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INTRODUCTION TO THE INTELLECTUAL PROPERTY SYSTEM

prepared by the International Bureau of WIPO

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INTRODUCTION

1. Today nobody challenges the importance of creativity, inventions and innovation for economic and technological development. Ever since mankind appeared on planet Earth, one of its major weapons for survival was the capacity to find innovative solutions to the problems encountered. The development of civilization over the centuries is marked by countless inventions and innovations that has facilitated the lives of mankind and made it more comfortable and easy. We cannot imagine today's world without those countless inventions and innovations.

2. Over the last two hundred years, with the acceleration of technological progress, the life of mankind has changed in a radical way and innovation has become a part of our every day life.

3. If in the past, a son had to wait until his father's death to introduce an innovation in his trade, today knowledge develops, accumulates and spreads so fast that as a result of technology and production methods, communication tools and methods, behavior patterns, etc., will change several times during the lifetime of an individual. Also, the knowledge and professional skills an individual has acquired during the years at school and at university will have to be updated several times during his or her lifetime.

4. Everyday we see and use products, which five or ten years ago we could not even have imagined, and some forecasts show that in five years half of the products we are using today and we see on the shelves of the shops and around us, will have disappeared and will have been replaced by new ones. All these developments are the result of inventive creativity and the innovation of mankind.

5. Long-term economic growth is the result of an increase and accumulation of scientific and technological knowledge, i.e. the increase of knowledge about useful goods and how to make them.

6. Economic progress requires a constant stream of new ideas and products to improve the quality of life, regardless of whether the innovation is a simple gadget or a sophisticated invention. There is now overwhelming empirical evidence that innovation and creativity bring competitive advantages to nations and companies. *Per capita* economic growth of countries is driven increasingly by innovation, not by aggregate capital investment *per se*.

7. The recent economic achievements of many countries have not sprung from their natural resources. Prosperity is no longer based on tin, rubber or timber. Countries rich in natural resources, for example, oil producing countries, are not necessarily the great economic powers.

GROWING ROLE OF INTELLECTUAL PROPERTY RIGHTS (IPR)

8. Intellectual capital is often of considerable value because it is unique. It comprises, *inter alia*, patents for inventions, trademarks, industrial designs, utility models, appellations of origin, integrated circuits topographies, copyrights, but also know-how, trade secrets, proprietary technology, talents, skill and knowledge of the work force, training systems and methods, customer lists, distribution networks, quality management systems, etc.

9. Intellectual capital is the foundation for market dominance and continuing profitability of many leading corporations. Intellectual capital is often the key objective in mergers and acquisitions and knowledgeable companies are increasingly using licensing routes to transfer these assets to low tax jurisdictions. In economic growth and competition, intellectual capital is increasingly being recognized as being among the most important assets of may of the world's largest and most powerful companies.

10. At the corporate level there is an increasing awareness that active and full control over technology, the new products and processes secures the way to competitive advantage. The focus is on innovations and invention based design. Analysis of product life cycle reveals their falling contribution as they mature. The upgrading of these products and the introduction of new ones demands well-planned innovative technology inputs.

11. The neo-classical economic theory assumed the technology progress essentially as an exogenous phenomenon. Current understanding of economic growth is at variance with this view which regards technology as a "free good." It is now widely acknowledged that technological progress occurs precisely as a result of entrepreneurial activities in anticipation of profits from innovations. The intellectual property system contributes to the transfer of technology and research results by providing a legal environment, which is conducive to encouragement of technology transfer and application.

12. Intellectual property represents the creations of the human intellect. Intellectual property relates to information, which can be incorporated in tangible objects and reproduced in different locations and can be used by several persons at the same time, unlike immovable or movable tangible property. Similar to the movable and immovable property, intellectual property is characterized by limitations of law, for example, limited duration in the case of copyrights and patens in order to safeguard the common interest of the society.

THE INTELLECTUAL PROPERTY SYSTEM

THE TWO BRANCHES OF INTELLECTUAL PROPERTY

13. Intellectual property is usually divided into two branches, namely "industrial" property and "copyright."[i]

(a) Copyright

14. Copyright relates to artistic creations, such as poems, novels, music, paintings, cinematographic works, etc. In most European languages other than English, copyright is called author's rights. The expression "copyright" refers to the main act which, in respect of literary and artistic creations, may be made only by the author or with his authorization. That act is the making of copies of the literary or artistic work, such as a book, a painting, a sculpture, a photograph, a motion picture. The second expression, "author's rights" refers to the person who is the creator of the artistic work, its author, thus underlining the fact, recognized in most laws, that the author has certain specific rights in his creation, for example, the right to prevent a distorted reproduction, which can be exercised only by himself, whereas other rights, such as the right to make copies, can be exercised by other persons, for example, a publisher who has obtained a license to this effect from the author.

(b) Industrial Property

15. The expression industrial property is sometimes misunderstood as relating to movable or immovable property used for industrial production, such as factories, equipment for production, etc. However, industrial property is part of intellectual property and thus relates to creations of the human mind. Typically, such creations are inventions and industrial designs. Simply stated, inventions are solutions to technical problems, and industrial designs are aesthetic creations determining the appearance of industrial products.

16. Industrial property includes also trademarks, service marks, commercial names and designations, including indications of source and appellations of origin, and the protection against unfair competition. Here, the aspect of intellectual creations—although existent—is less prominent, but what counts is that the object of industrial property typically consists of signs transmitting information to consumers. In particular, as regards products and services offered on the market, the protection is directed against unauthorized use of such signs which is likely to mislead consumers, and misleading practices in general are distorting the normal market relations.

17. The expression "industrial property" may appear as not entirely logical because it is only as far as inventions are concerned that the main segment of economy that is interested in them is industry. Indeed, in the typical situation, inventions are exploited in industrial plants. But trademarks, service marks, commercial names and commercial designations are of interest not only to industry but also and mainly to commerce. Notwithstanding this lack of logic, the expression "industrial property" has acquired a meaning, which clearly covers not only inventions but also the other objects just mentioned.

THE OBJECTS OF INDUSTRIAL PROPERTY PROTECTION

(i) Inventions

18. As has already been said, inventions are new solutions to technical problems. This is not an official definition. Most laws dealing with the protection of inventions do not define the notion of inventions. The Webster's Encyclopedic Dictionary gives the following meanings for the words "invention" and "to invent":

- *the act of inventing of an idea and the means or apparatus by which the result is obtained;*
- *anything invented or devised;*
- *the act or an instance of producing or creating by exercise of the imagination;*
- *to produce or create with the imagination.*

19. The WIPO Model Law for Developing Countries on Inventions (1979) contained the following definition: "*Invention means an idea of an inventor which permits in practice the solution to a specific problem in the field of technology*." One can also say that an invention is something that did not exist in nature and was created by exercising the imagination of the human mind.

(a) Patents

20. Inventions are usually protected by patents, also called "patents for invention." Every country granting legal protection to inventions—and there are more than 160 such countries—provides such protection through patents although there are a few countries in which protection may also be given by titles other than patents, such as utility models, as will be seen below.

21. But first, let us consider what a patent is. For the word "patent" you will find the following explanations in the Webster's Encyclopedic Dictionary:

- *a government grant to an inventor, his heirs, or assigns, for a stated period of time, conferring the exclusive right to make, use, license, or vend an invention, process, etc.;*
- *an invention, process, etc., that has been patented;*
- *an official document, conferring some right, privilege, or the like;*
- *the instrument by which the US conveys the legal fee-simple title to public land.*

22. For the purposes of the industrial property system we are interested in the meaning as a legal title, a document, that is called "patent" or "letters patent."

23. When the patent system (or industrial property system) was first introduced in its contemporary form over 200 years ago, the main underlying idea was to encourage creative individuals to develop new inventions and technology by giving them a time-limited privilege of market exclusivity in respect of their invention. In return for such exclusivity, inventors are required to disclose the substance of their invention. Thus the whole society would benefit, since such disclosure would promote useful science and technology and the dissemination of knowledge.

24. For that reason some researchers consider the patent document as a contract between the inventor and society (represented by the Government). The grant of a patent is not automatic: first the inventor has to request the grant of a patent, by filing a patent application (disclosing the invention) with a specially created government authority, then that government authority (usually called the Patent Office or Industrial Property Office or Intellectual Property Office) will examine the request as to its compliance with the basic requirements of the law for the grant of a patent for an invention (criteria for patentability) and eventually proceed with the grant. The document, issued by a Government authority, is called a patent or a patent for invention.

25. Not all inventions are patentable. Generally, laws require that, in order to be patentable, the invention must be new, it must involve an inventive step (or it must be non-obvious), and it must be industrially applicable. These three requirements are sometimes called the requirements or conditions of patentability.

26. The conditions of novelty and inventive step must exist on a certain date. That date, generally, is the date on which the application is filed. There exists one exception to the date of filing, which is related to filing subsequent patent applications, for the same invention, in other countries (different from the country where the first application has been filed). Such cases are governed by the priority rule, provided for in the Paris Convention for the Protection of Industrial Property ("the Paris Convention"). According to that provision all subsequent

patent applications, filed within a period of 12 months of the date when the first application was filed, will be considered as if they have been filed on the same date, as the original application.

27. The right to priority was introduced already in the original text of the Paris Convention with the objective to facilitate the acquisition of patent protection in foreign countries and thus to facilitate international trade and the transfer of technology.

28. It is customary to distinguish between inventions that relate to products and inventions that relate to processes. An invention concerning a new alloy or a new medical drug is an example of a product invention. An invention of a new method or process of making a known or new alloy or a medical drug is a process invention. The corresponding patents are usually referred to as a "product patent," and a "process patent," respectively.

29. Now, let us deal with the content or scope of the protection that the patent confers. Today the general international framework for the protection of intellectual property (including also patents for inventions) is the Agreement of Trade Related Aspects of Intellectual Property, known also as the TRIPS Agreement, concluded in the framework of the World Trade Organization (WTO) in 1994. The TRIPS Agreement integrated the majority of the substantive provisions of the two international conventions, that regulated intellectual property for over 100 years – The Paris Convention for the Protection of Industrial Property and the Berne Convention for the Protection of Artistic and Literary Works.

30. The existence of a patent for a given invention or technology means that anyone who wishes to exploit the invention or technology must first obtain the authorization of the person to whom the patent was granted—called "the patentee" or "the owner of the patent". If anyone exploits the patented invention without such authorization, he commits an illegal act. One speaks about "protection" since what is involved is that the patentee is protected against exploitation of the invention, which he has not authorized. Such protection is limited in time. According to Article 33 of the TRIPS Agreement the term of protection must not be shorter than a period of twenty years counted from the filing date.

31. The rights, the protection, conferred by the patent, are not described in the patent document. Those rights are described in the patent law of the country that granted the patent for invention. The patent laws of the countries, members of the WTO must comply with Section 5 of Part II of the TRIPS Agreement, which sets out, in its Article 28, the exclusive rights conferred by a patent. The other provisions, relating to patents, of the said Agreement deal, *inter alia*, with patentable subject matter, conditions on patent applicants and the reversal of burden of proof in respect of process patents. The rights, usually called "exclusive rights of exploitation," generally consist of the following:

- in the case of product patents, the right to prevent third parties from making, using, offering for sale, selling or importing the product that includes the invention; and

- in the case of process patents, the right to prevent third parties from using the process that includes the invention, and to prevent third parties from using, offering for sale, selling or importing products which were made by the process that includes the invention.

32. It has been mentioned earlier that, it is illegal to exploit commercially a patented invention without the authorization of the owner of the patent for invention. However, as already stated, there are exceptions to this principle, because patent laws may provide for cases in which a patented invention may be exploited without the patentee's authorization, for example, exploitation in the public interest by or on behalf of the government, or exploitation on the basis of a compulsory license.[ii] Also, it should be noted that all the information contained in a patent document can be used for R&D purposes without any limitation.

(b) Utility Models

33. Utility models as titles for protection of inventions exist in the laws of some 20 countries and in the OAPI regional agreement. In addition, some other countries (for example, Australia and Malaysia) provide for titles of protection, which may be considered similar to utility models. They are called "petty patents" or "utility innovations." The expression "utility model" is merely a name given to certain inventions, namely—according to the laws of most countries which contain provisions on utility models—inventions in the mechanical field. Utility models usually differ from inventions for which ordinary patents for invention are available mainly in three respects:

(i) in the case of an invention called "utility model," either only novelty but no inventive step is required or the inventive step required is smaller than in the case of an invention for which a patent for invention is available;
(ii) the maximum term of protection provided in the law for a utility model is generally shorter than the maximum term of protection provided for a patent for invention; and
(iii) the fees required for obtaining and maintaining the right are generally lower than those applicable to patents.

34. Moreover, in certain countries there is also a substantial difference in the procedure for obtaining protection for a utility model: this procedure is generally shorter and simpler than the procedure for obtaining a patent for invention.

(ii) Industrial Designs

35. Generally speaking, an industrial design is the ornamental or aesthetic aspect of a useful article. Such particular aspect may depend on the shape, pattern or color of the article. The design must appeal to the sense of sight. Moreover, it must be reproducible by industrial means; this is the essential purpose of the design, and is why the design is called "industrial."

36. In order to be protectable, an industrial design must, according to some laws, be new and, according to other laws, original.

37. Industrial designs are usually protected against unauthorized copying or imitation. Under Article 26.3 of the TRIPS Agreement, the duration of protection available shall amount to at least 10 years. Members of the said Agreement are also obliged to ensure that requirements for securing protection of textile designs, in particular in regard of any cost, examination or publication, do not unreasonably impair the opportunity to seek and obtain such protection.

38. The document that certifies the protection may be called a registration certificate or a patent. If it is called a patent, one must, in order to distinguish it from patents for invention, always specify that it is a patent for industrial design.

(iii) Intellectual Property in Respect of Integrated Circuits

39. The question of the type of protection to be given to the layout-design, or topography, of integrated circuits is relatively new. Although prefabricated components of electrical circuitry have been used for a long time in the manufacture of electrical equipment (for example, radios), large-scale integration of a multitude of electrical functions in a very small component became possible only a few years ago as result of advances in semiconductor technology. Integrated circuits are manufactured in accordance with very detailed plans or "layout-designs."

40. The layout-designs of integrated circuits are creations of the human mind. They are usually the result of an enormous investment, both in the terms of highly qualified experts, and financially. There is a continuing need for the creation of new layout-designs, which reduce the dimensions of existing integrated circuits and simultaneously increase their functions. The smaller an integrated circuit, the less the material needed for its manufacture, and the smaller the space needed to accommodate it. Integrated circuits are utilized in a large range of products, including articles of everyday use, such as watches, television sets, washing machines, automobiles, etc., as well as sophisticated data processing equipment.

41. Whereas the creation of a new layout-design for an integrated circuit involves an important investment, the copying of such a layout-design may cost only a fraction of that investment. Copying may be done by photographing each layer of an integrated circuit and preparing masks for the production of the integrated circuit on the basis of the photographs obtained. The high cost of the creation of such layout-designs, and the relative ease of copying, are the main reasons for the protection of layout-designs.

42. Layout-designs of integrated circuits are not considered industrial designs in the sense of the laws providing for the registration of industrial designs. This is because they do not determine the external appearance of integrated circuits, but, rather, the physical location, within the integrated circuit, of each element having an electronic function. Moreover, layout-designs of integrated circuits are not normally patentable inventions, because their creation usually does not involve an inventive step, although it requires a great amount of work by an expert. Due to the uncertainty surrounding the protection of layout-designs, national, regional, and international efforts focused on the question of what type and scope of protection would be appropriate.

43. On May 26, 1989, under the auspices of WIPO, the Treaty on Intellectual Property in Respect of Integrated Circuits was adopted at Washington, D.C., United States of America. The Treaty has not entered into force but its substantive provisions have, to a large extent, been adopted in the TRIPS Agreement. The main features of the protection mandated under the Treaty are summarized in the endnotes[iii].

(iv) Trademarks

44. A trademark is a sign[iv] used on, or in connection with the marketing of goods. Saying that the sign is used "on" the goods means that it may appear not only on the goods themselves but also on the container or wrapper in which the goods are when they are sold. Saying that the sign is used "in connection with the marketing" of the goods refers mainly to the appearance of the sign in advertisements (newspaper, television, etc.) or in the shop windows of the shops in which the goods are sold. Where a trademark is used in connection with services, it may be called "service mark." For example, hotels, restaurants, airlines, travel agencies, car-rental agencies, laundries and dry-cleaners use service marks. All that has been said about trademarks applies also, *mutatis mutandis*, to service marks.

45. In general, it may be said that a trademark performs four main functions. These functions relate to the distinguishing of marked goods or services, their origin, their quality and their promotion in the market place.

46. The *first* function of a trademark is to distinguish the products or services of an enterprise from products or services of other enterprises. Trademarks facilitate the choice to be made by the consumer when buying certain products or making use of certain services. The trademark helps the consumer to identify a product or service which was already known to him or which was advertised.

47. In view of the fact that a trademark has the function of distinguishing, only distinctive signs are capable of serving as trademarks, and the main purpose of protecting trademarks is to ensure that only distinctive signs are used and that confusion among trademarks is prevented.

48. The *second* function of a trademark is to refer to a particular enterprise which offers the products or services on the market, i.e., give an indication as to the origin of the goods or services for which the mark is used.

49. Trademarks do not only or not always distinguish products or services as such. They distinguish them in their relationship to a particular enterprise, namely, the enterprise from which the products or services originate. Thus trademarks distinguish products or services from one source, from identical or similar products or services from other sources, namely, the various enterprises which offer such products or services. This function is important in the definition of the scope of protection of trademarks. The decisive test for that protection is whether the average consumer, in view of identical or similar trademarks relating to products or services of the same kind or of similar kinds, may believe that those products or services originate from one and the same enterprise.

50. The *third* function of trademarks is to refer to a particular quality of the products or services for which the trademark is used. This function is not always recognized. In fact, the quality function of trademarks is one of the most controversial issues of trademark law.

51. The reasons for maintaining that trademarks have the function of referring to a particular quality of the products or services for which they are used may be summarized as follows: a trademark frequently is not used by only one enterprise since the trademark owner may grant licenses to use the trademark to other enterprises; it is accordingly essential that licensees respect the quality standards of the trademark owner. Moreover, trading enterprises

often use trademarks for products that they acquire from various sources. Thus, products, although not originating from one and the same enterprise, nevertheless have to correspond to certain common characteristics and quality standards, which are applied by the trademark owner. A trademark owner therefore guarantees that only products that correspond to those standards and quality requirements will be offered under the trademark. In such cases, the trademark owner is not responsible for producing the products but rather—and this may be equally important—for selecting those that meet these standards and requirements. This argument is supported by the fact that even where the trademark owner is the manufacturer of a particular product, in the manufacturing process parts are frequently used which have not been produced by the trademark owner but which have been selected by him.

52. The question whether a quality-guarantee function for trademarks is to be recognized has practical significance in connection with trademark licensing. In this connection, it is generally agreed that the licensee must respect certain quality standards set by the trademark owner.

53. A controversial issue arises in respect of the question whether the trademark owner himself may change the quality and, if he does so, what are the consequences with respect to the trademark. Various approaches to solve this question are at present under discussion but there does not yet exist a generally accepted solution.

54. The *fourth* and last function of trademarks is to promote the marketing and sale of products and the marketing and rendering of services.

55. This function recently has become more and more important. Trademarks are not only used to distinguish or to refer to a particular enterprise or a particular quality but also to stimulate sales. A trademark, which is to fulfill that function, must be carefully selected. It must appeal to the consumer, create interest and inspire a feeling of confidence. This is why this function sometimes is called the "appeal function."

56. Trademarks that overemphasize the appeal function may run the risk of being misleading. This is to be kept in mind in the selection of trademarks, for misleading trademarks are excluded from protection.

57. Any sign, or any combination of signs, capable of distinguishing the goods or services of one undertaking from those of other undertakings, shall be capable of constituting a trademark. Such signs, in particular words including personal names, letters, numerals, figurative elements and combinations of colors as well as any combination of such signs, shall be eligible for registration as trademarks (TRIPS Article 15.1). Most countries require that trademarks for which protection is desired be registered with a government authority. The protection that laws give to a trademark consists essentially of making it illegal for any entity other than the owner of the trademark to use the trademark or a sign similar to it, at least in connection with goods for which the trademark was registered or with goods similar to such goods. The TRIPS Agreement sets out, in its Article 16, the rights conferred by trademarks including, in particular, well-known marks.

(v) Trade Names

58. Another category of objects of industrial property is "commercial names and designations."

59. A commercial name or trade name—the two expressions mean the same thing—is the name or designation, which identifies the enterprise. In most countries, trade names may be registered with a government authority. However, under Article 8 of the Paris Convention for the Protection of Industrial Property, a trade name must be protected without the obligation of filing or registration, whether or not it forms part of a trademark. Protection generally means that the trade name of one enterprise may not be used by another enterprise either as a trade name or as a trademark or service mark and that a name or designation similar to the trade name, if likely to mislead the public, may not be used by another enterprise.

(vi) Geographical Indications

60. Finally, among commercial designations there are also geographical indications.

61. The TRIPS Agreement (Articles 22 to 24) establishes certain obligations as regards the protection of geographical indications, which are defined therein, for the purposes thereof, 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."* The notions of "indications of source" and of "appellations of origin," which are used in the Paris Convention, encompass geographical indications as defined by the TRIPS Agreement.

62. An indication of source is constituted by any denomination, expression or sign indicating that a product or service originates in a country, a region or a specific place (for instance, "made in ..."). As a general rule, the use of false or deceptive indications of source is unlawful.

63. An appellation of origin is constituted by the denomination of a country, a region or a specific place which serves to designate a product originating there, the characteristic qualities of which are due exclusively or essentially to the geographical environment, in other words to natural and/or human factors. The use of an appellation of origin is lawful only for a certain circle of persons or enterprises located in the geographical area concerned and only in connection with the specific products originating there (for instance, "Bordeaux").

(vii) Protection Against Unfair Competition

64. Another object of the protection of industrial property is the protection against unfair competition. Such protection, required under Article 10*bis* of the Paris Convention, is directed against acts of competition that are contrary to honest practices in industry or commerce. The following in particular constitute acts of unfair competition in relation to industrial property: all acts of such a nature as to create confusion with the establishment, the goods or the industrial or commercial activities of a competitor; false allegations in the course of trade of such a nature as to discredit the establishment, the goods or the industrial or commercial activities of a competitor; and indications or allegations the use of which in the course of trade is liable to mislead the public as to the characteristics of goods.

65. The protection against unfair competition supplements the protection of inventions, industrial designs, trademarks and geographical indications. It is particularly important for the protection of know-how, that is: technology or information which is not protected by a patent but which may be required in order to make the best use of a patented invention.

(viii) Trade Secrets

66. The TRIPS Agreement contains, in its Article 39, provisions on the protection of undisclosed information (trade secrets). In the course of ensuring effective protection against unfair competition as provided in Article 10*bis* of the Paris Convention, Members of the TRIPS Agreement are required to provide natural and legal persons the possibility of preventing information lawfully within their control from being disclosed to, acquired by, or used by others without their consent in a manner contrary to honest commercial practices so long as such information:

(a) is secret in the sense that it is not, as a body or in the precise configuration and assembly of its components, generally known among or readily accessible to persons within the circles that normally deal with the kind of information in question;

(b) has commercial value because it is secret; and

(c) has been subject to reasonable steps under the circumstances, by the person lawfully in control of the information, to keep it secret.

III. THE ROLE OF INTELLECTUAL PROPERTY RIGHTS IN PROMOTING SOCIO-ECONOMIC DEVELOPMENT

67. In the highly competitive environment of international trade, increasing importance is being placed on planning and forecasting, and the development of appropriate commercial and industrial strategies on the part of individual enterprises, industrial groupings, and even countries. Such strategic planning is an increasingly important part of the successful implementations of the product and marketing policy of individual companies, and of the establishment and development of a technological base which is appropriate to the capacities and opportunities of the relevant country.

68. Recently, increasing attention and importance has been given to the role of the industrial property system as an analytical instrument for such industrial planning and decision-making. Two main uses may be of interest in this regard.

69. First, the information aspect of the patent system: awareness of the state-of-the-art in a particular technical field can avoid duplications in research work by indications that the desired technology already exists. Also, it can provide ideas for further improvements and can give an insight into the technological activities of competitors and, by reference, to the countries in which patents have been taken out, the marketing strategies of competitors. A state-or-the-art search will identify newly developing areas of technology in which future R&D activity should be monitored.

70. And second, as a tool for industrial planning and strategic decision making, the industrial property system may be very useful through analyses of the statistical aggregation of patenting activity as revealed through published patent documents. Since the degree of patenting activity provides an index of the degree of technological activity in a given technical field, the statistical analysis of patent documentation can indicate which countries or companies are active in various fields, in which industries technology is moving at a rapid pace and in which the technology is stable, and which are the enterprises active in particular technical fields. Registered trademarks witness a clear commercial interest in the market of a

country or group of countries. Analyses if IPR and their presence in different countries provide a means of forecasting future industrial developments, identifying areas in which market demand is increasing, monitoring general technological progress, and testing the soundness of policy and investment decisions.

71. Technology, and inventions, as a fundamental part of it, are, by nature, both private goods in creation and public goods in productive use or consumption. They are private goods in so far as their creation consumes both mental and physical resources, which are thereby diverted from other production or consumption activities. Once technology or inventions become available in the form of information, however, they lose their characteristics as private goods. Unlike a tangible object, they can be used by many without loss to any person, and without further investment in re-creating it for new users.

72. These characteristics of technology and invention create a dilemma. If all are free to use technology and inventions created by others, who will be willing to bear the cost associated with their creation? One of the basic rationales of the patent system is to provide such an incentive for the creation of new technology and inventions. It does this by offering to inventors exclusive rights to commercially exploit patented inventions for a limited time in return for the disclosure of the inventions to the public.

73. The exclusive rights to exploit the invention commercially permit its creator to work it without fear of interference from imitators who have not incurred the investment in research and development, which produced the invention. The inventor will thus have the opportunity to recover research and development costs through the competitive advantage conferred by the exclusive rights to exploit the invention. The patent grant in this respect acts as an instrument of economic policy to stimulate further risk-taking in the investment of resources in the development of new products and technology.

74. Patents are granted on technical criteria and not on the basis of commercial or market criteria. The exclusive rights conferred by the patent relate to the commercial exploitation of the invention, and do not preclude another person from experimental work using the technological information contained in the patent specification. In other words, while the patent owner can prevent others from using, for commercial purposes, the same technology as is revealed in the disclosure of his invention, he is not protected against those who derive from his disclosed invention a perception of a market need which may be satisfied by the legitimate adaptation or improvement of his technology, or through the discovery of a different technical solution to satisfy the same market need.

75. The patent system contributes to economic growth and development by creating the conditions for the marketing and commercialization of inventions in several ways:

(a) it gives an incentive to the creation of new technology which will result in, *inter alia,* new products, inventions and commercial opportunities;

(b) it contributes to the creation of an environment which facilitates the successful industrial application of inventions and new technology, and the legal framework which encourages investment, including from foreign countries;

(c) it acts as a catalyst for the commercialization of inventions and their transfer to productive use;

(d) it is an instrument of commercial and industrial planning and strategy.

76. The framework of the patent system also provides a necessary element of certainty for a technology transfer transaction. If a potential technology recipient were located in a country which did not maintain a patent system, the supplier of the technology would need to rely on purely contractual arrangements seeking to guarantee non-disclosure and use of the invention by third parties. Such arrangements establish an element of commercial risk for technology suppliers which is more pronounced than in circumstances where the transfer transaction can be linked to a patented invention or technology guaranteeing protection against illegal exploitation by third parties.

77. The existence of a patent also introduces another measure of certainty to the commercial transfer transaction by enabling the potential recipient of the technology to sight the essence of the technology, which he is wishing to acquire. In the absence of a patent, such initial sightings of the technology which it is proposed to transfer must take place through disclosures under secrecy and confidentiality agreements, which can again introduce an element of commercial risk of the leakage of the technology to third parties, this undermining both the value of the technology from the point o view of the supplier, and the value of the technology for which the recipient will be paying. Furthermore, to cover such high risk, the supplier would calculate it into a higher price of his technology.

78. The patent system must be understood as a policy instrument which encourages developing indigenous technological capabilities by providing an incentive to local inventors, research and development organizations and industry, rather than a policy instrument which, if adopted, will immediately effect a transformation in the level of technological sophistication in the relevant country. In fact, it represents a strong shield for the development of innovative domestic industry, however small it may be at the moment.

79. The patent system does not constitute an instant remedy, but rather a long-term infrastructure investment in development of the national market. Without any patent system, inventors, entrepreneurs and companies would have no effective protection against the imitation of their inventions, and less incentive to invest in the development and strengthening of their technological capacities. It might therefore be expected that the number of inventions produced by local inventors would be even less in the absence of a patent system.

VALUING INTELLECTUAL PROPERTY RIGHTS

80. Valuation of inventions and R&D results is necessary to estimate the value of the company's intellectual property portfolio. Furthermore, it is essential to working out the cost of technology for transfer purposes. Risk affects valuation analysis, corporate valuation must reflect risk and, most importantly, risk should reflect value.

81. Valuation is not easy. There is no agreed formula, or a common approach, to the valuation of technology, R&D results, know-how or intellectual property rights in general. It is easy to predict a person's contribution to a society when he or she is grown up and we can evaluate the usefulness of that person's contribution by ascertaining age, education, work experience and accomplishments, but valuation of inventions is like predicting the future contributions of a child, if not that of a new born baby. Indeed, many inventions need not have immediate economic benefits to be valuable. Embryonic technology often needs further development before its actual value is realized.

82. This has led some people to believe that valuation of inventions is not amenable to scientific treatment and could be based more on "gut feeling" and intuition than on precise calculations.

83. One of the key factors affecting a company's success or failure is the degree to which it effectively exploits intellectual capital and values risk associated with chemicals and substances.

84. In order to value intangible assets or intellectual property, it is absolutely necessary to address the question of economic life. Management needs to know the value of the company's brands, other intangibles at risk, for the same reasons as they need to know the underlying value of their tangible assets. When valuing intellectual property rights it is essential that the assessment of all aspects of the transfer be seen in the whole context of the venture.

COMMERCIALIZATION OF INVENTIONS: THE FINAL STAGE OF THE INNOVATION PROCESS

85. Technology and inventions are important parts of the innovation process, which transforms inventions into marketable products. This process is most complex and, as such, requires much specialized professional expertise and expert knowledge. The marketing and commercialization phase of the innovation process is crucial for the success of any invention and innovation. The returns, in terms of profit upon its commercialization, are the ultimate proof of the success of any invention or new product.

86. If we look closer at the innovation process we will realize that it consists basically of four overlapping and interrelated main phases: the idea generation and conception phase, the development and design phase, the prototype and pre-production phase, and the production, marketing and commercialization phase.

87. The crucial point in the innovation process is the production, marketing and commercialization stage, when the invention or the new product or process based on it will meet the test of the market. It is only when it is accepted on the market by the consumers and users that the invention or new product will begin to generate income that will compensate inventors and manufacturers for the investment made, and eventually generate some profit.

88. As was already mentioned, the returns, in terms of profit upon its commercialization, are the ultimate (and eventually the most important) proof of the success of any invention or new product.

89. A common mistake of may inventors is that they try to sell their invention without taking the necessary steps to at least obtain legal protection and to develop the inventive concept into something more tangible, e.g., to file a patent application and to produce a working prototype before trying to commercialize it.

CONCLUSION

90. We are witnessing an increased inter-dependence in global trade and technology as costs and risks of developing new products and processes increase. Strategic alliances

between companies, such as licensing agreements, joint ventures, mergers, acquisitions and cooperative R&D agreements, are proliferating, cutting across national borders and cultures. Alliances seek to learn and acquire from each other technologies, products, skills and knowledge that are not available to other competitors. New relationships between enterprises are setting new standards in making it easier to do business together. The increasing role of technology in economic growth and the growing transfer if IPR for competitive performance within and across borders makes this an important issue.

[End notes follow]

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[i] The Convention Establishing the World Intellectual Property Organization (WIPO), concluded in Stockholm on July 14, 1967, provides that "'intellectual property' shall include rights relating to

[1] literary, artistic and scientific works
[2] performances of performing artists, phonograms, and broadcasts
[3] inventions in all fields of human endeavor
[4] scientific discoveries
[5] industrial designs
[6] trademarks, service marks, and commercial names and designations
[7] protection against unfair competition

and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields." (Article 2(viii)).

The objects mentioned under [1] belong to the copyright branch of intellectual property. The objects mentioned in [2] are usually called "neighboring rights," that is, rights neighboring on copyright. The objects mentioned under [3], [5], [6] and [7] constitute the industrial property branch of intellectual property. The object mentioned under [4]—scientific discoveries—belongs to neither of the two branches of intellectual property. According to one opinion, scientific discoveries should not have been mentioned among the various forms of intellectual property since no national law or international treaty gives any property right in scientific discoveries. Scientific discoveries and inventions are not the same. The Geneva Treaty on the International Recording of Scientific Discoveries (1978)—a treaty that has not entered into force—defines a scientific discovery as "the recognition of phenomena, properties or laws of the material universe not hitherto recognized and capable of verification" (Article 1(1)(i)). Inventions are new solutions to specific technical problems. Such solutions must, naturally, rely on the properties or laws of the material universe (otherwise they could not be materially ("technically") applied), but those properties or laws need not be properties or laws "not hitherto recognized." An invention puts to new use, to new technical use, the said properties or laws,

[Endnote continued on next page]

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whether they are recognized ("discovered") simultaneously with making the invention or whether they were already recognized ("discovered") before, and independently from, the invention.

ii A compulsory license is an authorization to exploit the invention, given by a governmental authority, generally only in very special cases, defined in the law, and only where the entity wishing to exploit the patented invention is unable to obtain the authorization of the owner of the patent for invention. The conditions of the granting of compulsory licenses are also regulated in detail in laws, which provide for them. In particular, the decision granting a compulsory license has to fix an adequate remuneration for the patentee, and that decision may be the subject of an appeal. It should be noted that the TRIPS Agreement, in particular in its Articles 27.1 and 31, establishes a number of obligations with respect to the use of a patented invention without the authorization of the owner of the patent. Members of that Agreement have to comply with these requirements the most important of which no longer permits the grant of compulsory licenses on the ground of failure to work or insufficient working of an invention if the protected product is lawfully imported into the territory of the Member concerned.

iii A layout-design is defined in the Treaty as the "three-dimensional disposition, however expressed, of the elements, at least one of which is an active element, and of some or all of the interconnections of an integrated circuit, or such a three-dimensional disposition prepared for an integrated circuit intended for manufacture." Such a layout-design is considered protectable under the terms of the Treaty if it is the result of its creator's own intellectual effort and is not commonplace among creators of layout-designs and manufacturers of integrated circuits at the time of its creation.

The protection required under the Treaty, as modified in the TRIPS Agreement, is the prohibition, for a period of at least ten years, of the performance of the following acts, without the authorization of the holder of the right:

(i) reproducing, whether by incorporation in an integrated circuit or otherwise, a protected layout-design in its entirety or any part thereof, except the act of reproducing any part that does not comply with the requirement of originality; and

(ii) importing, selling or otherwise distributing for commercial purposes, a protected layout-design or an integrated circuit in which a protected layout-design is incorporated.

The manner in which these rights in a layout-design are to be secured is not mandated by the Treaty. Thus, a Contracting Party is free to implement its obligations under the Treaty through a special law on layout-designs (a solution which is more and more frequent), or its law on copyright, patents, utility models, industrial designs, unfair competition or any other law or a combination of any of those laws.

Contracting Parties are free to provide that registration of a layout-design is a prerequisite to protection.

The rights in layout-designs provided for under the Treaty are subject to three exceptions. Firstly, a third party is able to perform any act with respect to a layout-design for the purposes of evaluation, analysis, research, or teaching. Secondly, a third party may copy a layout-design or part thereof in order to prepare a second, original, layout-design. According to the Treaty, such a second layout-design is not to be regarded as infringing rights held in the first layout-design. Thirdly, a third party may perform any act in respect of a layout-design that was independently created.

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[iv] Under Article 15.1 of the TRIPS Agreement, any sign, or any combination of signs, capable of distinguishing the goods or services of one undertaking from those of other undertakings, shall be capable of constituting a trademark. Such signs, in particular words including personal names, letters, numerals, figurative elements and combinations of colors as well as any combination of such signs, shall be eligible for registration as trademarks. Where signs are not inherently capable of distinguishing the relevant goods or services, Members may make registrability depend on distinctiveness acquired through use. Members may require, as a condition of registration, that signs be visually perceptible.

[End of document]