone, the blockbuster drug with more than $20 billion in sales, used for treatment of multiple sclerosis was produced by Teva – Yeda in Israel. The encryption method developed by Prof. Adi Shamir, which underpins the technology of NDS, eventually acquired for $5 billion by Cisco in 2014, is yet another big success story.

The Weizmann Institute received nearly $2.6 billion in royalties over the period 2011-2017. Nearly $1 billion of this went to the relevant scientists.

With a remarkable track record for generating more revenue from IP sales than any other country, second only to the US, Israel is a role model. The secret of most of the 16 currently operating Israeli TTOs seems to be that they have a very *lean organizational structure*, creating one single point of contact for the researchers and the industry. Israeli universities are also very *proactive in engaging with the industries* - they are exceptionally outgoing and manage to create strong ties with companies willing to advance their inventions.

Israeli TTOs generated over 1B NIS in annual royalties in 2011, with about 150 new technologies licensed from universities and research institutes each year. Yissum Research Development Company of the Hebrew University and Yeda Research & Development Co. Ltd are ranked in the TOP 10 tech transfer companies worldwide in terms of revenue. Yeda proudly holds the title of the highest income per researcher worldwide.

(Source: https://www.ikare-innovation.com/single-post/2019/04/28/Did-you-know-that-both-Harvard-and-UCLA-Tech-Transfer-directors-came-from-Israel)

1) **Technology being licensed:** The working of the concerned technology may involve additional licensing of previously existing IP (background IP) as well as future IP (foreground IP) generated during the license project. All the IP required for effective technology transfer needs to be part of the agreement.

2) Grant: Rights to technology for specified purposes must be mentioned such as– display, reproduce, utilize, trade, sub-license, distribute, manufacture through third parties, adopt or change, improve, make derivative etc.

3) IP title retention to be through-out the term of the license: The licensor would need to provide assurance that they would maintain the IP rights on the technology being licensed at least until the license agreement is terminated.

4) Quality maintenance issues: The licensee may need to provide assurance of the quality standards as demanded by the licensor if using their brand name or if required by regulatory bodies for commercialization of the technology.

5) In case of improvement of technology by either party, the arising obligations such as buy-back or future license: The licensor would want to buy- back rights to improvement patents developed by the licensee that relate to the original patent as partial consideration for the license rights. A licensee may on the other hand want rights on future improvements made by the licensor to enable using the latest technology. Subject to national competition laws and antitrust laws, such clauses would be added in the license agreement.

6) Use of licensor facilities or setting up the manufacturing facility by the licensee if needed: The collaboration of the licensor and licensee could involve use of Licensor facilities to improve economic efficiency and reduce duplication of research and development.

7) Assistance and training to licensee by licensor: Depending upon the technology being transferred and the capability of the licensee, the licensor may need to provide assistance by providing training to facilitate the technology transfer.

8) Sharing of know-how: The scientific, clinical, regulatory, marketing, financial and commercial information or data, reports etc. that are proprietary information of the licensor required for the complete transfer of technology besides the patent disclosures can be called as know-how. They need to be specified to be shared during technology licensing.

9) Non-compete provision: Post-termination of license such clauses are made to prevent injury to the licensor. The non-compete prohibition period could be one to five years from termination of the agreement, depending upon the national laws.

10) Restrictions on the field of use: The technology being licensed may have more than one use. There could be separate claims for such use in the technology patent. The license could be only for particular use or patent claim.

The drafting of the work obligations, royalty payments and dispute resolution provisions are most critical aspects besides the aforementioned clauses of technology transfer agreement.

No two technology transfer strategies are identical. Each case is unique and has to be taken afresh by the TTOs. The standard agreements and terms therefore need constant review and update. Therefore, the role of TTOs becomes critical. An example of a technology transfer license agreement is provided in Annexure 3 with respect to health food related technology of a Chinese company wherein the trade-secrets, know-how and trademarks are the IP rights being transferred along with the technology.

5.5 SUMMARY

This chapter discussed IP issues related to technology transfer specifically due to its unique nature, even though technology license is nothing but a specialized IP licensing activity. More emphasis has been given, for the benefit of the readers of this publication, on technology areas, especially at universities and government organizations in developing and emerging countries.

Technology, innovation and knowledge play a significant role in value creation. The advancement in technology has redefined the companies' operations and helped them in conducting business across sectors. Fundamentally, technology transfer involves the exchange of information. Technology transfer is the process of transferring scientific findings to another organization for the purpose of further development and commercialization.

Technology transfer may involve transfer of legal rights and collaboration between parties, as well as informal transmission of information, knowledge, and skills through person-to-person or organization-to-organization interaction.

The transfer of technology would start with technology development and then identification of transfer opportunities for achieving the desired goals. The actual transfer of technology and issues related to further technology advancements would be much easier with IPRs in place. In

other words, valid patentable IP rights are a prerequisite for ensuring both the effectiveness of the involvement and the efficacy of the technology transfer operation.

Transfer of technology involves not only private institutions and public funded universities, but also government-funded laboratories.

TTOs are often responsible for marketing university technology and searching for commercial partners to license their protected technology. The creation of companies based on university research (spin-offs) is considered an important avenue for commercialization of new technology by taking the invention to market, as universities often lack the business expertise to support the creation of start-ups.

The functions of all TTOs are not identical. In some cases, they only deal with the management of IPRs, but in others, TTOs also market their technologies and search for companies that would sponsor university projects Nonetheless, the skill set of TTO is fundamental for effective technology transfer.

Some of the specific clauses of Technology Licensing include:

- *Use of Licensor facilities or setting up the manufacturing facility by the licensee if needed.*
- *Assistance and training to licensee by licensor.*
- *Sharing of know-how.*
- *Non-compete provision and Restrictions on the field of use.*
- *Quality maintenance.*
- *In case of improvement of technology by either party, the arising obligations such as buy-back or future license and IP ownership issues.*

Technology licensing is not necessarily synonymous with technology transfer. There are several challenges which are unique to each technology and have to be taken care of on a case to case basis while drafting the technology transfer license agreement.

SUGGESTED READINGS

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WIPO,2015. Successful Technology Licensing.https://www.wipo.int/edocs/pubdocs/en/licensing/903/wipo_pub_903.pdf

DISCUSSION POINTS

1. What is the role of the Technology Transfer Office (TTO) for a university? Can a TTO provide its services to more than one university?
2. Technology transfer requirements for software related technology would be very different as compared to a pharmaceutical or biotechnology-based invention. Please elaborate.
3. Discuss the hurdles in effective technology transfer license agreement being executed.

MULTIPLE CHOICE QUESTIONS

1. **The public funded research institutes developing cutting edge technology have the possibility of monetizing its innovative technology through:**
   a) Technology licensing
   b) Creation of spin Off
   c) Providing free access
   d) Assigning associated IP
   e) All of the above
2. **Government Science and Technology department funding R&D institutes cannot direct the technology developer to provide:**
   a) Joint IP ownership
   b) Future IP Rights
   c) Publication acknowledgement
   d) Access to technology
   e) Progress report
3. **Technology licensing is always synonymous to technology transfer.**
   a) True
   b) False
4. **TTOs are usually not responsible for:**
   a) Technology IP protection
   b) Drafting of license agreement
   c) R&D expenditure
   d) Maintenance of patent rights
   e) Negotiating license terms
5. **Trans-border technology transfer always takes place from developed countries to developing countries.**
   a) True
   b) False
6. **Technology transfer agreements may have some unique clauses distinct from other IP licenses. These clauses may relate to:**
   a) Assistance and training to licensee by licensor
   b) Sharing of know-how
   c) Setting up the manufacturing facility by the licensee if needed
   d) Use of Licensor facilities
   e) All of the above
7. **There is an impact of stronger patent regimes and registered IP rights on technology transfer.**
   a) True
   b) False
8. **Which of the following is not a mode of international technology transfer?**
   a) Joint ventures
   b) Licensing
   c) Patents
   d) Industrial espionage
   e) Mergers
9. **Which of the following is not a step in the process for planning a company's technology strategy?**
   a) Technology situation assessment
   b) Technology portfolio development
   c) Technology training
   d) Technology valuation and risk assessment
   e) Setting technology investment priorities
10. **Technology transfer is not possible for innovations of a university if they do not have a dedicated TTO.**
    a) True
    b) False

ENDNOTES

106 Banerjee et al. 2018.

107 GAO 2018

108 Camp and Sexton 1992.

109 Lu Lei and Han Yufeng 2016

110 He Jing and Jerry Xia, 2019

111 Lei, supra.

112 Jing, supra.

113 Vivian Tsoi and Yan Yan, Recent Developments in IP Protection in China, White and Case (Oct. 7, 2019), https://www.whitecase.com/publications/article/recent-developments-ip-protection-china-1.

114 Ting Zhang, Technology Transfer and IP Licensing in China, http://www.chinabusinesssolutions.com/wp-content/uploads/2014/01/technology_transfer_and_ip_licensing_in_china.pdf.

115 GAO 2018

116 IPCC special report Methodological and Technological Issues in Technology Transfer, referred to above, for a similar analysis distinguishing assessment (including identification of needs), agreement and implementation as well as evaluation, adjustment and replication as phases of technology transfer.

117 Intarakumnerd and Charoenporn, 2015. Impact of stronger patent regimes on technology transfer: The case study of Thai automotive industry, Research Policy, Volume 44, Issue 7, 2015, Pages 1314-1326.

118 Diamond v. Chakrabarty: 447 US 303 (1980)

119 The original line of Supreme Court precedents included Gottschalk v. Benson, 409 U.S. 63 (1972); Parker v. Flock, 437 U.S. 584 (1978). The revised decision was Diamond v. Diehr, 450 U.S. 175, 185-187 (1981).

120 Brandt and Sibanda, 2018

121 Meiselles and Wharton 2018.

122 GAO-18-327

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124 McQueen DH, Walmark JT. 1982.

125 https://www.stockspinoffs.com/recent-spinoffs/

126 AUTM 2018

CHAPTER

6

Enforcement Strategy and Dispute Resolution

This chapter deals with the enforcement of IPR. In particular, the strategies and prerequisites for effective enforcement are discussed. The IP enforcement through means of litigation in national judicial systems as well as Alternate Dispute Resolution (ADR) including mediation and arbitration are discussed. Another alternative means of IP Enforcement through Customs Authorities is also introduced.

6.1 IP enforcement

The different types of intellectual property rights such as Copyrights, Trade Mark, Domain Names, Design Rights, Trade Secrets, Patents, Plant Variety rights etc. are protected under different national and international legislations, therefore the enforcement strategies vary with the scope of each of these IP rights. The enforcement strategies that are commonly adopted and practiced are those before the courts and more recently, the alternate dispute resolution mechanisms.

The protection of IP rests on the foundation that the IP owner has the legitimate right to profits derived from the exploitation of such IP. Most IP rights bestow negative rights i.e. the right to exclude others from using and/or exploiting the IP without the permission/consent / authorization of the IP owners.

The process of restraining others from using/ exploiting the conferred IP rights gives rise to enforcement rights. It is a mechanism through which unauthorized use of intellectual property is prevented and remedies are awarded to the right holder/s. In the absence of IP enforcement, the system of IP protection will be rendered inadequate, as the right holders will not have any mechanism to prevent infringements and recover losses incurred from any such infringement.[127]

It primarily rests upon the IP holders to take necessary action against the infringer through IP mechanisms. The onus is upon the IP owners to bring proceedings to assert their exclusive rights over the IP, as it is a private right. Though IP rights are international in nature, its enforcement is subject to national regulations and laws, i.e. they are territorial in character.

Enforcement measures are essential to: (i) protect the rights of IP owners; (ii) prevent losses caused by unauthorized use of IP; and (iii) bring sanctions against those who caused the infringement.

6.2 Enforcement strategies

It is important for the IP owners to acquaint themselves with the range of IP enforcement mechanisms that are available to draw a strategy in case infringement occurs. Three aspects should be kept in mind while drawing up enforcement strategy: (i) cost to pursue enforcement; (ii) location of infringement; and (iii) traditional enforcement of IPRs is territorial and it can be sought only through national/local courts, if not through ADR.[128]

There are several factors which need to be considered while deciding the enforcement strategy. These factors would need to be evaluated on a case to case basis. It should be borne in mind that an external consultant with expertise in the relevant area is essential for arriving at a prudent decision for enforcement, as it is but natural for the owner of the IPR to be biased towards defending his personal creation/IPR.

The reasons to enforce IP rights could be several such as obtaining damages from infringer, maintaining market share, actively suing third parties as the patent holding company (PHC), patent assertion entity (PAE), and non-practicing entity (NPE), or even patent trolling. Patent trolls operate much like any other company that is protecting and aggressively exploiting

Box 6.1: Change in law by setting of precedent by Court in India

A precedent was created that evidence from DNA fingerprinting tests can be used to determine disputes involving plant varieties, in a dispute between two agro-biotech companies Pioneer Overseas Corporation, USA and Kaveri Seeds Limited in India when the court ruling on IP litigation remanded back the case to the Plant Variety Registration Office.

The Indian Plant Variety Registry was relying only on the DUS test data prior to the said order of the Courts to settle disputes between parties under the plant variety protection law of India. It may be noted that India is not a member of UPOV but follows regulations similar to that of UPOV related to protection and dispute resolution of Plant Variety Rights.

a patent portfolio. However, their focus is on obtaining additional money from existing users, not from seeking out new applications for the technology.

Besides, IP litigation can be pursued to strategically stop competition or forced collaboration or hostile takeover by pressure building, obtain license, claim co-ownership, create precedent[129] (Box 6.1), enforce strength of IP, obtain visibility as a marketing strategy, and/or personal emotional reasns.

The prerequisites for active enforcement, steps to be followed for IP enforcement and the forums available for resolution of disputes are discussed in the following paragraphs.

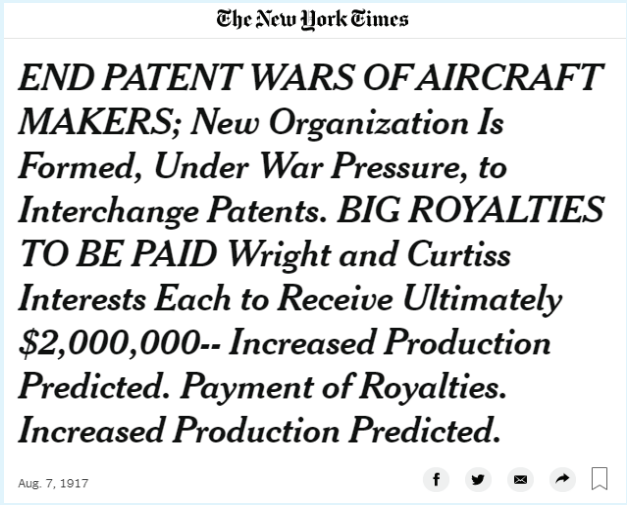
6.3 Prerequisites for effective enforcement

First of all, the owner of IP should identify the fact that an infringement has happened/ happening as against the conferred IP rights; such infringement could happen in any corner of this world. The IP holder may not even come to know of it. Hence the IP owners must be vigilant and pro-active in bringing action against the violator.

After getting to know of the infringement that is happening, the IP owner should then find out as to who is the infringer, his domicile, the place of manufacture/selling of infringed material, place of occurrence of damage etc.

After making an effort to find out who the infringer is and the infringement details, the next step is to collect evidence, i.e. obtain clear intelligence about the harm/loss caused by such infringement, the business model used for such exploitation, amount of profit made through such infringement etc. Procuring such intelligence is very critical for effective enforcement. Even after having all the data, the IP litigation route may not yield desired results in desired time. The Wright Brothers fought a patent battle for their 'Flying Machine' patent[130] and even though there was victory for

Box 6.2: External factors such as war pressure can change patent enforcement strategies (e.g. Aeronautics patents during World War I[132])



The New York Times

END PATENT WARS OF AIRCRAFT MAKERS; New Organization Is Formed, Under War Pressure, to Interchange Patents. BIG ROYALTIES TO BE PAID Wright and Curtiss Interests Each to Receive Ultimately $2,000,000-- Increased Production Predicted. Payment of Royalties. Increased Production Predicted.

Aug. 7, 1917

their patent, their business did not benefit as it should have. In fact, the external factors related to World War I also impacted their IP strategy, including pressure for compulsory licensing[131] (Box 6.2).

Enforcement measures are taken strictly against piracy and counterfeiting. Piracy is an act of engaging in unauthorized reproduction of copyrighted works such as films, books, music etc. While counterfeiting means making fake goods or unauthorized replicas of the original. Piracy and counterfeiting not only cause economic loss to the IP owners, but they also undermine innovation. For both piracy and counterfeiting, criminal action can be initiated. All other infringements are actionable under civil law.

6.4 IP enforcement measures

As stated earlier, the onus is on the IP right holders to adopt appropriate strategy for enforcement of their rights, through court litigation (criminal or civil action) and/or through ADR (Mediation or Arbitration) and/or through Customs Authority.

Cease and Desist Letter

Usually the first step taken against any infringer is sending a letter to the alleged infringer to 'cease and desist' from infringing the IP owner's legitimate right. It is a simple and effective preliminary measure at the hands of IP owners. Cease and desist letters provide for an affordable, fast and amicable solution, if effective. However, it is possible that they may produce no effect at all. It is still a useful tool that could be used as evidence in subsequent proceedings.

Risk analysis is critical in IP enforcement strategy at national and international levels for both the litigants, i.e. the person whose rights are infringed and the one accused of infringing the IP rights. If the accusation is ill founded, the accused may communicate the same to the IP owner and ask him to withdraw the claim/s. However, if the accusation is well-founded

Box 6.3: Cease and Desist Letter for registered scooter design in Viet Nam

In an Automotive Trade Fair in Viet Nam, several new designs of automotive companies were being exhibited. A Chinese company which had reportedly infringed the design of a Slovenian company in the past was also exhibiting along with the Slovenian company at the same fair.

The Slovenian company checked the list of exhibitors before the start of the exhibition and therefore timely prepared for any infringement which may occur during the fair, including registering the original certificate of its design registration in Viet Nam and identifying a lawyer who could provide advice directly at the exhibition in case of need.

At the trade fair the Chinese competitor was found displaying a model of scooter with an almost identical design to the one owned by the Slovenian company.

The Slovenian company took pictures of the infringing products as well as brochures and other marketing materials and took legal advice on how to collect sufficient evidence of the infringement and what action to be taken next.

The Chinese company was sent a notice during the trade fair and was asked to remove the products infringing the design owned by the Slovenian company from the exhibition booth. Subsequently a Cease and Desist Letter was sent, and the case proceeded to settlement.

(Source: South-East Asia IPR SME Helpdesk 2016. Case Study www.southeastasia-iprhelpdesk.eu)

then the accused may cease and desist from exploiting IP material and pay damages claimed or negotiate with the IP owner for continued use of IP by entering into a licensing agreement.

A successful example of use of Cease and Desist letter is provided in Box6.3.

If the cease and desist letter fails to have any effect, then resorting to enforcement measures is considered. There are two ways of enforcing IP rights that are infringed: 1) litigation through a regular national courts system; and 2) resorting to Alternate Dispute Resolution (ADR) through mediation or arbitration. In case of cross border transactions, there is also a third route, i.e. 3) seek enforcement through Customs authorities.

Litigation through national judicial system

A suit may be filed in a court of law to enforce IP rights. In this case, the court decides whether the patent is valid and whether it has been infringed. In order to bring a claim under the national court system, the existence of multiple jurisdictions is to be taken into consideration. These may include

- jurisdiction based on i.e. domicile/nationality of the defendant;
- jurisdiction based on from where the defendant is manufacturing/counterfeiting;
- jurisdiction based on where the defendant is selling the infringed IP material;
- jurisdiction based on place of occurrence of damage;and
- jurisdiction based on place of IP registration etc.

There are several points to be evaluated before deciding the place of litigation. The place of litigation is crucial. One has to strategize after taking into consideration whether:

i. the laws in the place of litigation is favorable to IP owner or the infringer;
ii. the cost is lower or the risk benefit is higher the place of litigation;
iii. judicial system, the expertise and capability of lawyers is satisfactory in that place; and
iv. comprehensive remedial measures are available in that place.

All these will determine the chances of winning and bringing maximum damage to the opponent.

a. Criminal action

Criminal action can be initiated in case of infringement of Trademark, Copyright, Geographical Indication, Plant Variety and Semiconductor Integrated Layout Design. For all other IP rights, only civil claims can be made. It may be noted that criminal proceeding does not apply to patent and design infringement.

In case of criminal action, the owners of the IP rights could file a First Information Report (FIR) in the police station. A criminal complaint could also be made before a District Court/Sessions Judge having appropriate jurisdiction. The judge may issue a search and seizure order, or direct the police to raid the premises of the accused and seize infringed IP material, and/ or arrest the infringer. Furthermore, a criminal complaint can also be filed directly in the High Court having original jurisdiction.

Initiation of criminal action does not disqualify one from taking civil action simultaneously. Both remedies co-exist, wherever applicable.

b. Civil action

Civil action could be initiated for enforcement of IPRs by claiming relief through a suit for:

1) Injunction—It is an order by the court to the infringing party to stop the infringing act. There are three kinds of injunctions. *Interim Injunction* is an ex-parte temporary order passed during the trial, to prevent or restrain a party from infringing that may cause further harm or damage to the IP holder. *Interlocutory Injunction* is an equitable remedy that aims to preserve status quo by preventing the infringer from committing, repeating or continuing the infringing act. It is granted pending the final disposal of the matter. *Permanent Injunction* is

a type of injunction granted at the end of the lawsuit; it requires the infringer to refrain from infringing the rights of IPR holders.

Indian courts have started to issue interim injunction only recently in IP litigations, which was not the case in the past. The courts always held the view that patent matters involve complexity hence only permanent injunctions were issued at the end of the lawsuit. However, the courts came to the realization that the life of a patent is limited, considering the time taken for determination of the case while the infringer continues to reap benefit of the infringement till then.[133]

2) Damages—It is an order by the court to pay compensation for the injury caused by the infringement. Pre-established or statutory damages as applicable in national laws can compensate rights holders and provide them with an expedient and economical way to prove and recover the damage suffered through counterfeiting and piracy. The damages are usually higher in case the court finds that the infringement was willful.

3) Accounts and handing over of profits gained through commercial exploitation of the infringed IP material—The profit made by the infringer is seldom equivalent to the plaintiff's loss/ damages, thus some common-law jurisdictions allow claiming of the infringer's gain. The Infringer is treated as if it conducted its business on behalf of the IP owner ordered to hand over the profits to the IP owner.

4) Anton Pillar Order—It is a court order that provides the right to search the premises and seize evidence without prior warning. This is intended to prevent the destruction of relevant evidence, particularly in cases of alleged trademark, copyright or patent infringements. It is an ex-parte proceeding.

5) Order for delivering up infringed materials through the channel of commerce or destruction of infringed materials—The court can order the seizure, forfeiture or destruction of the infringing goods and of materials and implements predominantly used to create these goods.

6) Specific Relief in case of existing contractual relation between the parties.

7) Astreinte i.e. daily penalty for continued infringement—When a court issues injunctions, astreinte is a pecuniary penalty which may be imposed for non-compliance, which typically accrues per day of non-compliance

It may be noted that even after winning a case at a court having appropriate jurisdiction, the court's decision is subject to appeal which could lead to several rounds of litigation and contesting. The cost of litigations is very high both in domestic courts and foreign courts. The outcome of the litigation depends on the legal system and expertise of lawyers in that jurisdiction, and the judgment varies tremendously. The uncertainties of litigation outcome are well exemplified in an infringement case in Russian Federation which led to the grant of a compulsory license, as discussed in Box 6.4.

Hence, Alternate Dispute Resolution is preferred for resolving IP disputes effectively.

c. Alternate Dispute Resolution (ADR)

ADR is an alternative to court litigation for resolving commercial disputes. ADR includes, among other forms, Mediation and Arbitration which allows parties to resolve their disputes out of court in a private forum, with the assistance of a qualified neutral person of their choice. It is an alternative to court proceedings for amicable settlement of disputes.

Disputes interfere with the successful commercialization of IP rights. International IP policy initiations seek to provide means for resolving disputes without disrupting the underlying business relationship. ADR serves this purpose; as such it offers an important

Box 6.4: Infringement action resulting in compulsory license in Russian Federation

An infringement action was initiated with respect to a drug, Sunitinib, protected by the Eurasian patent co-owned by Sugen LLC and Pharmacia & Upjohn Company in the Russian Federation. Both of these patent holders belong to the pharmaceutical corporation Pfizer. The legal action began with the IP holders' claim to protect their patent rights against infringement by Russian generics company Nativa. The case became interesting when Nativafiled a counter claim asking for a compulsory license. The claim of Nativa was based on the ownership of a dependent patent that cannot be exploited without infringing the Sunitinib patent.

On February 2019, the Moscow City Commercial Court granted a compulsory license to Nativa for the use of Sunitinib. The Patentee appealed against the issued compulsory license, but all courts of higher jurisdiction rejected such appeals. It was also established at the level of the Supreme Court of the Russian Federation that Nativa's actions may not be construed as an abuse of law. So a precedent was established that a court could grant a compulsory license to an infringer, where the following conditions are met:

- the infringing generic product is protected by a dependent patent;
- the dependent patent constitutes significant technical achievement; and
- the dependent patent has substantial economic advantages.

A compulsory license may be issued in Russian Federation due to insufficient use of the patent; however, Russian court practice still does not have many such cases. This is only the second CL granted in Russian Federation with the first one granted only in 2018 by the Moscow City Commercial Court to Nativa to use acancer drug named Lenalidomide-Nativ patented by American pharmaceutical producer Celgene International Holdings Corporation. The drug is used for the treatment of leprosy, tuberculosis and AIDS.

Nativa tried to contact Celgene for a conduction of licensing agreement to produce and sell the generic version of the original drug on the Russian market. However, Celgene did not respond. As a result, Nativa claimed a compulsory license based on the argument that it owns a dependent patent. The court determined that Nativa is a patent holder of the dependent invention. Also, it was identified that Nativa's product has significant economic advantages over the originator's invention due to the exclusion of certain stages from the preparation process. As aresult, the court granted a non-exclusive license to Nativa on the grounds of economic development in public interest. However, at the later stage of proceedings in the Intellectual Property Court, parties concluded a settlement agreement establishing that Nativa could not use the issued compulsory license or claim for it in future.

(Source: Darina Lysachkina, (2020). Compulsory Licensing in Russia in the view of COVID-19. International Lawyers Network. https://www.jdsupra.com/legalnews/compulsory-licensing-in-russia-in-the-61628/)

option for resolving IP disputes. (See Box 6.5 for an example of ADR[134] in IP dispute resolution.)

The advantages of ADR includes: (i) dispute settlement by a single forum under a single law agreed upon by the parties; (ii) it helps avoid expensive multi-jurisdictional litigation; (iii) it preserves the autonomy of the parties in determining time, place, language, procedure, choosing of mediator or arbitrator, etc. and (iv) it offers the parties great control over the way their dispute is resolved.

Box 6.5: Example of ADR in Dispute Resolution in India

Mahyco Monsanto Biotech (India) (MMB), a joint venture between Missouri-based Monsanto and India's Maharashtra Hybrid Seeds Co. pursued an aggressive IP enforcement strategy to defend its patents related to GM Technology in India against Indian companies. In April 2018, the High Court ruled against the patent of MMB which was appealed by Monsanto and subsequently, the said order was set aside by the Supreme Court of India in January 2019, reinstating the MMB patent.

Further, as the Indian companies were also using the MMB Technology via licensing, MMB also instituted Arbitration proceedings in relation to royalty payments disputes.

In February 2019, MMB received a favourable award from the arbitration panel in the proceedings against the Indian companies who owed about $22.82 million to MMB. The award was confidential as the arbitration tribunal comprising of three retired judges had directed both parties to maintain the confidentiality of proceedings and they were not allowed to make public statements.

ADR proceedings and their results are private and confidential. It is very crucial because in IP disputes, confidential information and trade secrets are at stake. It is a suitable method for resolving disputes concerning patent, software licensing, R&D, trademark coexistence agreements, distribution agreements for pharmaceutical products, domain name and patent licensing.

The success of ADR depends on the level of neutrality of the mediator or arbitrator and their dispute resolution skill and experience, accompanied by specialized knowledge of the subject matter of the dispute.

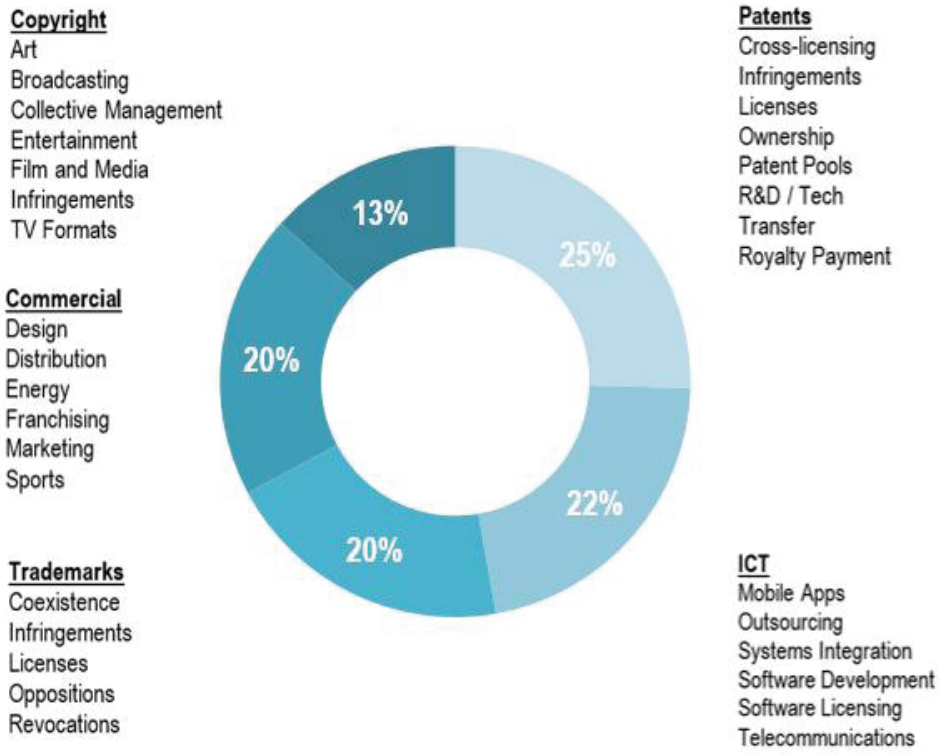
WIPO established an arbitration and mediation center to facilitate dispute resolution related to IP. This Center has promulgated WIPO Mediation Rules, WIPO Arbitration Rules and WIPO Expedited Arbitration Rules (together the "Rules") for use in various dispute resolution procedures. The WIPO Rules have been designed for use in any legal system, and in procedures anywhere in the world. Provided there is an agreement among the parties to a dispute, any person or entity, regardless of national affiliation, may refer a dispute for resolution under any of the procedures administered by the Centre. In the administration of such procedures, the Centre draws from its List of Neutrals, comprising highly specialized arbitrators and mediators with expertise covering the entire legal and technical spectrum of intellectual property.

The subject matter of the arbitration and mediation proceedings administered by the Centre in the past has included both contractual disputes (e.g. patent licensing agreements, trademark coexistence agreements, software licenses, distribution agreements for pharmaceutical products and research and development agreements) and non-contractual disputes (e.g. patent infringement).

The Centre assists in drafting contract clauses which refer future disputes under those contracts to a dispute resolution procedure administered by the Centre. The Centre also assists in drafting agreements for submitting existing disputes to such a procedure.

To facilitate the resolution of intellectual property disputes, the Centre provides case administration services. This includes, *inter alia*, assisting parties in selecting mediators and arbitrators from the Centre's database, setting the neutral's fees (after consultation with the parties and the neutral) and administering

Figure 6.1: Share of different IP related disputes being handled by the WIPO ADR Centre



the financial aspects of the proceedings. Further, they also advise on the application of the relevant rules, assist in coordinating case communications, and arrange meeting rooms for the proceedings, and ensure that procedures are conducted efficiently. Figure 6.1[135] depicts the various IP disputes being handled by the WIPO ADR Centre.

To facilitate submission of disputes, the Centre has developed model clauses that contain elements, which could enable parties to reach an agreement even prior to Arbitration or Mediation procedure being initiated. It also places great emphasis on identifying suitable candidates to function as arbitrators and mediators from around 70 countries. These range from seasoned dispute resolution generalists to highly specialized experts, covering the entire legal and technical spectrum of IP. WIPO database contains professional profiles of over one thousand arbitrators and mediators to choose from.

a. Mediation

Mediation is a consensual process in which a neutral person facilitates discussion and negotiation between the parties so that the parties themselves can solve their problem. The parties design both the process, and the terms and conditions of the solution to their problem. In contrast to adversarial procedures such as litigation or arbitration, a mediator cannot impose a settlement on the parties. Also, any party can abandon the mediation at virtually any time before signing a settlement agreement.

Mediation is widely used in IP matters because of the complex nature of applicable laws and intricate technological issues. Mediation is a very helpful process in the hands of the parties to get into the heart of the dispute. For instance, in patent disputes, the complex issues are inventor ship, obviousness, doctrine of equivalents, etc. They are very intricate legally and in their technicality. Similarly, in copyright disputes, issues like joint authorship,

Box 6.6: Article 3 of WIPO Mediation Rules

(a) A party to a Mediation Agreement that wishes to commence mediation shall submit a Request for Mediation in writing to the Center. It shall at the same time send a copy of the Request for Mediation to the other party.

(b) The Request for Mediation shall contain or be accompanied by:

(i) the names, addresses and telephone, e-mail or other communication references of the parties to the dispute and of the representative of the party filing the Request for Mediation;

(ii) a copy of the Mediation Agreement (if existing); and

(iii) a brief statement of the nature of the dispute.

work made for hire, etc. pose complexity. A mediator with expertise in the given IP business and relevant applicable laws could bring about neutral assessment of the dispute at hand and bring about a settlement.

For resolving disputes through mediation, the parties enter into a mediation agreement. This could be in the form of a mediation clause in a contract for submitting future disputes or in the form of a separate agreement. They may agree to submit to mediation in accordance with Article 3 of WIPO Mediation Rules.

Even in the absence of a Mediation Agreement, if a party wishes to propose submitting a dispute to mediation, it can submit a Request for Mediation in writing to the WIPO center. The Request for Mediation shall include the particulars set out in Article 3 (Box 6.6) of WIPO Mediation Rules.

The parties get to choose and appoint a mediator of their choice. Any person who is neutral, impartial and independent can become a mediator.

Discovery process is an expensive prolonged aspect of any IP dispute. It's also a prior requirement in order to proceed with the dispute settlement process. Discovery is a process through which the plaintiff requests a defendant or third party to provide information and documents relevant to the issue in the lawsuit. Mediation is used to facilitate cost-effective and efficient information exchange during the discovery process. The mediator helps is discovering the most specific information needed to engage in meaningful settlement discussions. After conclusion of the initial round of discovery, the mediator can start the mediation process to discuss possible settlement of dispute.

Mediation also helps bring the disputing parties out of the nitty-gritty of complex technical details of their case to focus and examine the core economic or relationship issues that drive the dispute, thus enabling a settlement beneficial to all parties concerned. Mostly IP disputes end up in license agreements. The mediator could help the parties take their relationship forward according to their requirement. In most cases, IP disputes arise out of existing relationships as licensor-licensee, joint ventures or co-inventors; mediation helps preserve the existing relationships. Whereas adversarial proceedings tend to polarize parties, mediation tends to bring them together. In exploring ways to create value and to create or restructure relationships, the parties tend to become partners rather than antagonists. They "enlarge the pie" and discover options unavailable in litigation or arbitration.

WIPO and Singapore ADR centers are recognized throughout the world and IP dispute resolution clauses using their guidelines are found in most IP agreements. Further, even if there is no such clause in an agreement, or furthermore even if there is no agreement between the parties, they can still choose to approach WIPO for the ADR proceedings. Any person or organization,

Box 6.7: Mediation by unilateral request in Singapore

Mr Suravit Kongmebhol, a Thai citizen and serial businessman, in 2017 registered the Trademark in respect of headphones, loudspeakers and headsets in Singapore as:

Aftershokz, LLC, a US company, applied for Trademark registration in Singapore in 2018 for four related marks including SHOKZ, OPTISHOKZ and

Aftershokz, LLC had won the Consumer Electronics category in the Wall Street Journal Technology Innovation Awards in 2012. The invention uses bone conduction technology in headphones. Their technology allows the deaf to hear and swimmers to listen to music underwater by conducting sound through the hearer's bones to the inner ear, in contrast to conventional technology which conducts sound through air.

Aftershokz, LLC and Mr Kongmebhol became embroiled in cross-actions at the Intellectual Property Office of Singapore (IPOS) seeking to invalidate each other's trademark registrations.

Mr Kongmebhol submitted a unilateral request for mediation to the WIPO Center to which Aftershokz, LLC agreed. Shortlists of five possible mediators were agreed upon along with the location of the mediation. However, the parties requested the WIPO Center to select the mediator.

The parties agreed to extend the scope of the mediation to foreign IP rights as they also had an opposition in Viet Nam; and apart from Mr Kongmebhol, another person had also filed a trademark application for Aftershokz, and for variants of ASHOKZ and SHOKZ in Indonesia, the Philippines, Malaysia and Thailand.

The mediation took place in Singapore on 30 August 2019 at the mediator's office and the parties reached a win-win outcome after 19.5 hours, ending with a settlement agreement after midnight into the next day.

In case of court litigation, it could have taken about two more years and several-fold costs to file evidence and submissions in five sets of proceedings, and obtain the Registrar's decisions after hearings. This could have taken even longer in other jurisdictions, and may have resulted in uneven global outcomes in relation to the same or similar marks.

Under IPOS' Enhanced Mediation Promotion Scheme (EMPS), the parties received funding of S$12,000 for this mediation case where the subject matter of mediation additionally involved foreign IP rights. This fully subsidized WIPO Center's administration fee and the mediator's fees and expenses, and partially defrayed the parties' mediation-related lawyer fees and disbursements.

(Source: https://www.ipos.gov.sg/protecting-your-ideas/hearings-mediation/mediation)

therefore, has the choice to make a unilateral request for mediation to the WIPO Center. This process allows a party to submit a request for mediation while the other party has yet to agree to mediation. The WIPO Center may assist the other party in its consideration of the request for mediation. An example is provided in Box 6.7.

Mediator also helps parties reduce costs by narrowing down issues. Even If mediation fails to settle the matter and litigation is taken up in the court, the mediators input with respect to narrowing down issues comes in handy and is helpful in defining the issue clearly, which in turn helps in reducing litigation costs. It helps IP owners make objective assessment while going ahead with litigation. At the same time the mediator can also help the accused infringer to avoid raising weak defenses.

The mediator is clearly not a decision maker with regard to the substantive issues facing the parties. That is, the mediator's principal role is to facilitate settlement discussions between the parties, and resolution by the parties, as to the substantive issues facing them. Mediation may be terminated by the decision of the mediator if, in the mediator's judgment, further efforts at mediation are unlikely to lead to a resolution of the dispute[136].

Mediation is an informal method of dispute resolution. As mentioned, it offers the parties autonomy to plan the proceeding, modify it during the process of mediation and other such flexibilities in mediation proceedings. Mediation is a relatively inexpensive mechanism for settlement of dispute, it is considered to be an efficient way of arriving at a settlement.

Box 6.8: ADR cost savings at IPOS Singapore

A major food & beverage business in Singapore, embroiled in four trade mark disputes at IPOS, Singapore, against a relatively well-known UK entertainment outfit, was able to save substantial costs using ADR Route.

In addition to the dispute before IPOS, these parties were also ensnared by disputes across different jurisdictions. The parties chose to mediate under the auspices of the WIPO Arbitration and Mediation Center. It is noteworthy that distance was not a hurdle and amicable settlement was reached within a day. The broad-based settlement was achieved with the use of video conferencing facilities, without the UK party having to travel to Singapore, saving time and costs. All present at the mediation were also bound by confidentiality obligations.

The administration fee and mediator's services added up to S$3,450.20, which was split equally between the two parties. Further, the parties also availed the benefit of funding under the IPOS Mediation Promotion Scheme and these costs were fully subsidized.

Each party saved about S$15,000 (or about 75% of actual costs) compared to the amount they would have spent if they had opted for the full opposition proceedings culminating in a substantive hearing.

It is crucial for businesses to be able to resolve disputes quickly and at low costs, and ADR proceedings provides for the same.

Complimentary access to eADR - WIPO's online case management tool – and its videoconferencing facilities are currently being provided (July 2020) in view of the above success.

(Source:https://www.ipos.gov.sg/protecting-your-ideas/hearings-mediation/mediation)

Most mediation proceedings are concluded within a single day. Even if it happens to continue beyond the scheduled one-day session, the post session proceedings can take place over the phone with parties and mediators in attendance and the matter gets settled. Mediation results in settlement agreement. The settlement agreement/s is/are in principle binding only upon the parties to the dispute. Box 6.8 provides an actual case study where the names of the parties are not shown due to confidentiality reasons. The parties benefited both in terms of time and costs in the proceedings

b. Arbitration

Arbitration is a consensual procedure in which a neutral person or persons impose a binding decision on the parties. Whereas the parties may design the procedure, the arbitrator designs the terms and conditions of the decision. Also, after a party has agreed to arbitrate, the party cannot unilaterally withdraw from the arbitration process without risking an adverse decision on substantive issues.

When parties decide to settle their dispute through private dispute resolution procedure instead of going to court, the choice is either mediation or arbitration. They choose arbitration over litigation because IP disputes are complex, technical and concern multi-jurisdictional legal issues which require 'one-stop-shop' single procedure for resolution. It offers considerable autonomy to the parties. Most importantly, parties can "forum shop" i.e. the parties can:

1. Choose the arbitrator(s);
2. Choose the issues to be arbitrated;
3. Choose the place of the arbitration;
4. Choose the substantive law that will control the merits of the dispute;
5. Choose the procedural rules;
6. Choose the schedule;
7. Choose exhibits, witnesses and other evidence to be adduced including arranging for tests and site visits;
8. Choose the form of relief to be awarded;
9. Choose the form of the award; and
10. Agree to facilitate enforcement of the award.

In contrast to litigation in national courts, these features afford substantial advantages.

Under Arbitration procedure, a dispute is submitted by agreement of the parties to arbitrator/s who make binding decisions on the dispute. Such a decision is called an Arbitral Award which is binding only on the parties to the dispute. It is not a generally binding decision and it is not normally subject to appeal.

Arbitration is possible only if both the parties agree to it. Arbitration proceedings are consensual and confidential in nature. Generally, parties insert an arbitration clause in their contracts to take care of future disputes that could arise out of the contract. If no such clause is inserted in the existing contract for submitting dispute to arbitration, then the existing dispute can be referred to arbitration by means of a *Submission Agreement* between the parties. In contrast to mediation, the party cannot unilaterally withdraw from arbitration. It is a more formal way of dispute resolution as compared to mediation.

Law applicable to the arbitration, i.e. the arbitral law, is usually the law of the place of arbitration. Article 59(b) (also, Article 3) provides that this is the case under WIPO Arbitration Rules. Article 59(b) acknowledges that the parties may agree on another arbitral law. Law applicable to the arbitration agreement and to the substance of the dispute can be chosen by the parties to dispute. It need not be the same as the arbitral law.

The law governing the enforcement of the award is the law of the place of enforcement. International arbitration awards are enforced by national courts, their enforcement across the border is facilitated by the United Nations Conventions for the Recognition and Enforcement of Foreign Arbitral Awards, 1958

known as New York Convention. WIPO has a facilitation centre for Arbitration and Mediation. This Centre for Arbitration and Mediation of WIPO has formulated procedures that are administered under the WIPO Arbitration Rules.

Article V(2) of the New York Convention provides that a court in the country where recognition and enforcement of an award is sought may refuse recognition and enforcement if (a) the subject matter of the dispute is not capable of settlement by arbitration under the law of that country; or (b) recognition or enforcement of the award would be contrary to the public policy of that country. Importantly, the court may raise and rely on these grounds on its own motion.

However, not all IP disputes could be referred to ADR. If one party to the dispute does not cooperate then it cannot be referred to ADR, as it is consensual in nature. One party cannot force another into taking part in ADR. IP issues often involve matters of competition law and validity of IP assets. These issues relating to competition law or validity of national IP rights or invalidity or nullity of registered IP assets are not subject to ADR proceedings. The decisions obtained through ADR—does not set legal precedent.

c. Expedited arbitration

Expedited arbitration is a consensual procedure in which the rendering of a decision by the arbitrator is accelerated. In the WIPO expedited arbitration model, only one arbitrator serves in such cases. Also, time periods are shortened, and evidentiary hearings are condensed. An example of expedited arbitration concluding in five weeks is shown in Box 6.9.

d. Mediation followed by arbitration ("med-arb")

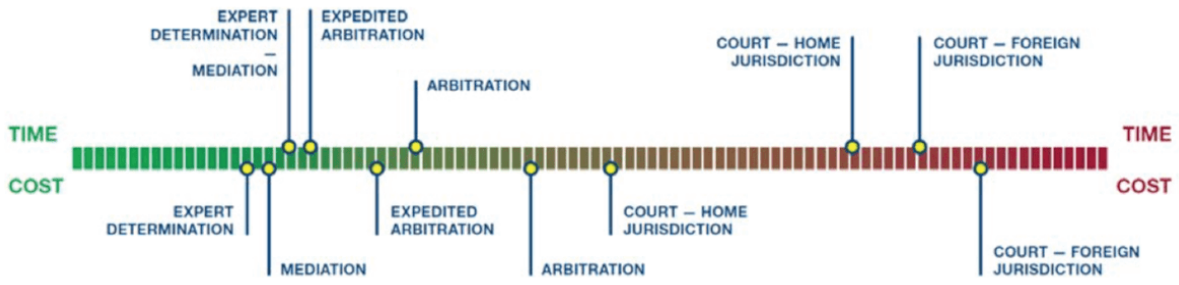
WIPO has also prepared a recommended agreement for submitting a dispute first to mediation, and if that fails, to arbitration. In

Box 6.9: Expedited arbitration of Artistic Performance Agreement

A producer of artistic performances entered into an agreement with an insurance company to finance arbitration proceedings. The Artistic Production Finance Agreement included an expedited arbitration clause. The producer brought arbitration proceedings against an Asian entity in Singapore. The producer claimed the costs of the Singapore arbitration under its Finance Agreement. Faced with the financing company's apparent refusal to make such payment, the producer filed WIPO expedited arbitration proceedings indicating that, as a result of the deadline imposed by the arbitral tribunal in Singapore, it required that a final award be issued within six weeks after the commencement of the expedited arbitration. Following consultations with the parties, a sole arbitrator was appointed, who issued a timely arbitral award within five weeks.

(Source: https://www.wipo.int/amc/en/arbitration/case-example.html)

Figure 6.2: ADR compared with Court: time and costs in dispute resolution



mediation followed by arbitration (sometimes known as "med-arb"), mediation is undertaken first. If the dispute is not entirely settled by way of mediation, arbitration ensues to resolve remaining issues. Post the dispute, multi-step procedures are increasingly accepted. These processes may comprise mediation followed by arbitration, as contemplated in the WIPO recommended clause. They may also comprise negotiation, followed by mediation, followed by arbitration. The popularity of multi-step processes reflects recognition by parties and counsel of the virtues of the parties attempting to solve their dispute by way of negotiating their own resolution, while relying on arbitration as the last alternative.

ADR is becoming more popular with usage of video conference facilities and IP office support for the same. The Figure 6.2[137]shows the time and cost-effective nature of ADR in comparison with Litigation.

6.5 IP enforcement through customs authority

Enforcement of IPR by Customs authority is of two kinds: 'Protection on Request' and 'Protection Ex-Officio.' The Protection on Request, also called passive protection, refers to the measures taken by the Customs to detain the goods that are suspected of infringement, at the request of an IPR holder who files an application, when such goods are found to be imported or exported. It is called passive protection because the Customs authority will not investigate the suspected infringing goods that are detained on request by IPR holders. The IPR holder will have to file a lawsuit in the court for action against infringement.[138]

IP Protection Ex Officio refers to the measures taken by the Customs during their supervision, when they find any import/export goods suspected of infringing any IPR that is registered

Box 6.10: Customs enforcement of IPR in India

In India, in order to prevent counterfeiting and infringing goods from surreptitiously being imported into the Indian markets, the Government of India has framed the Intellectual Property Rights (Imported Goods) Enforcement Rules, 2007. Under this Rule, IP Rights holders can now record their IP Rights online, through the Indian Customs IPR Recordation Portal (https://ipr.icegate.gov.in). They are required to file separate applications for trademark, design, copyright and geographical indication, etc. through the above referred online portal. IPR holders are required to provide consignment specific Bonds for an amount equivalent to 110% of the value of the detained goods, along with security, in the form of a bank guarantee or fixed deposit, equivalent to 25% of the bond value at the port of interdiction. Alternatively, they may file a Centralized Bond (which will be a running bond) for a value that is sufficient enough to correspond to value of suspected allegedly infringing goods all over India.

In case goods allegedly infringing upon recorded IP rights are detained at the customs frontiers of India, the Customs authorities shall inform the importer and the right holders of the suspension of clearance of the goods. At this stage the IP holder is required to join the proceedings by executing Specific Bond indemnifying the Customs authority. The IPR holder is then provided with photographs/serial numbers of the products/samples of the products for examination, testing and analysis to assist in determining whether or not they are infringing. If the IPR holder fails to join the proceedings within the given time period, the infringing goods shall be released to the importer.

If the IPR holder attends the proceedings and the Customs officials conclude that the goods are indeed infringing on the IPR holder's recorded IP rights and there is no legal proceeding pending,

the infringing goods will be seized and thereafter destroyed after intimation to the IPR holder in accordance with the provisions provided in the Customs Act. The cost of such detention and destruction shall be borne by the IPR holder. It is pertinent to note that Patent Rights are excluded from purview of 2007 Rules through an amendment in 2018. It was necessitated by the fact that any assessment of a potential patent infringement would require a detailed method of assessment which is technical in nature and the Customs authorities do not possess the necessary training and expertise to analyze the specifics of a registered patent. Hence Patent Rights' have been excluded from the purview and scrutiny of Customs authorities. The Customs do not have the authority to scrutinize the IP material but they have the powers to interdict the imported materials.

Box 6.11: Customs enforcement of IPR in People's Republic of China[139]

Customs enforcement of intellectual property rights (IPR) in People's Republic of China (China) refers to the measures taken by the Customs according to law against the import and export of IPR-infringed goods, and it is also referred to as the Border Measures regarding the IPR in World Trade Organization (WTO)'s Agreement on Trade-Related Aspects of Intellectual Property Rights – TRIPS.

Article 2 of the Regulations of the People's Republic of China on Customs Protection of Intellectual Property Rights promulgated by the State Council of the People's Republic of China provides for IPR protected by China Customs. This refers to the exclusive right to use trademark, copyrights and copyright-associated rights, and patent rights relating to import and export goods and protected by PRC laws and administrative regulations. In addition, China Customs also protects the Olympic symbols and World Exposition symbols in accordance with the Regulations on the Protection of Olympic Symbols and the Regulations on the Protection of the World Exposition Symbols. The IPR protection by China Customs is divided into the two modes of "Protection on Request" and "Protection Ex Officio":

- The Protection on Request refers to the measures taken by the Customs to detain the goods that are suspected of infringement at the request of an IPR holder who applies for the same according to Articles 12, 13 and 14 of the Regulations on Customs Protection of IPRs when such goods are found to be imported or exported. The Customs does not investigate the suspected infringing goods that are detained on request, and the IPR holder therefore has to file a lawsuit with the People's Court for relevant infringement dispute. The Protection on Request is also called Customs "Passive Protection" of the IPR.

- The Protection Ex Officio refers to the measures taken by the Customs during their supervision, when they find any import/export goods suspected of infringing any IPR that is registered with the General Administration of Customs. In such cases, the Customs proactively suspends the customs clearance procedures, informs relevant IPR holders and detains the suspected goods on the request of the IPR holders according to Article 16 of the Regulations on Customs Protection of Intellectual Property Rights. The Ex-officio protection is also called Customs "Proactive Protection" of the IPR.

An IPR holder, before applying for the Customs ex-officio protection, has to register its IPR with the General Administration of Customs. The agency to entertain IPR registration is the IPR Enforcement Office of the Department of Policy & Legal Affairs under the General Administration of Customs.[140]

with the Customs, to proactively suspend the customs clearance procedures, inform relevant IPR holders and detain the suspected goods on the request of the IPR holders. It is also called pro-active protection because the Customs will proactively use their power of office to deter suspected infringing goods from import and export, and have the power to investigate the IPR infringement and impose penalty on the infringers. In case or wrongful ex-officio detention, in some jurisdictions, the IP rights holders whose rights are infringed are required to reimburse reasonable damages suffered which may include costs of postage, phone calls, professional fees, financial charges and other such incidental expenses. However, the Customs authorities neither compensate the affected parties for the wrongful ex-officio action nor reimburse reasonable costs. The case studies for Customs enforcement of IP rights are presented in Boxes 6.10 and 6.11.

6.6 SUMMARY

The process of restraining others from using/exploiting the conferred IP rights gives rise to enforcement rights. It is a mechanism through which unauthorized use of intellectual property is prevented and remedies are awarded to the IPR holder/s.

The onus is upon the IP owners to bring proceedings to assert their exclusive rights over the IP. Enforcement measures are essential to protect the rights of IP owners, prevent losses caused by unauthorized use of IP and bring sanctions against those who caused the infringement. IP enforcement strategy can be used to derive monetary and non-monetary benefits from the IP in accordance with the overall business strategy of the IP owner.

In case of contracts and license agreements related to IP rights, the parties should be very careful about the choice of jurisdiction for enforcement. The choice of jurisdiction in cases of dispute should be examined from all perspectives including language, cost, speed, expertise, scope and remedies.

It is up to the IPR holders to adopt appropriate strategy for enforcement of their rights. The various ways of enforcement are litigation (criminal or civil action) and/or through ADR (Mediation or Arbitration) and/or through Customs authority and/or to simply use their IP rights as leverage for negotiations.

SUGGESTED READINGS

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DISCUSSION POINTS

1. What are different means of alternate dispute resolution (ADR) that can be pursued by the IP owners?

2. What are the prerequisites for proceeding with ADR?

3. Litigation usually involves huge costs. Discuss the IP litigation strategy for a university owned technology IP being infringed by a multinational company and vice-versa.

MULTIPLE CHOICE QUESTIONS

1. **The onus of enforcement of IP rights is on the IP owner.**
   a) True
   b) False
2. **Enforcement of IP Rights procedures include:**
   a) Infringement Action
   b) Sending Cease and Desist Notice
   c) Custom seizure at border
   d) Obtaining injunction
   e) All of the above
3. **The parties can withdraw at any time once the Mediation Proceeding has been initiated and proceed to legal challenge.**
   a) True
   b) False
4. **The parties can withdraw at any time once the Arbitration Proceeding has been initiated and proceed to legal challenge.**
   a) True
   b) False
5. **Alternate dispute resolution includes mediation and arbitration which are governed by the provisions of:**
   a) Local Legislation
   b) International Legislation
   c) IP Legislation
   d) Agreed Legislation
   e) WIPO Legislation
6. **An IPR holder may choose not to commercialize his IP by manufacturing the novel product but still enforce it by:**
   a) Patenting of competitor technology
   b) Publication in scientific journal
   c) Filing infringement action against licensed user
   d) Filing infringement action against non-licensed user
   e) Alternate dispute resolution
7. **Enforcement of IPR using Customs Regulations is possible in WTO member countries through:**
   a) TRIPS Compliance

b) WTO Compliance
c) National Law Compliance
d) All of above

8. A trademark infringement action pending before the courts forbids the enforcement of IP Rights through Customs Regulations.
a) True
b) False

9. Which one of the following is known as the 'Gillette defence' to overcome a patent infringement action?
a) The alleged patent claims are on non-patentable subject matter and consequently, the patent is invalid because it is not an invention.
b) The alleged infringed patent lacks novelty or was obvious at the priority date of the patent. Therefore, the patent is invalid or, if valid, the alleged infringement falls outside the scope of the claims of the patent.
c) The alleged infringed patent is a subsequent and novel use of a known compound in the treatment of the human or animal body, or diagnosis of the human body and, therefore, the patent is invalid for lack of novelty.
d) The alleged infringed patent claims are directed towards an invention which does not belong to the patentee.
e) The alleged infringed patent lacks industrial application; therefore, the patent claim is invalid.

10. The strategy to proceed for litigation instead of ADR, with an exclusive licensee who has stopped paying royalty but continues to use the technology, would not depend upon the following:
a) Time taken
b) Cost involved
c) Currency used
d) Patent validity
e) Local law

ENDNOTES

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128 WIPO Magazine. 2016.
129 Pioneer Overseas Corporation v. Chairperson, Protection Of Plant Varieties And Farmers Rights And Ors, MANU/DE/2102/2019
130 https://patents.google.com/patent/US821393?oq=821%2c393
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#LeaveNoOneBehin

CHAPTER

7

Intellectual Property Policy Options and Recommendations for R&D Organizations

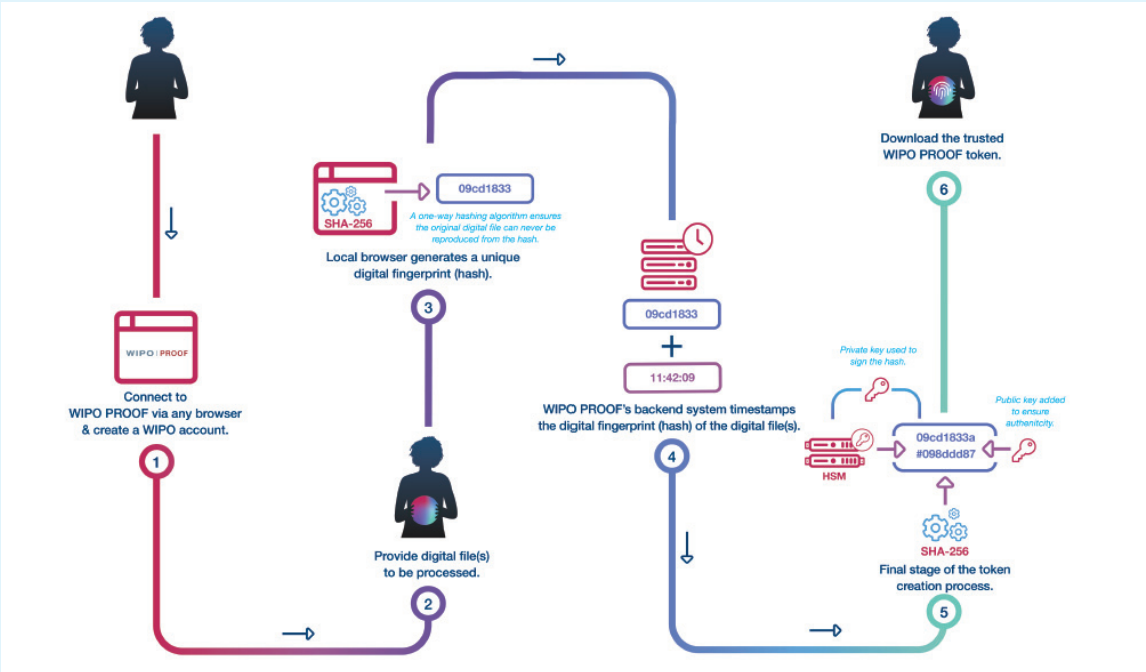
Intellectual property is a key aspect for economic development - Craig Venter

7.1 IP Policy: Background

Intellectual property rights are only a small part of the total knowledge produced by an organization. It is important to understand that this knowledge is not only subjective, but it can also be transferred to other people. The origin and creation of an innovative idea, whether registered or not, can be an important asset for the organization and would need to be protected in some manner or the other. WIPO-PROOF is one such method (Box 7.1) wherein the authenticity of a work product can be established by creators. IP, especially patents, serve as powerful instruments of strategy to protect such innovation and to strengthen a firm's technological administration.[141]WIPO PROOF creates tokens using the highest standard of Public Key Infrastructure technology and is compliant with the RFC 3161 protocol[142].

The examples taken up in the IP management chapter (See chapter 3) emphasizes the need of a clear IP policy and highlights the impact of having an IP culture. Another example from South Africa is the SmartSpot technology which is a specially designed paper card that is used to examine the accuracy of machines detecting tuberculosis (TB). It was developed by scientists at Wits University and the National Health Laboratory Service (NHLS). Wits Enterprise, which is the University's unit responsible for IP commercialization, worked with the research team to develop a plan to commercialize this patented technology. In 2015, a spin-off company called SmartSpot Quality (Pty) was created. To date, SmartSpot has been shipped to 22 countries globally, with many more countries in the pipeline. In South Africa, SmartSpot has been used on all 289 GeneXpert instruments in the National TB

Box 7.1: WIPO-PROOF workflow



Program since 2011. SmartSpot has saved an estimated 78,000 test results, of the 3 million tests performed, from being inaccurate[143].

Technology driven institutions have innovation at their core and hence IP is their most important asset. Therefore, to have a clear IP policy for the organization that empowers an IP culture in the organization can make a major difference in the growth of such institutions.

The IP of an organization, whether registered as a right or not, needs to be catalogued, evaluated and updated regularly with periodic audits. The management of the complete IP portfolio provides vital information to the business managers in making strategic decisions for the organization. The priority of IP audit is alignment of patent assets with business strategy, followed by quality audit and review of patents, patent cost management and reduction thereof, and patent monetization and licensing.

A value chain model is a logical framework which follows the formulation and development of the Intellectual Property acquisition through portfolio management, and commercialization.[144]

A good IP management system would include facilitation of business development through automated workflows for non-disclosure agreements, creation of standard templates, and clause libraries for licensing agreements, enabling management oversight, facilitating reporting on different business arrangement, enabling monitoring of agreements and relationships between different products, services and terms of service, managing payment reminders such as royalty payments, besides other unique business requirements of the organization.

The development of IP strategy and IP policy for an organization is a very specialized activity requiring IP as well as business skills in order to plan the management and monetization of IP rights. Therefore, in-house capacity building by either training or hiring or outsourcing is very essential at the initial stage itself.

Innovation being central to a technology-based organization, IPRs are the most crucial asset, making planning and managing them the top priority, and the organization should therefore have:

- IP strategy based on sound competitive IP intelligence;
- Alignment between IP transactions and the business strategy;
- Institutional IP culture with knowledge of IP concepts and capacity building; and
- Clear IP Policy with well-defined processes and designated personnel, such as technology transfer officers for identifying, evaluating, and capitalizing on IP.

7.2 Policy options for R&D organizations

Importance of having a clear vision, and an IP policy aligned to the same, cannot be ignored. And the various options that an organization may follow can be divided into three types in the simplest manner:

a. Protect no IP
b. Protect all IP
c. Protect some IP

a. Protect no IP

Non-protection policy does not mean that IP should not be identified or catalogued or respected. It simply means that the IP would not be protected as a legal right or IPRs so as to allow free access to the public to the said IP. This type of policy could be for organizations which are public-funded or not-for-profit. However, the recognition of their IP assets is still important. Free revealing of intellectual assets for building public domain could be the target of an organization, and the IP policy would therefore be not to protect IP but to publish it for public good.

The open source software licensing is an example of organizations providing their work product, i.e. source code of their software, freely for public use. However, cases[145] like Versata v. Ameriprise et al. indicate that this may not be a good IP policy, leading to disputes and exploitation.

b. Protect all IP

Robustly protecting and enforcing the IP generated by a company would require several policy procedures to be securely in place. This approach requires complete coverage of all IP and technology issues either by creating IP or licensing-in of IP, and having full control over technology performance and market for the said IP created by them. For example, companies like Apple, IBM, Microsoft, Toyota, etc. protect their innovations by getting IP rights granted to create global patent portfolios. While protecting their IP, these companies follow the strategy which may be termed as hybrid IP protection approach as seen recently by the actions of IBM when it offered free access to several of its patents to combat COVID-19[16] (Box 7.2).

c. Protect some IP

The IP policy to have limited coverage of technology with permissible technology transfer is another approach followed by policymakers.

Box 7.2: IBM offering free access to patent portfolio to combat COVID-19

Technological ingenuity is playing a critical role in society's response to the COVID-19 pandemic. Already, there are dozens of examples around the world of businesses, nonprofit organizations, government agencies, educators and individuals improvising and adapting technologies to meet their needs. Scientists, for example, are using supercomputers to accelerate COVID-19 drug discovery. Programmers are writing code to help with crisis communication, remote education and community cooperation. Meanwhile, industry and academia are 3-D printing face visors to address shortages in protective gear for healthcare professionals.

In the spirit of such innovation, IBM of USA, the leading patent recipient for each of the last 27 years, is granting free access to its considerable patent portfolio to those developing technologies to help diagnose, prevent, contain or treat corona viruses, including the one that causes COVID-19. The pledge covers thousands of IBM AI patents, including Watson technology patents, as well as dozens of active U.S. patents in the general area of biological viruses.

One such patent describes anti-viral agents and methods of treatment using these agents. The anti-viral agents include cationic polyamines active against a broad spectrum of viruses, including Dengue, H1N1, SARS, influenza and corona viruses. Other relevant patents, for example, describe a touch screen that uses ultraviolet light for pathogen mitigation and algorithms for predicting the time and range of events, including epidemics.

IBM's pledge will last for the life of our more than 80,000 patents and patent applications, and any new patent applications filed through the end of 2023 will likewise be covered by this commitment.

In promising to not assert IBM patents against entities using them in the fight against corona viruses, IBM is joining the recent Open COVID Pledge as a founding adopter. The Open COVID Pledge calls on organizations to promise to make their intellectual property available free of charge for use in ending the current pandemic and minimizing the impact of the disease.

(Source: https://www.ibm.com/blogs/research/2020/04/ibm-patent-portfolio-access-combat-covid-19/)

The organization may do research in several technology domains and choose to protect its innovations of any specific domain only. This type of policy should keep in mind the best commercial interest of the organization.

No matter which policy option is adopted by an organization, innovation is the key to sustainable growth. Therefore respect, recognition and protection of IP is essential for its optimum use and fulfillment of organizational goals. For example, the universities which are publicly funded may like to follow the Nine Points to Consider in Licensing University Technology[147] (Box 7.3) in public interest as recommended by various universities in the USA. At the same time, each university would like to modify the same as per their individual requirement

7.3 Recommendations for R&D organizations

Establish strong national IP systems: At Country level, having a National Innovation Agenda and National IPR Policy with strong patent offices and enforcement mechanisms is a prerequisite for creating a National IP Culture. Innovative industries, being stakeholders, should actively participate in the process of national legal and regulatory system development and review process. The creation of functioning national IP systems that include efficient patent offices and transparent IP court systems[148] is the foundation for all organizational IP policies to be functional.

Develop a strong IP culture: With the goal to create an IP ecosystem for inclusive and sustainable innovation, instilling the knowledge and importance of IP in every member of the organization is the basic requirement of IP culture to be synergized throughout an organization. Capacity building in terms of trained human resources as well as infrastructure (such as technical support, IP tools, services, standards, digitization, databases for storage and retrieval of IP information, mechanisms for training, platforms, servers, networks, etc.), along with knowledge dissemination to the members of the organization as well as the stakeholders such as clients, would help in creating a strong IP culture.

Box 7.3: In the public interest: nine points to consider in licensing university technology

1. Universities should reserve the right to practice licensed inventions, and to allow other nonprofit and governmental organizations to do so.
2. Exclusive licenses should be structured in a manner that encourages technology development and use.
3. Strive to minimize the licensing of "future improvements".
4. Universities should anticipate and help to manage technology transfer related conflicts of interest.
5. Ensure broad access to research tools.
6. Enforcement action should be carefully considered.
7. Be mindful of export regulations.
8. Be mindful of the implications of working with patent aggregators.
9. Consider including provisions that address unmet needs, such as those of neglected patient populations or geographic areas, giving particular attention to improved therapeutics, diagnostics and agricultural technologies for the developing world.

(Source: James K. Woodell and Tobin L. Smith, 2017. Technology Transfer for All the Right Reasons., Technology and Innovation, Vol. 18, pp. 295-304, 2017)

Invest on capacity building: The importance of human resources cannot be underestimated. IP awareness among all and deeper IP knowledge among the R&D professionals as well as business managers would set the foundation of having a well-defined IP culture in place. Investments should be made in awareness programs for all the members of the organization along with IP management and technology transfer related managerial posts. Knowledge and skill up-gradation of IP policymakers and managers need to be an on-going process.

Build strong IP portfolio: All forms of IP need to be carefully placed in an organization's IP portfolio. Strategic patenting, containing claims of varying breadth, at every step to maximize the long-term profitability of the organization with acquisition of both IP and non-IP assets, is essential. At a basic level, an IP portfolio must provide 'freedom to operate' to an organization in the desired markets for all its products and associated processes. At this stage, any relevant patents not owned by the organization should be in-licensed, or the organization should be prepared to argue that those patents are invalid or not relevant to their product.

Articulate an IP vision: R&D organizations need to articulate an IP vision and clearly communicate its implications for business development, R&D, and strategic planning. The IP vision will provide direction to all decisions being taken by the IP managers and licensing professionals. Formulation of institutional IP policies and effective IP management strategies go hand in hand.

Align IP strategy with IP vision to enable informed strategic decisions: An organization will appreciate IP as a critical asset only when it fully understands or values IP. This is critical for guiding decisions on new product development, alliances, and acquisitions, and long-range R&D portfolio management. The allocation of R&D funds and other strategic decisions of the organization such as ownership of IP rights and inventor compensations, therefore, need to be aligned with IP strategy.

Conduct IP valuation: In order to monetize the IP, its value should be ascertained in financial terms. This would assist in identifying the value of IP assets for calculation of tax liability purposes as well as knowing the market worth of the IP for commercialization by way of licensing, assignment or sale.

Ensure periodic monitoring and review: The effectiveness of a system is measured by regular reviews and accountability. The results of the norms and practices being followed need to be monitored at specified periods to confirm that the organization is moving in the desired path of growth. Also, upgrades with time as per current industry scenario, market requirements and technology changes need to be factored in with each review.

Mitigate risk by preparing for various scenarios: Risk assessment at each stage should be factored in the IP policy. For example, freedom to operate should be assessed prior to research with respect to use of raw materials and processes as well as prior to the launch of a product in the market. In case of licensing, the due diligence of IP assets of self as well as the other party, and regular IP auditing should be a standard practice. The possibility of future disputes and strategy for its resolution should be mapped.

Apply creative licensing strategies: Each license agreement is unique as there would be different parties, different jurisdictions, different rights, different market conditions, different requirements and circumstances every time an agreement is signed. Thus, the standard agreement clauses need to be reviewed creatively every time there is a new agreement or renewal of an old agreement to factor in the unique situations.

Think local as well as global: Most of the IP rights are territorial rights, hence they may need

to be utilized, licensed and enforced globally or in more than one jurisdiction. The cross-border licensing and technology transfer issues need to be considered at the inception stage itself to ensure global IP portfolio management and successful monetization.

Facilitate collaboration to exchange knowledge and experience: Organizations learn from sharing of experiences. Encouraging mentorship programs and cross-border brainstorming sessions of policymakers would lead to fast growth of the overall learning. The policymakers, managers and TTO personnel would be able to harness all available resources and platforms as used by other members participating in such exchange programs. Regional collaboration for IP management, technology licensing and capacity building is recommended.

Strive for high ethical standards and responsible commercialization: The respect for basic human dignity, right to equality and civic responsibility should form the core of all activities of an organization which should reflect in its IP policy. IP commercialization transactions bringing profit to an organization should also showcase the character of integrity and social concern. Acknowledging that innovation can lift nations out of poverty[149] would lead to responsible IP commercialization.

7.4 Conclusion

The importance of having a policy framework for intellectual property management and commercialization aligned with the vision of the organization at all levels of functioning is pertinent.

A general understanding of all aspects of Intellectual Property, the legal framework (national and international), its protection, management, commercialization, local and overseas, with emphasis on technology driven IP is essential in view of globalization. Each organization would need to devise its own effective ways and means for managing technology transfer processes including issues related to IPRs in accordance with the overall culture of the organization. Similarly, each organization would need to weigh in the various policy options and define its own policy based on the overall vision of the organization.

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Annexures

Annexure 1:

Sample License Agreement Template

{Annex to Chapter 4}

In consideration of the mutual promises and covenants set forth below, the parties hereto agree on this date ……as follows:

REPRESENTATIONS

1.1 PARTY A is the owner by assignment from inventor(s)] of [his/her/their] entire right, title and interest in the patents and patent applications listed in Appendix A, and in the inventions described and claimed therein.

1.2 PARTY A has the authority to issue licenses under PATENT RIGHTS.

1.3 PARTY A is committed to the policy that ideas or creative works produced at PARTY A should be used for the greatest possible public benefit, and believes that every reasonable incentive should be provided for the prompt introduction of such ideas into public use, all in a manner consistent with the public interest.

1.4 PARTY B is prepared and intends to diligently develop the invention and to bring products to market which are subject to this Agreement.

1.5 PARTY B is desirous of obtaining an exclusive license in the TERRITORY in order to practice the above-referenced invention covered by PATENT RIGHTS in the certain countries, and to manufacture, use and sell in the commercial market the products made in accordance therewith, and PARTY A is desirous of granting such a license to PARTY B in accordance with the terms of this Agreement.

GRANT OF RIGHTS

2.1 PARTY A hereby grants to PARTY B and PARTY B accepts, subject to the terms and conditions hereof, in the TERRITORY and in the FIELD:

(a) an exclusive commercial license under PATENT RIGHTS, and

(b) a license to use BIOLOGICAL MATERIALS

to make and have made, to use and have used, to sell and have sold the LICENSED PRODUCTS, and to practice the LICENSED PROCESSES, for the life of the PATENT RIGHTS. Such licenses shall include the right to grant sublicenses, subject to PARTY A's approval, which approval shall not be unreasonably withheld. In order to provide PARTY B with commercial exclusivity for so long as the

license under PATENT RIGHTS remains exclusive, PARTY A agrees that it will not grant licenses under PATENT RIGHTS to others except as required by PARTY A's obligations in paragraph 2.2(a) or as permitted in paragraph 2.2(b) and that it will not provide BIOLOGICAL MATERIALS to others for any commercial purpose.

3.2 The granting and exercise of this license is subject to the following conditions:

(a) PARTY A's obligations under agreements with other sponsors of research. Any right granted in this Agreement greater than that permitted under law in force in [Territory], shall be subject to modification as may be required to conform to the provisions of those statutes.

(b) PARTY A reserves the right to

(i) make, use, and provide the BIOLOGICAL MATERIALS to others on a non-exclusive basis, and grant others non-exclusive licenses to make and use the BIOLOGICAL MATERIALS, all for NON-COMMERCIAL RESEARCH PURPOSES; and

(ii) make and use, and grant to others non-exclusive licenses to make and use for NON-COMMERCIAL RESEARCH PURPOSES the subject matter described and claimed in PATENT RIGHTS.

(c) PARTY B shall use diligent efforts to effect introduction of the LICENSED PRODUCTS into the commercial market as soon as practicable, consistent with sound and reasonable business practice and judgment; thereafter, until the expiration of this Agreement, PARTY B shall endeavor to keep LICENSED PRODUCTS reasonably available to the public.

(d) At any time after [number] years from the effective date of this Agreement, PARTY A may terminate or render this license non-exclusive if, in PARTY A's reasonable judgment, the Progress Reports furnished by PARTY B do not demonstrate that PARTY B:

(i) has put the licensed subject matter into commercial use in the country or countries hereby licensed, directly or through a sublicense, and is keeping the licensed subject matter reasonably available to the public, or

(ii) is engaged in research, development, manufacturing, marketing or sublicensing activity appropriate to achieving 3.2(d)(i).

[Specific performance milestones should be inserted here.]

(e) In all sub licenses granted by PARTY B hereunder, PARTY B shall include a requirement that the sub licensee use its best efforts to bring the subject matter of the sublicense into commercial use as quickly as is reasonably possible. PARTY B shall further provide in such sublicenses that such sublicenses are subject and subordinate to the terms and conditions of this Agreement, except: (i) the sub licensee may not further sublicense; and (ii) the rate of royalty on NET SALES paid by the sub licensee to the PARTY B. Copies of all sublicense agreements shall be provided promptly to PARTY A.

(f) If PARTY B is unable or unwilling to grant sublicenses, either as suggested by PARTY A or by a potential sub licensee or otherwise, then PARTY A may directly license such potential sub licensee unless, in PARTY A's reasonable judgment, such license would be contrary to sound and reasonable business practice and the granting of such license would not materially increase the availability to the public of LICENSED PRODUCTS.

(g) A license in any other territory or field of use in addition to the TERRITORY and/or FIELD shall be the subject of a separate agreement and shall require PARTY B's submission of evidence, satisfactory to PARTY A, demonstrating PARTY B's willingness and ability to develop and commercialize in such other territory and/or field of use the kinds of products or processes likely to be encompassed in such other territory and/or field.

(h) During the period of exclusivity of this license in the United States, PARTY B shall cause any LICENSED PRODUCT produced for sale in the United States to be manufactured substantially in the United States.

2.3 All rights reserved to the Government and others under as per law, shall remain and shall in no way be affected by this Agreement.

DEFINITIONS

As used in this Agreement, the following terms shall have the following meanings:

3.1 AFFILIATE: any company, corporation, or business in which PARTY B owns or controls at least fifty percent (50%) of the voting stock or other ownership. Unless otherwise specified, the term PARTY B includes AFFILIATES.

3.2 BIOLOGICAL MATERIALS: the materials supplied by PARTY A (identified in Appendix B) together with any progeny, mutants, or derivatives thereof supplied by PARTY A or created by PARTY B.

3.3 FIELD: [field].

3.4 PARTY A: [Address and details].

3.5 LICENSED PROCESSES: the processes covered by PATENT RIGHTS or processes utilizing BIOLOGICAL MATERIALS or some portion thereof.

3.6 LICENSED PRODUCTS: products covered by PATENT RIGHTS or products made or services provided in accordance with or by means of LICENSED PROCESSES or products made or services provided utilizing BIOLOGICAL MATERIALS or incorporating some portion of BIOLOGICAL MATERIALS.

3.7 PARTY B: [company], a corporation organized under the laws of [state] having its principal offices at [address].

3.8 NET SALES: the amount billed, invoiced, or received (whichever occurs first) for sales, leases, or other transfers of LICENSED PRODUCTS, less:

(a) customary trade, quantity or cash discounts and non-affiliated brokers' or agents' commissions actually allowed and taken;

(b) amounts repaid or credited by reason of rejection or return;

(c) to the extent separately stated on purchase orders, invoices, or other documents of sale, taxes levied on and/or other governmental charges made as to production, sale, transportation, delivery or use and paid by or on behalf of PARTY B or sub licensees; and

(d) reasonable charges for delivery or transportation provided by third parties, if separately stated.

NET SALES also include the fair market value of any non-cash consideration received by PARTY B or sub licensees for the sale, lease, or transfer of LICENSED PRODUCTS.

3.9 NON-COMMERCIAL RESEARCH PURPOSES: use of PATENT RIGHTS and/or BIOLOGICAL MATERIALS for academic research or other not-for-profit scholarly purposes which are undertaken at a non-profit or governmental institution that does not use the PATENT RIGHTS and/or BIOLOGICAL MATERIALS in the production or manufacture of products for sale or the performance of services for a fee.

3.10 NON-ROYALTY SUBLICENSE INCOME: Sublicense issue fees, sublicense maintenance fees, sublicense milestone payments, and similar non-royalty payments made by sub licensees to PARTY B on account of sublicenses pursuant to this Agreement.

3.11 PATENT RIGHTS: The inventions described and claimed therein, and any divisions, continuations, continuations-in-part to the extent the claims are directed to subject matter specifically described in patents listed in APPENDIX A and are dominated by the claims of the existing PATENT RIGHTS, patents issuing thereon or reissues thereof, and any and all foreign patents and patent applications corresponding thereto, all to the extent owned or controlled by PARTY A.

3.12 TERRITORY: [territory].

3.13 The applicable laws and jurisdiction for purposes of this agreement …….

3.14 The terms "sold" and "sell" include, without limitation, leases and other transfers and similar transactions.

ROYALTIES

4.1 PARTY B shall pay to PARTY Aa non-refundable license royalty fee in the sum of [amount] upon execution of this Agreement [and the sum of [amount] upon issuance of every additional patent listed as currently pending patent application in Appendix A.

4.2

(a) PARTY B shall pay to PARTY A during the term of this Agreement a royalty of (number) percent ([number]%) of NET SALES by PARTY B and sub licensees. In the case of sublicenses, PARTY B shall also pay to PARTY Aa royalty of [number] percent ([number]%) of NON-ROYALTY SUBLICENSE INCOME.

(b) If the license pursuant to this Agreement is converted to a non-exclusive one and if other non-exclusive licenses in the same field and territory are granted, the above royalties shall not exceed the royalty rate to be paid by other licensees in the same field and territory during the term of the non-exclusive license.

(c) On sales between PARTY B and its AFFILIATES or sub licensees for resale, the royalty shall be paid on the NET SALES of the AFFILIATE or sub licensee.

4.3 No later than January 1 of each calendar year after the effective date of this Agreement, PARTY B shall pay to PARTY A the following non-refundable license maintenance royalty and/or advance on royalties. Such payments may be credited against running royalties due for that calendar year and

Royalty Reports shall reflect such a credit. Such payments shall not be credited against milestone payments (if any) nor against royalties due for any subsequent calendar year.

REPORTING

5.1 Prior to signing this Agreement, PARTY B has provided to PARTY A written research and development plan under which PARTY B intends to bring the subject matter of the licenses granted hereunder into commercial use upon execution of this Agreement. Such a plan includes projections of sales and proposed marketing efforts.

5.2 No later than sixty (60) days after December 31 of each calendar year, PARTY B shall provide to PARTY Aa written annual Progress Report describing progress on research and development, regulatory approvals, manufacturing, sublicensing, marketing and sales during the most recent twelve (12) month period ending December 31 and plans for the forthcoming year. If multiple technologies are covered by the license granted hereunder, the Progress Report shall provide the information set forth above for each technology. If progress differs from that anticipated in the plan required under Paragraph 5.1, PARTY B shall explain the reasons for the difference and propose a modified research and development plan for PARTY A's review and approval. PARTY B shall also provide any reasonable additional data PARTY A requires to evaluate PARTY B's performance.

5.3 PARTY B shall report to PARTY A the date of first sale of LICENSED PRODUCTS (or results of LICENSED PROCESSES) in each country within thirty (30) days of occurrence.

5.4

(a) PARTY B shall submit to PARTY A within sixty (60) days after each calendar half year ending June 30 and December 31, a Royalty Report setting forth for such half year at least the following information:

(i) the number of LICENSED PRODUCTS sold by PARTY B, its AFFILIATES and sublicensees in each country;

(ii) total billings for such LICENSED PRODUCTS;

(iii) an accounting for all LICENSED PROCESSES used or sold; (iv) deductions applicable to determine the NET SALES thereof;

(v) the amount of NON-ROYALTY SUBLICENSE INCOME received by PARTY B; and

(vi) the amount of royalty due thereon, or, if no royalties are due to PARTY A for any reporting period, the statement that no royalties are due.

Such a report shall be certified as correct by an officer of PARTY B and shall include a detailed listing of all deductions from royalties.

(b) PARTY B shall pay to PARTY A with each such Royalty Report the amount of royalty due with respect to such half year. If multiple technologies are covered by the license granted hereunder, PARTY B shall specify which PATENT RIGHTS and BIOLOGICAL MATERIALS are utilized for each LICENSED PRODUCT and LICENSED PROCESS included in the Royalty Report.

(c) All payments due hereunder shall be deemed received when funds are credited to PARTY A's bank account and shall be payable by check or wire transfer in EUROS. Conversion of foreign currency to EURO shall be made at the conversion rate on the last working day of each royalty period. No transfer, exchange, collection or other charges shall be deducted from such payments.

(d) All such reports shall be maintained in confidence by PARTY A except as required by law; however, PARTY A may include in its usual reports annual amounts of royalties paid.

(e) Late payments shall be subject to a charge of two percent (2%) per month, EURO [amount], whichever is greater.

5.5 In the event of acquisition, merger, change of corporate name, or change of make-up, organization, or identity, PARTY B shall notify PARTY A in writing within thirty (30) days of such event.

RECORD KEEPING

6.1 PARTY B shall keep, and shall require its AFFILIATES and sub licensees to keep, accurate records (together with supporting documentation) of LICENSED PRODUCTS made, used or sold under this Agreement, appropriate to determine the amount of royalties due to PARTY A hereunder. Such records shall be retained for at least three (3) years following the end of the reporting period to which they relate. They shall be available during normal business hours for examination by an accountant selected by PARTY A, for the sole purpose of verifying reports and payments hereunder. In conducting examinations pursuant to this paragraph, PARTY A's accountant shall have access to all records which PARTY A reasonably believes to be relevant to the calculation of royalties under ROYALTY SECTION above.

6.2 PARTY A's accountant shall not disclose to PARTY A any information other than information relating to the accuracy of reports and payments made hereunder.

6.3 Such examination by PARTY A's accountant shall be at PARTY A's expense, except that if such examination shows an underreporting or underpayment in excess of five percent (5%) for any twelve (12) month period, then PARTY B shall pay the cost of such examination as well as any additional sum that would have been payable to PARTY A had the PARTY B reported correctly, plus interest on said sum at the rate of two per cent (2%) per month.

PATENT FILING AND MAINTENANCE

7.1 Upon execution of this Agreement, PARTY B shall reimburse PARTY A for all reasonable expenses PARTY A has incurred for the preparation, filing, prosecution and maintenance of PATENT RIGHTS. Thereafter, PARTY B shall reimburse PARTY A for all such future expenses upon receipt of invoices from PARTY A. PARTY A shall, in its sole discretion, be responsible for the preparation, filing, prosecution and maintenance of any and all patent applications and patents included in PATENT RIGHTS. PARTY A shall consult with PARTY B as to the preparation, filing, prosecution and maintenance of such patent applications and patents and shall furnish to PARTY B copies of documents relevant to any such preparation, filing, prosecution or maintenance.

7.2 PARTY A and PARTY B shall cooperate fully in the preparation, filing, prosecution and maintenance of PATENT RIGHTS and of all patents and patent applications licensed to PARTY B hereunder, executing all papers and instruments or requiring members of PARTY A to execute such

papers and instruments so as to enable PARTY A to apply for, to prosecute and to maintain patent applications and patents in PARTY A's name in any country. Each party shall provide to the other prompt notice as to all matters which come to its attention and which may affect the preparation, filing, prosecution or maintenance of any such patent applications or patents.

7.3 PARTY B may elect to surrender its PATENT RIGHTS in any country upon sixty (60) days written notice to PARTY A. Such notice shall not relieve PARTY B from responsibility to reimburse PARTY A for patent-related expenses incurred prior to the expiration of the (60)-day notice period (or such longer period specified in PARTY B's notice).

INFRINGEMENT

8.1 With respect to any PATENT RIGHTS that are exclusively licensed to PARTY B pursuant to this Agreement, PARTY B shall have the right to prosecute in its own name and at its own expense any infringement of such patent, so long as such license is exclusive at the time of the commencement of such action. PARTY A agrees to notify PARTY B promptly of each infringement of such patents of which PARTY A is or becomes aware. Before PARTY B commences an action with respect to any infringement of such patents, PARTY B shall give careful consideration to the views of PARTY A and to potential effects on the public interest in making its decision whether or not to sue.

8.2

(a) If PARTY B elects to commence an action as described above, PARTY A may, to the extent permitted by law, elect to join as a party in that action. Regardless of whether PARTY A elects to join as a party, PARTY A shall cooperate fully with PARTY B in connection with any such action.

(b) If PARTY A elects to join as a party pursuant to subparagraph (a), PARTY A shall jointly control the action with PARTY B.

(c) PARTY B shall reimburse PARTY A for any costs PARTY A incurs, including reasonable attorneys' fees, as part of an action brought by PARTY B, irrespective of whether PARTY A becomes a co-plaintiff.

8.3 If PARTY B elects to commence an action as described above, PARTY B may deduct from its royalty payments to PARTY A with respect to the patent(s) subject to suit an amount not exceeding fifty percent (50%) of PARTY B's expenses and costs of such action, including reasonable attorneys' fees; provided, however, that such reduction shall not exceed fifty percent (50%) of the total royalty due to PARTY A with respect to the patent(s) subject to suit for each calendar year. If such fifty percent (50%) of PARTY B's expenses and costs exceeds the amount of royalties deducted by PARTY B for any calendar year, PARTY B may to that extent reduce the royalties due to PARTY A from PARTY B in succeeding calendar years, but never by more than fifty percent (50%) of the total royalty due in any one year with respect to the patent(s) subject to suit.

8.4 No settlement, consent judgment or other voluntary final disposition of the suit may be entered into without the prior written consent of PARTY A, which consent shall not be unreasonably withheld.

8.5 Recoveries or reimbursements from actions commenced pursuant to this SECTION shall first be applied to reimburse PARTY B and PARTY A for litigation costs not paid from royalties and then to reimburse PARTY A for royalties deducted by PARTY B pursuant to paragraph 8.3. Any remaining recoveries or reimbursements shall be shared equally by PARTY B and PARTY A.

8.6 If PARTY B elects not to exercise its right to prosecute an infringement of the PATENT RIGHTS pursuant to this SECTION, PARTY A may do so at its own expense, controlling such action and retaining all recoveries therefrom. PARTY B shall cooperate fully with PARTY A in connection with any such action.

8.7 Without limiting the generality of paragraph 8.6, PARTY A may, at its election and by notice to PARTY B, establish a time limit of sixty (60) days for PARTY B to decide whether to prosecute any infringement of which PARTY A is or becomes aware. If, by the end of such sixty (60)-day period, PARTY B has not commenced such an action, PARTY A may prosecute such an infringement at its own expense, controlling such action and retaining all recoveries therefrom. With respect to any such infringement action prosecuted by PARTY A in good faith, PARTY B shall pay over to PARTY A any payments (whether or not designated as "royalties") made by the alleged infringer to PARTY B under any existing or future sublicense authorizing LICENSED PRODUCTS, up to the amount of PARTY A's unreimbursed litigation expenses (including, but not limited to, reasonable attorneys' fees).

8.8 If a declaratory judgment action is brought naming PARTY B as a defendant and alleging invalidity of any of the PATENT RIGHTS, PARTY A may elect to take over the sole defense of the action at its own expense. PARTY B shall cooperate fully with PARTY A in connection with any such action.

TERMINATION

9.1 This Agreement, unless terminated as provided herein, shall remain in effect until the last patent or patent application in PATENT RIGHTS has expired or been abandoned.

9.2 PARTY A may terminate this Agreement as follows:

(a) If PARTY B does not make a payment due hereunder and fails to cure such non-payment (including the payment of interest in accordance with paragraph 5.4(e)) within forty-five (45) days after the date of notice in writing of such non-payment by PARTY A.

(b) If PARTY B defaults in its obligations under paragraph 10.4(c) and 10.4(d) to procure and maintain insurance.

(c) If, at any time after three years from the date of this Agreement, PARTY A determines that the Agreement should be terminated pursuant to paragraph 3.2(d).

(d) If PARTY B shall become insolvent, shall make an assignment for the benefit of creditors, or shall have a petition in bankruptcy filed for or against it. Such termination shall be effective immediately upon PARTY A giving written to PARTY B.

(e) If an examination by PARTY A's accountant pursuant to REPORTING section shows an underreporting or underpayment by PARTY Bin excess of 20% for any twelve (12) month period.

(f) If PARTY B is convicted of a felony relating to the manufacture, use, or sale of LICENSED PRODUCTS.

(g) Except as provided in subparagraphs (a), (b), (c), (d), (e) and (f) above, if PARTY B defaults in the performance of any obligations under this Agreement and the default has not been remedied within ninety (90) days after the date of notice in writing of such default by PARTY A.

9.3 PARTY B shall provide, in all sub licenses granted by it under this Agreement, that PARTY B's interest in such sublicenses shall at PARTY A's option terminate or be assigned to PARTY A upon termination of this Agreement.

9.4 PARTY B may terminate this Agreement by giving ninety (90) days advance written notice of termination to PARTY A and paying a termination fee of [amount] dollars ($[amount]). Upon termination, PARTY B shall submit a final Royalty Report to PARTY A and any royalty payments and unreimbursed patent expenses invoiced by PARTY A shall become immediately payable.

9.5 Upon termination pursuant to Paragraph 9.2, whether by PARTY A or by PARTY B, PARTY B shall cease all use of the BIOLOGICAL MATERIALS and shall, upon request, return or destroy (at PARTY A's option) all BIOLOGICAL MATERIALS under its control or in its possession.

9.6 Paragraphs 6.1, 6.2, 6.3, 7.1, 8.5, 9.4, 9.5, 9.6, 10.2, 10.3, 10.5, 10.6, 10.8 and 10.9 of this Agreement shall survive termination.

GENERAL

10.1 PARTY A does not warrant the validity of the PATENT RIGHTS licensed hereunder and makes no representations whatsoever with regard to the scope of the licensed PATENT RIGHTS or that such PATENT RIGHTS or BIOLOGICAL MATERIALS may be exploited by PARTY B, an AFFILIATE, or sub licensee without infringing other patents.

10.2 PARTY A expressly disclaims any and all implied or express warranties and makes no express or implied warranties of merchantability or fitness for any particular purpose of the patent rights, biological materials, or information supplied by PARTY A, licensed processes or licensed products contemplated by this agreement. Further PARTY A has made no investigation and makes no representation that the BIOLOGICAL MATERIALS supplied by it or the methods used in making or using such materials are free from liability for patent infringement.

10.3 in no event shall PARTY A be liable for any indirect, special, incidental or consequential damages (including, without limitation, damages for loss of profits or expected savings or other economic losses, or for injury to persons or property) arising out of or in connection with this agreement or its subject matter, regardless whether party a knows or should know of the possibility of such damages. PARTY A's aggregate liability for all damages of any kind relating to this agreement or its subject matter shall not exceed the amount paid by licensee to PARTY A under this agreement. The foregoing exclusions and limitations shall apply to all claims and actions of any kind, whether based on contract, tort (including but not limited to negligence), or any other grounds.

10.4 PARTY B shall not distribute or release the BIOLOGICAL MATERIALS to others except to further the purposes of this Agreement. PARTY B shall protect the BIOLOGICAL MATERIALS at least as well as it protects its own valuable tangible personal property and shall take measures to protect the BIOLOGICAL MATERIALS from any claims by third parties including creditors and trustees in bankruptcy.

10.5

(a) PARTY B shall indemnify, defend and hold harmless PARTY A and its current or former directors, governing board members, trustees, officers, faculty, medical and professional staff, employees, students, and agents and their respective successors, heirs and assigns (collectively, the "INDEMNITEES"), from and against any claim, liability, cost, expense, damage, deficiency, loss or obligation of any kind or nature (including, without limitation, reasonable attorney's fees and other costs and expenses of litigation) (collectively, "Claims"), based upon, arising out of, or otherwise relating to this Agreement, including without limitation any cause of action relating to product liability concerning any product, process, or service made, used or sold pursuant to any right or license granted under this Agreement.

(b) PARTY B shall, at its own expense, provide attorneys reasonably acceptable to PARTY A to defend against any actions brought or filed against any Indemnitee hereunder with respect to the subject of indemnity contained herein, whether or not such actions are rightfully brought.

(c) Beginning at the time any such product, process or service is being commercially distributed or sold (other than for the purpose of obtaining regulatory approvals) by PARTY B or by a sub licensee, AFFILIATE or agent of PARTY B, PARTY B shall, at its sole cost and expense, procure and maintain commercial general liability insurance in amounts not less than EUROS [amount] per incident and EUROS [amount] annual aggregate and naming the Indemnitees as additional insured. During clinical trials of any such product, process or service, PARTY B shall, at its sole cost and expense, procure and maintain commercial general liability insurance in such equal or lesser amount as PARTY A shall require, naming the Indemnitees as additional insured. Such commercial general liability insurance shall provide (i) product liability coverage and (ii) broad form contractual liability coverage for PARTY B's indemnification under this Agreement. If PARTY B elects to self-insure all or part of the limits described above (including deductibles or retentions which are in excess of EUROS [amount] annual aggregate) such self-insurance program must be acceptable to PARTY A and the Risk Management Foundation of the PARTY A Medical Institutions, Inc. in their sole discretion. The minimum amounts of insurance coverage required shall not be construed to create a limit of PARTY B's liability with respect to its indemnification under this Agreement.

(d) PARTY B shall provide PARTY A with written evidence of such insurance upon request of PARTY A. PARTY B shall provide PARTY A with written notice at least fifteen (15) days prior to the cancellation, non-renewal or material change in such insurance; if PARTY B does not obtain replacement insurance providing comparable coverage within such fifteen (15) day period, PARTY A shall have the right to terminate this Agreement effective at the end of such fifteen (15) day period without notice or any additional waiting periods.

(e) PARTY B shall maintain such commercial general liability insurance beyond the expiration or termination of this Agreement during (i) the period that any product, process, or service, relating to, or developed pursuant to, this Agreement is being commercially distributed or sold by PARTY B or by a sub licensee, AFFILIATE or agent of PARTY B and (ii) a reasonable period after the period referred to in (e)(i) above which in no event shall be less than fifteen (15) years.

10.6 PARTY B shall not use PARTY A's name or insignia, or any adaptation of them, or the name of any of PARTY A's inventors in any advertising, promotional or sales literature without the prior written approval of PARTY A.

10.7 Without the prior written approval of PARTY A in each instance, neither this Agreement nor the rights granted hereunder shall be transferred or assigned in whole or in part by PARTY B to any person whether voluntarily or involuntarily, by operation of law or otherwise. This Agreement shall

be binding upon the respective successors, legal representatives and assignees of PARTY A and PARTY B.

10.8 The interpretation and application of the provisions of this Agreement shall be governed by the laws of the …….

10.9 PARTY B shall comply with all applicable laws and regulations. In particular, it is understood and acknowledged that the transfer of certain commodities and technical data is subject to PARTY A's local laws and regulations controlling the export of such commodities and technical data. These laws and regulations among other things, prohibit or require a license for the export of certain types of technical data to certain specified countries. PARTY B hereby agrees and gives written assurance that it will comply with all such laws and regulations controlling the export of commodities and technical data, that it will be solely responsible for any violation of such by PARTY B or its AFFILIATES or sub licensees, and that it will defend and hold PARTY A harmless in the event of any legal action of any nature occasioned by such violation.

10.10 PARTY B agrees (i) to obtain all regulatory approvals required for the manufacture and sale of LICENSED PRODUCTS and LICENSED PROCESSES and (ii) to utilize appropriate patent marking on such LICENSED PRODUCTS. PARTY B also agrees to register or record this Agreement as is required by law or regulation in any country where the license is in effect.

10.11 Any notices to be given hereunder shall be sufficient if signed by the party (or party's attorney) giving same and either (a) delivered in person, or (b) mailed certified mail return receipt requested, or (c) faxed to other party if the sender has evidence of successful transmission and if the sender promptly sends the original by ordinary mail, in any event to the following addresses:

If to PARTY B:

[PARTY B]
[address]
[email]

If to PARTY A:

[PARTY A]
[address]
[email]

By such notice either party may change their address for future notices.

Notices delivered in person shall be deemed given on the date delivered. Notices sent by fax shall be deemed given on the date faxed. Notices mailed shall be deemed given on the date postmarked on the envelope.

10.12 Should a court of competent jurisdiction later hold any provision of this Agreement to be invalid, illegal, or unenforceable, and such holding is not reversed on appeal, it shall be considered severed from this Agreement. All other provisions, rights and obligations shall continue without regard to the severed provision, provided that the remaining provisions of this Agreement are in accordance with the intention of the parties.

10.13 In the event of any controversy or claim arising out of or relating to any provision of this Agreement or the breach thereof, the parties shall try to settle such conflict amicably between

themselves. Subject to the limitation stated in the final sentence of this section, any such conflict which the parties are unable to resolve promptly shall be settled through arbitration conducted in accordance with the WIPO Arbitration Rules. The demand for arbitration shall be filed within a reasonable time after the controversy or claim has arisen, and in no event after the date upon which institution of legal proceedings based on such controversy or claim would be barred by the applicable statute of limitation. Such arbitration shall be held in …….. The award through arbitration shall be final and binding. Either party may enter any such award in a court having jurisdiction or may make application to such court for judicial acceptance of the award and an order of enforcement, as the case may be. Notwithstanding the foregoing, either party may, without recourse to arbitration, assert against the other party a third-party claim or cross-claim in any action brought by a third party, to which the subject matter of this Agreement may be relevant.

10.14 This Agreement constitutes the entire understanding between the parties and neither party shall be obligated by any condition or representation other than those expressly stated herein or as may be subsequently agreed to by the parties hereto in writing.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their duly authorized representatives.

PARTY A

_____

Signatory Name, Designation

_____

Date

PARTY B

_____

Signatory Name, Designation

_____

Date

APPENDIX A

The following comprise PATENT RIGHTS:

APPENDIX B

The following comprise BIOLOGICAL MATERIALS supplied by PARTY A:

Annexure 2:

License Agreement

{Annex to Chapter 5}

This LICENSE AGREEMENT (the "**Agreement**") is made as of September xx, 20xx (the "**Effective Date**") by and between **XXX Pharma Company** an Australian corporation having its principal place of business at Sydney Australia ("**XXX**"), and_____a company registered under the laws of Sri Lanka, and having a registered office at_____("**Licensee**").

R E C I T A L S

WHEREAS, XXX wishes to facilitate access to its proprietary compounds Tristavir and Effectavir to treat patients with Coronavirus ("**COVID-19**") in low income countries, as identified in this Agreement;

WHEREAS, to accomplish this goal, XXX wishes to grant certain non-exclusive licenses to Licensee with respect to the manufacture and sale of Tristavir and Effectavir and products incorporating Tristavir and Effectavir; and

WHEREAS, Licensee wishes to obtain such non-exclusive licenses to facilitate patient access to Product in the Territory, all as more fully described in this Agreement below.

NOW, THEREFORE, inconsideration of the mutual covenants set for therein and other good and valuable considerations, the receipt of which is hereby acknowledged, the parties hereto mutually agree as follows:

1. Definitions

"**Active Pharmaceutical Ingredient**" or "**API**" means, individually and collectively, the following active pharmaceutical ingredients: Tristavir ("**Trt**") and Effectavir ("**Eft**"), the structures of each such compound are disclosed in the Patents.

1.1 "**Affiliate**" means, with respect to a party to this Agreement, any corporation, limited liability company or other business entity controlling, controlled by or under common control with such party, for so long as such relationship exists. For the purposes of this definition, control means: (a) to possess, directly or indirectly, the power to direct affirmatively the management and policies of such corporation, limited liability company or other business entity, whether through ownership of voting securities or by contract relating to voting rights or corporate governance; or (b) ownership of more than fifty percent (50%) of the voting stock in such corporation, limited liability company rother business entity(or such lesser percent as maybe the maximum that may be owned pursuant to applicable law of the country of incorporation or domicile), as applicable.

1.2 "**Confidential Information**" shall have the meaning set forth in Section 11.1.

1.3 "**Combination Products**" means, individually and collectively, Trt Combination Products and Eft Combination Products.

1.4 "**FDA**" means the United States Food and Drug Administration, and any successor agency there too.

1.5 "**Field**" means with respect to a particular product any use that is consistent with the label approved by the FDA or applicable foreign regulatory authority in the country of sale for the use of such Product, including the use of Trt Product for the treatment of COVID-19.

1.6 "**XXX Distributor**" means any third-party distributor that is operating under an agreement with XXX for the distribution and sale of XXX's branded product in one or more countries within the Territory.

1.7 "**XXX Mark**" shall have the meaning set forth in Section 2.4(b).

1.8 "**XXX Supplier**" means such contract manufacturing organization designated by XXX that the parties may agree to include as part of this definition by written amendment to this Agreement.

1.9 "**Improvements**" shall have the meaning set forth in Section 2.2.

1.10 **"Eft Combination Product"** means a pharmaceutical product containing Eft in combination with any other active pharmaceutical ingredient other than Trt (in each case subject to the restrictions set forth in Section 2.3(c)(ii)), including any co-formulation, co-packaged product, bundled product, or other type of combination product.

1.11 "**Eft Product**" means a formulated and finished pharmaceutical product containing Eft as its sole active pharmaceutical ingredient.

1.12 "**Licensed API**" means API that is either (a) made by Licensee pursuant to the license grant set for thin Section 2.1; or (b)acquired by Licensee from a XXX Supplier or from a Licensed API Supplier on the terms and conditions set forth in Section 3.

1.13 "**Licensed API Supplier**" means an entity (other than Licensee) that is licensed by XXX to manufacture and sell API to third parties in the Field in India.

1.14 "**Licensed Know-How**" means (a) the know-how actually transferred to Licensee pursuant to the terms of Section 5.5 and (b) any other improvements or modifications to such transferred know-how (x) that are (i) specific to API and (ii) developed and controlled by XXX during the term of this Agreement, and (y) specifically excluding any such improvements and modifications, methods and other know-how claimed in any patent or patent application.

1.15 "**Licensed Product Supplier**" means an entity (other than Licensee) located in India that is licensed by XXX to make, use, sell, have sold, offer for sale and export Products in the Field in the Territory.

1.16 "**Licensed Technology**" means the Patents and the Licensed Know-How.

1.17 "**Licensee Distributor**" means a third-party wholesaler or distributor that is not an XXX Distributor and that is operating under an agreement with Licensee for the distribution and sale of Product in the Territory.

1.18 "**Minimum Quality Standards**" shall have the meaning set forth in Section 6.2(a).

1.19 "**NCE Exclusivity**" means the five years of marketing exclusivity granted by FDA pursuant to its authority under 21 U.S.C. §§ 355(c)(3)(E)(ii) and 355(j)(5)(F)(ii), or similar regulatory exclusivity granted by the appropriate regulatory authority having jurisdiction over the Products.

1.20 "**Net Sales**" means, with respect to a given calendar quarter, the total amount invoiced by Licensee for sales of Product in the Territory to third parties, less the following deductions calculated in accordance with U.S. Generally Accepted Accounting Principles (GAAP): (a) freight, insurance, packing, shipping charges, in each case as actually incurred and included as a specific line it mentioned on a bill or invoice to such third party; (b)custom duty on imported components, VAT/ Indian excise tax, sales tax, or other governmental charges upon or measured by the production, sales transportation, delivery or use of goods, in each case included specific line item on a bill or an invoice to such third party; (c) trade, quantity and cash discounts allowed and taken, refunds, chargebacks and any other allowances given (as determined in accordance with GAAP) and taken which effectively reduce the gross amounts billed or invoiced; in each of (a) through (c) to the extent consistently applied across all products of Licensee. Net Sales on Combination Products shall be calculated based on the portion of product Net Sales Attributable To Licensed API, as set forth in Section 4.2.

1.21 "**Patents**" means (a) the patents and patent applications set forth in Appendix 2 hereto and (b) any other patents or patent applications (and resulting patents there from) that are

(i) owned and controlled by XXX and its Affiliates during the term of this Agreement and (ii) necessary for Licensee to practice the licenses granted in Section 2 hereof, including patents and patent applications claiming improvements or modifications to the manufacture of API, in each of

(a) and (b) solely to the extent the claims in such patents and patent applications cover the manufacture, use or sale of API.

1.22 "**Product**" means, individually and collectively, Trt Product, Trt Combination Product, Eft Product and Eft Combination Product.

1.23 "**Quarterly Report**" shall have the meaning set forth in Section 4.3.

1.24 "**Royalty Term**" shall have the meaning set forth in Section 4.9.

1.25 "**Trt Combination Product**" means a pharmaceutical product containing Trt in combination with any other active pharmaceutical ingredient (in each case subject to the restrictions set forth in Sections 2.4(c)(i)), including any co formulation, co-packaged product, bundled product, or other type of combination product.

1.26 "**Trt/Eft Product**" means a formulated and finished pharmaceutical product containing Trt and Eft as its sole active pharmaceutical ingredients. For clarity, Trt/Eft Product is a Trt Combination Product

1.27 "**Trt Product**" means a formulated and finished pharmaceutical product containing Trt as its sole active pharmaceutical ingredient.

1.28 "**Territory**" means the countries set forth on Appendix 1.

1.29 "**Third-Party Resellers**" means Licensed Product Suppliers, Licensee Distributors and XXX Distributors.

2. License Grants

2.1 Licenses

a. API License. Subject to the terms and conditions of the Agreement, XXX hereby grants Licensee royalty-free, non-exclusive, non-sublicensable (other than sublicense to an Affiliate in accordance with Section 2.1(c) below), non-transferable license under the Licensed Technology to (i) make API only in India; and (ii) sell API only in India and solely to Licensed Product Suppliers for the Field.

b. Product License. Subject to the terms and conditions of this Agreement, XXX hereby grants to Licensee royalty-bearing, non-exclusive, non-sublicensable (other than a sublicense to an Affiliate in accordance with Section2.1(c) below), non-transferable license under the Licensed Technology solely to (i) make Product from Licensed API India and (ii) sell, have sold, offer for sale, export from India and import such Product made from Licensed API in the Territory for the Field.

c. Affiliates. Licensee may grant sublicenses under the licenses granted in this Section 2.1 to its Affiliates upon XXX's prior written consent, which such consent shall not be unreasonably withheld. Licensee shall ensure that any such Affiliate complies with all the terms of this Agreement as if they were a party to this Agreement, and Licensee will be liable for the activities of such Affiliates as if such activities were performed by Licensee.

d. Restrictions on License Scope. The licenses granted in this Section 2.1 do not include, expressly or by implication, a license under any XXX intellectual property right to manufacture, use, sell or distribute any product containing any active pharmaceutical ingredients owned or controlled by XXX other than Trt and Eft. The licenses granted under this Section shall not extend to any active pharmaceutical ingredient owned or controlled by XXX other than Trt and Eft.

2.2 License Grant to XXX. Licensee hereby grants to XXX a non-exclusive, royalty-free, worldwide, sub licensable license to all improvements, methods (including manufacturing processes), modifications and other know-how, including any chemistry improvements or modifications, developed by or on behalf of Licensee and relating to API or a Product ("**Improvements**"), subject to the restrictions on further transfer of Licensee's technology by XXX as set forth in Section 5.3. Licensee shall, as between XXX and Licensee, own all such Improvements and shall, as between Licensee and XXX, have the sole right, but not the obligation, to pursue intellectual property protection with respect to such Improvements.

2.3 Licensee's Right to Sell

a. Licensed Product Suppliers. Licensee agrees that it will not sell or offer to sell API to any entity other than to Licensed Product Suppliers in India that have been Approved By XXX in accordance with Section2.3(d).

b. Product Sales. Licensee agrees that it will not sell, offer for sale, or assist third parties (including Affiliates) in selling Product in any country outside of the Territory or for any use outside the Field. Licensee agrees that it will prohibit Licensee Distributors from selling Product (i) to any other wholesaler or distributor, (ii) outside the Territory, or (iii) for any purpose outside the Field.

c. Limitations on Product Combinations.

i. Licensee will be allowed to manufacture and sell Trt in combination with other active pharmaceutical ingredients in the Territory, provided in each case (A) Licensee has the legal right to manufacture and sell such other active pharmaceutical ingredients in the applicable country in the Territory, and (B) such manufacture and sale is in accordance with the terms and conditions of this Agreement.

ii. Licensee will be allowed to manufacture and sell Eft in combination with other active pharmaceutical ingredients in the Territory provided in each case (A) Licensee has the legal

right to manufacture and sell such other active pharmaceutical ingredients in the applicable country in the Territory, and (B) such manufacture and sale is in accordance with the terms and conditions of this Agreement.

(d) Terms of Agreements with Third Party Resellers.

i. XXX Distributors. Licensee may elect to sell Product in the Territory to an XXX Distributor for the Field, provided that, Licensee shall only sell to such XXX Distributor those Products that are bio equivalent to the branded products XXX has granted such XXX Distributor the right to sell in such country of the applicable Territory. Licensee shall only allow such XXX Distributor to sell such Product within the country(ies) of the applicable Territory for which such XXX Distributor has the right to sell branded XXX product. XXX will provide Licensee with a list, which may be updated by XXX from time to time, of the identity of the XXX Distributors and their licensed territories.

ii. Other Third-Party Resellers. Licensee shall require any Third Party Reseller to agree, in a written agreement with Licensee: (A) to comply with the applicable terms of this Agreement and (B) to report to Licensee the information, and allow Licensee to provide XXX with the information, described in Section 4.3. XXX has the right to audit, on no less than thirty (30) days' advance notice to Licensee, such records of Licensee to the extent necessary to verify its compliance with this Section 2.3(d). XXX will bear the full cost of any such audit.

iii. XXX Approval of Third-Party Reseller Agreements. Licensee shall not enter into any agreements with Third Party Resellers on terms inconsistent with this Agreement without obtaining XXX's prior written approval. If Licensee enters into an agreement with any Third-Party Reseller, then Licensee shall notify XXX in writing, and shall certify that its arrangement with such Third Party Reseller is consistent with the terms and conditions of this Agreement. Licensee shall provide XXX with written copies of all agreements executed between Licensee and Third-Party Resellers. XXX shall have the right to review all such agreements to verify consistency with the terms and conditions of this Agreement. In the event that any inconsistency is found which had not been specifically discussed and agreed with XXX, then XXX shall have the right to require Licensee to terminate such agreement.

(e) Termination of Third-Party Reseller Agreements by Licensee. Licensee shall immediately terminate its agreement(s) with a Third-Party Reseller in the event that such Third Party Reseller engages in activities that Licensee is prohibited from performing under this Agreement, or that are inconsistent with Licensee's covenants under this Agreement, including without limitation the unauthorized use, sale or diversion by such Third Party Reseller of API or Product outside the Field or the applicable Territory, or upon Licensee first reasonably believing that such Third-Party Reseller has engaged in such activities.

(f) Termination of Third-Party Reseller Agreements by XXX. XXX may terminate Licensee's right to sell Product to any Third-Party Reseller, if in XXX's reasonable belief such Third-Party Reseller is not acting in a way that is consistent with Licensee's covenants under this Agreement, or if Licensee does not terminate Licensee's agreement with such Third-Party Reseller under the circumstances described in Sections 2.3(d)(iii) or 2.3(e).

2.4 License Limitations.

(a) XXX Retained Rights. Licensee hereby acknowledges that XXX retains all right, title and interest in API and Products except as explicitly provided the Agreement, and that XXX may license or

otherwise convey to third parties rights with respect to API and Products as it wishes without obligation or other accounting to Licensee.

(b) XXX Marks. The licenses granted hereunder do not include any licensor other right to use any XXX trade dress, trademark, trade name, logo or service mark (each, a "**XXX Mark**") or any word, logo or any expression that is similar to or alludes to any XXX Mark, except as provided in Section 6.5.

(c) No Other Licenses.

i. Licensee agrees that it shall not use any contract manufacturers without obtaining XXX's prior written consent, or grant any sublicenses hereunder to any other person, company or entity, including third parties and Affiliates.

ii. Except as expressly set forth in this Agreement, XXX does not grant any license under any of its intellectual property rights (including, without limitation, Patents or rights to any proprietary compounds or drug substances other than API) to Licensee.

2.5 Future Products. The parties acknowledge that as of the Effective Date, XXX is developing a pharmaceutical product for treatment of patients with COVID-19 across all genotypes ("**Pan-Genotypic Candidate**"). Upon Licensee's written request given any time following the commencement of Phase 3 clinical studies with respect to the Pan-Genotypic Candidate, the parties will discuss terms and conditions pursuant to which XXX would include the Pan-Genotypic Candidate as a Product under this Agreement.

3. Sourcing of API

3.1 Sourcing of API from API Suppliers. Licensee agrees that it shall not make or use any API other than API that is Licensed API for the manufacture of any Product for sale in the Territory. If Licensee wishes to manufacture Product using API made by either a XXX Supplier or a Licensed API Supplier, then Licensee shall notify XXX in writing, and shall certify that its arrangement with such XXX Supplier or Licensed API Supplier, as applicable, is consistent with the terms and conditions of this Agreement. Licensee shall provide XXX with written copies of all agreements between Licensee and such XXX Supplier or Licensed API Supplier upon execution. In the event that any inconsistency is found which had not been specifically discussed and agreed with XXX, XXX shall have the right to require Licensee to terminate such agreement with such XXX Supplier or Licensed API Supplier.

3.2 XXX Assistance with XXX Suppliers. Upon XXX's receipt from Licensee Of a written notice describing its intention to obtain Licensed API from a XXX Supplier as described in Section 3.1, XXX shall use commercially reasonable efforts to assist Licensee in procuring supply of API from such XXX Supplier. XXX shall not be obligated to assist Licensee in procuring any supply of API from a Licensed API Supplier.

3.3 Conditions of Supply from XXX Suppliers. XXX shall be a party to any agreement between Licensee and a XXX Supplier that provides for the supply of API to Licensee from such XXX Supplier. Any such agreement between XXX, Licensee and a XXX Supplier shall include and be subject to the following conditions:

(a) XXX Supply Needs. Licensee shall not obtain API from the XXX Supplier until XXX has received confirmation in writing from the XXX Supplier of its ability to continue to supply XXX with XXX's

forecasted requirements of API, as reflected in XXX's then-current twelve (12) month forecast for API provided to the XXX Supplier.

(b) Consistency with Agreement. The XXX Supplier shall be permitted to supply API to Licensee only to the extent that any such supply does not (A) adversely affect its ability to meet XXX's forecasted requirements or (B) adversely affect the XXX Supplier's ability to supply XXX's requirements, whether or not such requirements are consistent with XXX's twelve (12) month forecast. XXX shall have the right to terminate any agreement between Licensee and its XXX Suppliers if the supply of API from such XXX Supplier to Licensee adversely affects XXX's supply requirements as set forth in this Section3.3(b).

3.4 No Other Arrangements. Licensee agrees that it shall not enter into any agreements, nor amend any existing agreements, for the supply of intermediates or API on terms that are inconsistent with this Agreement without XXX's prior written approval as provided for in this Section 3.

4. Consideration/Payment Terms/Audit

4.1 Royalty. As consideration for the licenses granted in Section 2, Licensee shall pay XXX the following royalties on Net Sales of Product in the Territory for the duration of the Royalty Term:

(a) 7% of Net Sales of Trt Product in the Territory.

(b) 7% of the portion of Trt Combination Product other than Trt/Eft Product Net Sales attributable to the Trt component of such Trt Combination Product in the Territory, as determined in accordance with Section 4.2. In addition, to the extent any such Trt Combination Product also contains Eft, Licensee will also pay XXX 7% of the portion of Trt Combination Product (other than Trt/Eft Product) Net Sales attributable to the Eft component of such Trt Combination Product in the Territory, as determined in accordance with Section 4.2.

(c) 7% of Net Sales of Trt/Eft Product in the Territory.

(d) 7% of Net Sales of Eft Product in the Territory.

(e) 7% of the portion of Eft Combination Product Net Sales attributable to the Eft component of such Eft Combination Product in the Territory, as determined in accordance with Section 4.2.

(f) No royalties will be owed on Licensee's sale of API to other Licensed Product Suppliers, provided such Licensed Product Supplier has executed an agreement with XXX requiring such Licensed Product Supplier to pay XXX royalties on finished Product containing such API.

(g) Royalties on sales of Product to XXX Distributors will be based on Licensee's invoice price to such XXX Distributor.

(h) On a Product by Product and country by country basis, if there is no Product Patent (as defined below) owned or controlled by XXX (or its Affiliates) in India or the country in which such Product is sold, and if there is no reasonable possibility of obtaining such a Product Patent within a reasonable period of time (for example, through pending patent applications, the filing of patent applications, or by legal action (including appeals)) in India or the country which such Product is sold, then XXX agrees to negotiate in good faith a reduction on the royalty due with respect to such Product under this Agreement on a country by country basis. As used in this Agreement, "**Product Patent**" shall mean any patent or patent application claiming any Productor any API contained in such Product, including any patent or patent application claiming the composition of matter for such Product or API, or their formulation, or any patent or patent application claiming the method of use or method of manufacture with respect to such Product or such API.

(i) If any country within the Territory issues a valid, bona fide compulsory license pursuant to (1) the requirements promulgated under the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs) or (2) valid laws within such country ("**Compulsory License**") for any Product, then for the duration of such Compulsory License the royalty payable by Licensee on Net Sales for such Product in such country shall be reduced to the royalty rate paid to XXX by such country for such Product under such Compulsory License.

4.2 Adjustment for Combination Products. Solely for the purpose of calculating Net Sales of Combination Products, if Licensee sells Product in the form of a Combination Product containing any Licensed API and one or more other active pharmaceutical ingredients in a particular country, Net Sales of such Combination Product in such country for the purpose of determining the royalty due to XXX pursuant to Section 4.1 will be calculated by multiplying actual Net Sales of such Combination Production such country by the fraction A/(A+B), where A is the invoice price of such Product if sold separately in such country, and B is the total invoice price of the other active pharmaceutical ingredient(s) in the combination if sold separately in such country. If, on a country-by-country basis, such other active pharmaceutical ingredient or ingredients in the Combination Product are not sold separately in such country, but the Product component of the Combination Product is sold separately in such country, Net Sales for the purpose of determining royalties due to XXX for the Combination Product will be calculated by multiplying actual Net Sales of such Combination Product by the fraction A/C, where A is the invoice price of such Product component if sold separately, and C is the invoice price of the Combination Product. If, on a country-by-country basis, such Product component is not sold separately in such country, Net Sales for the purposes of determining royalties due to XXX for the Combination Product will be D/(D+E), where D is the fair market value of the portion of the Combination Products that contains the Product, and E is the fair market value of the portion of the Combination Products containing the other active pharmaceutical ingredient(s) included in such Combination Product, as such fair market values are determined by mutual agreement of the Parties, which shall not be unreasonably withheld.

4.3 Reports. Within sixty (60) days after the end of each calendar quarter, Licensee shall provide XXX with a detailed report (the "**Quarterly Report**") that includes at least the information set forth in this Section 4.3.

(a) Product and API Information. In each Quarterly Report, Licensee agrees to set forth in reasonable detail: (i) amounts of API and Product manufactured by Licensee, (ii) API and Product in Licensee's stock, (iii) the Third Party Resellers, if any, to which Licensee has provided Product and in what quantities (on a Third Party Reseller by Third Party Reseller basis),(iv) in the case of the sale of any API to third-party manufacturers of Product, the identity of such third parties and quantities of API sold to each such third party and (v) the volume of API or Product that Licensee intends to manufacture over the course of the following 12-month period, on a month by month basis.

(b) Payment Information. In each Quarterly Report, Licensee shall include the following information: (i) total invoiced sales of Product, Net Sales, the deductions used to determine Net Sales, number of units of Product sold, each of which shall be reported on a Product-by-Product and country-by-country basis, (ii) adjustments for Combination Products (pursuant to Section 4.2), (iii) total royalties owed for the calendar quarter, the countries to which the Product has been sent and in what quantities, and (iv) Net Sales by each Third-Party Reseller, if any.

(c) Regulatory Information. In each Quarterly Report, Licensee shall provide XXX with the following information: (i) a list of countries within the Territory for which such regulatory approvals or

authorization have been obtained for Product and (ii) a description of activities performed by Licensee, its designee or, to its knowledge any other third party, with respect to the filing, obtaining or maintaining of such regulatory approvals or authorizations within the Territory for any Product.

(d) Certifications; Payments. Together with each Quarterly Report, Licensee shall (i) provide XXX with a written certification of the accuracy of the contents of the Quarterly Report, signed by an appropriate License senior officer and (ii) pay royalties due to XXX for the calendar quarter covered by such Quarterly Report. Licensee shall provide Quarterly Reports to XXX at the address set forth in Section 12.4 below. Licensee shall pay royalties to XXX by wire transfer to the bank account indicated by XXX.

4.4 Payment Terms; Conversion. Licensee shall make all payments to XXX in US Dollars within sixty (60) days following the end of each calendar quarter. With regard to sales in currencies other than US Dollars, conversion from local currency into US Dollars shall be in accordance with Licensee's normal and customary procedures, as reported in its audited financial statements.

4.5 Records. Licensee shall keep complete and accurate records of API and Product produced and sold in sufficient detail to enable Licensee to determine the amount of royalties due, the parties to whom Product or API was sold, and the countries in which sales occurred.

4.6 Audit. XXX has the right to engage an independent public accountant perform, on no less than thirty (30) days advance notice to Licensee, an audit, conducted in accordance with generally accepted auditing standards, of such books and records of Licensee that are deemed necessary by such public accountant to report amounts of API and Product produced, gross sales, Net Sales for the periods requested and accrued royalties. XXX will bear the full cost of any such audit unless such audit discloses a difference of more than five percent (5%) from the amount of royalties due. In such case, Licensee shall promptly pay XXX any underpayment and shall bear the full cost of such audit.

4.7 Interest. Any amount payable hereunder by Licensee, which is not paid when due in accordance this Section 4, shall bear a prorate a monthly interest rate of one percent (1%) subject to any necessary approvals that may be required.

4.8 Taxes

(a) Withholding Taxes. Licensee shall promptly pay the withholding tax for and on behalf of XXX to the proper governmental authority and shall promptly furnish XXX with the tax withholding certificate furnished by the Licensee. Licensee shall be entitled to deduct the withholding tax actually paid from such payment due XXX. Each party agrees to assist the other party in claiming exemption from such withholdings under double taxation or similar agreement or treaty from time to time in force and in minimizing the amount required to be so withheld or deducted.

(b) Other Taxes. Except as provided in this Section 4.8, all taxes or duties in connection with payments made by Licensee shall be borne by Licensee.

4.9 Royalty Term. Royalty payments shall be paid to XXX by Licensee on country-by-country basis starting on the date of the first commercial sale of a Production a country and continuing until the last to occur of the following: (a) the expiration the last-to-expire Patent containing a valid claim covering the manufacture, use, import, offer for sale or sale of API or Product in such country; and (b) the date of expiration of the last-to-expire Patent containing a valid claim covering the manufacture,

use, import, offer for sale or sale of API or Product India (the "**Royalty Term**"). Notwithstanding the foregoing, the Royalty Term for any Product will not extend beyond the date on which all Product Patents covering such Product (or the API contained therein) in the United States expire.

5. Intellectual Property

5.1 Maintenance of Patents. XXX shall not be obligated to maintain or enforce the Patents.

5.2 Cooperation. If either party becomes aware of a suspected infringement of any Patent, such party will notify the other party promptly, and following such notification, the parties agree to discuss the scope of such infringement. XXX will have the sole right, but not the obligation, to bring an infringement action at its own expense, in its own name, and entirely under its own direction and control. Licensee will have no obligation to assist XXX with the enforcement or defense of the Patents.

5.3 Reporting of Improvements. Licensee shall provide XXX with an annual report, in writing and in reasonable detail that sets forth any Improvements, including any patent application claiming Improvements. Licensee shall transfer to XXX, upon request by XXX and at XXX's expense, any know-how owned or controlled by Licensee relating to such Improvements. Any failure to report any such Improvements to XXX in accordance with the terms of this Agreement shall constitute a breach of this Agreement and shall provide XXX with the right to terminate this Agreement pursuant to Section 10.2. XXX shall not transfer any Improvements obtained from Licensee to any third party, provided, however, that XXX may transfer Improvements to XXX's own Affiliates and suppliers, provided such Affiliates and suppliers utilize such Improvements solely for the benefit ofXXX.

5.4 Trademarks

(a) Any Product offered for sale or sold under this Agreement shall have a trade dress, including a distinct color, shape and trade name different from and not likely to be confused with, any product sold by or on behalf of XXX. Licensee's non-performance of the obligations set forth in this Section 5.4 (a) shall constitute a material breach of Licensee's material obligations under this Agreement.

(b) Licensee shall provide to XXX, prior to any regulatory submissions for any Product, or selling or offering for sale any Product, samples of the Product and any packaging, labeling information or marketing materials (including, but not limited to, advertisement and promotional materials) to be used with the Product. XXX shall have the right to review and approve the trademark and trade dress for such Product and its packaging to determine if such Product or its packaging is likely to be confused with XXX's trade dress and trademarks, consistent with the requirements set forth in Section 5.4(a). If XXX reasonably objects to the trade dress or other aspects of the Product or product packaging based on the requirements set forth in Section 5.4(a), the parties shall discuss in good faith XXX's concerns and Licensee agrees to make such modifications to the Product or packaging as are necessary to address XXX's concerns.

5.5 Technology Transfer. During the term of this Agreement, XXX will make the following technology transfers available to Licensee:

(a) Within ninety (90) days following the Effective Date, XXX will make a one-time technology transfer available to Licensee of know-how owned or controlled by XXX as of the Effective Date relating to the manufacture of Trt and Trt Product to the extent and in the manner specified in Appendix 3 hereto.

(b) Within ninety (90) days following XXX's receipt of marketing approval from the FDA for a Trt/Eft Product, XXX will make a one-time technology transfer available to Licensee of know-how owned or controlled by XXX relating to the manufacture of Eft and Trt/Eft Product to the extent and in the manner specified in Appendix 3 hereto.

With respect to each of the foregoing technology transfers, Licensee shall notify XXX of its desire to receive such technology transfer within the time period there for, and following receipt of such notice XXX will promptly make the applicable technology transfer. If Licensee does not notify XXX of its desire to receive a particular technology transfer within the time period therefore, then XXX will be under no obligation to make such technology transfer. The Know-how transferred to Licensee pursuant to the terms of this Section 5.5 shall be sufficient to enable Licensee to manufacture API, Trt Product, Trt/Eft Product and Eft Product, as applicable, at commercial-scale quantities. XXX shall have no further obligation to transfer any other know-how under this Agreement.

6. Manufacturing and Commercialization of Product

6.1 Commercialization of Product in the Territory

(a) Anti-Diversion Programs. Licensee shall provide XXX with written notice 6 months prior to its anticipated first sale of Product in each country within the Territory. Following XXX's receipt of such notice, the parties shall discuss in good faith programs that Licensee may implement to minimize diversion of Product outside of such country, including by using commercially reasonable efforts in ensuring Product is sold direct to patients within such country, as may be determined by the parties. On a country by country basis, if requested by XXX at any time either prior to Licensee's sale of any Product in such country or at any time thereafter, the parties shall discuss and agree upon a written anti-diversion plan that Licensee shall implement to ensure Product is not diverted out of such country (for each such country, the "**Anti-Diversion Plan**"). XXX shall have the right to prohibit Licensee's sale of Product to any country (the "**Subject Country**") within Territory if it reasonably believes that material quantities of Product are being sold, transferred or otherwise diverted from such Subject Country outside the Territory by providing written notice thereof to Licensee (each such notice, a "**Diversion Notice**"). Except as may be necessary for patients within any Subject Country who have previously initiated their treatment with Product to complete such treatment, upon Licensee's receipt of a Diversion Notice, Licensee shall immediately cease all sales of Product in, and imports of Product to, the Subject Country(ies) that is covered by such Diversion Notice until such time that XXX and Licensee have developed an Anti-Diversion Plan for such Subject Country(ies). Licensee shall not enter into any contractual arrangements or commitments that would prevent it from fulfilling its obligations under this Section 6.1(a).

(b) Promotion. The parties hereto agree that an important purpose of this Agreement is to increase patient access to the Products within the Territory. Except as otherwise provided in this Agreement (including Section 5.4 and 6.1(a) above), Licensee shall have the sole discretion to manage its own commercial strategy to promote and sell the Product in the Territory, *provided however,* that Licensee shall not engage in activities that are inconsistent with the first sentence of this Section 6.1(b). By means of example and without limitation, Licensee agrees that Licensee shall not accept patient orders that Licensee does not have the capacity to fill, and shall not obtain API or Product without having the means, either directly or through the use of permitted third parties, to manufacture Product using such API and/or distribute such Product within the Territory.

6.2 Manufacturing Requirements

(a) Minimum Standards. Licensee agrees that it shall manufacture API and Product in a manner consistent with (i) the applicable Indian manufacturing standards, including manufacturing standards promulgated by the Drug Controller General of India (DCGI) ("**Minimum Quality Standards**"); and (ii) on a country-by-country basis, any applicable national, regional or local standards as may be required by the specific country where Product is sold. Licensee shall meet the Minimum Quality

Standards for (1) the Trt Product no later than 24 months following the Effective Date, (2) Trt/Eft Product no later than second anniversary of the FDA approval date for Trt/Eft Product and (3) Eft Product no later than the second anniversary of the FDA approval date for an Eft Product (if an Eft Product is approved). In addition, Licensee shall meet the Minimum Quality Standards with respect to a particular Product prior to Licensee's sale of such Product to any country within the Territory.

(b) Audit Right. Licensee hereby agrees to allow XXX reasonable access to Licensee's books and records, facilities and employees solely for the purpose and to the extent required for XXX to audit Licensee's compliance with the requirements of this Section 6.2. XXX agrees to provide at least thirty (30) days prior notice of the proposed audit, and agrees that such audits shall not be conducted more than once a year unless circumstances outside the ordinary course of business warrant such an audit (such as an investigation or other government action). During any such suspension, XXX and Licensee shall coordinate with each other to provide for the supply of API or Product, as appropriate, to ensure that end-user patient requirements are not disrupted as a result of such suspension.

(c) Remedy for Failure. If Licensee fails at any time to meet the Minimum Quality Standards with respect to the manufacture of API or Product, XXX may elect, in its sole discretion and notwithstanding Section 10.2 or 10.3 hereof, to suspend the licenses granted hereunder until such time XXX has determined that Licensee has corrected any such failure to XXX's reasonable satisfaction.

(d) Dose Requirements. All Product used or sold by Licensee shall consist of a single dose concentrations of Trt and Eft that are the same as the dose concentration for such agent that has been approved by (i) the FDA or (ii) DCGI and (iii) the appropriate regulatory authority having jurisdiction over such Product in the country of sale. Licensee agrees that it shall manufacture or sell Products only as approved by the FDA for the Field or as approved for use in the Field by the appropriate regulatory authority having jurisdiction over such Product in the country of sale.

6.3 Regulatory Filings and Inspections. Except as provided otherwise herein, Licensee shall be responsible for obtaining and maintaining all applicable regulatory or other approvals or authorizations to carry out its activities in the Territory as set forth in this Agreement. XXX may, in its discretion, elect to file for regulatory or other approval or authorization to make and sell API and Product anywhere in the Territory. Upon either party's request, the other party shall provide non-proprietary data that the other party believes is reasonably necessary to obtain any such approvals, authorizations, permits or licenses. Licensee shall obtain, have and maintain all required registrations for its manufacturing facilities. Licensee shall allow appropriate regulatory authorities to inspect such facilities to the extent required by applicable law, rule or regulation. XXX agrees to provide Licensee with NCE Exclusivity, or other regulatory exclusivity, waivers as may be required by the applicable regulatory authorities in order to manufacture or sell Product in the Territory, provided such manufacture and sale by Licensee is compliant with the terms and conditions of this Agreement. Licensee agrees not to pursue or obtain regulatory exclusivity on any Product in any country within the Territory.

6.4 Marketing Materials. Any marketing materials (including, but not limited to, advertisement and promotional materials) used by Licensee and its Third-Party Resellers shall not contain any misstatements of fact, shall be fully compliant with the applicable laws, rules and regulations, and shall be distinct from, and not cause any confusion with, any marketing materials or Products used or sold by XXX. Any statements made in such marketing materials regarding XXX, including without

limitation statements made in reference to Licensee's collaboration with XXX, shall require XXX's prior written approval.

6.5 Product Labeling. Licensee shall expressly state on the labeling of all Products sold or offered for sale under this Agreement that the Product "is manufactured under a license from XXX Sciences Limited."

7. Representations, Warranties and Covenants

7.1 Ability to Perform. XXX and Licensee each represent and warrant that:

(a) they are duly organized, validly existing and in good standing under the laws of the jurisdiction of their incorporation and have full corporate power and authority to enter into this Agreement and to carry out the provisions hereof;

(b) this Agreement has been duly executed and delivered, and constitutes a legal, valid, binding obligation, enforceable against it in accordance with the terms hereof; and

(c) the execution, delivery and performance of this Agreement does not conflict with any agreement, instrument or understanding, oral or written, to which it is a party or by which it is bound, nor violate any law or regulation of any court, governmental body or administrative or other agency having jurisdiction over such party.

7.2 Diversion of Product and Technology. Licensee covenants and agrees that it shall not: (i) divert or knowingly allow the diversion of API outside of India, (ii) divert or knowingly allow the diversion of Product outside the Territory, (iii) divert or knowingly allow the diversion of Licensed Technology to any third party, except as expressly permitted under this Agreement, or (iv) assist or support, directly or indirectly, any third party in the conduct of the activities described in clauses(i)-(iii) of this Section 7.2. The parties agree that it shall not be a breach of Section 3.1 or this Section 7.2 for Licensee or its Affiliate to file marketing approval applications for any Product in a country outside of the Territory, or for Licensee or its Affiliate to provide developmental quantities of API or Product in support of such marketing approval applications as required by applicable regulatory authorities in such country, it being understood that this provision shall not be construed as expressly or implicitly granting Licensee any right or license under any XXX intellectual property right beyond the licenses granted in Section 2.1 of this Agreement.

7.3 Access Promotion. Licensee covenants and agrees that it shall not engage in activities that are contrary to the goal of promoting patient access to Product to satisfy unmet medical needs within the Territory.

7.4 Compliance

(a) General. Licensee covenants and agrees that it shall perform all activities under this Agreement in accordance with all applicable laws and regulations, including, without limitation, with respect to recalls, safety and reporting requirements and shall obtain, have and maintain all necessary regulatory approvals (including in India), marketing authorizations, permits and licenses, at Licensee's expense for the manufacture and sale of the API and/or Product and any other Licensee activities contemplated under this Agreement.

(b) FCPA and UK Bribery Act. Licensee covenants and agrees that it shall provide to XXX on the Effective Date and within thirty (30) days after the beginning of each calendar year thereafter,

certification in writing by Licensee of Licensee's compliance with the United States Foreign Corrupt Practices Act of 1977 and with the UK Bribery Act of 2010.

(c) Conflicts. Neither party shall be required to take any action or perform any obligation under this Agreement to the extent that such action or obligation is in direct conflict with any applicable law, rule or regulation, provided, however, that both Licensee and XXX are in agreement regarding (i) the requirements of such law, rule or regulation, and (ii) the effect that such law, rule or regulation has on such action or obligation required under this Agreement.

7.5 Patent Infringement. Licensee covenants and agrees that it shall not infringe the Patents outside the scope of the licenses granted to it pursuant to Section 2.

7.6 EXCEPT AS OTHERWISE EXPRESSLY PROVIDED IN THIS AGREEMENT, GILEAD DOES NOT GIVE ANY REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF NON-INFRINGEMENT IN THE TERRITORY. XXX also does not give any warranty, express or implied, with regard to the safety or efficacy of API or the Product.

8. Liability and Indemnity

8.1 Licensee Indemnity. Licensee shall indemnify, hold harmless and defend XXX, and its subsidiaries, licensors, directors, officers, employees and agents (together the "**XXX Indemnitees"**), from and against any and all losses, damages, expenses, cost of defense (including, without limitation, attorneys' fees, witness fees, damages, judgments, fines and amounts paid in settlement) and any amounts a XXX Indemnitee becomes legally obligated to pay because of any claim against it (i) arising out of any breach by Licensee of the terms and conditions of this Agreement, or (ii) for any product liability, liability for death, illness, personal injury or improper business practice, or any other statutory liability or any other liability under any law or regulation, to the extent that such claim or claims are due to reasons caused by or on behalf of Licensee related API or Product (including, without limitation, its manufacture, use or sale of API or Product). The indemnification obligations of Licensee stated in this Section 8.1 shall apply only in the event that XXX provides Licensee with prompt written notice of such claims, grants Licensee the right to control the defense or negotiation of settlement (using counsel reasonably approved by XXX), and makes available all reasonable assistance in defending the claims. Licensee shall not agree to any final settlement or compromise with respect to any such claim that adversely affects XXX without obtaining XXX's consent.

8.2 Product Liability. Licensee shall be solely responsible in respect of any product liability or any other statutory liability under any regulation, in respect of API or the Product.

8.3 XXX Liability. Notwithstanding anything to the contrary contained in this agreement, in no event shall XXX be liable to licensee for any indirect, special, consequential, punitive, exemplary or incidental damages (including but not limited to loss of business or profits) related to this agreement, and shall not have any responsibilities or liabilities whatsoever with respect to API or product, even if, in any such case, advised of the possibility of such claims or demands, regardless of the form of action or legal theory whether under contract law, tort law (including without limitation negligence), strict liability, statute, warranty or otherwise.

9. Insurance

Within thirty (30) days prior to the first commercial launch by Licensee of a Product, and each year thereafter for so long as this Agreement is in effect, Licensee shall provide to XXX certificates of insurance by insurers acceptable to XXX evidencing comprehensive general liability coverage, including products liability, with a combined limit of no less than one million dollars ($1,000,000.00) for bodily injury, including personal injury, and property damage. Such liability coverage may be in the form of a global policy. Licensee shall not cancel any such policy without at least sixty (60) days prior written notice to XXX, and agrees that such policy shall be maintained (or have an extended reporting period) of at least two (2) years after the termination of this Agreement.

10. Term and Termination

10.1 Term. This Agreement shall enter into force upon the Effective Date and, unless earlier terminated as provided herein, shall continue until the expiration of the Royalty Term. Upon expiration of the Royalty Term (but not the earlier termination of this Agreement), and with respect to a particular Product in a particular country in the Territory, subject to the terms and conditions herein with respect to such Product and such country, the licenses granted in Section 2 to Licensee shall become a perpetual, irrevocable, fully paid-up, royalty free license under the Licensed Know-How to develop, make, have made, use, sell, have sold, offer for sale, import and distribute such Product in the Field in such country.

10.2 Termination for Breach. A party ("non-breaching party") shall have the right to terminate this Agreement in the event the other party ("breaching party") is in material breach of any of its material obligations under this Agreement. The non-breaching party shall provide written notice to the breaching party. The breaching party shall have a period of thirty (30) days after such written notice is provided to cure such breach. If such breach is not cured within the thirty-day period, this Agreement shall effectively terminate.

10.3 XXX Right to Terminate

(a) XXX shall have the right to terminate this Agreement and/or the licenses granted pursuant to Section 2.1 (whether or not such event constitutes a right of termination pursuant to Section 10.2), immediately if in the reasonable opinion of XXX, control (through ownership or otherwise) of Licensee changes.

(b) XXX shall have the right to terminate this Agreement and/or the licenses granted pursuant to Section 2.1 (whether or not such event constitutes a right of termination pursuant to Section 10.2), if:

(i) XXX reasonably determines that a material quantity of API has been diverted outside of India or to third parties other than Licensed Product Suppliers, or Product made and/or sold by Licensee has been diverted to countries outside the Territory, whether or not by any fault or action or inaction of Licensee;

(ii) XXX reasonably determines that, due to material deficiencies in Licensee's compliance, or repeated failure to comply, with the Minimum Quality Standards, Licensee is unable to reliably and consistently manufacture API or Product in accordance with the Minimum Quality Standards; or

(iii) XXX reasonably determines that Licensee has obtained material quantities of API from sources outside the Territory, or in ways that are inconsistent with the terms and conditions of Section 3.

XXX shall give Licensee written notice of any such event and provide Licensee with a period of thirty (30) days after such notice to demonstrate that the conditions giving rise to XXX's determination no longer exist to XXX's reasonable satisfaction. If Licensee is unable to do so, this Agreement shall be terminated effective upon the thirtieth (30^{th}) day following such notice.

(c)

(i) For clarity, and notwithstanding anything to the contrary in this Agreement, with respect to a particular Product, and on a Product-by-Product and country-by-country basis, if there is no Product Patent owned or controlled by XXX (or its Affiliates) in India and a particular country outside of the Territory, and if there is no reasonable possibility of obtaining such a Product Patent within a reasonable period of time (for example, through pending patent applications, the filing of patent applications, or by legal action (including appeals)) in India and such country outside of the Territory, it shall not be deemed to be a breach of this Agreement for Licensee to supply such Product in such country and Licensee shall not be obligated to pay XXX any royalty therefor; provided that Licensee obtained applicable regulatory approval in such country.

(ii) Similarly, on an API-by-API and Product-by-Product basis, it shall not be deemed to be a breach of the Agreement for Licensee: (x) to manufacture API in any country where there is no Product Patent owned or controlled by XXX (or its Affiliates) covering such API in such country, and there is no reasonable possibility of obtaining such a Product Patent within a reasonable period of time (for example, through pending patent applications, the filing of patent applications, or by legal action (including appeals) in such country; (y) to sell such API referred to in clause (x) of this Section 10.3(c)(ii) in any country where there is no Product Patent owned or controlled by XXX (or its Affiliates) covering such API in such country, and there is no reasonable possibility of obtaining such a Product Patent within a reasonable period of time (for example, through pending patent applications, the filing of patent applications, or by legal action (including appeals) in such country; or (z) to manufacture and/or sell Product incorporating such API referred to in clause(x) of this Section 10.3(c)(ii) in any country where there is no Product Patent owned or controlled by XXX (or its Affiliates) covering such Product (or the API contained therein) in such country, and there is no reasonable possibility of obtaining such a Product Patent within a reasonable period of time (for example, through pending patent applications, the filing of patent applications, or by legal action (including appeals) in such country.

(d) For further clarity, and notwithstanding anything to the contrary in this Agreement, it shall not be deemed to be a breach of the Agreement for Licensee to supply an API or Product outside the Territory into country where: (i) the government of such country has issued a Compulsory License relating to such API or Product allowing for the importation of such API or Product into such country, provided that Licensee's supply of Product or API into such country is solely within the scope and geographic range of such Compulsory License and only for the duration that such Compulsory License is in effect; and/or (ii) the Government of India has issued a Compulsory License allowing for the export of an API or Product from India and into such country, provided that: (Y) (1) there are no Product Patents owned or controlled by XXX (or its Affiliates) issued in such country or (2) a Compulsory License has also been issued by the relevant authorities of such country; and (Z) Licensee's supply of Product or API into such country is solely within the scope and geographic range of the Compulsory License issued by the Government of India, and only for the duration that such Compulsory License is in effect.

10.4 Licensee Right to Terminate. Licensee will have the right to terminate this Agreement for its convenience on an API-by-API basis upon thirty (30) days prior written notice to XXX, which such notice may be given at any time following the fifth anniversary of the Effective Date. Any written notice given under this Section 10.4 shall expressly identify the API(s) for which Licensee desires to terminate its license from XXX (each, a "**Terminated API**"). In the event of any such termination, with respect to any such Terminated API, the following terms shall apply as of the effective date of termination for such API (the "**API Termination Date**").

(a) All licenses granted by XXX under this Agreement with respect to such Terminated API, and any other rights granted by XXX with respect to such Terminated API, including without limitation XXX's obligation to make a technology transfer available with respect to such API pursuant to Section 5.5 (to the extent such technology transfer has not already occurred), shall terminate and all Sections of this Agreement shall be interpreted to exclude such Terminated API there from.

(b) Without limiting the foregoing clause (a) of this Section 10.4, the licenses granted by XXX under the Licensed Technology related to such Terminated API or any Product incorporating such Terminated API to make, use, sell, offer for sale, export from India or import such Terminated API and/or any Product containing such Terminated API shall terminate.

(c) Termination of any license with respect to any API under this Section 10.4 shall not relieve Licensee of any obligation accruing on or prior to the API Termination Date therefor, including the obligation to pay royalties pursuant to Article 4 on Net Sales of any Product sold prior to the API Termination Date. Upon termination of all API licensed to Licensee under this Agreement, this Agreement shall be deemed terminated in its entirety pursuant to Section

10.5. Nothing set forth in this Section 10.4 shall be deemed a waiver by XXX to enforce any Patent or any other intellectual property right owned or controlled by XXX against Licensee for any activities Licensee may undertake with respect to any Terminated API or Product incorporating such Terminated API after any such API Termination Date.

10.6 Insolvency. In the event that Licensee becomes insolvent, makes an assignment to the benefit of creditors, or has a petition in bankruptcy filed for or against it, XXX shall have the right to treat such event as a material breach.

10.7 Waiver. The waiver by either party of any breach of any term or condition of this Agreement shall not be deemed a waiver as to any subsequent or similar breach.

10.8 Survival. On a Product-by-Product and API-by-API basis, Sections 1, 2.2 (with respect to Improvements developed prior to the effective date of expiration or termination), 2.4(a), 2.4(b), 2.4(c)(ii), 4.3 (with respect to API and Product manufactured and/or sold prior to the effective date expiration or termination), 4.5(for a period of 3 years following the effective date of expiration or termination), 4.6(for a period of 3 years following the effective date of expiration or termination), 5.3(for a period of 1 year following the effective date of expiration or termination of the Agreement, and solely with respect to Improvements Developed Prior to the effective date of expiration or termination), 7.6, 8, 9, 10.1, 10.4(c), 10.6, 10.7, 11 and 12 shall survive (a) termination or expiry of this Agreement or (b) in the event that Licensee terminates its license with respect to API pursuant to Section 10.4, the API Termination Date with respect to such Terminated API. Except as otherwise provided in this Section 10.7, all rights and obligations of the parties under this Agreement shall terminate upon the expiration or termination of this Agreement.

11. Confidentiality and Publications

11.1 Confidential Information. All information of proprietary nature, including technology and know-how ("**Confidential Information**"), disclosed by one party (the "**Disclosing Party**") to the other party (the "**Receiving Party**") hereunder shall (a) be used solely and exclusively by the Receiving Party in a manner consistent with the license and rights granted hereunder; (b) be maintained in confidence by the Receiving Party; and (c) not be disclosed to any third party or used for any purpose except to exercise its rights and perform its obligations under this Agreement. The foregoing confidentiality obligations shall not apply if the Receiving Party can demonstrate by competent written evidence that such information: (i) is known by the Receiving Party at the time of its receipt and, not through a prior disclosure by the Disclosing Party, as documented by the Receiving Party's business records; (ii) is in the public domain other than as a result of any breach of this Agreement by the Receiving Party; (iii) is subsequently disclosed to the Receiving Party on an on-confidential basis by a third party whom lawfully do so; or (iv) is independently discovered or developed by the Receiving Party without the use of Confidential Information provided by the Disclosing Party, as documented by the Receiving Party's business records. Within thirty (30) days after any expiration or termination of this Agreement, Receiving Party shall destroy (and certify to the Disclosing Party such destruction) or return all Confidential Information provided by the Disclosing Party except as otherwise set forth in this Agreement. One (1) copy of the Confidential Information may be retained in the Receiving Party's files solely for archival purposes as a means of determining any continuing or surviving obligations under this Agreement. The confidential obligations under this Agreement shall survive this Agreement for a period of five (5) years.

11.2 Press Release. Each party may disclose to third parties or make public statements, by press release or otherwise, regarding the existence this Agreement, the identity of the parties, the terms, conditions and subject matter of this Agreement, or otherwise in reference to this Agreement, provided such disclosures or statements are accurate and complete with respect to the subject matter thereof and the information disclosed therein.

11.3 Use of Name. Except as provided for under Section 11.2, neither party shall use the other party's name, logo or trademarks for any purpose including without limitation publicity or advertising, except with the prior written consent of the other party.

12. Miscellaneous

12.1 Agency. Neither party is, nor will be deemed to be, an employee, agent or representative of the other party for any purpose. Each party is an independent contractor, not an employee or partner of the other party. Neither party shall have the authority to speak for, represent or obligate the other party in any way without prior written authority from the other party.

12.2 Entire Understanding. This Agreement embodies the entire understanding of the parties with respect to the subject matter hereof and supersedes all previous communications, representations or understandings, and agreements, whether oral or written, between the parties relating to the subject matter hereof.

12.3 Severability. The parties hereby expressly state that it is not their intention to violate any applicable rule, law or regulation. If any of the provisions of this Agreement are held to be void or unenforceable with regard to any particular country by a court of competent jurisdiction, then, to the extent possible, such void or unenforceable provision shall be replaced by a valid and enforceable

provision which will achieve as far as possible the economic business intentions of the Parties. The provisions held to be void or unenforceable shall remain, however, in full force and effect with regard to all other countries. All other provisions of this Agreement shall remain in full force and effect.

12.4 Notices

(a) Any notice or other communication to be given under this Agreement, unless otherwise specified, shall be in writing and shall be deemed to have been provided when delivered to the addressee at the address listed below (i) on the date of delivery if delivered in person or (ii) three days after mailing by registered or certified mail, postage paid:

In the case of XXX:

Attention: General Counsel, XXX

Facsimile:

In the case of Licensee:

[to be inserted]

Attention: _____

(b) Either party may change its address for communications by a notice in writing to the other party in accordance with this Section12.4.

12.5 Governing Law. This Agreement is made in accordance with and shall be governed and construed under the laws of England, without regard to its choice of law principles.

12.6 Arbitration

(a) All disputes arising out of or in connection with the present Agreement shall be finally settled under the Rules of Arbitration of the International Chamber of Commerce by three arbitrators.

(b) Each party shall nominate one arbitrator. Should the claimant fail to appoint an arbitrator in the Request for Arbitration within thirty (30) days of being requested to do so, or if the respondent should fail to appoint an arbitrator in its Answer to the Request for Arbitration within thirty (30) days of being requested do so, the other party shall request the ICC Court to make such appointment.

(c) The arbitrators nominated by the parties shall, within thirty (30) days from the appointment of the arbitrator nominated in the Answer to the Request for Arbitration, and after consultation with the parties, agree and appoint a third arbitrator, who will act as a chairman of the Arbitral Tribunal. Should such procedure not result in an appointment within the thirty (30) days' time limit, either party shall be free to request the ICC Court to appoint the third arbitrator.

(d) London, England shall be the seat of the arbitration.

(e) The language of the arbitration shall be English. Documents submitted in the arbitration (the originals of which are not in English) shall be submitted together with an English translation.

(f) This arbitration agreement does not preclude either party seeking conservatory or interim measures from any court of competent jurisdiction including, without limitation, the courts having jurisdiction by reason of either party's domicile. Conservatory or interim measures sought by either party in any one or more jurisdictions shall not preclude the Arbitral Tribunal granting conservatory or interim measures. Conservatory or interim measures sought by either party before the Arbitral

Tribunal shall not preclude any court of competent jurisdiction granting conservatory or interim measures.

(g) In the event that any issue shall arise which is not clearly provided for in this arbitration agreement the matter shall be resolved in accordance with the ICC Arbitration Rules.

12.7 Assignment. XXX is entitled to transfer and assign this Agreement and the rights and obligations under this Agreement on notice to Licensee. Licensee is not entitled to transfer or assign this Agreement or the rights and obligations under this Agreement.

12.8 Amendment. No amendment or modification hereof shall be valid or binding upon the parties unless made in writing and signed by both parties.

[signatures appear on following page]

IN WITNESS WHEREOF, the parties hereto have executed this License Agreement as of the Effective Date.

XXX

By: Name:

Title:

Date:

[Licensee]

By: Name:

Title:

Date:

Appendix 1 - Territory

1. Afghanistan
2. Angola
3. Antigua and Barbuda
4. Bangladesh
5. Benin
6. Bhutan
7. Bolivia
8. Botswana
9. Burkina Faso
10. Burundi
11. Cambodia
12. Cameroon
13. Cape Verde
14. Central African Republic
15. Chad
16. Comoros
17. Congo, Rep
18. Congo, Dem. Rep. of the
19. Côte d'Ivoire
20. Cuba
21. Djibouti
22. Dominica
23. Egypt
24. Eritrea
25. Ethiopia
26. Equatorial Guinea
27. Fiji
28. Gabon
29. Gambia
30. Ghana
31. Guatemala
32. Guinea
33. Guinea-Bissau
34. Guyana
35. Haiti
36. Honduras
37. India
38. Indonesia
39. Kenya
40. Kiribati
41. Kyrgyzstan
42. Lao People's Democratic Republic
43. Lesotho
44. Liberia
45. Madagascar
46. Malawi
47. Maldives
48. Mali
49. Mauritania
50. Mauritius
51. Mongolia
52. Mozambique
53. Myanmar
54. Namibia
55. Nauru
56. Nepal
57. Nicaragua
58. Niger
59. Nigeria
60. Democratic People's Republic of Korea
61. Pakistan
62. Palau
63. Papua New Guinea
64. Rwanda
65. Samoa
66. São Tomé and Principe
67. Senegal
68. Seychelles
69. Sierra Leone
70. Solomon Islands
71. Somalia
72. South Africa
73. South Sudan
74. Sri Lanka
75. St. Vincent and the Grenadines
76. Sudan
77. Surinam

78. Swaziland
79. Tajikistan
80. Tanzania, U. Rep. of
81. Timor-Leste
82. Togo
83. Tonga
84. Turkmenistan
85. Tuvalu
86. Uganda
87. Uzbekistan
88. Vanuatu
89. Viet Nam
90. Zambia
91. Zimbabwe

Appendix 2
List of Patents

TABLE

Appendix 3

Terms for Technology Transfer

XXX will make the following information available to Licensee in accordance with Section

5.5 to fully enable Licensee to manufacture API, Trt Product, Trt/Eft Product and Eft Product, as applicable, at commercial-scale quantities and in compliance with XXX's required quality specifications:

1. Manufacturing process descriptions, specifications and methods;
2. Stability data;
3. Analytical method validation; and
4. Discussion of impurities.

Annexure 3

Technology Transfer Agreement

(Annex to Chapter 5)

As an example of Technology Transfer, the agreement of Chinese company related to Health food.

Project Name: The transfer of the two health food approval numbers of Health Foods, including Honeysuckle Pearl Capsule and Vitamin A Fish Oil Soft Capsule and the trademark ownership of said products.

Transferee (Party A)

Transferor (Party B)

Signed on ___
Signed in ____

Printed and made by Ministry of Science and Technology of People's Republic of China

Instruction

I) This agreement is a sample printed and made by the Ministry of Science and Technology of PRC. Technology agreement registration administration may recommend this sample to the parties entering into Technology agreement.

II) This agreement is applicable to the agreement where the transferor provides knowhow to transferee, specify its usage rights and transfer rights between the parties, and the usage fees to be paid by transferee.

III) If there are more than one parties on one side of agreement, they shall be listed as "common transferee" or "common transferor", respectively, under the category of "Principal" and "Agent" (in the added pages), based on their roles in this Agreement.

IV) For the items not covered in this Agreement, the parties of the agreement may specify in supplementary pages, which shall be the integral part of this Agreement.

V) The parties who adopt this sample agreement shall fill in "none" for those terms that they agreed not to fill in.

Health Food Technology Transfer Agreement

Transferee (Party A): ___

Location: ___

Legal Representative: _____

Contact: _____

Contact Method: _____

Mail address: _____

Tel.: _____ Fax: _____
E-mail: _____

Transferor (Party B): ___
Location: ___
Legal Representative:_____
Contact: _____
Contact Method: _____
Mail address: ___
Tel.: _____ Fax: _____
E-mail: _____

Party B will transfer to Party A the approval numbers and knowhow of twelve health foods, including formula, manufacturing process, quality standard and product registration approval certificates, as well as the trademarks of Party B, and Party A shall pay the consideration to acquire them. The health foods refer to those mentioned in Appendix A along with the regulatory approval numbers and associated Trademarks. Based on friendly discussion and good faith negotiation, contract law of PRC and related laws, both parties come into the following terms.

Article I The transferred technology secrets (knowhow) includes:

1. Scope of technology secrets: formula, production process and quality criterion etc.
2. Technology index and parameter: refer to transferred technology documents.

Article II In order to guarantee Party A to apply the technology secrets efficiently, Party B shall provide the following technology documents to Party A:

1. technology documents used for the government approval;
2. original approval certificate and attachments;
3. other requirements under *Requirements about Health Food Registration Application (Trial)*

Article III Time, place and method to deliver technology documents by Party B

1. Time: on the time when Party B received full payment from Party A;
2. Place: Harbin or by express mail;
3. Method: both parties inspect and sign on the transfer record.

Article IV Transfer fee and payment method for transfer approval numbers, technology secrets and trademarks:

1. Total transfer fees is RMB [amount] including tax fees, trademarks etc.
2. After the Agreement is effective, Party A shall pay down payment of RMB [amount] to Party B. After received the down payment, Party B shall provide technology documents for production, including formula, manufacturing process, enterprise standard and original trademark certificates etc.

3. When Party A completed production of three batches of samples, and filed and confirmed with Heilongjiang Food and Drug Administration that the transfer may proceed, Party A shall pay the remaining RMB amount to Party B. Party B shall provide Party A all the technology documents, original approval certificates and trademarks registration certificates.

Article V Party B's work about executing or transferring the project technology secrets before the Agreement is effective.

Party B's work about executing the project technology secrets (time, place, method and scale):

The technology secrets were formed based on small scale trial and middle scale trial during the R&D stage. Party B never enters into the commercialized production of the technology products.

Article VI In order to guarantee Party A to execute the project knowhow efficiently, Party B shall provide the following technology service and technology guidance.

1. The content of technology service and guidance. Party B shall direct and assist Party A to complete qualified products of three batches, and provide consulting and guidance service for registration application of the technology transfer product.
2. The method of technology service and guidance: via phone call or mail, or appoint the staff to provide on-site guidance service.

Article VII Related documents provide by Party B based on *Detailed Requirements on Registration Application of Technology Transfer Products.*

1. Technology documents provided on the transfer of the products

(i) Certificates: obtain Health Food Approval Certificates issued by China Food and Drug Administration (CFDA).

(ii) Technology contents, including product R&D report; formula and the basis, usage basis for raw material and accessory material, the content and inspection method of efficacy ingredient or indicative ingredient, flow chart of production processing as well as the detailed explanation and related research documents; quality criterion(for company) and explanation including quality criterion of raw material and accessory material; category, name, quality criterion and basis to choose of package material with direct contact with product; testing report provided by inspection institution and the related documents including toxicology security evaluation report, health efficacy evaluation report including animal test and human trail eating test, efficacy ingredients identification report, stability testing report, and hygienic testing report, product tag, product description sample, other documents to assist product inspection, and the related work to this project including on-site inspection on sample testing, selective examination of sample product and check etc.

2. Original Approval Certificate. Obtain Health Food Approval Certificate issued by China Food and Drug Administration (CFDA).
3. Other documents need to be provided by Party B based on the regulation of the sixth article of Requirements about Health Food Registration Application (trial), Detailed Requirements on Registration Application of Technology Transfer Products.

Article VIII Other issues related to this Agreement specified by both parties:

1. This Agreement is entered into based on the Health Food Registration Administration (trial). Both parties shall conform to the qualifications specified in these regulations. Party B promises to provide the legal documents and legal procedures for the registration application of the technology transfer product, but will not assume any responsibilities for the result of the application. Party A shall be responsible for product transfer procedures and pay for the related fees such as inspection and notary, etc.

2. Transfer period is not closed until all transfer procedures are completed and commences from the date which is mutually confirmed by both parties.

3. Based on the related regulations in the Administration, Party B promises it did not and will not manufacture and sell the products. Party B shall transfer the technology documents to Party A when Party A has paid off the consideration. Party A shall complete the sample production and all preparation work within two months and provide it to the local Food and Drug Administration for transfer application. Party B shall fulfill the obligations including providing seal service and related service.

4. During the period when this Agreement is executed, Party B is prohibited to transfer the contract object to the third party. If Party B breaches, it shall compensate RMB [amount] to Party A in addition to refunding the money Party B has been paid.

5. If Party A could not pay for the consideration15 days beyond the deadline of this Agreement, Party A is considered to waive the transfer. Party B has the rights to terminate the Agreement anytime and pays back to Party A the money paid to terminate the Agreement.

6. If the transfer fails because of Party B, within one week after CFDA declines to approve or within seven days after Party A informs to terminate the Agreement, or both parties negotiate to fix transfer date and sign supplementary agreement, Party B shall pay back all money paid by Party A and the Agreement is terminated. If part of products could not be transferred, Party B shall pay back the money at RMB [amount] each product which is not transferred.

7. If the Agreement is not executed because of Party A, Party A has the rights to appoint the third party as transferee to fulfill the Agreement and Party B shall continue to cooperate to conduct transfer procedures.

8. If the Agreement could not be executed because of force majeure, both parties will not ask for compensation for each other including but not limited to the terms and documents which have been performed.

9. During the period when the Agreement is executed, if the legal entity of both parties occurs, dissolution, rescind and changes etc., one party shall inform the other party by written notice. Both parties shall specify otherwise or negotiate to solve the problem about the legal entity of rights and obligations.

10. During the transfer period, Party B shall permit Party A to manufacture and sell in the name of Party B and cooperate with Party A. If Party B does not cooperate, it shall compensate RMB [amount] to Party A. In the process of selling in the name of Party B, if Party A breaches national sales regulation and causes damages to Party B's fame, Party A shall compensate the economic loss caused to Party B.

11. Because Party B needs the fund urgently, both parties agree to modify the article four way of payment based on mutual negotiation. Party A shall pay transfer fees of RMB [amount] at one time to Party B within three business days after the Agreement is signed and notarized, provided that Party B shall provide contract guarantee of ownership of all trademarks and manufacture qualification under the name of Party B. The contact guarantee shall be released if Party A completes sample production of three batches and makes the application to Heilongjiang Food and Drug Administration which confirms the transfer could be accepted.

12. If Party A has paid off the consideration, but Party B could not cooperate with Party A to complete the transfer, Party B shall double compensate Party A including all related fees occurred during the transfer period. In order to guarantee the economic benefit of both parties, Party B shall provide all transfer documents within seven days after the Agreement is signed. Within two business days after inspection and confirmation by an authorized person from Party A, Party A shall transfer the money to the bank account of Party B. Concurrent with wire payment, Party B shall provide all documents to Party A.

Article IX The Agreement is exclusive. If Party B breaches, it shall pay RMB [amount] to Party A as breaching compensation.

Article X For any disputes arise from executing this Agreement, both parties shall negotiate to settle the disputes. If the disputes are not settled by negotiation, either party may bring the lawsuit in the court where the plaintiff resides.

Article XI As for the items not covered in this Agreement, both parties need to sign a supplementary agreement which has the same legal effect with this Agreement.

Article XII This Agreement is executed in six copies. Party A and Party B held three copies respectively.

This Agreement is taken into effect after the authorized representatives of both parties sign, seal and notarize the Agreement.

Party A:

Authorized representative

Signed on

Party B:

Authorized representative:

Signed on

Discussion Tips and Answers to Multiple Choice Questions

Chapter 1: Introduction

Discussion points

1. What do you understand about Innovation Ecosystem, Knowledge Economy and Intellectual Capitalism?

a. Innovation ecosystem describes the large number and diverse nature of participants and resources that are necessary for innovation. These include entrepreneurs, investors, researchers, university faculty, venture capitalists as well as business development and other technical service providers such as accountants, designers, contract manufacturers and providers of skills training and professional development.

b. The knowledge-based economy describes trends in advanced economies towards greater dependence on knowledge, information and high skill levels, and the increasing need for ready access to all of these by the business and public sectors.

c. Intellectual capitalism refers to an economic system with basic capitalist institutions in which productive assets and processes, as well as commercial transactions and products, are predominantly intellectual or non-material rather than physical in nature.

d. Intellectual capital is the intangible value of a business, covering its people (human capital), the value relating to its relationships (relational capital), and everything that is left when the employees go home (structural capital), of which intellectual property (IP) is but one component.

2. What role does your National Government play in fostering innovation-based economy? List the framework and incentives provided by your local government.

a. The local government policies shape the nation's innovation ecosystem. Thus, the enabling policy frameworks play a key role in fostering innovation-based economy.

b. Each country would have its own innovation policy, statutes, regulatory mechanisms, etc.

3. Review the basis of calculation of Global Innovation Index criteria. Map your organization on the various parameters of GII.

a. See GII 2019.

Answers to multiple choice questions

1. e 2. c 3. a 4. a 5. d

6. a 7. b 8. d 9. b 10. a

Chapter 2: IP Assets— Identification and Protection

Discussion points

1. What is the role of patents in technology-based innovation? Is the term of protection available for patents sufficient to provide leverage to the innovator organizations in different industry sectors e.g. Pharmaceutical Industry, Telecom Industry and Automobile Industry for its exploitation to the fullest extent?

a. Patents protect inventions and hence are the most important IP Assets for technology-based organization.

b. Different sectors and organizations need patent protection for different reasons and durations. The Pharma industry would need long term protection whereas Telecom would need early grant but they would not necessarily maintain the patent for full term. Automobile industry would be somewhere in between with respect to the requirement of longer patent terms.

2. Identify the trademarks used in your organization. Categorize them as registered and not registered.

a. This exercise can be done for government departments as well. Non-registered trademarks may also have value.

3. What are the different intellectual property rights that a locally grown tea company can acquire for its distinct tea-based business?

a. Local tea may have Geographical Indication associated with it. A company has to have a trademark. The possibility of patents and trade-secrets also exist.

Answers to multiple choice questions

1. c 2. c 3. b 4. b 5. e

6. b 7. a 8. b 9. b 10. b

Chapter 3: IP Strategy and Management Tools

Discussion points

1. If you are the IP manager for a technology driven institution having an IP portfolio of 100 patents in one technical domain i.e. Agricultural Biotechnology, what would be your top five actions for best management of the portfolio?

a. There could be many possible actions, such as conducting IP Audit as maintaining 100 patent portfolios would have cost implications.

b. Scouting for license partners.

c. Making non-commercialized patents available for sale.

d. Review and pruning of portfolio as per Vision of the organization.

e. Periodic meeting with researchers to build and strengthen the portfolio.

2. IP Strategy, IP Policy and IP Management are distinct but important aspects of an organization. Discuss reasons and interconnection.

a. IP strategy is the decision path for an action to be taken with respect to IP portfolio.

b. IP Policy is the guidance document for taking the pre-decided steps for various IP related activities.

c. IP Management is managing the IP Portfolio of the organization.

3. Conduct a SWOT analysis of your organization's IP portfolio, or of an organization that you intend to invest in.

a. Take guidance from the text and lay down the S-W-O-T of an organization.

Answers to multiple choice questions

1. a 2. d 3. f 4. c 5. e

6. a 7. b 8. e 9. d 10. a

Chapter 4: IP Commercialization

Discussion points

1. How can IP be commercialized by the IP owner without licensing of IP? Discuss two ways.

- Sale of IP
- Filing infringement action against users of IP

2. How can publication, instead of protecting and providing free access to certain IP rights, benefit the IP owner?

- It would depend on what is the goal of the IP owner. For example, the IP owner may want more research in the area of a specific IP Portfolio. Free access would encourage the same.
- Or the IP owner may not be using the IP due to market consideration and does not want to prune the portfolio. The free access may lead to market demand in future.
- The IP owner may not register the IP but would not want others to claim rights over it. Publication would authenticate the ownership and save future litigation costs.

3. What are the concerns to be taken into consideration while initiating IP licensing activity? Discuss any three.

- Finding Trustworthy Partnership.
- Negotiating win-win terms.
- Terms for fore-ground and back-ground IP.

Answers to multiple choice questions

1. e 2. b 3. a 4. d 5. e

6. a 7. b 8. c 9. e 10. e

Chapter 5: Technology Transfer

Discussion points

1. What is the role of the Technology Transfer Office (TTO) for a university? Can a TTO provide its services to more than one university?

- TTOs have an important role in Universities as the researchers usually do not have the legal or management skills required for technology transfer.
- Yes, TTO can service more than one university as long as there is no conflict.

2. Technology transfer requirements for software related technology would be very different as compared to a pharmaceutical or biotechnology-based invention. Elaborate.

- Software technology transfer usually requires several patents to be used together. They have short shelf life as the market keeps changing. E.g. a standard essential patent.
- Pharmaceutical technology transfer varies with the stage of transfer, pre-clinical or post-clinical stage, regulatory approval stage, etc. Usually one or very few patents are involved in technology transfer. It involves long term investment, e.g. a new drug for cancer.
- Biotechnology patents usually require use of patent pools for its functioning. The local regulatory scenario determines its success. E.g. a stem cell derived invention.

3. Discuss the hurdles in effective technology transfer license agreement being executed.

- Licensee and Licensor concerns.
- Local laws.
- Requirement of hand-holding by sharing of know-how.
- No clarity on Freedom to Operate.

Answers to multiple choice questions

1. e 2. b 3. b 4. c 5. b

6. e 7. a 8. d 9. c 10. b

Chapter 6: Enforcement Strategy and Dispute Resolution

Discussion points

1. What are different means of alternate dispute resolution (ADR) that can be pursued by the IP owners?

- Arbitration.
- Mediation.
- Combination of both.

2. What are the prerequisites for proceeding with ADR?

- Agreement between the parties to proceed with ADR is the main prerequisite.

3. Litigation usually involves huge costs. Discuss the IP litigation strategy for a university owned technology IP being infringed by a multinational company and vice-versa.

- Create a hypothetical situation. For example –what kind of IP is being infringed, what is the university budget, what is the risk appetite, valuation of IP, cost-benefit analysis, etc.

Answers to multiple choice questions

1. a 2. e 3. a 4. b 5. d

6. d 7. d 8. b 9. b 10. c

Glossary

Alternative Dispute Resolution: Alternative dispute resolution (ADR) offers an alternative to formal court-based systems for tackling intellectual property disputes that may arise in relation to any contract, arrangement or other commercial relationship. It seeks to resolve disputes in non-adversarial ways in order to reach outcomes of mutual benefit for all parties. With ADR, the parties themselves assume responsibility for solving the conflict and can take into account issues other than legal norms. ADR is characterized by having both formal and informal procedures, offering options beyond those of litigation, and granting parties more control in determining the parameters of the dispute and the most appropriate way to reach resolution.

Applicant for Patent: A person claiming to be the first and true inventor, or assignee of the first and true inventor of an invention. There may be one or more applicants. In the United States, the applicant(s) must be the inventor(s). For a PCT international application the applicant must be any natural person or legal entity who is a national or resident of a PCT Contracting State. An applicant is sometimes known as an assignee or owner.

Arbitration: A form of alternative dispute resolution to resolve disputes outside the courts. The dispute will be decided by one or more persons (the 'arbitrators', 'arbiters' or 'arbitral tribunal'), which renders the 'arbitral award'. An arbitral award is legally binding on both parties and enforceable in the courts.

Assignment: A transfer of ownership of intellectual property (IP) rights to another party. An assignment of a patent, for example, is a transfer of sufficient rights so that the recipient has title to the patent. An assignment can be a transfer of all rights of exclusivity in the patent, a transfer of an undivided portion (for example, a 50 percent interest), or a transfer of all rights within a specified location (for example, a certain area of Asia). Anything less is considered to be a license transfer, rather than a patent transfer.

Berne Convention: A major multinational copyright treaty, with nearly 150 members. There are five main points to the Berne Convention: (1) national treatment, that is, non-discrimination with respect to foreign authors and copyright owners; (2) no formalities, that is, copyright is automatically granted and is not conditioned on formalities such as registration or notice; (3) minimum duration of copyright; (4) moral rights provided to authors under the national laws of member nations; and (5) copyright protection independent of whether such protection exists in the country of origin.

Biotechnology: Technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use. Modern biotechnology is the application of: a) in vitro nucleic acid techniques, including recombinant deoxyribonucleic acid (DNA) and direct injection of nucleic acid into cells or organelles, or b) fusion of cells beyond the taxonomic family, that overcome natural physiological reproductive or recombination barriers and that are not techniques used in traditional breeding and selection.

Cease and Desist letter: A document sent to an individual or business to stop purportedly illegal activity and not to restart it. The letter may warn that if the recipient does not discontinue specified conduct, or take certain actions, by deadlines set in the letter, that party may be sued.

Citation: Occurring in a patent document, search report, or in any other document, it is a reference to another document, which may affect the patentability of a (claimed) invention. If the citation refers to a patent document, it states who published the document, the serial number and, usually, the publication date of that document. If the citation refers to a scientific article or a book, it consists of the title of the periodical or book, the title of the article, the volume and page number and, usually, the publication date. A citation may also make reference to an oral disclosure, use, exhibition or other means of disclosure.

Claim: The part of a patent document which defines, in legal terms, the subject matter which the applicant regards as his invention and for which protection (and monopoly) is sought or granted. Each claim is a single sentence in a legalistic form that defines an invention and its unique technical features. Claims must be clear and concise and fully supported by the description. Most patent documents, including international applications, must contain at least one claim. Claims are usually located at the end of a patent document, after the detailed description, and before any drawings or Search Report. Claims of the patent define the invention (the technology that is the exclusive property of the patentee for the duration of the patent) and are legally enforceable, that is, the claims set the metes and bounds of the patent rights. The claim or claims are interpreted as set forth in the specification. The Terms and phrases used in the claims must be sufficiently described in the specification, that is, patent claims must read in the light of the specification. The specification discloses and the claims define the invention.

Commercialization: The process of taking an invention or discovery to the marketplace. It involves working the idea into a business plan, consideration of protection options, and determining how to market and distribute the finished product.

Compulsory license: A license granted by the state upon request to a third party that, through the license, is permitted to exploit a patented invention after the owner of the patent has refused to provide a voluntary license under acceptable conditions.

Confidentiality Agreement (nondisclosure agreement, confidential disclosure agreement): A legal document through which intellectual property can be disclosed by one party to another wherein the latter party is permitted to use the information for certain purposes, and only those purposes that are stated in the agreement, and agrees not to disclose the information to others.

Convention on Biological Diversity: An international agreement articulated at the 1992 Earth Summit in Rio de Janeiro, the Convention seeks to establish a comprehensive strategy for sustainable development, setting out commitments for maintaining the world's ecological underpinnings in light of increasing business and economic development. The Convention established three main goals: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits from the use of genetic resources.

Copyright: An exclusive right conferred by the government on the creator of a work to bar others from reproducing, adapting, distributing to the public, performing in public, or publicly displaying said work. Copyright does not protect an abstract idea; it protects only the concrete expression of an idea. In order to obtain copyright protection, a work must have originality and some modicum of creativity.

Counterfeiting: Fraudulent Imitation. Making exact imitation of something valuable with the intention to deceive or defraud.

Cross licensing: A legal agreement in which two or more parties that have potentially conflicting patent claims, or other conflicting IP rights, reach an agreement to share the IP rights in question through a reciprocal licensing arrangement.

Damages: Damages, in law, means money compensation for loss or injury caused by the wrongful act of another.

Defensive Publications: Publications of the details of an invention to prevent others from obtaining a patent on the invention, at a later date. Such "defensive publications" can be made available to examiners at patent offices to prevent a patent application from being granted.

Derivative Work: In copyright law, the term "derivative works" refers to the translations, adaptations, arrangements and similar alterations of pre-existing works which are protected as such without prejudice to the copyright in the pre-existing works. Sometimes, the term is used with a broader meaning, extending to the compilations/collections of works. In this sense, a "derivative work" includes compilations of data or other material, whether in machine-readable or other form, which, by reason of the selection or arrangement of their contents, constitute intellectual creations. The author's moral right may limit the right of third parties to make a derivative work. Therefore, even when a person is contractually or statutorily entitled to modify the work or to use it to create a derivative work, the author may object to any distortion of the work that is prejudicial to his or her reputation.

Disclosure of origin: A requirement imposed on patent applicants to disclose in patent applications the geographic origin of biological material on which the invention (subject of the patent application) is based.

Disclosure Requirements: Disclosure is part of the core rationale of patent law. Patent law imposes a general obligation on patent applicants, to disclose the invention in a manner sufficiently clear and complete for the invention to be carried out by a person skilled in the art. However, "disclosure requirements" is also used as a general term for reforms made to patent law at the regional or national level, and proposals to reform international patent law, which would specifically require patent applicants to disclose several categories of information concerning traditional knowledge and/or genetic resources when these are used in developing the invention claimed in a patent or patent application.

Disclosure: According to Black's Law Dictionary, a "disclosure" is a revelation of facts, or an act or process of making known something that was previously unknown. In the field of copyright, "disclosure" may mean making a work accessible to the public for the first time.

Due diligence: Investigations undertaken to assess the ownership and scope of one or more IP rights that are being sold, licensed or used as collateral in a transaction. This is done in order to identify business and legal risks associated with the IP rights being analyzed. Black's Law Dictionary defines due diligence as the diligence reasonably expected from, and ordinarily exercised by, a person who seeks to satisfy a legal requirement or to discharge an obligation.

Exclusive license agreement: A legal document licensing intellectual property to another party for its exclusive use. Exclusively licensed patent rights cannot, within the scope or field of the exclusive license, be subsequently or simultaneously licensed to any other party.

Ex-parte: Latin legal term meaning literally "from/out of the party/faction of", thus signifying "on behalf of". An ex parte decision is one decided by a judge without requiring all of the parties to the dispute to be present.

Field-of-use restriction: A provision in an IP license that restricts use of the licensed intellectual property by the licensee to only a defined product or service market.

First to file: A rule under which patent priority is determined. The rule gives priority to the party that first files a patent application for an invention, rather than to the party that is first to invent. For trademarks, priority between conflicting applications to register a trademark is handled by publishing the application with the earliest filing date for possible opposition by the applicant with a later filing date.

Freedom to Operate: The ability to undertake research and/or commercial development of a product without infringing the unlicensed intellectual or tangible property rights of others.

Freedom-to-Operate Search: A freedom-to-operate search is performed to identify patents or applications which may cover a proposed product or process and are still in force. Such a search will be country or region specific and require analysis of claims and legal status. It is similar to infringement search.

Global Innovation Index: An annual ranking of countries by their capacity for, and success in, innovation. Published by INSEAD, Cornell and WIPO.

Goodwill: Goodwill is a miscellaneous category for intangible assets that are harder to parse out individually or measured directly. Customer loyalty, brand reputation, and other non-quantifiable assets count as goodwill. A business or person's goodwill toward consumers keeps them loyal to the company and can even generate more customers for the business. Goodwill can be defined as a business's reputation and also as a client or customer's investment in a particular business. In the world of accounting, goodwill is calculated as a company's value beyond the fair market value of its assets. This type of goodwill matters most when companies are negotiating business purchase agreements.

Granted Patent: A legal document giving an inventor the right to exclude others from (i.e. monopolize) making, using, or selling the invention according to the laws governing patents in the country or region granting the patent.

Industrial applicability or utility: It's the requirement of patent grant.

Infringement Search: An infringement search is performed to identify patents or applications which may cover a proposed product or process and are still in force. Such a search will be country or region specific and require analysis of claims and legal status.

Infringement: An invasion of an exclusive right of intellectual property. According to Black's Law Dictionary, an infringement is an act that interferes with one of the exclusive rights of an intellectual property right owner. Infringement of a utility patent includes making, using, or selling a patented product or process without permission. Infringement of a design patent involves fabrication of a design that, to the ordinary observer, is substantially the same as an existing design, where the resemblance is intended to induce the observer to purchase one thing supposing it to be another. Infringement of a trademark consists of the unauthorized use or imitation of a mark that is the property of another in order to deceive, confuse, or mislead others. Infringement of a copyright

involves reproducing, adapting, distributing, performing in public, or displaying in public the copyrighted work of someone else.

Innovation: In a general way, innovation is a way of creating a new value through a new idea. More concretely, innovation could be applied to new products, new processes, methods, inventions or organizations. Innovation often involves rights of the creators; these rights are called IP rights. Technological innovation is the development of a technical solution to a specific technical problem. The technological solution may be referred to as an invention.

Intellectual property (IP): Creative ideas and expressions of the human mind that have commercial value and are entitled to the legal protection of a property right. Intellectual Property includes the creations of the mind such as inventions, literary and artistic works, and symbols, names, images, and designs used in commerce. The legal mechanisms for protecting intellectual property are mainly copyrights, patents, and trademarks, among others. IP rights enable owners to select who may access and use their intellectual property and to protect them from unauthorized use.

Intellectual Property Management: The means by which an institutionally owned IP portfolio is managed with regard to marketing, patenting, licensing, and administration.

International Patent Classification: The International Patent Classification (IPC) is a hierarchical system in which the whole area of technology is divided into a range of sections, classes, subclasses and groups. The IPCis a language independent tool indispensable for the retrieval of patent documents in the search for 'prior art'.

Invalidity Search: An invalidity or opposition search identifies patent and non-patent documents which may impact the claims of a specific patent. This can help block patents and establish solidity of a patent portfolio which may be useful for licensing or company acquisition.

Invention: The creation of a new technical idea and the physical embodiment of the idea or the means to accomplish it. To be patentable, an invention must be novel, must have utility, and would not have been obvious to those possessing ordinary skill in the particular art of the invention.

Inventive step (non-obviousness): A condition for patentability, which means that the invention would not be obvious to someone with knowledge and experience in the technological field of the invention.

Inventor: Someone who has a new idea and pursues its development. Inventors apply for patents on their inventions.

Joint Venture (JV): Commercial enterprise undertaken jointly by two or more parties which otherwise retain their distinct identities.

Know-How: Information that enables a person to accomplish a particular task or to operate a particular device or process. Similar to trade secrets.

License: A grant of permission to use an IP right within a defined time, context, market line, or territory. There are important distinctions between exclusive licenses and nonexclusive licenses. An exclusive license is "exclusive" as to a defined scope, that is, the license must be the only license granted for a particular IP asset for that particular scope. However, there might be many possible fields and scopes of use for the same invention that can also be subject to exclusive licensing. In giving an exclusive license, the licensor promises that he or she will not grant other licenses with

the same rights within the same scope or field covered by the exclusive license. The owner of IP rights may grant any number of nonexclusive licenses covering rights within a defined scope.

Licensee: A party obtaining rights under a license agreement.

License-in: A legal contract given by a licensor to a licensee for the right to use a patented invention, trademark, design, or copyrighted work.

License-out: The process by which one person, company, or institution extends to another person, company, or institution permission to use the former's intellectual property.

Licensing Agreements: Agreements setting out certain permitted use of materials or rights that the provider is entitled to grant, such as agreements to license the use of genetic resources as research tools, or to license the use of associated traditional knowledge or other intellectual property rights.

Licensor: A party granting rights under a license agreement.

Maintenance fees: Fees for maintaining a patent in force. The fees typically have to be paid at regular intervals, depending on the jurisdiction, and significantly increase over time.

Material Transfer Agreement (MTA): A contract between the owner of a tangible material and a party seeking the right to use the material for research or other assessment purposes. The material may be either patented or unpatented. MTAs tend to be shorter than license agreements. MTA may also be part of or annexed to a license agreement. The purpose of an MTA is to document the transfer of the material and outline the terms of use, including identification of the research or assessment project, terms of confidentiality, publication, and liability. MTAs, in commercial and academic research partnerships involving the transfer of biological materials, such as germplasm, microorganisms and cell cultures, refer to exchange of materials from a provider to a recipient and setting conditions for access to public germplasm collections, seed banks or *in situ* genetic resources.

Med-Arb: When mediation does not lead to settlement, a process, in which parties agree to proceed with arbitration resulting in a legally binding decision.

Mediation: A structured, confidential process in which a neutral third-party assists disputing parties in working towards negotiating a settlement. The third party's decision, unlike arbitration and adjudication, is not legally binding.

Mediator: A trained professional who remains neutral to assist participants in mediation to reach a mutually agreeable consensus.

Mergers & Acquisitions: Describes the consolidation of companies or assets through various types of financial transactions, including mergers, acquisitions, consolidations, tender offers, purchase of assets and management acquisitions.

Misuse, Patents: Black's Law Dictionary defines “misuse” as “the use of a patent either to improperly extend the granted monopoly to non-patented goods or to violate antitrust laws.” In general, Black's Law Dictionary states: “improper use, in an unintended or unforeseeable manner.” Misuse generally means a wrong, incorrect or improper use, or misapplication. Misuse may also refer to improper or excessive use, or to acts which change the inherent purpose or function of something.

Monopoly: Control of a commodity or service in a particular market which enables the one having control to raise the price substantially above that fixed by free competition. A granted patent gives a monopoly to the applicant for the technology claimed for a limited time, in return for the applicant

disclosing the technical means to carry out the invention. The English Statute of Monopolies of 1623 was a founding document for patent systems today.

Moral rights: The right of the creator of a work to be attributed authorship. In simple terms, this is the right to be identified as the author. In case of reproduction, publication, adaptation or exhibition of works of a creator by someone else, it is the right of the creator to be attributed to the work. Attribution should always be clear so that it is reasonably identifiable by the audience. For example, scribbling the artist's name at the bottom of a large painting in tiny handwriting is not correctly attributing the work to the author. Moral rights protect the reputation and integrity of creators. Moral rights are for life, moral rights cannot be assigned, unlike copyright.

Nation: Black's Law Dictionary defines "nation" as a large group of people having a common origin, language, and tradition and usually constituting a political entity. "Nationals" refers to persons, natural or legal, who are domiciled or who have a real and effective industrial or commercial establishment in a customs territory. The term "nation" carries connotations of a community shaped by common descent, culture and history and often by a common language as well.

Non-Disclosure Agreement: Commonly referred to as an "NDA". Protects confidential information by requiring that the information revealed be kept in confidence. It limits use or distribution of the information revealed and establishes legal liability for unauthorized use or exposure of information revealed.

Non-exclusive license: A license under which rights are granted to the licensee but not exclusively to that licensee; the licensor reserves the right to give the same or similar rights to use the licensed materials to other parties.

Notice: A formal sign or notification attached to items that embody or reproduce an intellectual property asset—for example, the presence of the word patent or its abbreviation, pat., together with the patent number, on a patented article made by a patent holder or his/her licensees. Example, the notice of trademark registration is the letter R inside a circle: ®. Notice of copyright consists of the letter C in a circle symbol: ©.

Novelty Search: Similar to patentability search. A novelty search is made to identify patents and non-patent literature which may affect the patentability of an invention. This search is recommended to applicants to be done before writing and filing the patent specification, and as such is sometimes called a pre-application search. The scope of a novelty search is narrower than a State-of-the-Art search.

Novelty: Novelty is one of the criteria of patentability in any examination as to substance. An invention is new if it is not anticipated by prior art.

Patent application: A technical document that describes in detail an invention for which a patent is sought. It is submitted by an inventor requesting to be issued a patent for an invention described in the specification which accompanies the application.

Patent Documents: Normally includes the following -published patent applications, patents for invention, inventors' certificates, utility certificates, utility models, patents or certificates of addition, inventors' certificates of addition, utility certificates of addition and published applications thereof.

Patent examination: A process of review of a patent application, undertaken by a patent examiner, to determine whether the application complies with all statutory requirements for patentability. The

examination process reviews prior art to ensure novelty, along with determining compliance with other statutory requirements, rules, and matters of procedure and form.

Patent Families: A group of patent equivalents relating to a specific invention make up a patent family. Members of a closely-related patent family have a common priority application number and date. Extended patent family members typically result from complex relationships but sharing at least one common priority application from different countries. Or extended patent family members may relate to relationships resulting from divisions, continuations, or continuations-in-part.

Patent Information: Types of patent information covers (1) technical information relating to articles, products, processes and uses and is described in the examples, drawings, and formulae of the patent documents, (2) legal status information relating to whether the patent or other industrial property right is in force, data from the patent register, etc., and (3) bibliographic information relating to published patent documents.

Patent pool: A patent pool is an agreement between two or more patent owners to license one or more of their patents to one another or to third parties. A patent pool allows interested parties to gather all the necessary tools to practice a certain technology.

Patent Search: Conducting a search to retrieve patent related information. It is mainly done using online databases and the results are analyzed keeping in view the purpose of the search.

Patent Searching: Search to identify any documents considered to be necessary to determine whether the invention is new and involves an inventive step. Types of search-(1) according to technical means used e.g. manual search (in a paper collection), on-line search (in a computerized file), offline electronic search (e.g. in a DVD collection). (2) according to the purpose of the search - state of the art search, novelty search, infringement search, etc. (3) according to the means used -classification search, name search, catchword (keyword) search, full text search, text mining etc.

Patent Trolls or Patent Assertion Entities (PAEs) and Non-Practicing Entities (NPEs): They are entities that own patents but do not make products from them. While there are differences between the two, both are sometimes referred to as "patent trolls" because they are seen as exploiting technological advances that make it difficult to establish boundaries for patents and they use aggressive litigation tactics against target companies, such as threatening to sue for patent infringement without specific evidence.

Patent: A patent is a document which describes an invention which can be manufactured, used, and sold with the authorization of the owner of the patent.

Patentability Search: A patentability search is made to identify patents and non-patent literature which may affect the patentability of an invention. This search is recommended to applicants to be done before writing and filing the patent specification, and as such is sometimes called a pre-application search. The scope of a patentability search is narrower than a State-of-the-Art search.

PCT applications or PCT/International Patent Application: An application for the protection of an invention filed under the Patent Cooperation Treaty (PCT). An international application contains a request, a description, one or more claims, one or more drawings, if required, and an abstract.

Piracy: The unauthorized use or reproduction of another's work. Software piracy is a common form of copyright infringement.

Plant Variety Protection (PVP): A form of patent-like protection for plants, as well as hybrids, tubers, and harvested plant parts. Also covers Plant breeders' rights in some jurisdictions which are to protect new varieties of plants by giving exclusive commercial rights to market a new variety or its reproductive material.

Prior Art: All the knowledge that existed prior to the relevant filing or priority date of a patent application, whether it existed by way of writing or oral disclosure. Everything made available to the public anywhere in the world by means of written disclosure (including drawings and other illustrations) shall be considered prior art provided that such making available occurred prior to the relevant date. (1) In a broad sense, technology that is relevant to an invention and was publicly available (e.g. described in a publication or offered for sale) before the relevant priority date, (2) In a narrow sense, any such technology which would invalidate a patent or limit its scope. The process of determining whether the claimed invention is new and involves an inventive step (i.e. is not obvious) for the purposes of search and examination largely consists of identifying relevant prior art and distinguishing the claimed invention from that of prior art. Synonym of "State of the Art."

Priority application: The application with the earliest date, when an inventor files for a patent in more than one country. The Paris Convention enables an inventor to file in the first country and then claim priority (for a period up to 12 months) for filing an application in other countries which are contracting parties to the Paris Convention or which are Members of the World Trade Organization.

Priority Date: In the context of the IP application, priority date means the filing date of the earliest application of which priority is claimed, and if no priority is claimed, the filing date is the date of the first presented application.

Publication: Making available the contents of IP assets, in documentary form or otherwise to the public. Depending on the particular national law, patent documents may be published on several levels of publication.

Resolution: An agreement or partial agreement; this may be underpinned by a settlement agreement document.

Royalty: Monies generated from the licensing and commercialization of inventions and technologies. Intellectual Property agreements typically contain the formula for dispersal of a percentage of royalties among the inventor, university, technology transfer office or other designated parties.

Settlement Agreement: A brief document setting out the key terms of the negotiated agreement or resolution.

State of the Art: The level of development to which a particular area of technical subject matter has advanced at a given date, to help guide research. It consists of everything disclosed to the public, including patent and non-patent literature. Synonym of Prior Art. In connection with a particular invention, the state of the art is decisive for the determination of the patentability of the invention in regard to novelty and inventive steps.

Subject Matter Search: Subject matter searches establish the state of the art for a particular technology area, to find out about solutions to a technical problem, or to find patents comparable to the claimed invention. These searches usually involve a combination of text and classification searching, such as the International Patent Classification.

Tangible Expressions: "Tangible" refers to an expression capable of being touched and seen; perceptible to the touch; capable of being possessed or realized. It is opposed to "intangible" which

refers to something that lacks a physical form, not capable of being touched; impalpable (Black's Law Dictionary).

Technology transfer: The process of transferring scientific research results, technical expertise or know-how developed by an individual, enterprise, university or organization to another individual, enterprise, university or organization. Effective technology transfer results in the commercialization of a new product or service.

Term/duration: The term, or length of time that an IP right lasts.

Terms, Agreed: Agreed Terms means, in relation to any document, the terms agreed between the parties and signed or initialed for identification purposes only by or on behalf of each party prior to execution of this Agreement.

Trade secret: Business information that is the subject of reasonable efforts to preserve confidentiality and has value because it is not generally known in the corresponding trade. Such confidential information is protected against those who gain access to it through improper methods or by a breach of confidence. Misappropriation of a trade secret is a type of unfair competition.

Trademark: (1) A word, slogan, design, picture, or other symbol used to identify and distinguish goods. (2) Any identifying symbol, including a word, design, or shape of a product or container, that qualifies for legal status as a trademark, service mark, collective mark, certification mark, trade name, or trade dress. Trademarks identify a seller's goods and distinguish them from goods sold by others. They signify that all goods bearing the mark come from, or are controlled by, a single source and are of an equal level of quality. And they advertise, promote, and generally assist in selling goods. A trademark is infringed by another if the second use causes confusion of source, affiliation, connection, or sponsorship.

Traditional knowledge (TK): Tradition-based creations, innovations, literary, artistic or scientific works, performances and designs originating from or associated with a particular people or territory. It includes know-how, practices, skills, and innovations. Traditional knowledge can be found in a wide variety of contexts, including agricultural knowledge; scientific knowledge; technical knowledge; ecological knowledge; medicinal knowledge, including related medicines and remedies; and biodiversity-related knowledge, etc.

Unfair Competition: Black's Law Dictionary defines "unfair competition" as "dishonest or fraudulent rivalry in trade and commerce; esp., the practice of endeavoring to pass off one's own goods or products in the market for those of another by means of imitating or counterfeiting the name, brand, size, shape, or other distinctive characteristic of the article or its packaging."

Universal Declaration of Human Rights: The Universal Declaration of Human Rights is a milestone document in the history of human rights. Drafted by representatives with different legal and cultural backgrounds from all regions of the world, the Declaration was proclaimed by the United Nations General Assembly in Paris on December 10, 1948, as a common standard of achievements for all peoples and all nations. It sets out, for the first time, fundamental human rights to be universally protected.

UPOV: The Convention of the International Union for the Protection of New Varieties of Plants. An international treaty that guarantees to plant breeders in member nations national treatment and a right of priority. National plant variety protection statutes of member nations are brought into

harmonization with the various UPOV provisions, for example, the requirements of distinctness, uniformity, stability, and novelty for new crop varieties.

Utility: The usefulness of a patented invention. To be patentable an invention must operate and be capable of use, and it must perform some "useful" function for society. See Industrial Applicability.

WIPO (World Intellectual Property Organization): A specialized agency of the United Nations, with two main objectives - (1) promote the protection of intellectual property worldwide, and (2) ensure administrative cooperation among the intellectual property Unions established by the treaties that WIPO administers.

Intellectual Property Management And Technology Licensing

Intellectual property is a key component of national innovation systems for stimulating economic growth and promoting inclusive and sustainable development. Intellectual property is not only a valuable strategic asset for research and development institutes and enterprises, but also key to their success. Efficient management and licensing of intellectual property has been a challenge due to limited human resource capability and management skills, especially in developing economies. Intellectual Property Management and Technology Licensing - Guide for Policymakers and Managers of Research and Development Institutes discusses the global mechanisms as well as various tools and practices for managing intellectual property and technology licensing. The publication is designed to guide and enhance the knowledge, understanding, skills and capability of science, technology, and innovation stakeholders in the member States of ESCAP. The publication is aimed to benefit the policy makers and managers of technology licensing/ transfer offices of Research and Development institutes and enterprises, especially in the Asia-Pacific Region.