Business and Industry Advisory Committee to the OECD – Comité Consultatif Economique et Industriel auprès de l' OCDE

CREATIVITY, INNOVATION AND ECONOMIC GROWTH
IN THE 21st CENTURY

An affirmative case for intellectual property rights

A BIAC Discussion Paper

Preface

Innovation and creativity are essential for sustainable growth and economic development. Several core conditions enable innovation and encourage economic growth:

- strong standards and effective enforcement of intellectual property protection,
- vigorous competition and contestable markets,
- open trade and investment in a stable economic environment,
- a strong and sustainable fundamental research and development infrastructure,
- sound policies and mechanisms to promote the science-innovation interface,
- efficient and transparent regulatory systems,
- ethics and the rule of law, and
- a strong emphasis on education at all levels.

Intellectual property protection is one of the central public policy pillars on which the knowledge-based industries and global markets of the 21st Century rest. Rapid changes in key technological, policy, and social drivers all underscore their growing importance. Intellectual property rights (IPRs) provide an increasingly critical legal and policy toolkit for spurring innovation, for stimulating the investments needed to develop and market new innovations, and for diffusing technology and other knowledge in socially beneficial ways. Sound framework conditions for a well-constructed IPR regime, therefore, are indispensable.

Nonetheless, certain policymakers, non-governmental organizations, academics and others have questioned the role of IPRs in the emerging 21st Century economy. Some simply oppose the role of property rights and the primacy of market-oriented economies on ideological grounds. Others question the "social contract" associated with granting and promoting intellectual property rights when compared to public sponsorship, government subsidies or other government-directed tools. Still others oppose the underlying technological advances and global market competition that are taking place and, therefore, conclude correctly that IPRs play an important role in creating and sustaining these developments which they view negatively. Finally, some others recognize the importance of IPRs but argue that intellectual property rights increasingly retard, rather than promote, innovation and economic growth.

In this Discussion Paper, BIAC summarizes an affirmative case for why a well-developed, carefully balanced system of intellectual property rights provides a fundamental foundation for promoting and achieving sustained creativity, innovation and economic performance in the 21st Century. The first section highlights the importance of IPRs in meeting today's and tomorrow's key economic and technological challenges. It identifies some of the driving forces and challenges that demonstrate the importance of intellectual property rights and the need to get the legal and policy framework for IPRs "right". The second section draws upon this forward-looking, affirmative case for IPRs to suggest the pivotal role that the OECD should play and to recommend a proactive, multi-point OECD work program related to intellectual property rights over the next few years.

This paper was prepared for the Ministerial Conference of the OECD's Committee for Scientific and Technological Policy (CSTP) in January 2004. It also, however, should be of equal interest to policymakers in national governments, other OECD Committees and the wider business community.

Executive Summary

Of course, the ultimate cause of all innovation is human creativity. But innovation does not occur in a vacuum; it requires a workable structure of incentives and institutions. Government policies that foster the right enabling conditions for innovation, and that allow entrepreneurship and markets to flourish, can provide a climate that encourages innovation and economic growth in the 21st Century. Increasingly, one of the core enabling conditions is intellectual property protection.

The American inventor and entrepreneur, Thomas Edison, once said, "the value of an idea lies in the using of it." IPRs have become a significant factor in both creating and using ideas that are translated into knowledge and inventions to promote innovation and economic growth. With the advent of an increasingly knowledge-based society, intellectual property protection ensures that innovators and creators have sufficient incentive to bring their works to market and to build on the innovations and creations of others for the benefit of society.

"Intellectual property protection is one of the central public policy pillars on which knowledge-based industries and global markets of the 21st century rest."

Intellectual property rights remain crucial policy tools for promoting innovation and economic growth in the 21st Century for many reasons, including:

1. IP protection stimulates innovation and spurs sustainable and widespread economic growth by providing incentives that ensure a sufficient supply of new inventions and creations

By providing certainty and incentives for invention and creation to overcome the problems of market failure with public goods, by enabling technology transfers, and by stimulating additional creative activity, IPRs stimulate innovation and create economic growth through increased productivity, increased trade and investment, and enhanced consumer welfare. As efficient market-oriented tools, IPRs are likely to enable firms to more fully appropriate the return from risky and uncertain investments. At the same time, however, it is important that critical attention be given to the quality of IPRs.

2. IPRs promote the disclosure of inventions and pioneering information, which stimulates innovation across and within industries

Intellectual property rights are a market-based mechanism for disseminating knowledge. Public disclosure is one of the most important functions of most IPRs, and one of the most overlooked. IPRs spur subsequent creative efforts facilitating a vigorous cross-fertilization of ideas.

3. IPRs promote risky, uncertain and costly investments

Forward-looking IPR protection provides the incentive for firms and individuals to invest in generating new technology and new products, including incremental improvements, especially where the returns from investment are longer term, where the investment involves significant costs or risks, and where the invention or creation may be easy to copy or imitate.

4. IPRs empower consumer protection in a global economy

The global economy increasingly depends on the international recognition and dissemination of IPRs related to branded products. Trademark protection is crucial to maintaining high-quality goods and services that earn consumer trust. The large and growing problem of counterfeiting, however, is a serious threat to legitimate commerce, as well as to public health and safety. The booming market in fake products too often puts the health, and even the lives, of consumers at risk. Counterfeiting also has a serious impact on reputation and consumer trust.

5. Effective competition policy depends on an appropriate IP regime

Intellectual property and competition policy are vital to maintaining competition and contestable markets because both encourage innovation and enhance consumer welfare. They, increasingly, should be viewed as complementary policy tools.

6. Securing the benefits of IP for the digital economy

Computers, telecommunications, semiconductors, entertainment and education content and other information-based sectors increasingly depend on IPRs as the legal and economic backbone of these industries. Digital piracy, however, threatens the continued growth of the digital economy. IPRs also play an integral role in broadband adoption and in creating new technology platforms and markets through de facto standards and network effects.

7. IP rights create new markets because IPRs are tradeable and transferable

IPRs facilitate the operation of markets and help create new ones because they are tradeable and transferable. The linkage between IPRs and contractual mechanisms such as voluntary licenses, distribution agreements, rights assignments, royalty agreements and other market-oriented transactions and relationships increasingly shapes the pace and direction of innovation processes in positive ways.

8. IP enables innovation in key economic growth sectors such as healthcare

The large R&D, regulatory, clinical trial and other costs associated with healthcare innovation only can be sustained by innovator healthcare companies if the economic climate and policy framework encourages and supports the role of IPRs throughout the increasingly complex and risky process of innovation.

9. IPRs play a crucial role at the intersection between science and innovation

The quality of all our economies depends on their ability to acquire, protect, translate, combine and apply knowledge through new university-industry-government intersections and public-private partnerships. IPRs play an increasingly crucial role in facilitating these positive trends.

A Proposed Proactive IPR Action Agenda for "Value-Added" OECD Work Concerning Intellectual Property Rights

- Integrate IPRs more fully, including the quality and the scope of IPRs, as a core enabling condition for innovation in all OECD activities
- Address the changing role of IPRs at the interface between science and innovation and in the interactions between different stakeholders
- Combat counterfeiting through new OECD work and the development of a new international anticounterfeiting convention that will provide for effective enforcement
- Develop new economic methodologies and economic indicators for measuring IPRs and understanding the increasingly critical role they play in stimulating innovation and economic performance
- Initiate a forward-looking project about the growing importance of IPRs in "converging technologies" by focusing on the changing role of IPRs in three key 21st Century drivers – biotechnology, information technology and nanotechnology
- Provide comparative analyses and undertake "value-added" reviews concerning the intersection of IPRs and competition/antitrust policy
- Focus on health-related innovation as a principal policy challenge for the early 21st Century, and develop new frameworks and policies for linking IPRs and health innovation
- Analyze the role of markets for technology and the economic accounting of intellectual assets

1 Introduction - Intellectual Property Rights: An Increasingly Essential Foundation for Innovation and Economic Growth in the 21st Century

Intellectual property helped make possible the conditions for innovation, entrepreneurship and market-oriented economic growth that shaped the 20th Century. In the 21st Century, IPRs increasingly will define these conditions, and will dictate the pace and direction of innovation, investment and economic growth around the world.

Today, more than ever before, innovation, enterprise and intellectual assets drive economic growth and increase standards of living. Innovation is instrumental in creating new jobs, providing higher incomes, offering investment opportunities, solving social problems, curing disease, safeguarding the environment, and protecting our security. To help achieve these objectives, governments must create appropriate incentives for continued growth in innovation and technology development and embrace sound policies for assuring broad social diffusion and access to key scientific and technological advances that enable us, as Newton first observed, "to stand on the shoulders of geniuses". A critical enabling tool increasingly is intellectual property protection.

BIAC strongly believes that the role of government policy concerning intellectual property must be to create a legal and policy framework for IPRs in which minds can expand, in which innovation can drive economic growth, in which entrepreneurs can flourish, in which important societal needs can be met through market-oriented mechanisms and in which technologies can reach new frontiers.

To achieve these inter-related goals, BIAC focuses on the need to get the policy framework right in the light of a broad range of fundamental scientific, technological, economic and social drivers. These drivers are rapidly transforming the process of innovation. In the process, they provide both new opportunities and challenges for economic growth. BIAC does not advocate in this paper the need for ever stronger IPR regimes. For most companies that BIAC ultimately represents, the goal is to maximize the value of their intellectual property. Similarly, for those companies that BIAC does not yet represent because they do not exist today, the goal must be to enable them to form and grow to world class on the strength of the contributions they make to future societal objectives through the intellectual property they will possess.

"BIAC strongly believes that the role of government policy concerning intellectual property must be to create a legal and policy framework for IPRs in which innovation can drive economic growth."

BIAC supports the development of a sophisticated, forward-looking IPR policy framework for the 21st Century. This requires: (1) an increased appreciation for the vitality of the IPR "toolkit" and its central role in stimulating innovation and spurring economic growth; (2) renewed attention to specific intellectual property issues such as scope, quality, diffusion, access, strategic use and effectiveness of IPRs; and (3) a new "systemic understanding" about the intersection and interaction of IPRs with other enabling conditions for innovation such as competition policy, government regulatory regimes, the R&D infrastructure, capital formation, and open trade and investment.

If we are to realize the promise of a 21st Century in which innovators can generate new ideas, investors can be persuaded to take the risk to underwrite them, and entrepreneurs can turn these ideas into new products, then intellectual property rights must play an increasingly central role in policy formation.

This section highlights the key reasons why intellectual property matters now more than ever. Each section also calls attention to new policy and empirical questions that must be answered objectively and sensibly if governments, business, universities and other stakeholders are to get it "right".

Intellectual property rights are essential for achieving many of today's challenges related to innovation and economic growth while providing the foundation on which tomorrow's societal needs can be met. Their vitality derives from the multiple roles they play. These include:

Stimulating innovation and spurring widespread and sustainable economic growth

Intellectual property rights are policy instruments that play an increasingly important and positive role in driving innovation and expanding information. By stimulating innovation, information and creativity, IPRs directly affect economic performance and create economic growth through increased productivity, increased trade and investment, and expanded economic activity that enhances consumer welfare.

IPRs Create Incentives for Invention and Creation

Intellectual property rights provide an efficient mechanism to overcome traditional "market failure" problems associated with public goods, information asymmetry and innovation – especially, the imperfect appropriation of returns and uncertainty with regard to research and investment first identified by Nobel-laureate Kenneth Arrow. A principal source of market failure is the inability of individuals and firms to prevent others from making use of the new knowledge they generate. Without the incentives provided by the temporary exclusivity generated by IPR protection, there will not be sufficient incentives for business to invest in risky R&D and other value-enhancing activities because the benefits from those investments cannot be appropriated fully. In economic terms, innovation will be suboptimal.

The economic evidence is overwhelming that a significant gap exists between private and social returns to R&D and other risky and uncertain forms of investment. Most studies find social returns on R&D ranging from 20 to 150 percent although the magnitude of the positive social returns varies among sectors and among countries. With such large externalities, almost all economists agree that business will underinvest in R&D and other socially desirable, knowledge-expanding investments without effective intellectual property protection. Innovators cannot earn a profit from their risky and uncertain investments because competitors are free to appropriate their inventions or creations without cost and gain the economic benefit of the invention or creation before the innovator can obtain a sufficient return.

> *"Intellectual property rights are essential for achieving many of today's challenges related to innovation and economic growth while providing the foundation on which tomorrow's societal needs can be met."*

Strong and effective IPR protection is a particularly powerful incentive that will permit firms to invest in generating new technology in sectors where the returns to technological or product investment are longer term and involve significant risks, and where the invention may be easy to copy or imitate. Such protection, in turn, is a highly effective way to promote the diffusion of knowledge in the long term.

Research is only one critical component of innovation. Studies confirm that research constitutes only about 25% of the cost of commercializing a new technology or technique and substantial up-front additional resources are needed to bring most products or processes to the market. The exclusive rights granted a patent holder for a limited time provide the incentive for encouraging all the up-front investments needed to develop an idea and to generate a marketable product or technology.

This compelling argument becomes even stronger in the emerging international economy. The incentives provided by IPRs improve the capacity of domestic firms to adopt new technology and ideas, to use their domestic markets as a springboard to compete more effectively in global markets, and to take advantage of the spillovers from foreign R&D and foreign IPRs. A strong and effective IPR framework also improves each country's ability to attract foreign investment and, especially, to attract certain research- or knowledge-intensive activities that likely will result in important social benefits through new knowledge and new skills. It is a market-driven mechanism that provides an essential building block for future innovation and economic development.

Government policies that appear to favor the spread and dissemination of a given stock of knowledge by relaxing or eroding IPR protection discipline form a strong disincentive to investment in and hence creation of knowledge in the medium and longer term. By promoting secrecy and discouraging disclosure of inventions, they preclude many of the collaborative private-public partnerships and new types of strategic relationships among firms that the OECD recognizes as important innovation drivers. The erosion of IPRs often appears as a seductive option when viewed through the prism of short-term political considerations but it exacts a very high societal price over time by depressing the generation of knowledge and retarding the pace of innovation.

To be sure, other types of government support – such as subsidies, guaranteed procurement or prizes – can substitute as drivers of innovation to varying degrees for intellectual property protection and are complementary to IPRs. In an era of sustained budgetary deficits and the need to allocate resources to meet other compelling social needs, however, the political realities in OECD nations strongly suggest that, realistically, public economic resources will be not available to substitute for IPRs as an effective spur to innovation and economic growth. As efficient market-oriented tools, IPRs are likely to enable firms to more fully appropriate the return from their risky and uncertain investments and this, in turn, will require significantly reduced levels of government support.

IPRs promote the disclosure of inventions and pioneering information, which stimulates innovation across industries

Intellectual property rights are not a mechanism for hiding knowledge. They are a powerful market-based mechanism for disseminating knowledge. The diffusion of IPRs, and the bundle of rights that often go with them, can serve as a central policy tool in shaping the knowledge economy. The public disclosure of information is one of the most important functions of IPRs but, often, one of the most neglected by policymakers.

> *"A strong and effective IPR framework improves each country's ability to attract foreign investment and will result in important social benefits through new knowledge and skills."*

With the growth of complex, cumulative technologies and the blurring of economic activity across traditional sectoral boundaries, the diffusion of information and technology becomes ever more important for innovation. The social bargain explicit in the grant of a patent, for example, facilitates this objective. In return for the exclusive right to exclude others from manufacturing, selling or using the invention for 20 years from filing, the

inventor must disclose the invention so that it can be put to practical application. The alternative is secrecy that may impose large societal costs and provide few of the positive economic externalities or social returns associated with IPRs.

Such disclosures facilitate a vigorous cross-fertilization of ideas, thus spurring further creativity and innovation. This dynamic is particularly important in an era of increased multi-disciplinary activity and technological convergence. Inventions and creations in one sector often spark new ideas and innovation in others and, increasingly, help create entirely new areas of inquiry or new marketable products and services.

The disclosure requirements also serve an overlooked function in balancing the needs of current and future innovation. It creates a climate of competitiveness with multiple sources of innovation that provides the basis for future technological progress and economic growth.

IPRs promote risky, uncertain and costly investments

Forward-looking intellectual property rights protection provides the incentives for firms and individuals to invest in generating new technology and new products, including incremental improvements. This is especially important where the returns from investment are longer-term, where the investment involves significant costs or risks, and where the invention or creation may be easy to copy or imitate.

IPRs enable technology transfer

IPRs increasingly facilitate the operation of markets. Strong and effective intellectual property rights are an essential tool for technology transfer. They encourage private and public enterprises to transfer technology not only through voluntary licensing and other contractual arrangements but also through the development of innovative approaches for promoting technological development, direct investment, technology sales and dissemination, and cooperative ventures. For example, the increasing use of public-private partnerships or the creation of business-government-NGO collaborations to meet emerging technological or societal challenges often would not be possible without IPRs. They provide the bridging mechanisms that make these promising collaborations work.

> *"Forward-looking intellectual property rights protection provides incentives for firms and individuals to invest in generating new technology and new products."*

IPRs also play a growing role as part of the growing recognition about the importance of technology diffusion to the process of technological change. An OECD study, for example, found that smaller countries that are more dependent on technology and knowledge developed abroad require effective policies, such as IPRs, to facilitate the inflow of knowledge and capital-embodied new knowledge and to create a competitive business climate.

IPRs help stimulate and focus the process of knowledge creation and innovation through the necessity of finding legal means to "invent around" or "reverse engineer" patented inventions

By providing exclusive rights to an invention, the patent system frequently spurs others to innovate by developing alternative solutions to technical problems or new and improved inventions. Innovators are stimulated to "invent around" or "design around" the original invention in order to avoid infringing the applicable patent(s). While this may, in some circumstances, lead to "me-too" innovation, it most often leads to the emergence of different technologies and competing pathways that promote competition and spur innovation. The circumvention of existing patents means that new technological solutions put market pressure on the exploitation of existing technologies.

History also provides a number of examples about inter-industry technology "leaps." Perfume sprayer mechanisms influenced the development of the carburetor, while various

e-commerce innovations have come from the banking industry rather than the computer industry. Such technological convergence among industries is enabled by an intellectual property system that creates a public pool of knowledge, allowing companies to look beyond their own industry boundaries for R&D innovation.

Empowering consumer protection in the global economy

The increase in cross border trade has promoted a growth in trade of trademarked / branded products that also incorporate copyrighted content and patented innovations. As a result, recognition of famous brands exists around the world. Moreover, international efforts to harmonize patent and trademark acquisition procedures have made it possible for companies to seek IPRs in more countries, in turn promoting the introduction of new products into markets around the world.

The new global economy increasingly depends on the international recognition and dissemination of IPRs related to branded products. Trademarked brand names, copyrighted systems and patented inventions define the multinational marketplace as products and services are negotiated, shared and transferred with little regard to jurisdictional barriers or related to the country from where they originated. With increased trade and investment, and the concomitant growth of branded products, IPRs increasingly serve as trade facilitators.

Nevertheless, counterfeiting and digital piracy are booming. Innumerable fake products, ranging from pirated software and copied CDs to counterfeit medicines and aircraft parts, plague global trade and harm consumers. Counterfeiting increasingly poses a direct and serious threat to public health and safety. The market in fake pharmaceuticals and healthcare products is thriving in both developed and developing countries, too often putting the health and even the lives of consumers at risk.

Counterfeiting also threatens legitimate trade and economic growth. The best estimates suggest that companies are losing more than $ 200 billion annually to counterfeiting and piracy. In addition to lost sales, counterfeiting damages the reputations of legitimate manufacturers because the quality of fake products usually is inferior and can taint consumer perception of the genuine product. Moreover, counterfeiters pay no taxes or duties, thus costing governments as well. Counterfeiting causes global job losses of more than 200,000 jobs per year. In this way, counterfeiting, which accounts for approximately 5 – 7 % of world trade, threatens economic growth as a whole.

Supporting and enhancing competition

Both intellectual property and competition policy are vital to maintaining competition in a market-driven society because each, in its own way, encourages innovation and enhances consumer welfare. In protecting the rights of inventors and allowing innovators and creators to profit from their ideas and inventions, IPRs also depend on a legal and policy framework that ensures competitive markets.

> *“With increased trade and investment, and the concomitant growth of branded products, IPRs increasingly serve as trade facilitators.”*

Intellectual property and competition policy often are viewed incorrectly as sitting in an adversarial relationship characterized by a “zero sum” game. In fact, they increasingly should be viewed as complementary policy tools and legal regimes aimed at promoting the same goals – innovation, economic growth and consumer welfare. Even the limited term of exclusivity accorded intellectual property rights holders is procompetitive. By protecting creative innovations and avoiding exploitation and free riding by imitators, this temporary exclusivity promotes new product innovation and creates new technology markets that stimulate competition and rivalry in the longer

term. In addition, by ensuring competition and promoting innovation, competition policy ensures the fair and reasonable use of intellectual property rights in marketing, distribution and dissemination.

Intellectual property policy, properly designed and implemented, interacts with competition policy to promote allocative efficiency by encouraging the production of higher quality products at the lowest costs. Nevertheless, as Professor Robert Pitofsky, the former Chairman of the U.S. Federal Trade Commission, has observed, competition policy must consider a set of special characteristics in markets characterized by the strong presence of intellectual property: incentives to innovate are particularly important; competition at the research and development level is critical; markets are dynamic and market shares often unstable; predictions about the way markets will develop are uncertain; and the issues facing policymakers are unusually complicated and highly technical.

Securing the benefits of IP for the digital economy

Computers, telecommunications, semiconductors, entertainment and educational content, and other information-based sectors depend on IPRs as the legal and economic backbone of these industries. Intellectual property protection for these sectors -- especially digital-related copyrights, software patents and other computer-implemented inventions -- are the essential tools that create new businesses, new jobs and new markets that drive the digital economy.

The Internet and low-cost information processing, storage and communications have created numerous new markets and competitive opportunities that have reshaped the process of innovation. Most innovation processes today use the Internet as an integral component. And, as a communication device, it has permitted the diffusion of knowledge, facts and ideas literally at the speed of light. It also has introduced new competition into numerous markets and made them more efficient and productive. All of these broad, social benefits depend on effective intellectual property protection – copyrights, patents, trademarks and domain names, and semiconductor mask works.

> *"IPRs have been a powerful instrument for economic development, export growth and the creation and diffusion of new information technologies with widespread social benefits."*

With many higher value-added economic activities in the digital economy increasingly dependent on intellectual property rights, they encourage, reward and protect innovation and creativity in both incremental innovations and in breakthrough new platforms and technologies. IPRs have been a powerful instrument for economic development, export growth and the creation and diffusion of new information technologies with widespread social benefits. Sound legal and other framework conditions for a well-constructed IPR regime, therefore, are indispensable.

For example, copyright only confers exclusive rights on the person who originates a form of expression, and not on the idea, the thought or the information embodied in that expression. It, therefore, serves an important role in the diffusion of knowledge because the bundle of exclusive rights that make up copyright include a right to use the work, especially in research, scholarship and public access to knowledge and learning.

In short, IPRs are essential for the digital economy because creative products and services tend to have public good and information asymmetry characteristics. Consumption by one person does not preclude another from using the same product (non-rivalrous) and people cannot readily be stopped from using or consuming the product (non-excludable). This creates strong incentives for consumers to become free-riders by obtaining the good's

value without incurring any of the costs associated with producing and distributing them. In such situations, economists recognize the need for a mechanism – copyright – to stop the free-riding and encourage the production of these types of products. If the producer or creator cannot recover the costs of investment in the product and achieve some reasonable profit, then there will be an undersupply relative to a socially optimal level. Innovation, creativity and economic growth all will suffer.

At stake is the continued growth of the digital economy. The new ability in the digital economy to duplicate and transmit at virtually zero marginal cost all types of digital information – data, images, voices, and other digital content – makes the framework for intellectual property and the available enforcement mechanisms even more important than in the past. The costs of reproducing digital information are now close to zero for both rights holders and infringers, and digital copies are perfect copies of the original. When combined with high-speed computers and communications, the balance of risks and rewards between innovators and imitators has shifted and threatens to result in suboptimal levels of creativity and innovation. Without new digital rights solutions that both protect intellectual property and work easily and flexibly for consumers, the dynamic economic and social benefits of new content creation and the advantages of the Internet as a powerful distribution channel are put at serious risk.

"More than one-half of all patents have been issued in the last 30 years."

IPRs and digital content also are integral to broadband adoption and what some are calling "the great digital broadband migration". A tremendous amount of data and content increasingly is available in the digital broadband world, and it needs to be protected in an appropriate manner. The need to stimulate demand for broadband services (innovative content, software applications and other products and services) further underscores the need for adequate and effective intellectual property protection. Without it, copyright owners increasingly will go uncompensated and will reduce investments in creating diverse, new content; hardware companies will shy away from innovating for fear of facilitating piracy; and consumers will become confused and frustrated and be without new content and services.

Another important role of IPRs in the digital economy relates to its utility in helping multiple firms and individuals solve industry-wide problems and to create entirely new markets through the development and improvement of industry standards that have procompetitive networking effects. IPRs serve as a central facilitating mechanism in the standardization of network apparatus and as a tool for achieving compatibility and interoperability of core network technology often is not appreciated.

Creating new technology markets because IPRs are tradeable and transferable

At the center of the innovation process and technological change today is information and its application, knowledge. Estimates suggest that more than one-half the store of human knowledge was produced in the second half of the 20th Century, more than one-half of all patents have been issued in the last 30 years, and the number of marketable new products, services and innovations has tripled in the last 20 years. An important component of this explosive growth is the role played by IPRs in creating new markets for technology and accelerating the pace of future innovation. The principal reasons for this are the market-oriented characteristics of IPRs; they are tradeable, transferable and transparent.

Many of the current attacks on IPRs completely ignore the fundamental point that an important precondition for market-based allocation is the definition of property rights. IPRs enable markets to work and benefit

society in two principal ways: they perform an allocational function and they encourage production, i.e., they provide an efficient mechanism for deciding who gets to use what and a powerful incentive for creating things. This directly results in both static and dynamic economic benefits.

A growing body of economic literature and empirical evidence, including the recent OECD/BIAC patent survey and the OECD IPR Workshop, confirm the importance of the linkage between IPRs and contractual arrangements or other market-oriented mechanisms to propel innovation. For example, procompetitive licensing can avoid wasteful imitation and the misallocation of resources. In cumulative technologies, contracting combined with strong IPRs create additional incentives for IP rights holders to support other innovators making product improvements because the IP rights holder can profit from, rather than being threatened by, new improved products. The message is clear: strong IPR and private, market-oriented instruments can be complementary in reducing social costs and improving innovation.

By assigning exclusive rights to market for a limited time, IPRs improve the value of the property by permitting the owner to appropriate the value of his or her invention or creation through subsequent sale or licensing,

“Strong IPR and private, market-oriented instruments can be complementary in reducing social costs and improving innovation.”

and through further production and improvements. They also avoid the very high administrative and transaction costs of splitting ownership among numerous people or of holding IPRs in common ownership. The lower transaction costs that come from voluntarily assigning IPRs to owners and their ability to assign economic value to those rights help facilitate opportunities for trade and market-oriented transactions without the need for direct governmental intervention.

Enabling innovation in key economic growth sectors, such as healthcare

Intellectual property rights enable innovation in a number of key economic growth sectors. Healthcare is one such sector. It is important that IPR supports innovation and, at the same time, promotes other public interests.

Biomedical progress and healthcare innovation are playing a major role in increasing life expectancy, improving the quality of life and eradicating diseases that previously were life threatening. These advances are made possible by an innovative, enabling set of technologies that are transforming what we know about human disease and are permitting researchers to target increasingly complex diseases. The realization of this promise, however, depends critically on strong and effective IPRs to stimulate the very costly investments in resources needed to research and develop these innovations from the laboratory through clinical trials to the market, to disseminate the new technologies widely to spur incremental improvements and new breakthroughs, and to provide a market-oriented framework for the exchange of rights.

Increasingly, new insights and approaches to biomedical research and healthcare are made possible not only by revolutionary advances in biology and chemistry but also by information technology and by the development of powerful tools, such as mass spectrometers and genomic arrays. All of these R&D-based, innovator sectors contribute to medical progress by translating fundamental research findings into innovative treatments and diagnostics for the benefit of patients. The discovery and development process, however, is a risky business with no guarantees of success. The large R&D and other costs associated with these developments only can be sustained by innovator healthcare companies if the economic climate and policy framework support and reward successful R&D and clinical trials through IPRs, understands the increasingly complex process of innovation that saves lives and improves the quality of life, and creates greater patient and consumer choice.

> *"Large R&D costs can only be sustained by an economic climate and policy framework that support and reward successful R&D through IPRs."*

In human-related biotechnology, for example, countries only can nurture their own research-based biotechnology industries, attract foreign investments and transboundary collaborations in biotechnology, all the while providing state-of the-art healthcare to their citizens by enacting and enforcing an appropriate IPR framework. Moreover, as biotechnology becomes a principal foundation for economic growth and development, protecting these IP rights also can provide countries with an opportunity to create high-value jobs for the 21st Century and to develop new economic clusters appropriate to the needs of that country. Many biotechnology companies, for example, invest more than 45 percent of their annual income into research and development, meaning that nearly one half their value consists of intellectual capital. Life science companies in human health, both large and small, depend on IP rights to raise capital efficiently, to create the foundation for sustainable and innovative business models, and to invest in highly risky new areas over an extended period of time.

Healthcare innovation also highlights the intersection of IPRs with domestic regulatory regimes and the importance of other rights closely related to IPRs. For example, data exclusivity recognizes the innovator's investment in conducting the rigorous pharmacological, toxicological and clinical trials necessary to establish the safety and efficacy of new drugs before they can be provided to patients. Such data are proprietary to the innovator, but must be submitted to the health authorities for their evaluation of the product's safety and efficacy. Data exclusivity, mandated by TRIPS Article 39(3), precludes governments for a reasonable period of time, typically five to ten years, from using or relying on the original registration or the data submitted by the innovator for the benefit of third parties seeking to market a copy of the product without providing its own data. After the period of data exclusivity ends, the originator's data can be relied on by the authorities to approve the marketing of copy products, thereby obviating the need for the second applicant to repeat trials already conducted by the originator. Data exclusivity, which must be afforded regardless of the existence of patent protection for the product, accordingly provides an incentive to conduct the extensive testing of new products. It recognizes that use or reliance on such data for the benefit of others unfairly places the innovator at a disadvantage since others do not bear the significant costs of extensive and lengthy clinical trials required for market approval.

IPRs play a crucial role at the intersection between science and innovation

The quality of all our economies depends on their ability to acquire, protect, translate, combine and apply knowledge. This knowledge is needed to solve today's problems and to prepare the foundation for solving tomorrow's. Without new knowledge and new combinations of knowledge, there will be no innovation. IPRs can play a critical role.

Connectivity, excellence and focus have become essential to the success of any company, university or nation. With the changing nature of university-industry-government relations and the evolving role of universities as both platforms for creating knowledge and engines of economic growth, it is important to recognize the growing role of IPRs, especially for universities and for new types of university-industry-government intersections. (See also BIAC paper on "Promoting Public-Private Partnerships : Industry – University Relations").

2 A Proactive IPR Action Agenda for "Value-Added" OECD Work Concerning the Importance of Intellectual Property Rights for the 21st Century

BIAC believes that the structure, capacity and economic focus of the OECD make it uniquely positioned to "add value" to national and international policymakers concerning intellectual property rights in several ways:

- in recognizing the growing importance of intellectual property rights to innovation and economic growth;
- in undertaking empirical studies and economic analyses that help policymakers understand the important role IPRs play in the science-innovation interface and in stimulating innovation that produces economic growth; and
- in developing a forward-looking legal and policy framework for IPRs in the light of rapid and profound technological and economic change.

As a result, BIAC recommends that the OECD, generally, and DSTI and the Futures Programme, specifically, undertake an enhanced and comprehensive work program related to intellectual property over the next few years. We, therefore, set forth a proactive action plan of those OECD activities that BIAC believes are most important and where the OECD's work would add the greatest value.

1. Integrate IPRs more fully as a core enabling condition for innovation in all OECD countries

The OECD has undertaken valuable initial work to assess the evolution of IPR systems in OECD countries and to relate them to broader trends related to innovation processes and economic performance. Also, as the OECD recognizes, IPRs do not operate in a vacuum. They influence and are influenced by a broad range of context conditions such as the nature of the technology or market, industry structure, other government policies, and the process and dynamics of innovation in each sector.

> *"BIAC recommends that the OECD undertake an enhanced and comprehensive work program related to intellectual property."*

As a result of changes in the science and technology knowledge base, trade and investment in global markets, business models and practices related to IPRs, and the shifting boundaries of new knowledge and new markets, BIAC believes the OECD can add significant value by "broadening and deepening" its attention to IPRs across all its activities, especially in DSTI and in the Futures Programme.

In this process, BIAC expects and will support measures that improve the quality of IPRs. To achieve this goal, the OECD should continue its comparative analyses and benchmarking of patent regimes and patent offices to ensure the quality of patents.

RECOMMENDATIONS:

- Integrate considerations of IPRs in all existing OECD work programs to the extent they are not already included;
- Explore cross-cutting, new linkages between work on other issues affecting innovation and economic growth and the role of IPRs;
- Give critical attention throughout to the quality of granted IPRs;

- Undertake an initial economic assessment of the linkage between IPRs and investment and capital formation, and of the key emerging trends.

2. Address the changing role of IPRs at the interface between science and innovation and in the interactions between different stakeholders

The days when companies, universities and public entities performed different, clearly demarcated roles in innovation are past. Innovation is marked by greater interdependency and traditional boundaries have blurred. In an increasing number of fields, the linear model of research and development no longer provides an adequate description of events or a framework for public policy. Today's modes of knowledge production and knowledge application depend on networking, multidisciplinary approaches and the interaction of discovery-based science with practical problems.

"Positive action by governments towards eliminating counterfeit and imitation goods is of the utmost importance and the OECD is the appropriate global forum to pursue the issue."

Thus, knowledge has become more mobile and diffused, not just through information technology. The best creators of knowledge move where their efforts can be rewarded; innovation comes from combining more knowledge and from multiple sources; and, increasingly, new discoveries are transferred rapidly into new marketable products and services.

Particularly in this regime of greater interdependence, it is essential that any system for IPR gains critical stakeholder support. BIAC fully supports that the work of the OECD be geared towards improved economic growth and social well-being.

RECOMMENDATIONS:

- Assess the changing role of IPRs in fundamental research and early stage applied research – especially with respect to complex, multidisciplinary research involving multiple players -- in response to profound changes in the science and technological base, in the process of innovation and in business models.
- Develop policy recommendations for promoting better public-private partnerships and industry-university relations, and for utilizing IPRs more effectively and efficiently to achieve these objectives.

3. Update the OECD's work on counterfeiting and develop an appropriate OECD instrument for combating counterfeiting on an international basis

Positive action by governments towards eliminating counterfeit and imitation goods is of the utmost importance to international trade and consumer welfare. While substantive IPR laws have become more comprehensive and widespread in the last decade, enforcement remains the weak link in effective intellectual protection in many countries and prevents consumers and firms from realizing the full benefits of open trade and investment.

The OECD's 1998 Report, under DSTI's direction, regarding the economic impact of counterfeiting shed valuable light on the scope and magnitude of the global counterfeiting problems plaguing not only consumer products companies that depend on consumer trust in their brands but also an expanding range of high-tech industries, ranging from aerospace to pharmaceuticals to telecommunications. The OECD is the appropriate global forum to pursue the issue of counterfeiting enforcement because it has both the economic analytical capabilities and the capacity and experience in developing model laws, instruments and ongoing policy analysis in this area.

RECOMMENDATIONS:

- Expand the OECD's profile with respect to all aspects of counterfeiting across the full spectrum of OECD Committees and work programs;
- Update the OECD's 1998 Report and provide a new roadmap and recommendations for addressing this increasingly costly global issue;
- Develop an OECD Anticounterfeiting Convention, or other appropriate instrument or guidelines, along the lines of the OECD's highly influential Antibribery Convention;
- Engage both OECD Members and OECD Observer nations in the new work program related to counterfeiting.

4. Develop new, more robust methodologies and economic indicators for measuring intellectual property rights and the critical role they play in stimulating innovation and economic performance

Current IPR indicators provide a useful measure of innovation output, national innovation outcomes, R&D intensity, and other economic and technological benchmarks. As the OECD has recognized, however, the traditional IPR input-output indicators, such as patent indicators, are limited in their current utility and even may provide a misleading or incomplete picture to policymakers. For example, current IPR indicators: (a) tend to focus on quantity rather than the quality of the rights; (b) lack standardization across national systems; (c) reflect an outdated view of the innovation process as a linear process rather than a complex, intersecting system with multiple feedback loops; (d) fail to take account of changes in the underlying IPR legal regimes, in the underlying science and technology base, and in the globalization and geographical dispersion of IPRs; and (e) are constrained by the available methodologies used to construct IPR indicators.

"Fact-based evidence will provide policymakers with a more objective understanding of the role of IPRs."

Existing economic indicators and methodologies are woefully inadequate for providing a sophisticated understanding about systemic linkages, the science-innovation interface, or the changing nature of the innovation process. They also come up short in providing effective measurements about the increasing role of intellectual or knowledge-based assets in dynamic national and global economies.

RECOMMENDATIONS:

- BIAC supports the OECD Patent Project to develop an international statistical infrastructure for patents, with a strong emphasis on the development of databases and methodologies.
- NESTI and DSTI should undertake a multi-year program, in conjunction with business, academic and government experts, to develop new methodologies, indicators and other analytical tools for measuring and assessing IPRs and the increasingly important linkages between IPRs and innovation and economic performance. This also should include tools to measure IPRs role as a source of information and an enabling mechanism for technology transfers and the development of technology markets. The OECD's focus on measuring inventive performance, international trade and investment flows, diffusion of knowledge, the effects of other national policies such as S&T investments and regulatory regimes on IPR, and the internationalization of innovative activities will be significantly enhanced by this work.
- As recommended by the OECD Experts Workshop, the OECD also should undertake more empirical studies about IPRs, innovation and economic performance. Many of the current attacks on IPRs stem from misunderstandings or misperceptions that have no basis in fact. Increased empirical work and factually-based evidence will

provide policymakers with a more objective and comprehensive understanding about the role of IPRs.

5. Initiate a forward-looking, horizontal project about "converging technologies" by focusing on the changing role of IPRs in three key technological and economic drivers for the 21st Century – biotechnology, ICT and nanotechnology

The early decades of the 21st Century will be marked by the increased scientific and technological convergence of three fundamental drivers – biotechnology, advanced information technology and nanotechnology. Revolutionary advances at the interfaces between previously separate technological and economic spheres will transform traditional disciplines, business models and government policies. These converging technologies have the promise to achieve tremendous improvements in human capital, innovation, economic performance, and the quality of life. IPRs already are playing a critical role in converging technologies, multidisciplinary research and evolving business models. It is essential to get "ahead of the curve" and prepare policymakers for the changes made possible by converging technologies, including a significant emphasis on the role of IPRs.

"Now is the time to anticipate IPR policy issues and plan an integrated, forward-looking approach that will yield optimal results for society."

RECOMMENDATIONS:

- The Futures Programme, with DSTI's assistance, should undertake a series of forward-looking projects to explore the potential of converging technologies and research to improve human and economic performance, as well as the overall potential for revolutionary changes in the economy and society, and the role of IPRs. Now is the time to anticipate IPR policy issues and plan an integrated, forward-looking approach that will yield optimal results for society.
- For each key economic driver – biotechnology, advanced information technology, and nanotechnology – DSTI also should examine the appropriate IPR framework and policies needed within each area to meet the challenges and opportunities posed by technological convergence and by the unique factors associated with each of them.

6. Provide comparative analyses and undertake "value-added" reviews concerning the intersection of IPRs and competition/antitrust policy

BIAC agrees with the OECD's recent findings that the growth in IPRs during the last decade corresponds to new structural innovations, such as public-private partnerships and new business models that are based more on knowledge networks and markets. Innovation processes throughout the OECD have become more competitive, more cooperative, more globalized, and more reliant on new entrants with competitive ideas and products. It, therefore, becomes much more critical that IPRs and competition policy be viewed as complementary policy tools and not as a "zero sum" game.

The recent major report by the Federal Trade Commission in the United States, "To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy" aims to strike a balance between monopoly and disclosure. It expresses the realization that patent offices have often assumed an incorrect attitude by considering applicants as their clients, rather than assume the role of guardian of the public interest. As a result, they have granted too many poor quality patents that stifle innovation.

RECOMMENDATIONS:

- Provide a comprehensive overview of the current research and policy reviews in member countries, including the European Union, about the intersection of IPRs and competition policy.
- Establish a joint working party between the Trade and Competition Committee and the Committee on Science and Technology Policy to develop suggested guidelines and policies for a sophisticated intellectual property-competition policy interface and to ensure the vigorous competition that enables IPRs to operate effectively and efficiently.
- Initiate a pilot project that analyzes how both IPR and competition policies must work together to promote innovation and adjust to rapid changes in business models and innovation processes. BIAC suggests using the emergence of de facto standards with network effects in ICT as an initial subject for such an examination.

7. Focus on health-related innovation as a principal policy challenge for the early 21st Century and develop new frameworks and policies for linking IPRs and health innovation

The dawn of the 21st Century provides an entirely new landscape for healthcare. It already is providing entirely new approaches to many diseases in both the developed and developing world. In order to realize the enormous promise of the ongoing revolution in the life sciences, policymakers increasingly must recognize the critical role of innovation as a key driver of improved healthcare and the role of IPRs as a core enabling condition.

RECOMMENDATIONS:

- Initiate a broad, new project to foster health-related innovation and to develop public policies that encourage and reward innovation in human health-related products, services and technology, that can deliver on societies' expectation for health while contributing to economic growth, and that increase patient and consumer choice in human health.
- Continue and expand the ongoing activities of the Working Party on Biotechnology related to IPR and innovation, both with respect to human health and with regard to sustainable industrial biotechnology.

8. Analyze the role of markets for technology and the economic accounting of intellectual assets

BIAC supports the OECD view that markets for technology are increasingly important for knowledge-based economies and that IPRs play a pivotal role in the development of technology transactions and new technology markets. Markets for technology can provide a means for technology diffusion, can increase the efficiency of R&D and innovation by stressing complementary strengths of firms and non-profit organizations, and can provide new sources of revenues that can create virtuous cycles of new investments in innovation.

"Policymakers increasingly must recognize the critical role of innovation as a key driver of improved healthcare and the role of IPRs as a core enabling condition."

RECOMMENDATIONS:

- Develop an analytical framework for analysis that will better inform governments and other stakeholders about the evolution of markets for technology, including their functioning and effect on innovation and economic performance.

The Business and Industry Advisory Committee to the OECD (BIAC) was created in 1962 as an independent organisation officially recognised by the OECD as being representative of all sectors of the OECD business community. BIAC's members are the major industrial and employers' organisations in the 30 OECD member countries. Via its 19 standing committees, BIAC mirrors a wide range of policy issues the OECD covers.

This "Affirmative Case for Intellectual Property Rights" was spearheaded by the BIAC IPR Brainstorming Group which was created specifically for the purpose of developing a broad business position on the issue. This discussion paper is the result of a cross-sectoral dialogue within the OECD business community.

BIAC

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AdNova January 2004