

IP Asset Development and Management: A Key Strategy for Economic Growth

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PREFACE

Intellectual Property (IP) in the form of patents, trademarks, copyrighted works, industrial designs, trade secrets, geographical indications, like other types of property, can be developed, owned, managed and commercialized to generate an economic return. Increasingly, private enterprises and academic institutions see patents, trademarks, copyrighted works and other forms of IP as economic assets, the value of which can be optimized by proactive policies and strategies. At the governmental level, many Member States are seeking practical information on proactive policies and strategies for national and regional asset development.

This booklet identifies and presents data concerning the key policies, strategies and practices that are effective in stimulating and supporting the development, accumulation, management and use of IP as an economic asset.

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I. WHAT ARE IP ASSETS AND WHY ARE THEY IMPORTANT?

A. What are IP Assets?

IP assets (IPAs) are collections of intellectual properties – patents, trademarks, copyrighted works, industrial designs, geographical indications, trade secrets – that are strategically chosen for their business value. IP assets have economic value because of their ability to enhance the value and financial return from technologies, products and services.

By using the word “assets”, business managers and policy makers recognize that IP is not only a legal right but also an economic benefit¹ enjoyed by its owner. Intellectual property is part of a larger economic context in which human capital is a productive and skilled work force or a generation of scholars and researchers.

Without the complement of intellectual property, human capital is of limited economic value because it is by its nature non-proprietary – human talent cannot be owned – and has no legal status. Without human capital, intellectual property does not come into being and cannot be protected and developed. Intellectual property has become the most important driver of economic development. The combination of intellectual property and human capital is a potent economic force in today’s knowledge-based economy.

B. Why IP Asset Development and Management?

Over the last decade, the development and management of intellectual property has become a primary concern of private enterprise, especially in the fast growing areas of technology and cultural industries. The field of Intellectual Asset Management – sometimes called “IAM” – has become a professional discipline taught by business schools, and offered as a service by accounting, consulting and law firms. In the private sector, complex systems have been developed for auditing IP assets, including computer software and patented business methods. Major corporations worldwide and several universities have established expert offices responsible for IAM. Intellectual property has become widely perceived as an important economic asset, the value of which can be enhanced by proactive and strategic policies.

At the macro-economic level, there is growing recognition that intangible assets, including human capital and IP are often the most valuable elements in national and regional economies. For this reason, policymakers in governments, universities and research institutions wish to implement proactive IP policies to encourage the development, accumulation and use of IP assets as a key tool in economic policy. Just as there are established techniques to enhance the IP portfolios of enterprises, there is a growing recognition that proactive governmental policies can enhance the human capital and IP portfolios of nations.

“There is an infinite source of richness in knowledge, and those who have encouraged and promoted the exchange of ideas and information were in the center of modern economic and social development”, said Former President Ion Iliescu of Romania, a member of the WIPO Policy Advisory Commission (PAC). “Intellectual property represents the heart of commercial strategies as is proven by its increasing part of the fixed assets in the value of enterprises.”²

The U.S.-based National Knowledge and Intellectual Property Task Force states: “In the knowledge age, a company’s value is largely determined by its ability to convert individual and organization Knowledge into Net Worth in time to seize a new market opportunity. As product cycles shorten, and competitors reduce time to market, the competitive corporation must continuously validate and improve its processes to develop and commercialize new ideas. IP Management is the heart of this transformation process. It is a process that addresses the explosive growth of intangible assets and their impact on the company’s strategic market position and shareholder value.”³

Why IP Asset Development and Management at WIPO?

IP is an economic asset. For this reason many countries are seeking practical information on how IP can be used to promote economic growth. Like other types of property, it can be developed, owned and managed so that it creates an economic return. Proactive policies can be undertaken by enterprises and by nations to support the development and management of IP

assets. At the Seventh Consultation Meeting between the World Intellectual Property Organization (WIPO) and the Association of South East Asian Nations (ASEAN) in May, 2001, WIPO was requested to conduct a study on how intellectual property can contribute to the Association's objective of promoting economic growth and development. This study has been completed and describes IP asset management initiatives underway in the ASEAN countries as well as recommending further IP asset strategies.⁴

Similarly, WIPO was requested by high-ranking Caribbean Government Officials during the 2002 WIPO General Assembly to draft an IP and Development Project for the region, to promote economic growth through effective use of intellectual property. Consequently, in 2003 WIPO initiated and completed a study⁵ to review the status of IP Asset Development and Management in the Caribbean. The study confirmed the dynamism of the Caribbean economies and regional initiatives and explored strategies for incorporating IP asset management into these strategies. At the WIPO Ministerial Level Meeting on Intellectual Property for Caribbean Countries⁶ organized in cooperation with the Ministry of Justice and Legal Affairs of Antigua and Barbuda at St. John's on November 27 and 28, 2003, ministers signed a comprehensive Cooperation Agreement to promote the use of IP as a tool for economic growth and social benefit. The IP and Development Project contained in the Cooperation Agreement will support on-going regional initiatives for economic development and integration of IP policies and strategies into government economic and social development plans at regional and national levels. It aims to create conditions for the development, protection, ownership, management and use of IP assets in the region, by fostering technological innovation and enterprise competitiveness, as well as cultural industries. The Project will also promote technology transfer, strengthen regional research and development initiatives, encourage local invention and creativity, promote an IP culture and national and regional identity and branding.

Realizing the importance of IP strategic planning, many developing and developed countries such as Australia, Canada, Ethiopia, Hungary, Japan, Philippines and Romania have published their IP strategic plans.⁷

C. How Do IP Assets Help Economic Growth?

IP assets stimulate economic growth in several ways. One of the most important ways is that companies can gain royalty revenues from licensing their IP assets to other parties. Worldwide earnings from licensing of patent rights have skyrocketed in the last decade, increasing from US\$15 billion in 1990 to more than US\$100 billion, with the US significantly in the lead – currently earning licensing revenues from abroad in excess of \$30 billion per year. Japan is in second place, and then the UK, both of whom earn in the \$5-10 billion range.⁸ IBM gained more than US\$1.7 billion in licensing royalties in the fiscal year 2000.⁹ Licensing of IP can also help companies lower their costs or gain access to goods, thereby increasing their profitability. For example, it is reported that Dell Computer Corporation used its portfolio of patents in 1999 as collateral in a US\$16 billion cross-licensing agreement with IBM that provides Dell with lower cost computer components.¹⁰

Universities have also used IP assets to support their budgets and to sustain continued education and research. Canadian and U.S. universities and research institutions reported a license income of US\$1.36 billion for the fiscal year 2004.¹¹ The dramatic growth in university IP licensing is illustrated by Stanford University which in 1970 set up a one-person pilot technology licensing program that generated US\$55,000 from a mere three technologies. In its 25th anniversary in 1995 the program had blossomed into a 20-person Office of Technology Licensing (OTL), managing more than 1,100 inventions licensed to companies all over the world – 220 of which were producing royalty income totaling \$44 million.¹² In fiscal year 2003/2004 the OTL received gross royalties of \$49.5 million.¹³

Many small and medium-sized enterprises (SMEs) worldwide are also successfully using IP. Developing countries are increasingly seeing the potential in indigenous development and accumulation of IP assets in key areas that can help businesses participate in technology transfer agreements, attract joint ventures and expand into new regional markets.

IP assets increase corporate valuation in merger and acquisition contexts. When companies merge, IP assets such as patents, trademarks and copyrights add significantly to actual and perceived value.

D. Why do IP Assets Have Economic Value?

IP assets, when properly managed, can:

- motivate and help generate revenues from product sales and licensing royalties;
- increase high value exports;
- attract high-value foreign direct investment (FDI) and joint ventures;
- help retain and motivate technical personnel;
- stimulate research and development (R&D) based industries and create employment;
- support educational and research institutions;
- enhance corporate valuation;
- promote funding for R&D, which provides and enhances needed technologies and products;
- provide bargaining power in technology transfer negotiations;
- help to gain access to goods and technologies through licensing agreements.

E. What can Policymakers do to Promote the Development and Management of National IP Assets?

Policy makers can develop and implement written IP strategic plans. Such plans may include IP audits, goal-setting and measurement, the identification of “clusters” or target areas for IP asset development, funding of research and development and “harvesting” of resulting IP, coordination of education and economic policies with IP policies and planning, creation of tax and other financial incentives for IP development and introduction of measures to make IP ownership realistically affordable to SMEs and non-profit research institutions, including public-private venture funds and patent application funds. A few examples of proactive policies to stimulate IP asset development and management undertaken by WIPO Member States are given below.

In 2001, Singapore established an Economic Review Committee to conduct a thorough analysis of Singapore’s areas of comparative advantage and to work out a comprehensive development package to include IP assets.

Singapore has focused on building up the capabilities of SMEs and investing selectively in priority areas referred to as “clusters”, such as information technology (IT), biotechnology, and life sciences research. The government also lays emphasis on the education of its workforce to upgrade skills and knowledge. These measures were intended to reduce the economy’s vulnerability to external shocks related to electronics exports, and to continue its transformation from a manufacturing to a knowledge- and skills-intensive economy.¹⁴

Malaysia has created several venture capital funds for technology development, including The Technology Acquisition Fund¹⁵ (TAF), The Commercialization of R&D Fund¹⁶ (CRDF) and the Malaysia Venture Capital Management Fund¹⁷ (MAVCAP). The last of these focuses on “spearheading the country’s change towards a complete knowledge-based economy before 2020”.

The *Organisation Africaine de la Propriété Intellectuelle* (OAPI) created a venture fund in 2002 to stimulate development of IP based enterprises, the Fonds d’Aide à la Promotion de l’Invention et de l’Innovation (FAPI).¹⁸



As shown in this diagram, IP asset development and management has four key components, each of which is broken down into sub-categories consisting of policies, practices and techniques. All of these components are interrelated so IP assets must be seen in the context of a total system involving government policies, education, technology, funding, infrastructure and other elements.

II. IP ASSESSMENT AND PLANNING

IP assessment and planning in the public sector has multiple components including: IP auditing, strategic IP plans, clustering target areas, human capital development, incentives, policies addressing brain drain, IP policies to benefit SMEs, institutional IP policies in research institutions, and regional cooperation and markets.

A. IP Audit: A First Step

The IP audit permits a nation, a university, an enterprise or an R&D institution to assess its existing stock of IP and human capital. It is a familiar tool used in private enterprise that is being expanded or used as a tool in public policy. Different methods for IP audits exist and may take the form of a simple list of existing IP as for example the number of patents and trademarks classified according to residents and non-residents, identification of technology/cultural industries that may be sources of IP, lists of research institutions and data on licensing transactions and royalty revenues. It may also be a more sophisticated assessment of trends in IP protection over time and how such trends meet or do not meet economic and educational focus areas. Such an audit may also include data and statistics on joint ventures and foreign direct investment involving IP, technology licensing at research centers, investment in R&D and assessment of human capital development.

A public policy IP Audit Tool has been developed by WIPO for use by its Member States.¹⁹ This document is in the form of an extensive questionnaire designed for use by policy makers in developing a national IP strategy. It also contains examples of measures undertaken by various Member States in key elements related to IP asset development and management. For example, one Part of the Audit Tool focuses on financing for IP asset development, lists questions, and provides examples.

It is important to distinguish between IP audits for the private sector and IP audits used as a tool in the public sector in the context of IP strategy. The private sector audit tool focuses on specific patents, works of authorship, trademarks, licenses, etc. owned by a company and helps to evaluate the strengths and risks of that portfolio of IP. The public sector audit tool focus-

es on the policies and infrastructure available and needed on a national basis in order to use IP as tool for economic growth. The public sector IP audit provides a factual and analytical foundation for national IP strategy.

B. Strategic IP Plans

After the IP audit, a written IP plan creates a strategy for developing and managing IP over a period of time. As with a business plan for any enterprise, a strategic plan outlines the national or regional approach for developing and importing human capital and IP as well as the methods to be employed for commercial exploitation of those assets. The plan may be in the form of a white paper, a recommendation by an advisory board, or another analytical document. Sometimes there is no stand-alone IP strategy, but rather an innovation plan or an R&D Plan in which IP is an integral part.

This plan may specify strategic goals and objectives, mechanisms, policies, actions, costs and resources, as well as links with other planning tools, including development, economic and education plans. Many countries have developed stand-alone IP plans, economic plans with IP components, or multifaceted strategic plans integrating education, technology, health, agriculture, commerce, IP and finance.

The countries which have developed IP-related strategic plans include Australia,²⁰ Canada,²¹ China,²² Czech Republic,²³ Denmark,²⁴ Ethiopia, Hungary,²⁵ South Africa,²⁶ Japan,²⁷ Philippines,²⁸ Romania²⁹ and United Kingdom.³⁰

Several countries are in the process of establishing IP and technology development plans with identified phases, objectives, activities and deliverables. Those plans address education and funding, identify priority areas for research, human resource development needs, and the expected products for research initiatives. Sometimes they relate to a particular field or technological sector corresponding to public priorities or needs. In September 2002, the French-speaking nations of Africa, under the leadership of OAPI, also adopted in Libreville, Gabon, a strategic plan for IP development in connection with an initiative to strengthen traditional medicine.³¹

C. Clustering: Targeting Specific Areas of Competitive Advantage

Nations successfully implementing IP asset development and management programs select clusters or target areas in which their enterprises or research institutions may have a competitive advantage, or which harmonize with national needs and capacities. This definition of cluster areas may also work as a strategy for researchers and enterprises.

In the Philippines for example, the Department of Science and Technology has published a list of twelve priority areas for science and technology development which include IT, electronics, instrumentation and controls, photonics and space technology applications. These areas form the basis for human resource development planning as well as R&D funding decisions.³²

The Malaysian Multimedia Development Corporation³³ (MMDC) has also identified seven areas of “Flagship Applications” to accelerate the objectives of Vision 2020, a project to create an information and communication technology area in Malaysia to attract world-leading multimedia companies. In Thailand, the National Science and Technology Development Agency has identified three strategic research areas: biotech/genetic engineering, metals and materials technology and electronics/computer technology. In the Arab region, the Kingdom of Jordan has identified pharmaceuticals and IT as its focus areas. In a recent report titled *A Practical Guide to Cluster Development*, by Ecotec Research and Consulting to the UK Department of Trade and Industry and the English RDAs, the examples of clusters given are Silicon Valley IT Cluster in the USA, the city of London Finance and Services Cluster and the North West UK Aerospace Cluster.³⁴

D. Human Capital Development

Education is the foundation of IP asset development. The education of young professionals, as well as experienced professionals, to develop and upgrade skills related to the cluster or target areas identified is a key part of national and regional IP policies and plans. Without the capacity to educate scientists, technologists and creators in key areas corresponding to the economic clusters where IP will be cultivated, a strategic IP plan cannot be implemented in practice.

Investment in tertiary education, especially research and development targeted in cluster areas, is a precondition to IP asset development. Investment in primary and basic education is equally an essential foundation for IP asset development and development in general.

One example of an education policy that is congruent with IP Policy can be observed in Singapore, where the Infocomm Development Authority has developed the Infocomm Training Framework³⁵ (ITF) that focuses on the needs of the different segments of the Singapore population involved in the high technology industries identified as information communication technologies (ICTs). It comprises five levels of training to meet specific needs for information communication skills. Level 5 – Infocomm Specialization – focuses on skills upgrading to accelerate the development of emerging, critical and specialized information communication skills urgently required by industry.

E. Incentives and Awards

The next element of IP strategic planning involves establishing multifaceted incentives and support for IP asset development and commercialization. These include tax incentives, payments, patent application funds, venture funds for SMEs in cluster areas and financial rewards in private enterprise for inventors and creators.

Many Member States offer tax incentives for R&D and innovation activities. In Canada, for example, the Ontario New Technology Tax Incentive allows corporate taxpayers a 100 percent immediate write-off of the eligible cost of IP acquisitions.

In Jamaica, a recognized film producer is entitled to relief from income tax for a period not exceeding nine years from the date of the first release of the motion picture. There is also exemption from payment of import duty on equipment, machinery and materials for building studios or for use in motion picture production.

IP ownership may serve as a powerful incentive for invention. In many countries, universities and R&D centers, as well as private enterprises, are developing policies that permit individuals to retain ownership or interests in the IP that they have created. The *Institut Teknologi Bandung* in Indonesia is a pioneer in programs that give local experts and professors financial benefits related to the development of inventions. In the U.S., Stanford University initiated the practice by permitting professors to retain interests in their inventions and developing a dynamic technology licensing office.

A number of countries in the ASEAN region have incentives for IP development and promotion. These are in the form of tax exemptions, insurance and awards.

In the Philippines, there is the Incentive Act, Republic Act No. 7459, by which inventors and businesses which contribute to national development are granted exemption from payment of license fees, permit fees and other business taxes. Customs duties on imports relating to locally developed technologies are waived. Indonesia gives incentives for R&D and IP, while in Malaysia, an agency called Multimedia Super Corridor (MSC) certifies qualifying companies to benefit from a range of incentives, to undertake R&D and to develop human capital in targeted areas. MSC companies receive:

- (a) a five-year exemption from Malaysia income tax, renewable for up to 10 years;
- (b) an investment tax allowance permitting deductions of 100% of qualifying expenditure from income for 5 years;
- (c) the ability to accept foreign knowledge workers, i.e. individuals with five years' experience in multimedia, IT, certain levels of IT education or a master's level or higher degree in any discipline;
- (d) intellectual property protection.

Brunei Darussalam grants tax benefits through the Department of Economic Planning and Development to Pioneer Companies which are companies in areas deemed essential for the country's development.³⁶ The country also grants immigration to foreign workers with special expertise in technology areas.

Philippines has a Presidential Award for Invention, Utility Model, Industrial Design and Creative Research. It consists of a substantial payment, e.g. Php. 5,000 to Php. 10,000.

In Vietnam, the universities and institutes present annual awards for scientific excellence and technical creativity.

In Indonesia, the Ministry of Research and Technology operates Asuransi Teknologi National (National Technology Insurance) to safeguard enterprises against the risk of failure of their technology. A consortium of insurance companies issues a policy and the Ministry of Research and Technology pays a premium.

F. Policies Addressing “Brain Drain” and “Brain Gain”

Incentives also work as part of strategies to attract and retain talented human capital. Measures to combat or reduce brain drain, such as research facility grants, R&D networks, incubation centers, R&D parks, venture funds to support invention and programs to support artists and cultural industry development are all part of IP strategic planning.

The European Commission (EC) has addressed the issues by committing in 2003 nearly 1.6 billion Euro to induce local scientists to remain in the European Union (EU). Spending on combating the outflow of European scientists is to increase by 50 percent by 2010. The funds will be spent on incentives, such as research facility grants, to attract researchers back from abroad.

G. Institutional IP Policies in Research Institutions

In 2003, Moi University in Kenya launched an IP policy, the Moi University Intellectual Property Policy (MUIPP), aimed at promoting creativity and innovation, ensuring a fair and equitable sharing of the rights and benefits of IP among the researchers or inventors, the institution and other stakeholders. The policy implementation is to be handled by the Technology Management Office (TMO). It is envisaged to provide incentives to the potential inventors

and to curb brain drain. Other Universities in Kenya are working on similar IP policies with the collaboration of the Kenya Industrial Property Institute (KIPI).

Moi University, like other public universities in Kenya, has been affected by the loss of many teaching staff who quit to take up similar or better positions in universities in South Africa, Botswana, Namibia, Zimbabwe and elsewhere. This adversely affects the running of some courses. This is one of the problems which Moi University Intellectual Property Policy is designed to address through a more equitable and fair share of the rights to invention between the inventors, i.e. research staff and the University as the employer.³⁸

The University of the Philippines (UP) educational system established the University Intellectual Property Office (UIPO) in 1997 in an effort to coordinate technology transfer and IP management between six autonomous campuses. While the UIPO does not report to any particular government office, it operates in coordination with the national Intellectual Property Office of the Philippines. The UIPO has reviewed and prepared IP policies. For example, the University of the Philippines Ayala Technology Business Incubator (TBI) or technopark, located in the UP Diliman campus, is encouraging the transfer of research done at the university into the market to generate research returns and new funding sources. The functioning of TBI is based on the implementation of the university's IP guidelines.³⁹

In Brazil, agricultural research institutes began to pay closer attention to their IP assets in 1995, after the signing of TRIPs (The Agreement on Trade-Related Aspects of Intellectual Property Rights). An IP Secretariat was created within the Brazilian Agricultural Research Corporation (EMBRAPA), which had been founded in 1974. With 39 units dedicated to agricultural research and development, EMBRAPA added in 1996 a new Institutional Policy for the Management of Intellectual Property Rights to its statutes in order to give researchers guidance on IP issues. This policy helps EMBRAPA units to facilitate the transfer and the licensing of products and technologies derived from their research programs, including new plant varieties, genes, molecules, and software.⁴⁰

H. SME Policies Regarding IP

Policies to promote IP asset development by SMEs are important because SMEs are often the venue where new technologies and creativity are born and incubated. These policies help SMEs use the IP system by fully exploiting their existing IP assets and improving their creation, development and management. Such policies include outreach programs to train IP personnel in the SME sector, awareness and training programs for business owners, identifying IP office personnel to work specifically with SMEs, programs to make IP protection affordable for SMEs, and a myriad of other approaches.

In this regard, the 25 European Union States have adopted the Gate2Growth Initiative (G2G).⁴¹ The Initiative is part of the Innovation/SMEs Program to provide “access to private innovation financing and tools for better knowledge exploitation”. The Initiative focuses on helping early stage technology venture capital investors, managers of technology incubators and managers of industrial liaison and technology transfer offices linked to universities and research centers improve their capacity to assist entrepreneurs by networking and exchanging information. G2G provides tools, infrastructure and support services directed to all of these groups. It also offers three pan-European networks to enhance professional development: the I-TecNet with over 70 early-stage technology venture capital investors, the G2G Incubator Forum with 150 technology incubators and the G2G Finance Academia for academics and entrepreneurship trainers. The Innovation/SMEs Program for Financing Innovation also actively supports the establishment and development of the European Venture Capital Association (EVCA) that brings together over 400 professional venture capital operators.⁴²

In Jamaica, where small, medium and micro-enterprises generate up to 40% of GDP annually, a New Economy Project (NEP) was launched in 2000 through 2005. It is a 6 million US Dollar project aimed at improving the business environment for SMEs.⁴³

In India, the Small Industries Development Organization (SIDO) is the national SME Development Agency. Set up in 1954, it provides services to small industries throughout India via the 100 offices it operates in the country. Specifically, it is involved in:

- (1) Entrepreneurship Development
- (2) Tool room Services
- (3) Testing Centers
- (4) External Services
- (5) R&D Services
- (6) Consultancy Services
- (7) Policy Development.

In Nigeria, the National Office for Technology Acquisition (NOTAP) is responsible for technology acquisition, promotion and development. Since inception in 1998, its other mandate has been to commercialize locally developed R&D findings, inventions and innovations from the research institutions, universities and private laboratories. It has taken initiatives to assist SMEs in the country through its Patent and Documentation Center and to patent their inventions and innovations. In doing this, NOTAP provides the following services:⁴⁴

- Assistance with the drafting of patent applications covering the inventions; and
- Payment of the prescribed registration fees at the Registry of Patents, Trademarks and Design Office in Abuja.

NOTAP also provides technology advisory and extension services to SMEs, through the Research-Industry linkage program. Some of the elements of the program are:

- Linkage between research and industry by establishing long-lasting, trust-worthy relationship and partnership of the stakeholders in commercialization;
- Preparation of project profiles based on locally developed technologies for interested and potential investors in SMEs; and
- Brokerage role for the promotion of commercialization of local technologies.

In Europe, a consortium of five Intellectual Property Offices: Luxembourg, Ireland, Greece, Spain and Italy, with their respective partners, have published a Good Practice Guide within the framework of Linking Innovation and Industrial Property Projects (LIP-Projects), which focuses on developing awareness of the increasing importance of intellectual property issues and basic knowledge of IP. It is for use by SME managers, University researchers and independent inventors. The publication shows the benefits of IP to SMEs in terms of legal protection, technical information and competitive advantage.

The foundation of Finnish Inventors offers support and advice to private inventors, researchers and SMEs in Finland. Its activities include:

- promotion of invention activities;
- evaluation of inventions;
- financing of protection, inventions product development and marketing varying from EUR1,500 to EUR100,000.

Since inception in 1971, it has given advice to about 150,000 customers.

These are but a few examples of the ways in which SMEs are being helped to develop IP.

I. Regional Cooperation and Markets

Finally, strategic IP planning by nations as well as by enterprises requires identification of the market in which IP assets will be developed, used and commercialized. Nations are examining sub-regional or regional approaches to IP strategic planning. Regional cooperation in IP and in R&D permits nations to leverage the costs and resources associated with the development of IP assets. Training of technology and IP professionals may be carried out in regional centers with a sharing of expert professors. Regional cooperation, especially in the form of R&D networks or IP consortia, permits cross-licensing of IP assets and joint ventures for the development of inno-

vative technologies. Technology licensing offices and other management and support functions related to IP commercialization may also be shared where local or national support services are inadequate. At the enterprise level, inventors decide where they will seek protection for IP based on their need to exercise their IP rights where they will make, use and sell products.

In sum, for IP asset development and management to succeed, it must benefit from strategic public and private policies as well as coordinated goal-setting with consultation by all stakeholders including policymakers in government, private enterprise and academia. The experience in many countries demonstrates that there are many ways to support the development and management of IP as an economic asset.

One of the best examples of regional cooperation and markets is the ASEAN Free Trade Area, AFTA. Launched in 1992 to transform the region by eliminating tariff barriers between the member countries, it envisages reducing tariffs on trade to 0 to 5% by the year 2008. Currently, the average tariff on intra-ASEAN trade is 3.2%. The ASEAN countries also formed the ASEAN Investment Area (AIA) in 1998, to create substantial investment flow into the region from ASEAN and non-ASEAN sources.

Another example of regional cooperation and markets is the Caribbean Community which serves as a strategy for collaboration in trade through a Single Market and Economy (CSME). Most Caribbean countries have basic IP infrastructure such as national laws and regulations providing legal protection to IP rights administered by the IP offices and consequently regional IP asset development and management will be a logical complement.

III. THE ROLE OF INFRASTRUCTURE

A. Infrastructure: “The Basics”

What is IP asset infrastructure? The term refers to the basic components that must be in place in order for IP to enjoy legal protection and be encouraged and promoted. The most fundamental elements of IP infrastructure are national laws providing legal protection for all of the recognized forms of IP including patents, trademarks, copyright, industrial design and, depending on national choices, other forms of IP such as trade secrets, semiconductor design protection, geographical indications and so forth. Without these basic laws that give individuals the right to own IP and protect it from infringement and misuse, the development of IP assets would be impossible.

Enforcement of IP gives reality and meaning to IP laws. Without effective enforcement, IP laws, however well drafted, are meaningless. Consequently, effective enforcement mechanisms are also basics of IP infrastructure. Through the training of customs and enforcement officials, WIPO works with its Member States to develop effective enforcement procedures.

In this chapter and the next one are listed some of the elements that must be in place in order to promote the development, protection and exploitation of IP assets. An extensive listing and examples on those elements can be found in WIPO publication No 927E entitled *Intellectual Property Audit Tool*.

B. Beyond the Basics: Laws that Help Promote IP Assets

In order to promote the development and management of IP assets, it is important to expand the definition of IP infrastructure beyond basic IP laws and enforcement institutions. Other laws, mechanisms and institutions that are related to IP must be put into place. The first area to explore relates to laws that are complementary to IP laws in that they do not create IP rights, but rather lay the foundation for developing and managing IP assets.

For example, the U.S. passed, in 1980, the Bayh-Dole Act that permits federally-funded universities to retain ownership of any IP they develop as well as the rights to commercially exploit such IP. This Act has had a major impact

on the funding of R&D and is believed to have acted as a stimulant to the development of new technologies and science-based industries.⁴⁵

In China, the Central Committee of the Chinese Communist Party (CPC) and the State Council issued, in May 1995, their *Decision on Accelerating Scientific and Technological Development* that allowed universities to establish science and technology research centers and encouraged university professors and researchers to join industrial parks focused on high technology in order to commercialize the results of scientific research.⁴⁶

Other areas where laws and regulations affect IP asset development are those regulating the IP offices and governmental programs for IP, taxes and trade, immigration, technology transfer, science and R&D, financing of human resource development, etc.

C. The Role of Organizational Development

Organizational development (OD) is the study of how organization affects institutional function. It has evolved as a business management discipline. IP management experts are interested in how OD can help countries with IP asset development and management. For example, OD analysis indicates that having industrial property and copyright offices reporting to separate government ministries may pose obstacles to a coherent IP policy. Similarly, if the ministries of science and technology, education, economy, commerce and justice do not coordinate with respect to IP policies, it will be difficult to implement an IP-strategic plan or to coordinate such a plan with national economic planning.

Many countries have experimented and succeeded with different types of OD initiatives. One example is Singapore where the Intellectual Property Office of Singapore has been separately incorporated and reports to a statutorily created Board of Directors that includes representatives of concerned ministries as well as local private sector representatives. In addition, Singapore has created a multi-faceted infrastructure devoted to IP Asset Development and Management including A*Star, the national agency for

science, technology and research, and Exploit Technologies, an entity devoted to technology development that has been spun off from Singapore's 13 government-funded research institutes.⁴⁷

The Intellectual Property Office of Singapore

"The Intellectual Property Office of Singapore (IPOS) began as a Registry of Trade Marks in 1937 where it functioned largely as a regulator of trademarks and the re-registration authority of UK registered patents. Over the years, the role of the Registry grew in importance as did the increasing relevance and significance of intellectual property in the society. It expanded its activities beyond the traditional regulatory functions to include policy development, law reform, public education and the facilitation of IP initiatives. On April 1, 2001, IPOS was converted to a statutory board under the Ministry of Law of the Singapore Government. The conversion gives IPOS greater autonomy and resources to better meet the challenges of maximizing intellectual property as a critical resource in the new economy."⁴⁸

D. Making the IP System Easy to Use, Accessible and Affordable

The African Regional Intellectual Property Organization (ARIPO) was created by the Lusaka Agreement in 1976 to foster close relations between the member states in matters relating to industrial property and to assist in their acquisition and development of technology relating to industrial property. Currently it has 15 member states.

The *Organisation Africaine de la Propriété Intellectuelle* (OAPI) was set up by the Bangui Agreement in 1977 after revision of the Libreville Agreement of 1962 which created its forerunner. The objective of OAPI is to promote cooperation amongst its 16 Member States in Africa in protecting intellectual property and facilitating technology transfer. OAPI has announced a fee reduction for individual inventors and research institutions.

The Eurasian Patent Office since 1997 grants an 80% fee reduction to persons having their residence, or legal entities having their principal place of

business, on the territory of any State party to the Paris Convention in which the yearly *per capita* gross national product amounts to US\$3,000 or less, or the representatives of such persons or entities.⁴⁹

In Colombia, Colciencias, which is the National Institute for Science and Technology Development, created in 2005 a new fund to support patent applications by national research centers and individuals.⁵⁰

Focus on IP infrastructure means examining whether the system is structured so that it works in practice for users. Is the system affordable and easy to use? Can research institutions realistically use the IP system to protect their work? Does the IP system include outreach programs whose purpose is to make it accessible to users? For example, Indonesia, a nation spread over thousands of islands with hundreds of universities and research institutions, has established over 90 IP outreach centers to provide IP counsel and protection support.

It is also useful to survey research institutions, private enterprise and other users to find out what they think about how the IP system works for them and what institutional changes might be desirable.

E. Enforcement

IP infrastructure includes systems to enforce IP rights such as:

- programs for the training of enforcement personnel and judiciary;
- programs for cooperation among government agencies;
- creation of special units or task forces within the government.

In October 1996, Thailand enacted legislation for the establishment of an Intellectual Property and International Trade (IP&IT) Court as well as a code of procedure for consideration of such cases. The Act authorized the establishment of both central and regional IP&IT courts. The rationale for this new court was that greater expertise and specialization would reduce delays and improve the quality of the results.⁵¹ Other countries have chosen not to cre-

ate specialized courts but rather have implemented training programs to enhance the IP expertise of judges.

F. IT at the Service of Inventors and Creators

IT has become a standard part of IP infrastructure that has made the operations and functions of IP offices more effective and expanded their outreach activities. Public terminals have facilitated IP searches, websites have increased the dissemination of public information on IP, secure networks have connected researchers around the world and software has improved collective copyright management. All of these show IT at work to promote IP asset development and management. The objective is not to create state-of-the-art technology, but rather, appropriate technology designed to provide optimum IP system access at minimum cost.

G. Networks, Clusters and Technology

The creation of a strong IP infrastructure is expensive. However, countries can leverage or spread out infrastructure costs such as those for research tools and equipment, IP professional services, databases, etc. Initiatives to share resources in R&D networks, to promote partnerships and joint ventures and regional cooperation/integration agreements are examples of this.

There have been many successful cases of resource and cost-sharing through the establishment of sub-regional or regional strategies, approaches, policies, initiatives, networks and cooperation agreements, as for example:

- the creation of regional funds for promotion of R&D in target fields;
- regional programs for innovation promotion, registration and commercialization of R&D results;
- cooperation in IP professional training and human resource development.

The African Regional Intellectual Property Organization (ARIPO) and the *Organisation Africaine de la Propriété Intellectuelle* (OAPI), for the English and French speaking countries in Africa respectively, are examples of shar-

ing resources and leveraging costs in IP management and human resource development. The former is based in Harare, Zimbabwe and the latter in Yaoundé, Cameroon.

Another example is the Greater Mekong Subregion Academic and Research Network (GMSARN), comprising eight academic and research institutions in Cambodia, Lao People's Democratic Republic, Myanmar, Thailand, Vietnam and China. It promotes shared research and development, recognizing intellectual assets as a regional concern.

A project, coordinated by the World Intellectual Property Organization (WIPO) with the financial support of the Geneva International Academic Network (RUIG-GIAN), aimed at supporting developing country health research institutions in protecting their research results was launched in September 2004. The project will create two networks of research institutions and develop local expertise to protect and commercialize research results through the use of patents and other types of IP. More than 30 research institutions from six Central African nations (Cameroon, Chad, Central African Republic, Equatorial Guinea, Gabon, Republic of Congo) and, in South America, from the nation of Colombia, are participating in the project.⁵²

H. Engaging NGOs and Civil Society Organizations

An important part of IP infrastructure is the encouragement of organizations in the development, management and use of IP assets as well as in the promotion of IP awareness. Organizations, such as artists' societies, IP protection organizations, research promotion organizations, fundraising societies for IP asset development, professional associations, etc., have an important role to play. Without such private institutions, it is difficult for a society to promote IP asset development and management.

Networks of R&D organizations have become increasingly common and are an essential infrastructure for the development of IP assets. Network theory is a fast growing field and increasing attention is being placed upon networks in developing countries as a key form of infrastructure. Such networks permit communication, rapid dissemination of information, technol-

ogy transfer, sharing of resources, leveraging of costs, development of expertise and many other benefits that assist in the development and management of IP Assets without compromising national sovereignty.

For example, the African Regional Center of Technology, an association of research facilities in 35 African States, is closely linked to IP organizations, including WIPO, OAPI and ARIPO. Professional organizations and organizations of special competence are also important elements of IP asset development infrastructure. These include organizations that may not have previously been interested in or engaged in IP matters. For example, the Arab Organization for Agricultural Development in Sudan signed a Memorandum of Understanding with WIPO in June 2002 to promote IP jointly. Other professional organizations are active in IP and play an important institutional role in education and professional networking. The International Licensing Executives Society (LES), for example, is a non-profit organization with 28 chapters worldwide,⁵³ including China, the Benelux countries, Eastern Europe, North America and South Africa.

IV. IP EDUCATION, PUBLIC AWARENESS AND PROFESSIONAL IP TRAINING

WIPO Director General Kamil Idris frequently emphasizes the importance of demystifying IP in creating a culture that appreciates its value. This has been the subject of a campaign by WIPO in recent years aimed at changing perceptions of IP from a purely legal discipline to a broad field with extensive connections to economics, education, technology and culture.

IP Asset Development and Management is a practical approach to using IP as a tool for economic growth. Increasingly, private enterprises see patents, trademarks, copyrighted works and other intellectual property as economic assets, the value of which can be optimized by proactive policies and strategies.

Governments and academic institutions are also treating IP as a practical tool for enhancing national competitiveness, increasing opportunities for technology exchange, augmenting revenues, exports and corporate valuation, avoiding “brain drain” and motivating employees. The experience of many Member States shows that intellectual property, like other forms of property, has an economic value that can be promoted and enhanced by means of proactive national policies.

A. Training IP Professionals

This chapter addresses a related but distinct educational focus: the need to train IP professionals and related IP specialists who provide services in support of IP asset creation.

If the goal of national or enterprise strategy is to use IP as a tool for economic growth, there must be cadres of individuals with core competence in IP, as practically applied.

The work of these IP professionals will be to:

- draft claims for inventors;
- advise inventors and creators;
- help develop strategies for research centers;
- work with SMEs on IP protection strategies;
- negotiate IP licensing and joint venture agreements;

- provide expert advice on the relationship of trade and IP;
- provide counsel on IP valuation;
- manage IP portfolios;
- develop branding and trademark programs and so on.

Who can assist an SME in designing an IP strategy that will help that company realize its full potential in terms of IP and revenue generation? Who will draft claims and file patents that are developed by young technology specialists? Who will represent musicians and artists in negotiating license agreements? Who will provide legal advice to start-up companies in the area of solar energy, food processing, or materials science? Without IP professionals, all the other elements of an IP asset development and management strategy may be in place but the strategy without human assets to make it work will certainly fail. In many countries today, there is a sharp lack of human capital capable of designing and executing IP based strategies.

Many countries do not have training institutions to meet the demand for patent agents, patent lawyers and other IP professionals. In countries that do have excellent law schools and business schools, very few of these institutions are geared towards graduating individuals who can assist inventors and creators in realizing the value of their intangible assets. In light of this shortage it is unrealistic to assume that there will be increases in the filing of patents or in the protection and distribution of works of authorship, or in the use of trademarks to support marketing strategy without a change in training expectations and results. There is also a need for informed IP and business specialists to provide support at incubation centers for new enterprises, IP outreach programs geared to SMEs and university research and development offices.

This perceived need for IP professionals is the reason why Singapore has recently created the Singapore IP Academy.⁵⁴ As the IPOS explains:

“IP is a complex legal field. The skill-sets required in IP protection, exploitation and management go beyond legal know-how. IP professionals need knowledge and expertise in basic legal foundations on

IP, contract, competition and tax laws, patent drafting and negotiation, marketing and branding know-how, business strategy and asset valuation. With the anticipated growth of IP activities, our base of expertise has to be rapidly nurtured. This is not only to cater for the basic needs of filing and prosecution but the value-added services such as asset management, valuation, technology analysis, etc.”

In order to train professionals in two areas that are considered key for the protection and exploitation of IP assets, WIPO has developed two training programs, one on licensing and the other on drafting patents. The licensing training program is based on WIPO publication No.903, *Successful Technology Licensing*, used to train trainers in connection with WIPO’s Successful Technology Licensing training tool kit.⁵⁵

B. Emphasis on Interdisciplinary Training

The Asian Institute of Technology (AIT) School of Advanced Technologies emphasizes the importance of addressing the technology gap between developing and industrialized countries which continues to widen at an alarming rate. The mandate of the school is “to help alleviate this situation by educating engineers with the ability to plan, administer and manage the latest technologies”. The school’s “multidisciplinary faculty” emphasizes its “interdisciplinary rationale.”⁵⁶

At the National University of Singapore, there is a Center for Management of Innovation and Techno-entrepreneurship that offers an interdisciplinary degree in Management of Technology. This permits engineering students to receive education in business disciplines such as marketing, new venture creation and product development. A *practicum* course is offered in “start-up consulting”, where students develop a set of varied skills (including IP strategy) that enable them to serve as consultants, an increasingly important and lucrative field that is inherently interdisciplinary. Students on this course have served as consultants for a Danish start-up and helped develop a business plan for the company to market a corporate search engine in the Asia-Pacific region.⁵⁷

At the Stanford University Center for e-Commerce, created in 2002 as part of the Stanford Program in Law, Science and Technology, the faculty collaborates with scholars in residence and with faculties and students from other Stanford University departments on cutting-edge, interdisciplinary research and policy-making.

The Massachusetts Institute of Technology (MIT) has a Center for Technology, Policy and Industrial Development (CTPID) that emphasizes the practical focus of its work as well as the interdisciplinary nature of its training:

“Applying MIT’s intellectual competencies to real world dilemma produces a rich learning experience for students involved in CTPID research programs and for those enrolled in the associated masters and doctoral programs. The combination of interdisciplinary academic resources and partnerships with both regulatory bodies and entrepreneurial enterprises defines CTPID’s role as a home for advanced research with practical applications.”⁵⁸

In the Republic of Korea, Northwestern University offers an “Executive LLM Program” for international and Korean students with an IP unit. The course covers a number of related skills, including international investments and securities.⁵⁹

Other law schools worldwide are exploring and initiating training programs in the IP field, focusing on practical training of workers who can represent and advise SMEs in technological and cultural industries. For example, in the Caribbean region last year the University of the West Indies added courses in copyright law to its undergraduate program and launched a new Masters of Law program in commercial law where students can pursue a thesis and specialty in IP.

C. Public Awareness Building and IP

In addition to professional education in IP and related fields, awareness building for the public at large is essential in promoting IP asset development. In contrast to the very pointed task of educating IP professionals with practical skills, the task of raising the general level of understanding of IP involves a broad-based grass-roots effort.

In this respect, some IP offices have developed programs for public secondary-level education and even websites for children, to raise awareness of the importance of invention and creativity at an early age. Other IP offices have developed programs for public recognition of IP. The Philippines has one such program, emphasizing the value of national creativity and invention. WIPO has targeted younger audiences with a number of information products, for example a series of comic books explaining the basic concepts of IP.

One of the most effective ways of communicating the value of IP is the granting of publicized awards to inventors, creators and IP professionals. The granting of awards is recognition of the cultural and economic value of IP whether it is the result of technological invention or artistic creativity. For example, in India the Council for Scientific and Industrial Research offers a series of awards to inventors. WIPO offers the WIPO Award for Inventors, the WIPO Creativity Award in the field of copyright and related rights and the WIPO Trophy for Innovative Enterprises to encourage SMEs.

These are the IP professionals of the future whose training and skills development are essential to the vision of the knowledge society. In addition, public awareness and understanding of the IP system and how it works are essential to making the vision of IP empowerment a reality.

V. COMMERCIALIZATION

A. Product Enhancement

IP assets represent the protected result of investment in innovation and lead to new products or enhancement in features or performance of existing products. The ability to produce a better or a customized product, especially when competitors do not have such an advantage, is one of the key commercial advantages of IP. This enables the owner of the IP asset to sell a higher volume of products, achieve greater profits and maintain customer interest over time. In order to be used in this way, IP and IP management must be part of an enterprise's business plan and IP assets must be integrated into the product strategy.

B. Licensing

One of the most dynamic ways that IP is used is through licensing. Licensing is the sharing (or the "renting") of IP through a legally binding contract that specifies certain conditions with another company (the licensee) in exchange for the payment of royalties. These royalties are usually paid on a percentage of revenues, on each unit sold, or as a lump sum. This arrangement can be attractive for licensees because they are able to sell products that they would otherwise be barred from selling or they will be able to enhance products that they are already selling with new features and technologies. Licensing can be attractive for the licensors as well because they can reach markets that they may not otherwise be able to reach (because they may not have distribution channels or manufacturing capacity for example). Licensing may involve sharing of IP in exchange for payments or "cross-licensing" in which both parties have IP and exchange it. Cross-licensing enables parties to collaborate without risk of litigation and can mean that there is no financial exchange between the parties.

Licenses involving IP are extremely varied and are often part of a larger business relationship (e.g. a research and development joint venture or an agreement to manufacture and sell finished products). Sometimes licenses result from the settlement of threatened or real litigation where the parties, instead of litigation, reach a business arrangement that offers a possible "win-win" situation for both sides.

For some businesses, licensing is the primary source of revenue generation. These businesses are effectively in the business of research and product development and, once a technology is sufficiently developed, they hand it over to another company with greater expertise in marketing and distribution. Many semiconductor companies fit this description, designing a semiconductor and then licensing the design to another company for manufacture and distribution. Dolby Laboratories is a well-known example of a sound technology company that has achieved much of its financial success through the licensing of its patented audio technology which is then incorporated into the products of other companies.⁶⁰

Increasingly, university and research centers engage in IP licensing. Indeed, according to a study of the Association of University Technology Managers, in 2004, universities and research centers in Canada and the United States made US\$1.36 billion in IP licensing revenues.⁶¹ Columbia University in New York created the Columbia Innovation Enterprise (CIE) Unit in 1982, which name was changed in 2001 to Science and Technology Ventures (S&TV), and since its creation it has developed more than 400 patents and entered into more than 1,000 licensing agreements. By 2004, S&TV's annual revenues from licensing were over US\$130 million.⁶²

Licensing also includes consortium licensing where several companies may join together and place their IP assets into a "pool", agreeing that all consortium members may use the IP that is in the pool. The members may then conduct joint research projects on related technologies without fear of infringement. Sometimes a pool of IP assets is created by a group of companies in order to promote a "standard" or "platform" in order to assure interoperability of related systems. Platform strategies are highly dependent on patents and trademarks. A good example of a platform strategy in use is Microsoft Windows where many different companies develop and sell products that operate with Microsoft's operating system. Microsoft's trademark logo and the IP in its operating system are key to maintaining its position as linchpin of the Windows platform.

WIPO has developed a Successful Technology Licensing training program based on a training tool kit. The training program is addressed at training

trainers and has been offered in many Members States all over the world in cooperation with local authorities and experts.⁶³

C. Joint Ventures and Strategic Alliances

Businesses often form alliances to achieve jointly what is difficult to achieve separately. The legal forms vary but IP licenses are a common aspect of such ventures. The parties agree to cross-license their intellectual property in order to create or manufacture a better product. The IP license is often combined with a development agreement contract whereby the parties divide up responsibilities and IP ownership with respect to research and development of an agreed technology or product. They may also license manufacturing documentation, specifications and manuals subject to copyright, as well as industrial designs and trade secrets. A strategic alliance may also include joint marketing agreements and trademark licenses under which the parties share advertising expenses and market products under a common logo.

A strategic alliance may consist of a network of companies and/or research centers that agree to share and leverage resources. See www.maxhave-laar.com/ for an example of the use of a logo to show that all members of an organization comply with certain labor and trade practices. Another example of the use of a trademark as a unifying market force is the Intel Inside™ slogan and logo.⁶⁴

A logo may also be used to show membership of an organization that monitors and may certify quality, for example an association of organic food producers that uses a common logo to show consumers that the products bearing the logo meet certain requirements.

D. IP Valuation and Funding

IP Valuation aims at determining the monetary value of an IP asset or portfolio of assets. It is essential for business planning and joint ventures and is important for licensing, acquisitions, mergers, investments, joint ventures and loans. Although securitization of loan transactions with IP assets is not currently widely practiced, there is already a great deal of interest in the sub-

ject in the accounting and financial communities. Some commentators believe that it is only a matter of time before IP-based collateral is common.⁶⁵ In October 2003, the Small and Medium Enterprises Development Bank of Thailand announced that it would accept IP as collateral in loan applications.

Even if securitization of loans with IP is not yet standard in the financial community, it is clear that the quality and quantity of IP assets are taken into account when investment decisions are made. A strong IP asset portfolio, well integrated into a company business plan, will be attractive to an investor because of the potential revenues generated by the IP and the fact that development of IP assets shows a commitment to innovation and product enhancement. In “due diligence” investigations where the assets of a company that is subject to possible acquisition are surveyed and audited, the IP assets are generally listed and often evaluated in order to ensure that they are legally protected and that contracts have not inadvertently or intentionally transferred them. They are also assessed as to their value in relation to the core business.

IP Valuation of intangible assets, including IP, is important in terms of funding for early stage technology ventures.

E. Branding and Geographical Indications in Use

IP is a key tool in marketing. A strong trademark or brand can be the cornerstone of a company’s marketing strategy. It may also be used by a country as a “location brand” – a way to project the image and promote the products of that country.

Geographical indications are a form of IP that can be effectively used in marketing campaigns. Like trademarks, geographical indications can stimulate demand by projecting positive images and communicating product attributes to the potential buyer. An example of effective use of a geographical indication is Tequila, a Mexican drink that has been protected as a geographical indication since 1977. Its protection as a geographical indication has been a tremendous advantage to the Tequila industry in Mexico, creating jobs and generating export revenues.⁶⁷

CONCLUSION

The various chapters of this booklet have focused on how government, private sector and academic policies can stimulate the development of IP assets. The IP that is produced is an Asset with a theoretical economic value. However, this value cannot be realized in practice unless the IP is used in specific, concrete and practical ways to earn revenue or for other economic benefits. Strategic preparation and development of IP assets are necessary preconditions for the dynamic use of IP for micro and macro-economic development. The greatest invention in the world, if not marketed and exploited effectively, will not create revenues. IP asset management is making the most of your human resources. For an in depth analysis on the different elements involved in IP assets development and management see WIPO publication No.927E *Intellectual Property Audit Tool*.

“A thought which does not result in an action is nothing much and an action which does not proceed from a thought is nothing at all”.

Georges Bernanos (1888-1948), French novelist.

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20. <http://backingaus.innovation.gov.au/>
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