



OECD Science, Technology and Industry Working Papers
2005/01

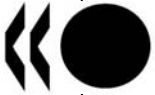
Promoting IPR Policy
and Enforcement in China:
Summary of Dialogues
between OECD and China

Gang Zhang

<https://dx.doi.org/10.1787/676211282105>

Unclassified

DSTI/DOC(2005)1



Organisation de Coopération et de Développement Economiques
Organisation for Economic Co-operation and Development

09-Feb-2005

English - Or. English

DIRECTORATE FOR SCIENCE, TECHNOLOGY AND INDUSTRY

**DSTI/DOC(2005)1
Unclassified**

PROMOTING IPR POLICY AND ENFORCEMENT IN CHINA

STI WORKING PAPER 2005/1

Summary of OECD-China Dialogues on Intellectual Property Rights Policy and Enforcement

Gang Zhang

JT00178246

Document complet disponible sur OLIS dans son format d'origine
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**PROMOTING IPR POLICY AND ENFORCEMENT IN CHINA:
SUMMARY OF DIALOGUES BETWEEN OECD AND CHINA**

Gang Zhang*

Abstract

Intellectual property rights (IPRs) have an important role to play in helping China realise a modernisation strategy based on technological upgrading and integration into the global economy. Through the protection they offer to inventors, IPR regimes can help promote domestic technological innovation and facilitate transfer of foreign technology. Having recognised the importance of IPRs, the Chinese government has taken great strides in the past two decades to develop a modern system of IPR legislation and to further amend it in accordance with China's membership in the World Trade Organisation (WTO). Progress with respect to IPR enforcement, however, still falls short of the levels needed to stimulate Chinese innovation and meet the expectations of the international business community.

This report summarises two policy dialogues that the OECD organised with China in Spring 2004 on IPR issues. These dialogues aimed at assisting China in its efforts to further improve IPR policy and enforcement by sharing the experience of OECD countries on a range of issues of special relevance and interest to China. The topics addressed by the first dialogue, the *Workshop on Intellectual Property Rights and Economic Development in China: Meeting Challenges and Opportunities Following WTO Entry*, included: the relationship between IPR, innovation and economic performance; links between anti-trust and IPR policies; policy and institutional coherence in modern IPR regimes; special challenges facing developing nations in regard to IPR protection; and enforcement of IPRs in China. The second dialogue, the *Seminar on Intellectual Property Rights Issues Related to Public Research Institutions*, concentrated on practical policy and implementation issues related to the protection and dissemination of IPR resulting from publicly funded research.

Drawing on the presentations and discussions of each event, this Report offers general messages on the various topics discussed and specific messages focused on China.

* The author would like to thank Daniel Malkin, Jerry Sheehan, Catalina Martinez, Mario Cervantes, Douglas Lippoldt and Andreas Reindl for their valuable comments and help. Needless to say, the author bears the whole responsibility for any remaining errors and omissions in the report.

AMÉLIORER LE RÉGIME DES DROITS DE PROPRIÉTÉ INTELLECTUELLE ET LE RESPECT DE LEUR PROTECTION EN CHINE

RESUMÉ DES ÉCHANGES ENTRE L'OCDE ET LA CHINE

Gang Zhang*

Résumé

Les droits de propriété intellectuelle (DPI) ont un rôle majeur à jouer dans la réussite de la stratégie de modernisation de la Chine, fondée sur le relèvement du niveau technologique et l'intégration dans l'économie mondiale. Au travers de la protection donnée aux inventeurs, les régimes de DPI contribuent au développement de l'innovation dans l'économie nationale et facilitent les transferts de technologie étrangère. Conscient de l'importance des DPI, au cours des 20 dernières années le gouvernement chinois a consenti un effort considérable à la mise en place d'un régime moderne régissant les DPI, totalement inexistant jusque-là, et en l'améliorant encore à l'occasion de l'adhésion du pays à l'Organisation mondiale du commerce (OMC). Cependant, le progrès réalisé du point de vue du respect de la législation relative aux DPI n'est pas encore suffisant tant au regard de ses effets sur le développement de l'innovation qu'à celui des attentes des milieux d'affaires internationaux.

Le présent rapport résume les échanges que l'OCDE a menés avec la Chine sur les DPI en 2004. L'objectif de ces échanges était d'aider la Chine à améliorer encore le régime des DPI ainsi que le respect de leur protection sur la base de l'expérience acquise par les pays de l'OCDE concernant diverses questions qui présentent un intérêt particulier pour la Chine. Le premier échange, à savoir l'*Atelier sur les droits de propriété intellectuelle et le développement économique en Chine : défis et opportunités après son accession à l'Organisation mondiale du commerce*, a porté sur les questions suivantes : la relation entre les DPI, l'innovation et les performances économiques, la relation entre les politiques anti-trust et la politique des DPI, la cohérence des politiques et agencements institutionnels des régimes modernes de DPI, les enjeux particuliers du renforcement de la protection des DPI pour les pays en développement et le respect des DPI en Chine. Le second échange, à savoir l'*Atelier sur les droits de propriété intellectuelle dans le secteur de la recherche publique*, a été centré sur l'étude de la politique des DPI et les aspects pratiques relatifs à la protection des DPI et à la diffusion de l'innovation issue de la recherche financée sur fonds publics.

A partir des exposés présentés et de l'analyse de chaque atelier, le rapport propose deux séries de conclusions, la première sur les questions traitées lors de ces rencontres et l'autre concernant plus particulièrement la Chine.

* L'auteur tient à remercier Daniel Malkin, Jerry Sheehan, Catalina Martinez, Mario Cervantes, Douglas Lippoldt et Andreas Reindl pour leurs précieuses observations et leur aide. Bien entendu, l'auteur assume l'entière responsabilité de toutes erreurs ou omissions qui subsisteraient dans le rapport.

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SUMMARY OF OECD-CHINA JOINT EVENTS ON INTELLECTUAL PROPERTY RIGHTS HELD IN BEIJING, CHINA 20-23 APRIL 2004

Foreword

Improving the protection of intellectual property rights (IPR) has been one of the main challenges faced by the Chinese government since its accession to the World Trade Organisation in December 2001. While the Chinese government has become increasingly aware of the importance of IPR protection in the context of a modernisation strategy based on openness to the global economy, innovation and technological upgrading, lack of expertise on advanced IPR policy issues has been a barrier to further progress. Improving IPR policy and its enforcement in China is of interest to OECD countries that have experienced fast growing economic relations with China through trade and foreign direct investment (FDI).

In order to develop policy recommendations for improving and enforcing China's IPR policies, the Development Research Centre (DRC) of the State Council, and the State Intellectual Property Office (SIPO) became interested in co-operation with the OECD. China gained Observer status in the OECD Committee for Scientific and Technological Policy (CSTP) in December 2001. Meanwhile, IPR policy was identified as a priority for co-operation between the Chinese Ministry of Science and Technology (MOST) and the OECD, whose recent work (OECD, 2003) on the design and implementation of IPR policies for publicly funded research in the OECD countries could be usefully shared with China in the context of the reform of China's IPR policies for publicly funded research.

Against this background, and as part of the OECD outreach dialogue with China on a wide range of policy issues of mutual interest, two events on IPRs were organised jointly by the OECD Directorate for Science, Technology and Industry (DSTI) and relevant Chinese government agencies in April 2004:¹

- *High-Level Workshop on Intellectual Property Rights and Economic Development in China: Meeting Challenges and Opportunities Following WTO Entry*, Beijing, China, 20-21 April 2004, organised in co-operation with the State Intellectual Property Office (SIPO) and the Development Research Centre (DRC) of State Council, China (referred to below as OECD-SIPO-DRC Workshop).
- *High-Level Seminar on Intellectual Property Rights Issues Related to Public Research Institutions*, Beijing, China, 22-23 April 2004, organised in co-operation with the Ministry of Science and Technology (MOST), China (referred to below as OECD-MOST Seminar).

The broad objectives of these two events were to share the OECD expertise and experience with China in order to:

- Promote a better understanding among Chinese policy makers and other stakeholders of the increasing importance of IPR policies in promoting technological innovation and social and economic growth, in the context of the knowledge-based economy.

¹. The OECD Secretariat received financial support from the government of Japan in the form of a voluntary contribution.

- Contribute to China's efforts to further improve IPR policy and enforcement in support of its modernisation strategy based on technological innovation, openness to foreign direct investment and further integration into the global economy.

Each event was designed to discuss and address a set of policy issues of particular relevance and interest to the Chinese policy makers as well as other stakeholders. The two events were organised around thematic sessions, each of which contained presentations by international and Chinese presenters followed by panel discussions.

This summary aims to provide a synthesis of the two events. As the topics addressed in each are closely related, the first addressing general IPR issues and the second focusing on special issues related to public research, both events are summarised in this report. Following an introduction on recent developments in IPR policy and technological capability in China, which aims to provide readers with background and to set the context of the issues addressed by the events, the summary is organised in two parts, one for each event. Each part contains a section on the key findings of the event and a summary of the presentations and discussions. The summary of the Workshop on Intellectual Property Rights and Economic Development in China: Meeting Challenges and Opportunities Following WTO Entry is structured around themes linked to the key messages, whereas the summary of the Seminar on Intellectual Property Rights Issues Related to Public Research Institutions is organised around the presentations, to reflect the differences in national policy approaches and the detail of experiences on diverse aspects of managing technology transfer and licensing from public research.

The agendas of the two events are attached in Annex 1 of this report. Annex 2 contains a background document prepared for the events, summarising policy developments in China's IPR system and remaining challenges.

Introduction and background: IPR policy and R&D development in China

Towards a stronger IPR regime in China

Over the past two decades, China has taken great strides in developing a comprehensive system of IPR legislation (Yang, 2003). China's current IP legal framework consists of basically three laws: the Trademark Law (1982, revised 1993 and 2001), the Patent Law (1984, revised 1992 and 2000) and the Copyright Law (1990 revised 2001). These laws are complemented by regulations such as those on the Protection of Computer Software (1991 and revised 2001), on the Protection of New Plant Varieties and on the Protection of Lay-out Designs of Integrated Circuits (2001). Furthermore, the Anti-unfair Competition Law promulgated in 1993 is used to provide a legal basis for protection of trade secrets and business know-how.²

China has also progressively accepted its international obligations for the protection of IPR. It joined the World Intellectual Property Organization (WIPO) in 1980, ratified the Paris Convention for the Protection of Industrial Property in 1985 and the Madrid Agreement concerning the International Registration of Marks in 1989 as well as signing the Integrated Circuits Treaty the same year. Further in the 1990s, China became a signatory country of the Berne Convention for the Protection of Literary and Artistic Works and the Universal Copyright Convention in 1992, Geneva Convention in 1993, the Patent Co-operation Treaty (PCT) and Budapest Treaty in 1994. Finally, with its WTO membership in 2001, China accepted the obligation to adhere to the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement of the WTO.

² It needs to be noted that the Chinese Anti-unfair Competition Law is not the same as the Antitrust Law, which has not been passed yet. See below.

Accession to the WTO has motivated considerable strengthening of IPR protection in China. China revised its intellectual property laws and regulations, promulgating new regulations and abolishing old ones in an effort to bring the scope and strength of IP protection into conformity with the TRIPS Agreement. By the end of the first year of its transitional period, the WTO Council formed a positive opinion towards China's fulfilment of its obligations, including with respect to the TRIPS clauses. Further in 2003, China continued the effort by introducing a number of regulations and administrative protection measures, such as the regulations on customs protection of IPRs, and implementation measures on copyright administrative sanction, and those on compulsory patent licensing and on the administration of patent agencies.

Enhancing IPR enforcement in China

Despite these efforts, concerns remain about the enforcement of IPR protection in China. In fact, enforcement problem in China has become a greater concern than the IPR legislation to foreign and the Chinese stakeholders. Recent studies found that the effect of criminal and administrative enforcement was insufficient to deter the level of IPR infringement activities in China (QBPC, 2004 and DRC, 2003).

Chinese authorities have recognised the need for stronger enforcement and are already taking steps to do so. The main IPR enforcement mechanisms in China have been strengthened, including elements of administrative enforcement, civil enforcement, criminal enforcement and customs enforcement.³ In addition, the State Council created the National Office for Rectification and Standardisation of Market Economic Order to enhance the coordination and strengthen the enforcement of IPR protection. Some 21 government ministries and national agencies, including SIPO, participated in the work co-ordinated by this Office. Combating counterfeit production and sales, and protection of intellectual property was a priority on the work agenda of this steering group in 2004. The National Office also organised a week-long nationwide campaign in April 2004 to raise the awareness on IPR protection of the Chinese people — a key obstacle to greater IPR protection in China.

Such efforts appear to be producing results. In 2003, the number of trademark counterfeiting and infringement cases investigated and prosecuted by the trademark authority increased by 13% over 2002, the number of false patent cases and patent falsification cases investigated by SIPO increased by 67% and 41%, respectively, over 2002, the number of copyright infringement cases dealt with by the copyright authorities increased fourfold over 2001, and the number of IPR infringement cases detected by the Chinese customs increased by 32% in 2003 over the previous year.⁴ The number of IPR cases heard by the judiciary system also increased in recent years.

To further enhance the enforcement would necessarily call for a greater role to be played by the judiciary channels in the future. Recognising this need, the government is taking the necessary steps to lower the threshold for criminal penalties in the judicial execution of the IPR laws. To this end, the Supreme People's Court and the Supreme People's Procuratorate have been drafting a new juridical interpretation that would clarify and relax the criteria for transferring IPR cases to judicial channels for

³. Enforcement of IPRs concerns not just patents, but also other types of intellectual property, primarily trademarks and copyrights. For more information on the administration of IPR enforcement in China, see a forthcoming OECD publication on public governance in China (OECD, 2005).

⁴. This was a result of the State Council's new regulations on the protection of IPR by Customs issued in 2003, which included many positive reforms in the view of foreign companies. Many critical issues were further clarified under policy directives and implementation rules, effective as of 1 July 2004, issued by the Customs authority (QBPC, 2004).

enforcement. It is hoped that these steps will address the lack the clarity in the criteria for prosecution, conviction and sentencing of IPR violations - a weakness of the present Chinese IPR laws.

In summary, despite significant progress in the development of IPR policies and enforcement, further challenges lay ahead both in the short term and long term for China to improve and enforce its IPR legislation. In the short term, the challenge is for China, as a Member of the WTO, to amend its IPR legislation to ensure compliance with the TRIPS Agreement. While accession to the WTO has given rise to new opportunities for Chinese industry, it has also exposed Chinese firms to international competition under the WTO rules, including TRIPS. This means that China's government and industry need to learn as quickly as possible how to play by the new "rules of the game", not only in respecting others' IPRs but also in strengthening the competitiveness of Chinese industry in the global market. In the long run, the challenge is to design and adapt IPR policies to accommodate changing needs and requirements. IPR policy will need to support not only foreign direct investment and transfers of foreign technologies, but also encourage domestic R&D and innovation. The large size of the Chinese economy and low and uneven levels of economic development coupled with a limited awareness of IPR issues by many government officials, enterprises and the vast Chinese population make it no easy task for the government to meet these challenges.

Reform and development of China's R&D system during 1990s and beginning of 2000s

IPR issues are of growing importance to China as it continues to modernise its science and technology system and improve its economic performance. Since the government adopted the strategy of "*Revitalising the nation through science and education*" in 1995, China has paid increasing attention to improving its national innovation system as part of the country's overall development strategy. R&D expenditures have grown rapidly over the past decade, with gross domestic expenditures on R&D (GERD) reaching USD 72.1 billion in 2002 (OECD, 2004a), up from USD 12.5 billion in 1991.⁵ GERD as a share of GDP climbed up from 0.60% in 1995 to 1.23% in 2002. While this level is significantly below that of OECD countries as a whole, it exceeds that of some OECD members, such as Greece and Mexico.

Protection of intellectual property is a key consideration for multinational enterprises, whose R&D investments are one of the important factors behind the rapid growth of China's R&D spending in the past years. The Ministry of Science and Technology estimated that R&D funding by overseas companies, *i.e.* including those from Hong Kong, China and Macau, China, and Chinese Taipei, accounted for around 15% of business R&D expenditures in China. Although FDI in R&D and technology services accounted for only 0.4% of accumulated contractual value of FDI until 2002, the increasing number of foreign-invested R&D facilities – from just a few at the end of the 1990s to some 600 in the year 2004 – indicates that foreign R&D investments have grown quickly in recent years.

IPR protection is increasingly important to domestic firms, as well, as they become more technology-intensive and as business accounts for a growing share of R&D. In 2002, the business enterprise sector⁶ performed 61% of China's R&D, up from around 40% in 1991; the share of government research institutes

5. GERD expenditures are expressed in terms of purchasing power parity (PPP). It is possible that such figures may overstate the magnitude of China's R&D effort. See Schaaper (2004) for a methodological note on measurement issue and a comparison between GERD in PPP and in current US dollars. Extension of the statistical scope for business R&D expenditure in 2000 explained part of the dramatic growth of China's R&D expenditure before and after 2000.

6. The composition of the business enterprise sector in China is considerably different from that of the OECD countries, where private business entities are the majority of business entities. Most Chinese enterprises that conduct R&D activities are state-owned companies, where research is funded by public resources in that sense.

was 27%, down from 50% in 1991, while universities' share was a low 10%, registering a moderate increase from 8.6% in 1991. Increasing business R&D combined with systemic reforms has led to an increase in the number of patents applications in China, which increased almost three-fold, from slightly more than 100 000 in 1996 to more than 300 000 in 2003. More than three-quarters of the patents by Chinese inventors were not invention patents, *per se*, but design and utility patents, reflecting the limitations of their innovative capabilities.⁷ In contrast, invention patents accounted for 85% of foreign applications.

Parallel to increasing R&D spending, the Chinese government has carried out reforms of public research organisations (PROs), established high-technology development zones, developed successively several national plans for science and technology and created a number of key national laboratories such as those of the Chinese Academy of Sciences. Government measures have also been introduced to enhance R&D spending, innovation capability and appreciation of intangible assets, notably intellectual properties by the Chinese enterprises. To facilitate the technology transfer from public research to the private sector and co-operation between PROs and enterprises, China amended the Patent Law and promoted the creation of technology transfer centres and technology markets.

While China holds great potential for social and economic developments in the 21st century, to realize this potential it is critical for the government to put in place appropriate incentives for innovation and technology development and sound policies for broad diffusion of and access to scientific and technological advances. In this context, developing a strong IPR system is crucial, not just for attracting FDI and accessing to foreign technology but also for nurturing China's innovation capability. With large public spending on R&D, publicly funded research forms the backbone of China's national innovation system. It is thus all the more important for China to adopt the right IPR policies for communalisation of public research in order to boost its contribution to social and economic development.

⁷. The Chinese patent system grants three types of patents, namely invention patents, utility designs, and appearance design patents. The latter two types of patents contain little technology or process inventions.

HIGH-LEVEL WORKSHOP ON INTELLECTUAL PROPERTY RIGHTS AND ECONOMIC DEVELOPMENT IN CHINA: MEETING CHALLENGES AND OPPORTUNITIES FOLLOWING WTO ENTRY

Key findings

Although the purpose of the OECD-SIPO-DRC Workshop was to share the OECD expertise on IPR policy issues with China, the Workshop served as a venue for an exchange of views and experiences among the international and Chinese participants on important IPR issues. The presentations and formal and informal exchanges of ideas and insights helped enrich and reinforce understanding of these issues. Key messages of the Workshop on generic IPR policy issues and those specifically concerned with the further developments of China's IPR policy are summarised below.

Main messages on IPR Policy

- IPR protection can promote innovation and economic development by attracting FDI and strengthening incentives to innovate among domestic firms. Enhancement of IPR systems is associated with the strategic shift from static competition to dynamic competition (*i.e.* based on innovation). At the same time, IPR policy needs to strike the right balance between protection of innovation and facilitation of technology diffusion.
- The business community attaches great importance to the protection of trade secrets, in addition to the protection of patents. Companies take both factors seriously into consideration when they make overseas investment decisions. In some circumstances and for some industries, protection for trade secrets can be equally or even more important than patents. Where there is abuse of trade secrets, rapid access to injunctive relief can be of critical importance for firms.
- Antitrust and IPR are not necessarily in conflict, and the differences can be, in principle, bridged. However, different perspectives exist on the most appropriate balance between antitrust and IPRs, and between the static and dynamic competition goals they pursue. Assessing the risk of potential abuse of market dominance by IP right holders can be difficult in practice. Ensuring the quality of issued patents can be important in reducing this risk.
- Coherence must be maintained between IPR and related policies, not least those affecting FDI and innovation. Coherence is a dynamic concept, as a coherent policy framework may not be maintained over an extended period of time without consultation with rights holders and others affected by IPR. Development of a coherent policy depends crucially on appropriate consultations with *all* stakeholders, and involves constant learning by policy makers and enforcers of new theories and practice. Institutional relationships need to be maintained among the various entities involved in the development and implementation of IPR policies.
- Globalisation has led to an increasing demand for greater international harmonisation with respect to national IPR regulations and procedures in order to facilitate trade and investment. Meanwhile, harmonisation of national IPR systems is called for to facilitate the co-operation amongst national patent offices, as a way for them to better cope with increasing workloads and limited resources. In fact, such co-operation might be viewed as an extension of coherence to the international level.
- In the context of developing countries, available empirical evidence suggests that the economic benefits of IPR protection may not always increase in proportion to the strength of the IPR protection. In particular, strengthening IPR may not be in the interest of the poorest developing countries due to a number of considerations especially related to this type of developing countries. However, for scientifically-sophisticated developing countries, such as China, the impact of IPR deserves further significant attention.

IPR, innovation and economic growth: trends and new directions for policy

IPR regimes play a key role in the way private firms and research institutions develop, acquire and manage their intellectual assets. Through their influence on the pace, patterns and diffusion of technological progress as well as on competition they have a strong impact on innovative capacity and economic performance of countries. In many OECD countries, the transition to a knowledge-based economy characterised by the increasing importance of technology-intensive sectors and the efficient management of intellectual assets has given rise to changes in governments' IPR policies and firm's

strategies concerning IPR management. However, the challenge for governments to create a modern IPR system to encourage innovation and enhance its contribution to social and economic development is not unique to OECD countries. China is faced with the same, but more difficult, challenge. Sharing with China the insights into the evolving relationships between IPR, technological innovation and economic performance and the experiences of OECD countries on IPR policy reforms is an important way to promote and reinforce the understanding of the importance of IPR protection among Chinese policy makers and business leaders.

Increasing importance of IPRs and policy response during the last century

As a result of the fast technology advancement in information and communication technology (ICT) and biotech industries and increasing globalisation, recent decades witnessed a surge in the numbers of patents filed in OECD countries. Related to this technology-driven development, a number of other factors fed as catalysis into this dynamic process, including the increased need for capital markets to use patents for the valuation of intangible assets, the proliferation of technology-based start-up firms, increased co-operation and outsourcing in innovation processes and R&D, and the shift towards more innovation based competition. All of these changes have occurred in the context of increasingly globalised markets.

OECD work reviewed by Catalina Martinez of the OECD Directorate for Science, Technology and Industry, confirmed that patents played an increasingly important role in innovation and economic performance in OECD countries in the past century and that the increasing use of patents to protect inventions is closely linked to changes in innovation processes, where interactions among global networks of actors in the public and private sectors had become an increasing necessity (OECD, 2004b).

The international business community, as presented by Richard Johnson of Arnold & Porter LLP and vice-chair of the Committee on Technology of the Business and Industry Advisory Committee (BIAC) to the OECD, contends that IPR helped make possible the conditions for innovation, entrepreneurship and market-oriented economic growth that shaped the 20th century. Furthermore, as noted by Ruud Peters of Philips Intellectual Property and Standards (The Netherlands), in the global economy, good intellectual property systems are needed for promoting sharing of the knowledge protected by IPR, and for facilitating the globalisation of R&D. The protection of IPRs, including patents, trade secrets, know-how, and trademarks, is an increasingly important factor that influences firms' decision on foreign direct investment and on the type of technology to transfer.⁸ Michael Schiffer of Baxter Healthcare (United States) pointed out in his keynote speech that firms will bring the most advanced technology and production process into a country *only if* the country can provide secure and adequate protection for IPRs, including trade secrets. It is thus the role of government to help create a legal and policy framework for IPRs to encourage innovation and technology diffusion.

Responding to the increasing need for a better protection of IPRs, many OECD countries have implemented reforms in their IPR systems, principally in the following directions:

- *Expansion of coverage*: Patentability was broadened to provide protection for inventions in growing new technology areas (e.g. biotechnology and software).
- *Higher incentives* for patenting at public research organisations (see Part Two).
- *Increased flexibility* and reduced patent filing costs: more flexible and less costly patent filing procedures, notably at the international level.
- *Reinforced patent holder rights*: special IP courts were set up in several countries.

⁸. See also below on the IPRs influence on foreign direct investment to developing countries.

Furthermore, patents offices in many OECD and non-OECD countries undertook measures to cope with the challenge in handling the increased numbers of patent applications, especially those in new technology areas (see Box 1).

Despite these reforms, few systematic economic evaluations have been carried out to better inform policy choices. Catalina Martinez from the OECD noted that there is a need to examine the extent to which changes in patent policies over the past two decades been beneficial to innovation and technology diffusion. Well-informed policies are needed to prepare the patent system for future challenges, including increased globalisation, the expansion of the Internet as a vehicle of diffusion, and the growing role of service sector firms in innovation.

Box 1. Challenges faced by patent offices world-wide

Patent offices world-wide are faced with the challenge of mastering an increasingly voluminous and complex workload. During recent years, the number of applications has increased significantly, and many are in new technology areas in which patent offices had limited experience or access to prior art (e.g. software, genetics). The average complexity of applications, as measured by their length and number of claims, has also increased. To meet this challenge, many patent offices reorganised and rationalised their working methods. For example, the European Patent Office (EPO) reorganised itself around 14 joint clusters specialised in certain technology areas, in order to better capture specific trends in each field. It also made continuous investments in databases, ICT tools and personnel training. Furthermore, close co-operation between all patent offices faced with similar challenges was sought as a way to facilitate the exchange of experience, the development of new tools (notably IT and databases), search results, and the harmonisation and simplification of their respective procedures. China's State Intellectual Property Office (SIPO) has faced similar challenges, and international collaboration with major patent offices has helped with capacity building and utilisation of information technology in SIPO.

Source: Presentations by Dominique Guellec, European Patent Office; Ichiro Nakayama, Intellectual Property Strategy Headquarters, Cabinet Secretariat of Japan; and Qin Zhang, State Intellectual Property Office of China.

Directions for IPR policy development in the 21st century

Projecting into the 21st century, speakers shared the views that IPRs increasingly define the conditions for economic performance, by making a significant impact on the pace and direction of innovation, investment and economic growth around the world. As such, the IPR systems will continue to face new challenges, mainly as a result of increasing globalisation, the rapid expansion of Internet use, and service-related innovations (e.g. business methods).

Richard Johnson of BIAC suggested that countries would have to develop a more sophisticated, forward-looking IPR policy framework for the 21st century. This would require: *i)* an increased appreciation for the vitality of the IPR toolkit and its central role in stimulating innovation and spurring economic growth; *ii)* renewed attention to specific intellectual property issues such as scope, quality, diffusion, access, strategic use and effectiveness of IPRs; *iii)* understanding the importance of IPR protection and enforcement to knowledge-based economic growth, trade and investment; and *iv)* a new systemic understanding of 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.

Antitrust policy and IPR protection

The interface between IPRs and antitrust raises a number of important economic and legal issues. For many years, it was thought that the two systems were inherently in conflict. More recently, it has been recognised that the two systems are complementary in that both seek to promote innovation and the development of new technologies, products and services. Determining where one system ends and the other begins, however, is not easy. Important issues that arise at the interface between antitrust and IPRs,

including the interdependence between competition law and IPR law, competition issues in bilateral and multilateral license agreements, and potential tensions between IPR and antitrust when firms with significant market power refuse to grant competitors access to their intellectual property. Along with the transition to a market-based economy and improving its IPR system, China must take steps to address antitrust issues, such as by adopting antitrust legislation. Experiences of OECD countries can be particularly helpful in this area as China currently lacks expertise on antitrust issues.

IPR and competition law are fundamentally linked

Both competition and patent laws serve the goal of promoting innovation, but they approach this goal in different ways. As described by John Barton of Stanford Law School, intellectual property rights promote *dynamic competition* by granting exclusivity to an inventor as an incentive to research and creativity, with the expectation that the price will be above marginal production cost and thereby recompense development costs. In contrast, antitrust law primarily promotes *static competition*, with the expectation that competition in product markets will bring price close to marginal production cost.

Maximizing consumer welfare over time requires maintaining the right balance between *static competition* and *dynamic competition*, so that society has the right balance between research oriented toward new products and consumer access to current products. According to Barton, these two counterbalancing forces must work in tandem, and the right balance may vary from one nation to another because it depends ultimately on the balance between concern for the present and for the future.

Balancing competition and IPR protection

While competition and patent laws generally work well together, problems inevitably emerge. A recent report of the US Federal Trade Commission (FTC, 2003), summarised by the FTC's William Cohen, notes that issuance of questionable patents, *i.e.* those with invalid or overly broad claims, are a principal cause of unwarranted market power. To reduce this problem, the FTC stresses the need for effective mechanisms to identify and weed out questionable, commercially-significant patents, both through a post-grant review process within the US Patent and Trademark Office and through effective judicial review. It also urges steps to minimise competitive problems that could arise when unexpected patents are approved and catch competitors by surprise.

Reflecting differences between the US and European approaches to and policies on antitrust issues, Sarah Turnbull, from SJ Berwin (United Kingdom), used various European Union court cases to illustrate the point that "*It is not easy to marry the innovation bride and competition groom, and some have argued that such a marriage will unavoidably lead to divorce*" (European Commission 2001). These cases helped highlight the difficulties in determining market dominance originating from IPR and the abuse of the market dominance, and in applying in practice important concepts such as relevant markets and "exceptional circumstances" in which there might be a duty to license IPR. Applying these concepts either too narrowly or too broadly would influence the balance between static competition and dynamic competition. Improving the capacity and competence of both competition and IPR enforcing agencies so that they can better apply these difficult concepts is thus important for a better balance between competition and IPR laws.

Regarding ways to achieve the balance between competition and intellectual property laws, William Cohen of the US Federal Trade Commission suggested that each discipline should improve its own analysis to better accommodate the legitimate goals pursued by the other. Otherwise, there could be damaging effects to both disciplines, for example if a competition authority attempted to push antitrust law ways to deal with competitive problems created within the patent system by the issuance of questionable patents.

The balance may shift over time

The balance between IPR and competition law may also need to shift over time, reflecting changes in industrial dynamics and society concerns. As described by Michael McFalls of Jones Day (United States), contemporary US history illustrates this dynamic evolution process (see Box 2). The rise of new industries, and thereby new market situations and business behaviour, gave rise to the need for rebalancing between antitrust and IPR over time. To manage the task of rebalancing, law makers and enforcers must continuously incorporate new learning from new theories in economics and law and from the marketplace. The recent hearings by the US Department of Justice and the Federal Trade Commission on Intellectual Property and Competition Law and Policy gave a good example of this learning.

Box 2. An evolutionary overview of anti-trust policy and IPR policy in the United States

In the United States, the passage of the Sherman Act in 1890 – which established the basic framework of competition law and policy – coincided with a period of rapid industrial growth between the end of the 19th century and the beginning of the 20th century. Although early antitrust law and policy assumed the predominance of IPRs, courts and the US Congress became sceptical over time about the ways in which businesses attempted to use licensing restrictions to obtain commercial power beyond the scope of their statutorily granted rights. By the early 1940s, courts routinely condemned both vertical and horizontal licensing restrictions, and IPRs – once a shield against antitrust enforcement – had become associated with dominant or collusive behaviour. That shift, accompanied by more aggressive enforcement policy, resulted in the hegemony of antitrust policy.

By the 1970s and 1980s, however, new economic and legal theory led courts and enforcers to re-examine their hostility to IPR and licensing in the antitrust context. The law changed, and enforcement became less aggressive. In 1995, the federal enforcement agencies acknowledged their unofficial shift in policy by issuing the Antitrust Guidelines for the Licensing of Intellectual Property. Since then, the explosion in both the number and value of IPRs, and the increase in licensing and settlement agreements in the United States have resulted in an active antitrust enforcement. Today, both law and policy focus on the actual or likely effect of licensing restrictions on competition – always with an eye toward determining what would have happened in the relevant markets in the absence of the license. Despite the emergence of new issues related to the use of IPRs (arising in new industries), antitrust law in the United States has become sufficiently flexible over time to remain not only relevant, but arguably indispensable as a means of ensuring continuing competition in IP-intensive industries.

Source: Presentation by Michael McFalls, Jones Day (United States).

China's forthcoming antitrust legislation, enforcement and related issues

China started paying attention to antitrust issues only in recent years, as it continued with the development of market institutions in the transition to a market-based economy. So far the attention has focused primarily on the foreign multinationals with perceived market dominance in China due to their strong technological position and IPRs, as pointed out by Wang Xianlin of China's Anhui University. A draft antitrust law was recently submitted to China's Cabinet and could go to the national legislature for approval. Apart from adopting the law, the creation of a truly independent regulatory agency for antitrust with a clear enforcement authority would be an important issue for China. Determining the right balance between IPR and antitrust in China would be a challenging task. Important factors to take into account, as suggested by John Barton, include the ability of Chinese industry to compete in export markets dominated by IP rights, and terms of access and decision-making for FDI and foreign acquisitions of indigenous firms, the balance between dynamic competition through creating incentives for Chinese firms to innovate and develop new products and access to foreign technology. In the first place, however, building antitrust analytic capacity should be a high priority for China.

Policy coherence and institutional design of modern IPR regimes

IPR regimes differ among countries, notably as a result of different institutional settings but also because they are a component of a broader policy mix, including science and technology, competition and

trade policies and *etc.* that have a direct or an indirect influence on their design, implementation and enforcement. Important issues here include what form the core policy components of a modern IPR system, how governments could improve the coherence of IPR policies and relevant policies, and how institutional designs could help achieve coherence of IPR regimes. The Chinese government has recognised the importance of policy and institutional coherence as a condition for the IPR policies to better contribute to China's social and economic development. In this context, China is interested in learning from the institutional and policy experience of OECD countries.

Policy coherence in OECD countries

The experience of OECD countries shows that the need for IP protection increases with a country's level of industrialisation and the degree of integration into the global economy. The case of Korea, as a newly industrialised economy, provides a good example of such a dynamic adjustment process, as the patentability scope of the Korean IPR system expanded and its focus shifted from small domestic utility models to national and, subsequently, international patents as Korea's industrial development progressed during the 1980s and 1990s. The increased need for IP protection led to the amendment of obsolete IP laws and policies and the adoption of new legislation on IPR over time, resulting in the need to maintain policy coherence through legislative and institutional adjustments of relevant policies and government bodies. Thus, maintaining policy coherence was inherently part of the dynamic development process of countries.

Approaches to policy and institutional coherence tended to vary among countries, however. The US experience, as presented by Richard Wilder of Sidley, Austin, Brown and Wood LLP (United States), underlines that coherence requires careful consideration of not only economic and political theory in the operation of intellectual property, but also co-ordination between executive branch agencies responsible for the granting and enforcement of intellectual property and related laws. Important principles for achieving and maintaining a coherent policy include ensuring: *i*) that all affected parties have a role in setting the policy; and *ii*) that consultation with rights holders and others affected by intellectual property rights be maintained over an extended period of time.

In practice, such consultation is undertaken in the US government by the executive branch in connection with the implementation of intellectual property laws and by the legislative branch when reviewing the operation of the overall system for the protection of IPR in the country. As IPR issues are relevant to many policy domains, and at national and international levels, managing policy coherence has become an increasingly complex task, involving a large number of government bodies (Table 1).

Table 1. Legislative and executive bodies involved in making and enforcing IPR policy in the United States

<i>Legislative Branch</i>	<i>Executive Branch</i>
<i>House of Representatives Committees</i>	
<ul style="list-style-type: none"> • Judiciary – Subcommittee on Courts, the Internet, and Intellectual Property • Appropriations • International Relations • Small Business • Science 	<ul style="list-style-type: none"> • Patent and Trademark Office • Department of State • Office of the United States Trade Representative • Department of Commerce • Department of Treasury <ul style="list-style-type: none"> – The United States Customs Service – Alcohol and Tobacco Tax and Trade Bureau • Department of Agriculture, Plant Variety Protection Office • Department of Justice • Department of Health and Human Services
<i>Senate Committees</i>	
<ul style="list-style-type: none"> • Judiciary • Governmental Affairs • Appropriations • Small Business and Entrepreneurship • Foreign Relations 	

Source: Presentation by Richard Wilder.

Compared with the approaches of other countries, the Japanese approach, as presented by Ichiro Nakayama of the Intellectual Property Strategy Headquarters in the Cabinet Secretariat of Japan, was distinctly characterised by: *i*) the role played by Japan's top government leadership in stressing the strategic importance of intellectual property strategy and policies; and *ii*) the creation of a sufficiently high-level co-ordinating body to ensure policy coherence. The policy statement made by Prime Minister Koizumi in February 2002 gave the strongest political support to Japan's *IP-based Nation Strategy* that was launched in March 2002. In terms of institutional design, the creation of an IP Strategy Headquarters at the Cabinet level, which is chaired by the Prime Minister, and co-chaired by ministers of related government agencies, provided an effective institutional device for enhancing policy coherence and the co-ordination among government agencies in the implementation of the IP-based Nation Strategy and related key reforms.

The experience of Korea, as presented by Keun Lee of Seoul National University, emphasised a systemic approach that treats the IPR system not simply as a system confined to the administrative activity of the competent office, but rather as a comprehensive system, from R&D activity to the dispute settlement mechanism. In addition, the Korean experience shows that continuous improvements in the provision of public services by the government proved important in coping with the complexity of achieving policy coherence.

IPR policy as a component in China's development strategy

Several speakers, both Chinese and other, stressed the importance of treating IPR policy as one component of a broader set of policies aimed at fostering economic development in China, including, most importantly, policies on education, R&D, competition and industrial development. Since China has a dual economic structure with both a modern sector and an underdeveloped traditional sector, IPR policies have to meet the different needs for IP protection and work in harmony with policies that support the development of different sectors. Important facets of policy coherence in the context of China's overall development strategy are illustrated in Box 3. Since IPR policies have an impact on other policy domains, and vice-versa, policy coherence requires close co-ordination of government bodies in charge of IPR policy with those in charge of other policies and the interactions between policy areas should be managed structurally.

Box 3. An illustrative account of coherence issues between IPR and other policies of China's modernisation strategy

IPR and public R&D: To promote public research, which plays an important role in China, special attention should be given to the creation of conditions needed to allow the public sector to contribute to the creation and diffusion of new technology. This implies, among other things, the need to have legislation similar to the US Bayh-Dole Act and a clear and strong exemption for research use in the public sector.

IPR, small inventions, and small and medium-sized enterprises (SMEs): small inventions and incremental inventions characterized by some novelty, mainly local impact, significant but not large economic value, generally coming from SMEs with little or no R&D, are especially important for developing countries with modest technological capabilities. The standard patent system would not be well suited to protect such inventions as the requirements and costs would be too high, whilst aiming at strong protection. In this context, policy coherence will require a patent regime that can suit the need to protect utility models. The adoption of the Utility Model Law in Japan in 1905 and the creation of the Quick Registration System for Utility Models in Korea in 1999 are good examples in this regard.

IPR, foreign direct investment and access to foreign technology: China needs good access to foreign technology, because at its current level of development it depends on this knowledge to construct its own innovation capacities. Policy coherence in this context would require proper protection for foreign as well as national inventions (e.g. implementing TRIPS), and to fight systematic counterfeiting, which would deter the transfer of foreign technology and undermine the effect of China's export-led development strategy.

IPR and encouraging business R&D: Patents are an essential instrument in this regard as they protect commercialisation on the national market, and as national patents are used by companies as "launching pads" before seeking protection abroad, hence accessing foreign markets. In this context, policy coherence would require the patent policy to deliver strong and high quality patents according to the criteria of proper scope of protection, cost efficiency and rapid filing and legal certainty.

Source: Presentation by Dominique Guellec, European Patent Office.

The growing need for international harmonisation of IP regimes and enforcement

Today, with the increasing process of globalisation, coherence and institutional efficiency of the international IPR systems has become critical for business, and will become even more so tomorrow, due to the rapid technical development and the globalisation trend. In particular, international business representatives, such as Måns Ekelöf of Ericsson (Sweden) and Ruud Peters of Philips (The Netherlands), emphasised the need for accelerating global harmonisation and integration of IP protection. According to Måns Ekelöf, important issues include the following:

- Harmonisation of patents, to deal with the co-existence of different principles, practices and standards.
- Global patentability of computer implemented inventions to overcome the important regional differences in the scope of their patentability.
- Implementation of WIPO treaties, especially those regarding new business models and digital content.
- International enforcement to ensure reasonable royalties and effective enforcement.

Before the adoption of a global IPR system which would not likely become a reality any time soon, governments could help mitigate the differences of national IPR systems by observing, as far as possible, international norms and practices when designing and reforming national IPR policies, and by taking part in international co-ordination of patent examination, as suggested by Takaya Ishida of Mitsubishi Electric Corporation (Japan) and BIAC.

Enhancing IPR protection: special challenges faced by developing countries

The past decade witnessed substantial changes in the web of international treaties that govern IPRs in conjunction with national laws. The World Intellectual Property Organization administers a series of international IPR agreements developed over many years. During the 1990s, many developing countries moved to strengthen their IPR regimes through adherence to these WIPO-administered agreements. Building on this framework, the TRIPS Agreement was negotiated within the GATT/WTO, coming into effect on 1 January 1995. Furthermore, regional trade agreements often included one or more provisions going beyond the strict requirements of the TRIPS Agreement, as noted by a recent OECD study (Lippoldt, 2003).

Several Chinese speakers identified specific challenges that developing countries face in reconciling their development agendas with greater respect for IPR. Many relate to the cost of licensing foreign technology, which can undercut the low-cost production strategy of many firms. According to Zhang Ping from the IPR College of Beijing University, licensing fees for patents used in some international standards may be reasonable for firms in developed countries, but are too high for many Chinese firms. While this may be most notable in the information technology sector, it affects firms in other, lower-technology manufacturing industries as well. For example, Zhou Dahu, president of the Wen Zhou Lighter Industry Association, described the serious challenge many Chinese firms faced when the European Union moved to impose new safety standards for cigarette lighters that effectively required Chinese manufacturers to license a patented safety device or invest in the development of alternatives. Only with support from industry associations and government ministries were firms able to negotiate a viable solution.

Accommodating the needs of developing countries

International agreements already reflect some concerns of developing countries. As explained by Jayashree Watal of WTO, the TRIPS Agreement aims to ensure a multilateral rule of law in relations between countries in the area of intellectual property. It does so by setting *minimum* standards and rules for each key area of intellectual property while at the same time embodying exceptions and other forms of flexibility. There are different transition periods for developing countries and least-developed countries. Major concerns of developing countries in the context of implementing TRIPS focus on three issues: *i)* access to medicines, *ii)* biotechnology, biodiversity and traditional knowledge, and *iii)* transfer of technology. Notwithstanding the work undertaken to-date under each of these subjects (see Table 2), these issues remain to be fully addressed (see Box 4 on the issue of access to medicine).

Table 2. TRIPs-related issues of concern to developing countries

	<i>Access to medicine of developing countries</i>	<i>Biotechnology, biodiversity, and traditional knowledge</i>	<i>Transfer of technology</i>
<i>The issues</i>	Concerns that strengthened IP protection would lead to reduced access to essential medicines, especially in poorer countries.	<p><i>Biotechnology:</i></p> <ul style="list-style-type: none"> • Exclusions from patent protection • Plant variety protection <p><i>Biodiversity:</i></p> <ul style="list-style-type: none"> • Compatibility TRIPS-Convention on Biological Diversity (CBD) <p><i>Traditional knowledge:</i></p> <ul style="list-style-type: none"> • No provisions in TRIPS 	<ul style="list-style-type: none"> • A central issue especially for African countries • Concern that obligation for developed countries to provide incentives to their enterprises to transfer technology to LDCs is not being met.
<i>Progresses made</i>	<ul style="list-style-type: none"> • Workshop on differential pricing and financing of essential drugs (April 2001) • Doha declaration (Nov. 2001) on TRIPS and public health: clarifications on compulsory licenses and on exhaustion • Cancun (Aug. 2003) legal changes to make it easier for poorer countries to import cheaper generics 	<ul style="list-style-type: none"> • Doha Declaration: to examine, <i>inter alia</i>, the relationship between the TRIPS Agreement and the Convention on Biological Diversity (CBD), the protection of traditional knowledge and folklore... • Proposals made by Switzerland, India (on behalf of Latin American countries and Thailand), Morocco (on behalf of African countries) 	<ul style="list-style-type: none"> • New and more specific monitoring mechanism agreed to in Feb. 2003, following Doha instructions • WIPO-WTO joint workshop: IPRs and Transfer of Technology in Nov. 2003

Source: Compiled from presentation by Jayashree Watal of WTO.

Box 4. A developing country's voice on access to medicine

Adrian Paterson of the South African Department of Science & Technology pointed out that over-emphasising IPRs at the expense of other end-user needs, can lead to a polarised debate that fails to address the needs of people in developing countries. Developing country governments are fully entitled to insist on the protection of consumers in their markets and to establish effective mechanisms to ensure normal competition. From the South African viewpoint, intellectual property rights are not absolute rights, but rights that are in tension with the rights of end-users and consumers who could reasonably expect that multi-national companies take them seriously. He argued that it should be perfectly possible to ensure effective protection of IPRs under the principles for a more systemic end-user centred debate, based on the recognition that IPRs, in the case of pharmaceuticals, express themselves in the lives of real patients suffering from life-shortening diseases and that this view would always remain the primary view of governments in developing countries.

Source: Presentation by Adrian Paterson, Department of Science & Technology, South Africa.

The impact of IPRs on developing countries

In his keynote speech, John Barton, Chairman of the UK Commission on Intellectual Property Rights, described the Commission's report (CIPR, 2002), an independent study commissioned by the UK government on the impact of intellectual property rights on developing countries. A basic conclusion of the

study was that strengthening of intellectual property rights might not be in the interest of the poorest nations because of the absence of a scientific community to encouraged in this type of developing countries, and for the considerations of fairness of allocation of cost of research, the history of development through imitation and data in the public domain. However, he particularly emphasised that be this conclusion was not necessarily true for scientifically-sophisticated developing nations, such as China. In this context, the impact on these nations deserves significant further attention.

As regards the relationship between IPR, FDI and trade, a recent study (Park and Lippoldt, 2003), presented by Douglass Lippoldt of the OECD's Trade Directorate, suggests that stronger intellectual property rights positively influence FDI and moderately influence trade, with some variation by industry.⁹ The results of the study indicate that strengthening IPRs has a positive but diminishing effect on FDI. The effect of stronger IPRs is largest for the least developed nations (where IPR regimes are weakest), followed by developing nations (where IPR regimes are somewhat stronger). The suggests that there may come a point where IPRs are too strong, in the sense that they grant producers of intellectual products excessive market power and may negatively influence FDI and trade. Compared to the basic conclusion of the CIPR Report – that strengthening IPR might not be in the interest of poorest countries – these results suggest that strengthening IPR could have a positive impact on the least developed countries, in terms of trade and FDI, in spite of their lack of scientific capability.

Determining the optimal level of IPR protection for a developing country is an empirical question which depends crucially on the level of economic development, the technological and innovation capability of the country, and thereby its need to access foreign technology. Since maintaining an IPR system involves considerable resources, participants in a panel discussion on day one suggested that the level of IPR protection should be set also with a view to optimising the use of scarce resources of developing countries.

Improving IPRs in developing countries

As regards steps developing countries should take to improve their IPR systems and in view of the fact that IPR policies and patent offices in developing countries tended to work quite independently from other economic policies and government agencies, Geoffrey Yu of the World Intellectual Property Organisation (WIPO), emphasised the importance of strengthening the linkages between IPR policy and other economic policies and co-operation between patent offices and relevant government agencies.

With respect to what developing countries with a certain level of technological and innovation capacities, such as China, should focus on in improving their IPR systems, the account given by Dominique Guellec of the European Patent Office (see Box 3) and the past experience of OECD countries presented during the Workshop suggested the followings priorities:

- Use IPR policy to promote public R&D and commercialisation of public R&D results.
- Provide protection of small inventions.
- Use IPR protection to improve access to foreign technologies and FDI.
- Use IPR protection to encourage domestic business R&D.
- Develop the professional competence and capacity of IPR offices to ensure:

⁹. In this work, IPR strength is described by a quantitative index determined by five indicators: membership in international treaties, coverage of patentability, restriction on patent rights, enforcement and duration of protection.

- Proper scope of protection: avoiding questionable patents.
- Legal certainty (presumption of validity in courts of granted patents).
- Cost effective and rapid processing of applications.

Improving enforcement of IPRs following China's WTO entry

Improving enforcement of IPR protection in China is as important as improving its IPR legislation. China has a multi-faceted approach to enforcing IPRs that relies on courts, customs officials and administrative authorities. Administrative enforcement is a unique feature of the enforcement mechanism in China and Chinese participants, for example Lu Wei of China's DRC, considered it primarily to be a fast, inexpensive and convenient mechanism that suits the Chinese situation, where many IPR infringements are caused by lack of awareness of IPR.

China has taken additional steps to enhance enforcement, in particular by improving co-operation among relevant government organisations. As described by Hong Zhao of China's Ministry of Commerce, the central government established an inter-ministerial National Office on Rectification and Regulation of Market Order to co-ordinate the efforts of some 21 government ministries and agencies involved in IPR policy and enforcement, in particular as relates to counterfeiting and other violations of IPR. Increasing numbers of IPR cases have been heard by the judiciary system in recent years. Speakers, such as Michael Schiffer of Baxter Healthcare (United States), acknowledged the numerous steps that China has taken to improve its IPR laws and regulations, and the increased use of judicial enforcement for protecting IPRs.

Despite these efforts, major challenges remain ahead, especially in raising the awareness of IPRs among the population. Elaine Wu of the US Patent and Trademark Office pointed out that each of the elements of China's current enforcement system has some serious weaknesses that offset their strengths (Table 3). For example, while administrative enforcement is inexpensive and more convenient than civil or criminal enforcement mechanisms, it is undermined by local protectionism and limited damage awards in administrative enforcement actions. Because administrative enforcement is by far the most important enforcement channel in China, it is particularly important to find ways to address these weaknesses.

Table 3. China's IP enforcement mechanisms: Features and weaknesses

	Features/Strengths	Limits/Weaknesses
Administrative Enforcement	<ul style="list-style-type: none"> • Inexpensive, fast, local. • Expert agency - nearly an administrative agency for each type of IP right. • Do not need a lawyer. • May be able to obtain an injunction. 	<ul style="list-style-type: none"> • "Local Protectionism". • Penalties usually non-deterrent, non-transparent. • Difficult to transfer to criminal prosecution. • Limited geographic jurisdiction. • Damages for injured party not likely available. • Lack of co-ordination among enforcement bodies.
Civil Enforcement	<ul style="list-style-type: none"> • Specialised judiciary that may be trained in IPR. • Availability of damages and injunctive remedies. • Rights of appeal. • Nationwide jurisdiction. 	<ul style="list-style-type: none"> • High cost. • Low damage awards.
Criminal Enforcement	<ul style="list-style-type: none"> • Can be brought by police/prosecutors or injured party. • Deterrent damages possible (fine and imprisonment). • Possibility of civil damages in addition to criminal punishment. 	<ul style="list-style-type: none"> • High thresholds. • Not all IP infringements are criminalised. • May be a problem in having administrative cases referred to criminal prosecution.
Customs Enforcement	<ul style="list-style-type: none"> • Available for import and export, stops goods in Transit. • Inexpensive. • Stops the harm caused by export of counterfeit goods. 	<ul style="list-style-type: none"> • Storage charges and other expenses can be high. • Export of counterfeit and pirated goods increasing. • Customs can only inspect a limited percentage of goods exported.

Source: Presentation by Elaine Wu, USPTO.

Major international collaborations to build enforcement capacity

To assist China in its effort to better enforce IPR protection, bilateral dialogues have been established between foreign government officials and their Chinese counterparts. Several US agencies, including the PTO, Department of Justice and Department of Commerce also provided IP enforcement training to help speed up the capacity building for IP enforcement in China. The European Patent Office has engaged in long-term co-operation with China on IPR since 1986, and has provided training for a large number of SIPO staff. The European Union signed a framework agreement for co-operation with China on IPR issues in 1996 with a budget of EUR 4.8 millions to propel China's IPR development and particularly help China's IPR system to meet the standards of the WTO. Since 1998, the EU programme has helped train hundreds of Chinese judges and lawyers, officials within administrative departments, professors in universities and staff in research institutions.

The experience of these projects suggests that international collaboration can serve as an important channel for improving the understanding on enforcement issues between China and foreign countries, and to help build more quickly the capacity which China is dependent on for better enforcement.

Good practice for enforcement

Sharing good international enforcement practice on IPR with China is another way to help improve the enforcement in China. Timothy Trainer, President of International Anti-Counterfeiting Coalition Inc, highlighted the importance of the following measures for effective IPR enforcement:

- Flexible provisional measures: judicial procedures must allow for withholding information from law enforcement to prevent raid information leaks.
- Imposition of penalties must be carried out to have deterrent effect.
- Carrying out IP enforcement within free-trade zones.
- Publicise enforcement actions – sentencing, destruction.
- Establishing cross-border law enforcement co-ordination for both goods and Internet transactional trade in counterfeits.
- Inter-agency and multi-level enforcement co-ordination (local, state, national levels and different agencies).
- Allow all possible laws and offences to be applied in cases involving counterfeits.

Other speakers also made suggestions on how to improve IPR enforcement in China. For example, Baxter's Michael Schiffer suggested China should consider: *i*) establishing a single appellate court to review all patent litigations, in order to increase the consistency, and reduce the uncertainty of the litigation outcome,¹⁰ *ii*) increasing the monetary rewards of damages of IPR infringements to strengthen the deterrent effect of IPR enforcement, and *iii*) enhancing the judicial system's appreciation of trade secrets, and the provision of strong and timely protection of trade secrets.

Meeting further challenges: specific messages for China

In the past two decades, China took impressive strides in quickly developing its IPR system. The government's awareness of the significance of IPR policy and enforcement not only in the context of attracting FDI, but also increasingly in that of the competitiveness of the future Chinese economy in the global market is of strategic importance.

Jerry Sheehan of the OECD noted that while there is general agreement on the importance of stronger IPR protection in advancing China's development objectives, implementation of an effective IPR regime is complicated by the need to: accommodate multiple social demands (*e.g.* economic development, health care, regional equality), develop a coherent set of complementary policies (*e.g.* antitrust, trade policy, science and technology policy) and recognise differences in IPR use across industry sectors (*e.g.* biotechnology, ICT and low-technology manufacturing). A key question is how to link the sequencing of IPR reforms to changes in China's stage of development and changing patterns of globalisation.

As such, the Chinese government is concerned with how to further improve China's IPR regime in the following priority areas identified by Deng Jun of SIPO:

- How to design China's IPR regime to suit its level of development?

¹⁰. See also Part Two on the importance in creating the US Court of Appeals for the Federal Circuit (CAFC) for producing the intended result of the Bayh-Dole Act. Meanwhile, it is noteworthy that the tendency of the US CAFC to uphold patent-holders rights has generated some backlash.

- How to enhance the systemic development of IPR legislative systems, including antitrust law?
- How to enhance the awareness of and ability to manage IPR by the Chinese enterprises?
- How to quickly develop the competence and infrastructures of government agencies on IPR?

Specific messages that emerged from the Workshop on these and related key issues of further development of the Chinese IPR regime are as follows:

Box. 5 Messages concerning the further development of China's IPR Policy

- There are potentially great benefits for China from further developing and exploiting intellectual property as part of its modernisation strategy based on technological upgrading, and integration into the world economy. With the right policy framework, there is every reason to believe that IP can increasingly contribute to boosting the share of value added along the value chain in China and to its economic development in general.
- IP reforms in China should be designed by taking into account China's specific factors, including public interest and the overall level of economic development. While it is important to take into consideration the differences between Chinese regions, the objective of the reform should be the establishment of a transparent and coherent national IP system.
- Sectoral differences should be taken into account in the design of IPR policies, especially in the context of whether China should go beyond the level of protection of TRIPS for those industries and sectors where China enjoys a comparative advantage, such as agriculture and biotechnology. Thus, pros and cons of going beyond TRIPS should be carefully analysed.
- It is important to ensure overall policy coherence (antitrust, S&T and innovation, education, trade, FDI and SMEs, etc) and to choose the right sequence for implementing IP policy reforms, according to the priorities, the availability of resources, and the government's ability to achieve coherence.
- Enacting antitrust law, inexistent so far, and developing analytic capacity on antitrust issues in China should be high on the agenda. In dealing with the antitrust law and IPR issues, China should pay attention to the following key factors: *i)* its ability to compete in export markets dominated by IP rights; *ii)* terms of access and decision-making for FDI and foreign acquisitions of indigenous firms – balancing dynamic competition and access to technology; and *iii)* providing strong incentives for domestic firms to innovate and develop new products.
- Managing an IPR system involves considerable direct cost and the lack of resources in China, as a developing country, is a particular constrain. Thus, resource constraints should be taken into account when setting the level of IPR protection in China, and efficiency improvement should be pursued as an objective in reforming the IPR system.

HIGH-LEVEL SEMINAR ON INTELLECTUAL PROPERTY RIGHTS ISSUES RELATED TO PUBLIC RESEARCH INSTITUTIONS

Key findings

Governments in many OECD countries are reforming IPR policies related to universities and public research organisations (PROs) with a view to facilitating the commercialisation of results of publicly funded research and, more generally, to better connect science to innovation. Patenting and licensing of PRO technologies is on the rise, but is still not as prevalent as many policy makers assume, and in most countries there is still room for improving technology transfer from PROs to the business sector.

The presentations and panel discussions of the OECD-MOST Seminar helped shed light on a number of important issues that remained to be better understood and addressed. Key messages of the Seminar are summarised below.

Box 6. Main messages of the OECD-MOST Seminar

- A clear legal and regulatory framework, a commitment to developing professional technology transfer infrastructure, and a good understanding of PRO patent and license portfolios are necessary in achieving higher technology transfer productivity.
- Rules on ownership are important but not sufficient. Other important conditions that need to be created include *incentives* for institutions and researchers to protect and exploit IP of their work, *markets* for technology transfer, the training of *human resources* for managing IP and technology transfer, and the availability of *venture funding* for spin-offs. In addition, direct or indirect public support may be needed to subsidise the operations of technology transfer offices at PROs and universities, before self-financing is achieved.
- Intellectual property is but one of the channels for transferring knowledge and technology from public research. Other important channels, such as contract research, public-private partnerships, education, and publication, should also be further developed. An exclusive focus on patenting, licensing, and the creation of public IP-based spin-offs tends to obscure the diversity of IP activities at PROs.
- University/PROs patenting is not about money, but about transferring technology. Thus, the licensing of patented inventions should be carried out on a non-exclusive basis to the extent possible. Of course, in many instances, an exclusive license may be the preferred channel.
- PROs and universities perform multiple functions in society, as educational institutions, providers of scientific public goods, and generators of commercially valuable technologies. A key point is that they must adopt a technology transfer policy that is consistent with their missions.
- There are legal risks as universities and PROs get involved in technology transfer activities due to the uncertain nature of research and the complexity of technology transfer. Good institutional policies and professional legal competencies are needed to reduce the potential for litigation (e.g. infringement).
- Governments should encourage the collection of data on the patenting and licensing activities of PROs and universities but should avoid focusing too much on patents/licenses as the sole indicators of technology transfer.
- Governments should play an active role in identifying good practices and diffusing them broadly.

China's on-going policy reforms and experimentations

As part of the ongoing reform aimed at enhancing the contribution of public research to social and economic developments, China amended its Patent Law and implemented policy measures to encourage patenting by and technology transfer from public research institutions and universities. China's leading universities and public research organisations, which were granted autonomy and responsibility to design their technology transfer policies and to experiment with ways of technology transfer, have achieved remarkable results, as shown by the presentations summarised here. Success has so far been limited to the

key PROs and universities, and it remains a challenge for many of them to commercialise their patented technological inventions.

The current state of policies on IPR and technology transfer from public research

China's current IP ownership policy assigns the IPR of publicly funded research to public research organisations. Under this system, individual researchers may sign contracts with PROs to obtain private ownership of IP for on-duty inventions. The current system is the result of the two amendments to the Patent Law. The first, in 1993 granted PROs the legal basis to own the IP generated by their research. The second in 2000 recognised the legal status of researchers to possess IP rights of their research through contracts with their PROs.

The new ownership policy and related government measures, including the exemption of business tax and business income tax for technology transfer activities, encouraging the setup of technology transfer offices in universities and PROs, and the establishment of national technology centres, *etc.*, resulted in increased technology transfer. However, due to a number of factors, including the weak awareness of IP and the lack of competence of IP management, the amount of intellectual property protected by universities and PROs remained small in both quantitative and qualitative terms, and the pace of institutional and capacity building fell behind the need for the commercialisation of public research.

As Zhang Jingan of China's Ministry of Science and Technology pointed out, further improving and reinforcing IPR policies will remain a focus of the government's efforts aimed at improving the innovation environment, establishing new innovation mechanisms and upgrading national innovation capability.

Experimentations of technology transfer from PROs

The experience of several leading Chinese PROs (government laboratories and universities) exemplifies the range of approaches that have been adopted to promote technology transfer under the new Patent Law and illustrate the degree of success to date.

The *Dalian Institute of Chemical Physics (DICP)*, under the Chinese Academy of Sciences, emphasises IPR management through the whole innovation process, ranging from the evaluation of research proposals to research and invention and to commercialisation. To analyse the IP potential of new research projects, DICP invested in patent databases in the core areas of its scientific research. The DICP model also emphasised the importance of giving economic incentives to researchers by considering patent applications in the evaluation of research projects. To commercialise its patents, DICP adopted a variety of technology transfer approaches, which involved essentially different forms of joint ventures with industry in which DICP used its IP as investment.

According to Bao Xinhe, Director General of DICP, the Institute was independent in making decisions regarding:

- Terms of technology transfer and formation of joint ventures with industry.
- Administration, management and marketing of intellectual property.
- Establishment of institutional regulations for IPR management.
- Entering into legal responsibility and contract.
- Responsibility for the maintenance fees of IPR.
- Awards to inventors of IP and responsible staff for tech transfer contracts.

DICP's independence in these areas reflects China's policy toward IPR management in PROs, which provides them with considerable autonomy for decision-making and experimentation. The law does, however, give the government the right to freely exploit intellectual property resulting from publicly funded research.

Tsinghua University represents not only the top level of higher education and research in China but also an excellent example of the wide range of technology transfer and commercialisation functions performed by leading Chinese universities. As described by Zheng Yongping, Director of the Scientific R&D and IPR Office, the technology transfer office of Tsinghua University has since the mid-1990s successively fulfilled the following functions:

- Promote innovation of Chinese regions through co-operation with local governments: agreements signed with 20 Chinese provinces and cities.
- Promote innovation by industry through co-operation with companies. The Tsinghua Industry-University Co-operation programme was established, with 170 industry members, including 30 foreign companies, and 50 joint research laboratories with industry.
- Create university-owned technology companies. There are currently six publicly listed Tsinghua-based companies.
- Build a science and technology park for technological innovation: Tsinghua Science Park hosts 80 overseas groups and 241 companies, with a yearly revenue of CNY 12.7 billion.
- Strengthen international co-operation and promote international technology transfer, through organisations such as the China-France Environment and Economy Centre, China-America Engineer Technology Centre, International Technology Transfer Centre (jointly with six Chinese research universities).

The above functions and achievements illustrate that major research universities are entrusted to play a comprehensive role in China's national innovation system. Particularly interesting to note is that the technology transfer office at Tsinghua University serves as a national hub of innovation activities across Chinese regions and with industry, both Chinese and foreign.

The *China Beijing Equity Exchange* (CBEX) – one of the equity exchange centres set up under the government initiative at the end of 1990s – is designed to provide a market-based means for facilitating the transfer of equity ownership in China. Although CBEX was initially set up for facilitating the exchange of equity ownership of state-owned enterprises, Liang Yu, the Vice President, noted that today CBEX also functions as an intermediary for the transfer of IP by serving as an information platform that provides information on new technologies available on the market and as a marketplace where technology transfer and exchange of IP actually takes place. In 2003, CBEX concluded 37 technology transfer deals, with a total contract value of CNY 2.93 billion and provided training for 150 technological professionals, as well as organising 16 technology exhibitions, fairs and business contacts. CBEX was also actively looking into new ways of promoting technology transfer and IP exchange, including through *i*) providing technical and intermediate services in drawing up technology transfer contracts, and *ii*) bridging the capital needs of technology companies before their initial listing on the Chinese or overseas stock markets.

Reforms of IPR policy for public research institutions in OECD countries

Inspired by the US Bayh-Dole Act, most OECD countries have carried out reforms and policy measures aimed at encouraging technology transfer, in particular the patenting and licensing of IP generated at universities and PROs. What are the most valuable outcomes of the Bayh-Dole Act in terms of the increased number of patents filed by US research organisations, royalty revenues generated, numbers

of technology transfer agreements signed, and promoting a culture for innovation? How have similar and dissimilar policies worked in other OECD countries? What are the important institutional and policy conditions that are required to make commercialisation a reality? These are some of the questions raised by policy makers and were the subject of several presentations in this seminar.

The Bayh-Dole Act – 23 years later

In his presentation, John Raubitschek of the US Department of Commerce highlighted that commercialisation of university research has benefited the US economy with the creation of many new products and new companies. It is thus important and appropriate to look at the impact of the Bayh-Dole Act more in terms of promoting an innovation *culture* in the US universities than in terms of licensing revenues.

The Bayh-Dole Act has been in effect since 1980 and has stimulated the commercialisation of technology created by universities and small business firms under US government contracts and grants. The law allows universities and small businesses to own the rights to inventions made with government funds. Bayh-Dole also grants government laboratories the authority to patent and license inventions made by government employees. Growth in the number of licenses from government labs was very gradual until the Federal Technology Transfer Act of 1986, which allowed laboratory directors to enter into co-operative R&D agreements with industry and negotiate licensing agreements, as well as keep royalties.

Today, available statistics on the multi-fold increases in the numbers of inventions reported, patents obtained, licenses granted and royalties received provide evidence that Bayh-Dole has worked as a significant enabler of commercialisation of federally funded inventions. Before Bayh-Dole, American universities were obtaining less than 250 patents a year; they now receive 3 000 a year. In 1980 there were only about 25 universities which had licensing offices, but now there are 215 university licensing offices in the United States. Furthermore, the Bayh-Dole Act stimulated more research funding from industry to universities, which increased from USD 70 million in 1980 to about USD 3 billion in 2002. However, licensing revenues for most universities did not exceed the expenses of their licensing offices.

John Raubitschek emphasised that policy makers interested in adopting a Bayh-Dole-like act in their own countries need to realise that such legislation does not by itself encourage better technology transfer. Complementary policies and infrastructure need to be in place, too. In the United States, two particular events laid important legislative and institutional conditions for Bayh-Dole to achieve its goal: *i*) the Supreme Court decision in 1980 that micro-organisms were patentable subject matter, and *ii*) the creation of the Court of Appeals for the Federal Circuit in 1982. The former facilitated the patenting and licensing of biotechnology, which accounted for much of the growth in university patenting in the US, while the latter provided the added stability of patent law, and thereby increased the value of patents and resulted in the tripling of patent applications filed in the United States.

Japan's latest reforms

Japan has implemented new legislation that, since April 2004, grants Japanese national universities the legal status of administratively independent university corporations and thereby allows them to assert ownership over all work related to faculty inventions. Before this change, approximately half of all inventions should have belonged to the government agencies, and half to the nation, depending upon the source of funding that gave rise to the particular inventions. According to Robert Kneller of the University of Tokyo, however, because government ownership implied dedication of inventions to the public, inventors usually attributed their inventions to funding sources that allowed them to retain ownership. Then they passed these inventions to large companies that gave them donations and employed their students. This experience illustrates how a strict principle of public ownership and non-exclusive licensing can be

readily undermined by the industry's need for some degree of exclusive access to some publicly funded inventions.

While the previous Japanese system probably suited the needs of its large companies well, it disadvantaged venture start-ups and other small companies. The advent of technology licensing offices (TLOs) in 1998, and the legalisation in 2000 of paid consulting and concurrent corporate positions of professors partially rectified this bias, which led to a surge in venture start-ups that continues today. However, because of remaining inconsistencies in the old system and the perceived success of the US and UK systems based on university ownership of IPRs, the Japanese government adopted the new legislation and also created a new technology management bureaucracy parallel to the TLOs in the main universities. The potential for poor co-ordination between these two fledgling organisations plus the entrenched system of *de facto* inventor ownership does raise the risk that the official system of university ownership might be by-passed or may have to co-exist with inventors retaining ownership in some cases.

Although recent events suggested that the new system might cope reasonably well with these challenges, addressing these remaining issues will require tackling the two main problems in the Japanese universities and PROs: *i*) lack of control over (and responsibility for) financial and personnel matters; and *ii*) a system of hiring and promotions that is not based primarily on merit but also on other factors such as connections and patronage. As a result, it remains difficult to mobilise academic researchers for cutting edge basic research and research of importance to industry. Giving universities semi-independent legal status has laid the groundwork for future reforms to address these problems.

Reforms of IPR policy in EU countries: Convergence of national policies

Until the end of the 1990s European Union countries were characterised by different legal concepts and systems regarding the ownership of intellectual property developed in PROs. For example, while universities in the United Kingdom and France are generally entitled to own the IP resulting from publicly funded research, the university faculty in Germany, Austria and the Nordic countries owned the IP generated by their work. At the turn of the new millennium, several European Union countries, including Germany and Denmark, adopted new legislation that granted IP resulting from publicly funded research to the performing institutions (universities and other PROs), rather than the researchers themselves, although most have provisions in place to ensure that proceeds (*e.g.* licensing royalties) are shared with researchers.

Universities in the United Kingdom have been given freedom since the early 1990s to exploit the IP they create, prior to this the main opportunity to license was through a publicly owned monopoly that returned royalties payments to universities. Furthermore, many Public Sector Research Establishments were converted into some form of public-private partnership or non-departmental public bodies. These changes were catalysed by the government by making available several streams of knowledge transfer funding to universities. David Humphry of the UK Department of Trade and Industry considered that lessons learned so far include, among others:

- Lack of skilled licensing officers are a real constraint on expanding licensing efforts.
- Governments should avoid placing too much emphasis on creation of spin-off companies compared to licensing of IP to existing firms.
- There is a need for a legislation that addresses IP ownership for inventions resulting from research that involves both public and private funding.

Similarly, the Danish Act on Inventions at Public Research Institutions of 1999 assigned the IP rights to institutions, which were obliged to exploit the IP commercially, with the licensing revenue being shared between the inventors and their institutions. The new Danish system, which was welcomed by industry,

inventors and PROs alike, has produced positive results in terms of increased numbers of invention disclosures, patent applications and licensing agreements.

Jens Kr. Damsgaard of the University of Southern Denmark, considered that two related government initiatives played a crucial role in making the new Danish system work. The first one was the so-called Patent Consortia, which provided institutional networks and training for technology transfer officers, while the second one was, as in the case of the United Kingdom, the availability of government grants for covering the cost of institutional patenting activities.

Furthermore, the Danish experience highlights the important role of technology transfer professionals, the provision of IP assistance to inventors, the marketing of IPR, and a focus on spin-offs. Further reform under way in 2004 is the Act on Technology Transfer at Public Research Institutions, which would provide the legal framework for PROs to create and invest in commercial companies for technology transfer.

Despite differences in legislation and in practice among EU countries, Thomas Gering of the Joint Research Centre of the European Commission drew a number of common insights and lessons from their experience, which include:

- IP management and licensing by PROs should be seen in the institutional context of how public research and the national innovation system are organised.
- Greater degrees of collaborative research and research funding by industry could make it difficult for PROs and universities to maintain their positions to assert IP rights of joint research results.
- It could take a long time for an IP management and licensing programme to develop mature competence and professionalism.
- Institutional or government support to technology transfer offices is a critical factor for the success of IP policies that assign IPRs to PROs, especially in the early stages.

The European Union has undertaken initiatives aimed at developing guidelines to help Member States review and adapt, as appropriate, their national IPR regimes for PROs and universities in order to facilitate technology transfer to industry, the creation of spin-offs, and the exploitation of IP of public research, as well as IP awareness and competence building among researchers and university graduates.

The Swedish and Swiss models: exceptions to the rule

Contrary to the trend in most OECD countries, Sweden continues today the so-called *professors' privilege* practice of allowing researchers to own the IP – a legal exception to the law dating from the mid-20th century that assigns the employer the IPRs resulting from the work of the employee. According to David Nordfors¹¹ of VINNOVA (the Swedish Agency for Innovation), the underlying reason for preserving the professors' privilege is that it provides faculty with maximum control over the research results as well as economic incentives that may compensate the relatively low salaries of public sector researchers. It is also argued that without the participation of the inventors – who are in the best position to transfer the tacit knowledge and know-how associated with an invention – it will be difficult to commercialise the invention. Furthermore, assigning the IPRs to the universities could have a negative impact on the commercialisation of inventions because universities are seen to lack the skills and the interest for commercialisation.

¹¹ Magnum Breidne, Science Counsellor at the Swedish Embassy in Beijing made the presentation on behalf of David Nordfors.

On the other hand, the fact that universities lack title to the IP is seen by some as one of the reasons universities pay too little attention to commercialising research. Another challenge inherent in the professor privilege system is that technology transfer opportunities may be missed due to the predominance of informal channels and the lack of professional expertise, at the level of the institutions, in dealing with industry. The solution proposed by VINNOVA to the Swedish government was to retain the professor privilege while at the same time providing Swedish universities with more incentives to work together with professors in the identification, disclosure, and protection of IP and its commercialisation. Possible measures suggested included providing universities with grants to support patent filing costs and the right for them to retain part of the revenues from technology transfer activities.

The Swiss approach, as described by Patrick Vock, of the Centre for Science and Technology Policy (Switzerland) provides a unique example of multiple approaches to successful technology transfer. Unlike most other countries, Swiss technology transfer activities of PROs operate in a heterogeneous institutional and legal environment. In fact, ownership of IP at public research institutions and universities depends on the type of IP (copyright, patents, design, *etc.*) as well as the types of employment contracts that govern the relationship between the researchers and the institution, the precedence of IP or employment law and finally the source and level of funding – public or private. This heterogeneous approach has been successful: Switzerland ranks high among OECD countries in terms of academic patenting and licensing, and in general 50% of Swiss academic patents are actually licensed.

Key to understanding the success of the Swiss model is the concept that commercialisation is the outcome of a subtle interplay between researchers, technology transfer offices and firms which are shaped by the availability of resources, competence and the willingness of the actors as well as by the framework conditions. Given that the combination of these factors differs from one case to another, different approaches to commercialization may be required. Nevertheless, many of the stakeholders see room for improvement and potential benefits from making ownership policies more clear and simple. Consequently the government has revised the law governing research organisations that are fully financed by the federal state and has provided funding for technology transfer offices on an experimental basis.

Technology transfer from public research to industry – practitioners' insights

To make informed policies, policy makers need to gain insights from the experience of practitioners that manage patenting and technology transfer activities in PROs as well as to listen to the views of the industry as receivers of the technology transfer. The presentations summarised in this section help shed light on a number of important issues such as: What should be the ultimate goal of patenting and technology transfer activities at the public institutions which carry out multiple functions in society? What kinds of patenting and licensing policies and practice can help achieve consistency between the research and teaching missions of public institutions and the commercialisation of their research results. Is licensing the most important channel for technology transfer from public research or do other channels need to be explored?

US National Institutes of Health

The experience of the US National Institutes of Health (NIH) highlights the importance of patent and licensing policies keeping in line with the mission of PROs. Located under the Office of the Director, the NIH's Office of Technology Transfer is charged with two functions: central administration of patent and licenses, and policy development and implementation. NIH policy is to recommend the filing of a patent only when further development is required, and a partner's investment needs protection. Such a policy is consistent with the mission of NIH in carrying out publicly funded research and is sensible considering the high cost of filing for a patent. As a key public institution, NIH prefers non-exclusive licensing, and its licensing policy requires commercial development plans from the licensees that include clear milestones

and progress reviews. These measures aim to ensure that inventions from publicly funded research are commercialised for the benefit of public health. As Theodore Roumel, director of the Office of Technology Transfer pointed out: “Technology transfer is not just about money!”.

In terms of current issues and concerns, NIH focuses its attention on two fundamental issues, *i*) how can the technology transfer/commercialisation policies of PROs help achieve public policy mandates and institutional missions without creating impediments to the development of new products,¹² and *ii*) how to deal with conflicts of interest between public benefit, profit and economic development.

INRIA (France)

Based on the concept that technology transfer is a way of answering the question of how to create value from research, technology transfer at INRIA embraces not only patenting and licensing, but also a wide spectrum of activities with industry and society at large. IPR management is just one of the various tools used by INRIA for technology transfer. Other tools include contractual collaborations with large firms and small and medium-sized companies, creation of joint teams with industry, participation in research and technological innovation networks, facilitation of mobility of research scientists toward companies, transfer of know-how, creation of spin-outs, dissemination of open software, building consortia of partners, and so forth. For INRIA, collaboration with industry is not only a means to overcome the shortage of expertise and funding, but also the necessity to complement between the long-term research by PROs and the short term research by the industry.¹³

Laurent Kott, Head of INRIA’s Technology Transfer Office, maintains that technology transfer management in PROs should try to strike a balance between knowledge dissemination and IP protection. For example, INRIA, being a public research institute in information technology, considers it important to maintain a balance between open source software and software patents. To this end, INRIA employs a two-pronged strategy that, on the one hand, promotes technical standards through free access to research (*e.g.* open source software), and, on the other hand, promotes spin-off through exclusive licensing used as an entry barrier. INRIA’s experience stresses that technology transfer for a research institute should be treated as a business *about* money not *for* money, because in general it is not a source of revenues and even in the most successful universities or national labs very few (*i.e.* two or three) licenses generate 80 - 90% of the royalties.

GlaxoSmithKline (United Kingdom)

The presentation by Malcolm Skingle of GlaxoSmithKline provided an industrial firm’s perspective on commercialising academic IP. Today, all technology-intensive companies recognise that it is impossible for them to undertake all of their research activities in-house – nor do they want to, recognising the benefits that could accrue from external collaborations. Consequently, industry actively seeks to identify and collaborate with partners in its research to speed up the time needed for developing new products and processes and for delivering them to market. As a result, academic-industry collaborations built on the basis of complementary strengths, mutual respect and trust have never been stronger, and technology-driven companies, such as GlaxoSmithKline, will be ready to form global partnerships for world-class research irrespective of location, provided that their IPR can be adequately protected.

^{12.} As pointed out in the NIH document, *A Plan to Ensure Taxpayers' Interests are Protected*, requiring the government to recoup its investment in biomedical research can potentially impede the development of promising technologies by making industry unwilling to license federally funded technologies.

^{13.} See also below the view of industry on the complementarities in the section on GlaxoSmithKline, UK.

From the company's point of view, technology commercialisation from universities and PROs to industry can take a number of routes:

- Exclusive and/or non-exclusive licensing.
- Spin-out companies, where the university or PRO packages and protects a patent portfolio before attempting to commercialise it.
- Consultancy to allow companies to access skills or know-how from a particular academic.
- Industrial collaboration, in which the company provides not only funding but also access to company expertise and other integrated technology.

While there is value in universities seeking to protect their IPR for potential exploitation, licensing income will, at best, be modest for most universities. Even for the most successful universities licensing income seldom exceeds more than 1% to 2% of total university income. There are, however, many other benefits that universities obtain from successful collaborations with industry.

Infrastructure, legal, and human resource capacity building

Making technology transfer a reality takes more than putting in place the right policy framework. Lack of institutional capacity and professional competence in carrying out technology transfer at PROs and universities was identified as one of the key factors responsible for the limited success of the technology transfer policies put in place in some OECD countries. Experiences of well-established technology transfer offices shed light on managerial issues such as: what kinds of competence are required for technology transfer offices in universities or other PROs to perform their functions well? What are the important organisational and managerial decisions that need to be taken when setting up a technology transfer office? What kinds of legal risks are technology transfer offices exposed to, and how do they manage and reduce such risks? The experience of the European Union (EU) IPR Helpdesk offers an example of what governments can do to help compensate for a lack of technology transfer competence among PROs.

Goal setting, organisational design and competence requirements

Drawing on the experience from the Office of Technology Alliances (OTA) at the University of California, Irvine (UCI), Beatrice Bryan, a Senior Licensing Officer, illustrated that there were many decisions that university administrators must take when establishing an IP office. The main decisions concern the mission of the office, the types of activity of the office, the economic resources, staffing and skills resources required to carry out the chosen activities, the structure of the office internally and the reporting line to higher levels of administration. Table 4 lists activities that an intellectual property office may choose to carry out and the skills that are considered necessary for each one.

Table 4. Functions of Technology Transfer Offices and required skills

<i>Activities and functions of TTC</i>	<i>Required necessary skills and competence</i>
Assessment of inventions	Science, good judgment, communications
Marketing	Market knowledge, communication, science
Licensing	Science, strategic mentality, negotiation skills, patience, drive to reach closing
Start-ups/Spin-outs	Business development, contract law, funding sources
Incubation	All of the above
Copyrights/multimedia/trademarks	Up-to-date knowledge on copyright, multimedia, and trademark law
Material transfer agreements	Science, drafting
Accounting for income and expenses	Meticulous bookkeeping
Research agreements	Research protocol, science, patent law, drafting

Source: Compiled from presentation by Beatrice Bryan.

According to Beatrice Bryan, it can take approximately seven years for a new technology transfer office to become financially self-supporting. Therefore, expectations on economic out turns of IP offices must be set realistically, and continuous funding support can be important. In this context, managing expectations of the office staff, industrial clients, researchers/inventors, and communicating reasonable expectations to higher administration is especially important. While these issues are not strictly within the scope of an IP office, they must be addressed by the office's administration for it to function well within the overall organisation.

Legal issues and litigation strategies

Drawing on the experience of the Wisconsin Alumni Research Foundation, Howard Bremer illustrated that in carrying out research and technology transfer functions universities were charged with a knowledge of and capability to respond to a myriad of legal considerations, including most importantly:

- Requirements imposed by government rules, regulations and guidelines that could impinge on the research function itself.
- Adherence to the laws governing patents and other intellectual property in international venues.
- Awareness of judicial decisions which have interpreted those laws or generated new criteria with legal precedence.
- Legislation which would enable and control the technology transfer process or would impinge upon it.
- Anti-trust considerations.

All of these considerations are important to an effort to maximise the research function and technology transfer meanwhile minimising the university's vulnerability and exposure to potential litigation.

In carrying out technology transfer and licensing, Howard Bremmer noted that the following issues and relationships which have high potential to give rise to legal issues require particular consideration:

- Determination of inventorship (*e.g.* co-authors of scientific papers may not be co-inventors).
- The relationship with and legal rights of Federal and other government entities that funded the research relating to the IP concerned.
- The relationships with and legal rights of third parties (other than government entities) as set forth in:
 - Arrangements for research sponsorship.
 - Various forms of license agreements (exclusive or non-exclusive agreements, material transfer agreements, consortium agreements, *etc.*).
 - Inter-institutional agreements (made with other universities and business and legal entities).
 - Litigation.

Howard Bremer warned that litigation can be costly and that no university would have the capability to engage in litigation without the help of an expert counsel. Therefore, litigation should be avoided if possible. Nevertheless, decisions made carefully on engaging in litigation could have the effect of signalling to the potential licensees and infringers that the university is both willing and able to assert its IP positions.

In summary, the evolutionary nature of both science and the law has given rise to increasing legal and ethical considerations as well as to the many evolving facets of such considerations that must be addressed in carrying out research and technology transfer missions of universities. These present a continuing and growing challenge to the university community.

Public service provision for building an IP culture: the experience of EU IP Helpdesk

The European Union (EU) IPR Helpdesk has, since 1998, played a key role in building a culture of innovation in EU countries, by informing and supporting research officers and managers. The 1995 *EU Green Paper on Innovation* identified that under-utilisation and weak awareness of the patent system was a significant barrier to innovation in Europe, and thus to Europe's competitiveness in global markets. As a response to this deficit situation, and in recognition of the needs of PROs and small and medium-sized enterprises for expert support in managing IP issues, the EU IPR Helpdesk was created in 1998.

The aims and functions of the Helpdesk are to assist participants taking part in the EU Research and Technological Development (RTD) programmes with issues relating to the management and commercialisation of IP throughout the whole process, from the bidding phase to drawing up the Technological Implementation Plan regarding the protection, use, and dissemination of the knowledge generated by the RTD contractors. In providing these services over the past six years, the IPR Helpdesk benefited not only EU RTD participants but also the wider research and SME communities.

As part of its mission, the EU IPR Helpdesk has sought to raise awareness by disseminating information on IP management through a variety of ways, including a Website, seminars and workshops, and the Helpline. In addition, it has played a positive role in promoting open innovation and knowledge diffusion through helping implement the EC's Rules for Participation that grant the consortium participants access rights, on a royalty free basis, to specific knowledge needed in their research.

Nevertheless, according to Gail Evans of the IPR Unit of the Queen Mary Intellectual Property Research Institute (United Kingdom) the EU IPR Helpdesk has two major limitations: first, it cannot survive without public funding, and second the Helpdesk has so far produced a limited effect on socially

engineering a culture of innovation within the PRO community, referring to the fact that culture is *not* easily susceptible to short term change, even though it *is* to long term change.

Further improving IPR policy for public research: specific messages for China

While China has made considerable progress in fostering the commercialisation of results of publicly funded research, workshop participants identified opportunities for further improvement. The first is to strengthen the incentives and capabilities for effective technology transfer. The Chinese government made important amendments to the patent law, first to give PROs the legal status to own the IP generated by their research, and second to grant researchers the right to retain IP rights to their research through contractual arrangements with PROs. While these amendments make it possible for universities and other public research organisations to retain titles to IP, they do not provide specific requirements or incentives for institutions to actively engage in the commercialisation of patented inventions. In addition, a lack of understanding of the importance of IPR and shortages of skills required for IP management and technology transfer among Chinese universities and other PROs has resulted in an inadequate implementation of the government IPR policies.

Additional steps could also be taken to build on the lessons learned through recent experimentation with technology transfer at leading PROs. The government's IP policy currently grants PROs a high degree of autonomy for designing and experimenting with their own strategies for IP management and commercialisation. Because China is going through an intensive institutional development phase and lacks significant competence in managing IPR and commercialisation in Chinese PROs, there is a need, as indicated by Daniel Malkin of the OECD Directorate for Science, Technology and Industry, for the Ministry of Science and Technology to assume a more active role in guiding the experimentation by identifying and disseminating best practices and by issuing guidelines. It is particularly important for the government to review the effectiveness of current commercialisation practices in disseminating public research and to take measures to address the tendency that limited real commercialisation has taken place outside of the PRO and universities, in spite of increasing numbers of patents owned by PROs and their researchers.

In implementing further reforms, the Chinese government will need to take into account specific characteristics of its national innovation system and industrial structure. The public sector funds and performs more than half of R&D in China, which is common among countries at early stages of development. This suggests that special attention should be given to the conditions for allowing the public sector to contribute to the creation and diffusion of new technology, and for encouraging the business sector to take up and improve inventions coming from the public sector. Among the participants, there was general agreement that the following policy actions could help China to achieve these goals:

Messages specific to China's IPR policies relating to results of publicly funded research

- *Strengthen the legal and regulatory framework* that defines both the rights and the responsibilities for universities and public research institutions to identify, disclose, and protect IP resulting from public funding and to encourage its commercialisation and diffusion in the economy.¹⁴
- *Develop the institutional capacity* of Chinese PROs to transfer technology while ensuring that the public interest is safeguarded, such as by requiring firms to make use of the licensed IP or surrender their rights to it, requiring front-end or milestone payments for licensees and employing field-of-use restrictions to ensure that the research not necessary to commercialisation remains publicly accessible.
- *Promote transparent licensing processes that are consistent with PRO missions* in order to preserve competition among potential licensees and to ensure that the monopoly rights under IP resulting from public research will not be misused.
- *Protect access to patented inventions for research uses* (e.g. via a research exemption), consistent with Chinese IP law and recognising the important role that public research organisations play in the Chinese innovation system at this stage in the nation's economic development.

¹⁴. Several participants recognised that a clear and strong mandate regarding the ownership and exploitation of IP resulting from publicly funded research would contribute to achieving a greater success in technology transfer. Several recommended that China adopt a Bayh-Dole-like law, but design the Chinese law to take into account China's specific conditions, including characteristics of its industry.

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ANNEX 1: WORKSHOP AGENDAS

High-level Workshop on Intellectual Property Rights and Economic Development in China:

Meeting Challenges and Opportunities Following WTO Entry

Beijing, CHINA, 20-21 April 2004

*Co-organised by the Organisation for Economic Co-operation and Development (OECD),
the Development Research Centre (DRC) of the State Council
and the State Intellectual Property Office (SIPO), People's Republic of China*

Objectives: In the context of China's economic modernisation strategy, which is based on technological upgrading, openness to foreign investment and further integration into the global economy, the reform of its IPR regime has become a major policy issue. Such reform should support the modernisation strategy through the development of a more efficient and transparent legal and regulatory IPR framework that facilitates technology transfer and knowledge diffusion between China and foreign countries, and fosters the innovative capacity of China in its transition to a knowledge-based economy.

In this context, the workshop's objectives are the following:

- *To improve the understanding by Chinese policy makers and other stakeholders of the increasing importance of IPR policies in promoting technological innovation and social and economic growth, in the context of the knowledge based economy.*
- *To draw lessons from the experience of OECD and other countries, and to benefit from the expertise of international organisations and international firms in improving IPR policy and IPR management in an open and increasingly globalised economy.*
- *To review the current or envisaged IPR reforms in China, and assist in the development of institutional, legal and regulatory IPR frameworks, including the implementation of national IPR policies and the enforcement of IPR protection, that are required for China to meet the challenges and opportunities following the WTO entry.*

Participants: The workshop will bring together approximately 300 participants, including senior officials and experts from OECD countries, officials of relevant Chinese government agencies at central and municipal levels, and representatives from the OECD and other international organisations, such as the World Intellectual Property Organisation (WIPO) and the World Trade Organisation (WTO), as well as Chinese and foreign business executives.

Venue: Crowne Plaza Park View Wuzhou Beijing.

Language: English and Chinese with simultaneous interpretation.

This Workshop is organised as part of the China Program of the Centre for Co-operation with Non-Members of the OECD. The OECD acknowledges the invaluable financial support from the government of Japan for this event.

AGENDA

DAY I: Tuesday 20 April 2004

8:00- 9:00 REGISTRATION

9:00-9:30 Welcome and Opening Remarks

Chair: **Mr. LI Yuiguang**, Vice Commissioner of SIPO

- Written Statement by Vice Premier **Mrs. WU Yi**, read by **Mr. TIAN Lipu**, Vice Commissioner of SIPO, China
- **Mr. LU Zhiqiang** Vice President, (DRC), State Council, China
- **Mr. ZHANG Qin**, Vice Commissioner of SIPO
- **Mr. Herwig SCHLÖGL**, Deputy Secretary-General, OECD

9:30-10:30 Keynote Speeches: IPR and Social and Economic Development

Chair: **Ms SUN Lanlan**, Director-General, Department of International Affairs, DRC.

- **Mr. DENG Jun**, Director, Development and Research Center, SIPO, China
- **Mr. John BARTON**, Chair of the UK Commission on Intellectual Property Rights
- **Mr. Michael SCHIFFER**, Chief IP Counsel, Baxter Healthcare, United States

10:30-10:45 Tea and Coffee break

10:45 SESSION 1 IPR Policies, Technology Innovation and Economic Growth: Trends and New Directions for Policy

IPR regimes play a key role in the way private firms and research institutions develop, acquire and manage their knowledge assets. Through their influence on the pace, patterns and diffusion of technological progress as well as on competition they have a strong impact on innovative capacity and economic performance of both advanced and less developed countries. In many OECD and non-member countries the transition to a knowledge-based economy characterised by the increasing importance of technology-intensive sectors and the efficient management of intellectual assets has given rise to changes in governments' IPR policies and firms' strategies concerning IPR management. This session will focus on highlighting the evolving relationships between IPR, technological innovation and economic performance, and the implications for changes in IPR regimes and business IPR strategies.

Chair: **ZHANG Qin**, Vice Commissioner, SIPO, China

The Importance of IPR Protection for Promoting National Competitiveness of China: **LU Wei**, Deputy Director-General, Technical Economics Department, DRC, China

Trends of IPR Development in the Global Economy (with the emphasis on non-OECD countries): **Geoffrey YU**, Deputy Director General, World Intellectual Property Organisation (WIPO)

Strengthening IPR regimes in Knowledge-Based Economies: Trends in OECD countries: **Catalina MARTINEZ**, Economist, Directorate for Science, Technology and Industry, OECD

Intellectual Property Rights Stimulate Innovation in the Industrial Environment: **Ruud PETERS**, Chief Executive Officer, Philips Intellectual Property & Standards

Intellectual Property Rights and Business - an Increasingly Essential Foundation for Innovation and Economic Growth in the 21st Century: **Richard JOHNSON**, Senior Partner, Arnold & Porter, and Vice Chairman of Committee on Technology, Business and Industry Advisory Committee (BIAC) to the OECD

12:25 Discussion

12:55- 14:15 Lunch hosted by DRC and SIPO

14:15 SESSION 2: Antitrust policy and IPR protection

The interface between IPRs and antitrust raises important economic and legal issues. For many years, it was thought that the two systems were inherently in conflict. More recently, it generally has been recognised that the two systems are complements, and that both seek to promote innovation and the development of new technologies and products. Determining the line where one system should end and the other one should start, however, is not always easy. This session will focus on questions of competition policy and competition law enforcement in connection with IPRs, including a discussion of a recent US FTC report on IP policy and competition, competition issues raised in connection with bilateral and multilateral license agreements, and the tensions between IP and antitrust when firms with significant market power refuse to grant competitors access to their IPRs.

Chair: **Andreas REINDL**, Administrator, Directorate for Financial, Fiscal and Enterprise Affairs, OECD

Intellectual Property Rights and Antitrust - an Overview of Economic and Legal Issues: **John BARTON**, Professor, Stanford University Law School, United States

Intellectual Property and Antitrust - the Situation in China: **WANG Xianlin**, Professor of Anhui University, China

Competition and Patent Law and Policy – Maintaining the Proper Balance: **William E. COHEN**, Associate General Counsel for Policy Studies, US Federal Trade Commission

15:45-16:00 Tea and Coffee break

Licensing and Antitrust Policy in the United States: **Michael S. McFALLS**, Jones Day, United States

Unilateral Practices of Right Holders with Significant Market Power - the European Experience: **Sarah TURNBULL**, SJ Berwin, United Kingdom

16:40 Discussion

17:00-18:00 Panel Discussion

Chair: **Dominique GUELLEC**, Chief Economist, European Patent Office

Panellist:

- **William E. COHEN**, Associate General Counsel for Policy Studies, U.S. Federal Trade Commission
- **LU Wei**, Deputy Director-General, Technical Economics Department, DRC, China
- **Ichiro NAKAYAMA**, Deputy Counsellor, Intellectual Property Strategy Headquarters, Cabinet Secretariat of Japan
- **ZHANG Qin**, Vice Commissioner of SIPO
- **Ruud PETERS**, Chief Executive Officer, Philips Intellectual Property & Standards

18:15 Reception hosted by DRC and SIPO

DAY II: Wednesday 21 April 2004**09:00 SESSION 3 Policy Coherence and Institutional Design of Modern IPR Regimes**

IPR regimes differ among countries, notably as a result of different institutional settings but also because they are a component of a broader policy mix, including science and technology, competition and trade policies that have a direct or an indirect influence on their design, implementation and enforcement. This session aims to exchange views and experience on what core policy components are required to form a modern IPR system, on how governments can improve the coherence of IPR policies and other relevant policies, and on how governments can improve the institutional design to enhance the functioning of an IPR regime. Experience of some OECD countries, such as Japan and Korea, in adjusting their policies and institutional setup to enhance the protection of IPR in the process of their transition to knowledge intensive and globalised economies will also be explored in the context of China's integration into the world economy following the accession to WTO.

Chair: **Daniel MALKIN**, Head of Science and Technology Policy Division, Directorate for Science, Technology and Industry, OECD

The Architecture of Policies on IPR, and the Institutional Setup for Effective Implementation of IPR Policies - the US Experience: **Richard WILDER**, Partner, Sidley, Austin Brown and Wood LLP, United States

Enhancing the IPR Protection in Transition to an Open Economy - the Korean Experience **LEE Keun**, Seoul National University, Korea

Enhancing the IPR Protection - the Japanese Experience **Ichiro NAKAYAMA**, Deputy Counsellor, Intellectual Property Strategy Headquarters, Cabinet Secretariat of Japan

A Patent System for Supporting Economic Development - Some Lessons from Europe **Dominique GUELLEC**, Chief Economist European Patent Office

The Business Perspective on the Need for Improving Policy Coherence and Institutional Efficiency of IPR Regimes: **Måns EKELÖF**, Vice President, Intellectual Properties, Ericsson

11:15-11:30 Tea and Coffee break**11:30 SESSION 4 Enhancing IPR Protection: The Special Challenges for Developing Countries**

China's Membership in the WTO will undoubtedly pose serious challenges to China's IPR regime, which needs to be gradually brought in line with the TRIPS. Yet, like for other developing countries, the design of China's IPR policy needs to manage a balance between the need to protect IPRs, to promote technological diffusion, and to develop the domestic industry. This session will explore what strategies may be most appropriate for China to adopt in reforming its IPR regime, taking into consideration China's level of economic development, and in particular, its need to build domestic industry and innovation capability.

Chair: **John BARTON**, Chair of the UK Commission on Intellectual Property Rights

Technology Innovation Policies and IPR Protection in China: **ZHANG Jing-an**, Director-General, Department of Policy and System Reform, Ministry of Science and Technology (MOST), China

TRIPs and Developing Countries: the On-Going Debate: **Jayashree WATAL**, Counsellor, Intellectual Property Division, World Trade Organisation (WTO)

Developing Countries and Trade-Related Intellectual Property Rights: Recent Work by the OECD Trade Directorate: **Douglas LIPPOLDT**, Principal Administrator, Trade Directorate, OECD

Balancing IPR Protection and a Developing Country's Needs: **Adrian PATERSON**, Chief Operating Officer, Department of Science & Technology, South Africa

12:50 Discussion**13:15-14:45 Lunch hosted by DRC and SIPO**

14:45 SESSION 5 Improving Enforcement of IPRs following China's WTO entry

In China, improving enforcement of IPR protection is as important as improving upon IPR legislation. Furthermore, improving enforcement requires not only an effort by the government, but also an improvement of the business sector's understanding of IPR protection, and changes in business strategy and market behaviour. This session will focus on *i*) reviewing the changes that have occurred, or are under way, in China to enhance the enforcement of IPR protection, and *ii*) discussing changes in IPR strategies adopted by Chinese as well as foreign enterprises in China, in response to the challenges and opportunities for better IPR protection following China's WTO entry.

Chair: **Jayashree WATAL**, Counsellor in the Intellectual Property Division, WTO

Improvements of IPR Protection Following China's WTO Entry and Remaining Challenges: **Hong ZHAO**, Deputy Director-General, Department of Legal Affairs, Ministry of Commerce, China

The U.S Experience on IPR Enforcement and IPR Co-Ordination: **Elaine WU**, Attorney-Advisor, US Patent and Trademark Office

Challenges and Opportunities in IPR Facing Chinese Traditional Industry: **ZHOU Dahu**, President of Wen Zhou Lighter Industry Association, China

International Experience on Enhancing the Enforcement of IPR Protection: **Timothy TRAINER**, President, International AntiCounterfeiting Coalition, Inc.

16:05 Discussion

16:30 – 16:45 Tea and coffee break

16:45-18:00 Concluding Panel

Chair: **Geoffrey YU**, Deputy Director General, WIPO

Introduction to issues for discussion: **Jerry SHEEHAN**, Principal Administrator, Directorate for Science, Technology and Industry, OECD

Panellists:

- **John BARTON**, Professor, Stanford University Law School, United States
- **Takashi ISHIDA**, Technology Advisor, Corporate Research and Development, Mitsubishi Electric Corporation, Japan
- **Jun DENG**, Director, Development and Research Center, SIPO, China
- **Jayashree WATAL**, Counsellor in the Intellectual Property Division, WTO
- **Wei LU**, Deputy Director-General, Technical Economics Department, DRC, China

18:00-18:30 Closing Remarks

Chair: **Mr. Lipu TIAN**, Vice Commissioner of SIPO, China

- **Mr. Zhiqiang LU**, Vice President, DRC Centre, State Council, China
- **Mr. Jingchuan WANG**, Commissioner of SIPO, China
- **Mr. Herwig SCHLÖGL**, Deputy Secretary-General, OECD

18:30 ADJOURNMENT

***High-level Seminar on
Intellectual Property Rights Issues Related to Public Research Institutions***

Beijing, China, 22-23 April 2004

*Co-organised by the Organisation for Economic Co-operation and Development (OECD) and
the Ministry of Science and Technology (MOST), People's Republic of China*

Objectives: In the context of China's modernisation strategy, public research organisations (PRO) are being called upon to enhance their contributions to developing China's innovative capacity. The protection and commercialisation of the intellectual property (IP) generated by public research institutes has the potential to increase the social and economic benefits from public investments in research. Consequently, the Chinese Ministry of Science and Technology (MOST) is deepening its reform of public research institutions, including changing government policies on intellectual property rights of public research. Following the recent accession of China as an Observer to the OECD Committee for Scientific and Technological Policy, the objective of this event is thus to provide the relevant high-level officials of MOST and key public research institutes with state-of-the-art knowledge and expertise on designing and implementing IP policies in public research institutions, drawing extensively on the experience of OECD member countries and selected non-member countries.

Participants: The Seminar will bring together approximately 80-100 participants, including OECD experts and policy makers and representatives from Chinese government ministries, public research organisations and universities as well as from the business community.

Structure: The one-and-a-half-day seminar will consist of three main sessions of presentations by national experts from OECD countries and China, followed by a Concluding Panel discussion. A half day field visit to some research institutes will be organised in the afternoon of the second day to provide an opportunity for exchanging views between the Seminar participants, foreign experts and Chinese officials dealing with IPR issues in China's public research organisations.

Venue: Beijing, Friendship Hotel

Language: English and Chinese simultaneous translation

This Seminar is organised as part of the China Programme of the Centre for Co-operation with Non-Members of the OECD. The generous financial support from the government of Japan is gratefully acknowledged.

AGENDA

DAY I: Thursday, 22 April 2004

08:00-09:00 REGISTRATION

09:00 -09:30 WELCOME AND INTRODUCTORY REMARKS

Moderator: **ZHANG Jingan**, Director-General, Policy, Regulation & System Reform Department, MOST, China

LI Xueyong, Vice Minister, MOST, China

Herwig SCHLÖGL, Deputy Secretary-General, OECD

Overview of the Seminar by **Mario CERVANTES**, Administrator, Science and Technology Policy Division, OECD

09:40 SESSION 1: THE ROLE OF GOVERNMENT IN PROMOTING THE COMMERCIALISATION & DIFFUSION OF PUBLIC RESEARCH RESULTS

Issues to be addressed:

- What are the trends in policies for owning and commercialising IP at public research organisations in OECD countries?
- What is the legal framework for intellectual property at PROs in China? How are China's research institutes and university laboratories designing and implementing IP policies?
- Does institutional ownership matter to make commercialisation a reality?

Session Chairman: **Takayuki MATSUO**, Director for Science, Technology and Industry, OECD

Chinese Reforms of Government Policies on Ownership and Exploitation of Inventions from Public Research: **ZHANG Jingan**, Director-General, Department of Policy, Regulation & System Reform, Ministry of Science and Technology, China

China's Innovation System: Reform of Chinese Academy of Sciences and the Development of China-Japan R&D Networks Linking Public Research Organisations: **Atsushi SUNAMI**, Associate Professor, Science and Technology Policy National Graduate Institute for Policy Studies, Japan

Bayh-Dole – 23 years later: **John RAUBITSCHER**, Patent Counsel, Department of Commerce, United States

Commercialising Academic IP When the Researcher Owns Inventions - Advantages and Disadvantages: **David NORDFORS**, Special Advisor, VINNOVA (Swedish Agency for Innovation), Sweden

11:00-11:15 TEA AND COFFEE BREAK

Designing and Implementing a Policy for Patenting and Licensing University Inventions in Denmark: **Jens Kr. DAMSGAARD**, Advisor to the Danish Ministry of Science, Technology and Innovation and Head of Office, Contract and IPR Management, University of Southern Denmark

IPR Policy Development for Public Research in the United Kingdom: **David HUMPRY**, Department of Trade and Industry, United Kingdom

Commercialising Public Research in Switzerland - Tensions between Bottom-Up Practices and National Policy Making: **Patrick VOCK**, Centre for Science and Technology Policy, Switzerland

12:15-12:45 GENERAL DISCUSSION

12:45-14:00 LUNCH HOSTED BY MOST

14:00 SESSION 2: TRANSFERRING TECHNOLOGY FROM PUBLIC RESEARCH TO INDUSTRY – PRACTICAL EXPERIENCES FROM OECD COUNTRIES AND NON-MEMBERS

Issues to be addressed:

- Institutional policies for academic patenting: moving from the administration of IP to exploitation
- Managing IP in collaborative research with industry
- Licensing strategies versus spin-off strategies
- How important are IP issues in international technological standards setting and what is the role of government

Session Chairman: **Sung-Chul CHUNG**, Vice Chair, OECD Committee for Scientific and Technological Policy and Policy advisor, STEPI, Korea

China's Government Policies and Institutional Practices for Managing IP at PROs: **BAO Xinhe**, Director General, Dalian Institute of Chemical Physics, Chinese Academy of Sciences

Commercialising Inventions at NIH - Policies, Practices and Challenges: **Theodore ROUMEL**, Assistant Director for Technology Transfer, US National Institutes of Health (NIH)

The New Japanese Technology Transfer System: **Robert KNELLER**, Department of Intellectual Property Advanced Research Centre for Science and Technology University of Tokyo

Patents and Licensing by Public Funded Research Organisation in Europe – an Overview: **Thomas GERING**, Joint Research Centre, European Commission

15:20-16:00 TEA AND COFFEE BREAK

Technology Transfer from Non-University Labs - the Case of France's INRIA: **Laurent KOTT**, Head of Technology Transfer Office, INRIA, France

An Industrial Firm's Perspective on Commercialising Academic IP - What are the bottlenecks and success factors: **Malcolm SKINGLE**, Director, European Academic Liaison, GlaxoSmithKline, United Kingdom

The issue of Technical Standards and IPRs in the Co-operation between Public Research Organisations and Industry: **ZHANG Ping**, Associate Professor, IPR College of Beijing University

17:00-17:20 GENERAL DISCUSSION

18:00-20:00 DINNER HOSTED BY MOST

DAY II: Friday, 23 April 2004

09:00 SESSION 3: INFRASTRUCTURE, LEGAL, HUMAN RESOURCE AND CAPACITY BUILDING ISSUES

Issues to be addressed:

- How to set up technology transfer offices?
- What are the emerging legal challenges in academic patenting?
- How to build an IP culture at PROs?

Session Chair: **ZHANG Xiaoyuan**, Deputy Director General, Department of Policy, Regulation & System Reform, Ministry of Science and Technology, China

University Technology Transfer Practices: **ZHENG Yongping**, Director of the Scientific R&D and IPR Office, Tsinghua University

Infrastructure and Resource Choices for Technology Transfer Offices - Lessons from the University of California System: **Beatrice BRYAN**, Senior Licensing Officer, Office of Technology Alliances, University of California Irvine

University Technology Transfer - Legal Considerations and Litigation: **Howard W. BREMER**, Esq., Patent Counsel to the Wisconsin Alumni Research Foundation

Exploring the Construction of Market-oriented Technology Equity Exchange Platform: **LIANG Yu**, Vice President of China Beijing Equity Exchange

10:20-10:40 TEA AND COFFEE BREAK

Building an IP culture – the EU’s IPR Helpdesk: **Gail EVANS**, Head of IPR Unit, Director of the Queen Mary Intellectual Property Research Institute, United Kingdom

11:00-11:20 DISCUSSION

11:20 SESSION 4 - CONCLUDING PANEL

BALANCING THE COMMERCIALISATION OF PUBLIC RESEARCH RESULTS WITH THE NEED TO MAINTAIN PUBLIC ACCESS – IMPLICATIONS FOR POLICY MAKING

Selected experts and participants will, drawing on the discussion in the previous sessions and their own experience, debate the issue of how policy makers can encourage the use of intellectual property in public research to increase the contribution of public R&D to innovation whilst ensuring that public access to research is safeguarded.

Moderator: **Daniel MALKIN**, Head of the Science and Technology Policy Division, OECD

Introduction of Issues: **Mario CERVANTES**, Administrator, Science and Technology Policy Division, OECD

Panelists:

John BARTON, George E. Osborne Professor of Law, Stanford Law School, US

YANG Lincun, Deputy Director General of the IPR Centre, MOST, China

LI Shunde, Professor, Law Institute, Chinese Academy of Social Science

Theodore ROUMEL, Assistant Director for Technology Transfer, US National Institutes of Health

Malcolm SKINGLE, Director, European Academic Liaison, GlaxoSmithKline, United Kingdom

12:40 -13:00 CLOSING REMARKS

Mr. Takayuki MATSUO, Director for Science, Technology and Industry, OECD

Mr. ZHANG Xiaoyuan, Deputy Director General of Policy, Regulation & System Reform Department, Ministry of Science and Technology

ADJOURNMENT

13:00-14:00 LUNCH HOSTED BY MOST

14:00–17:00 SITE VISIT TO KEY CHINESE PUBLIC RESEARCH INSTITUTES

General Research Institute for Nonferrous Metals

Institute of Genetics and Developmental Biology, Chinese Academy of Sciences