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## TURNING PIRATES INTO PROPRIETERS HOW AND WHY TO MAKE SOFTWARE INTELLECTUAL PROPERTY WORK IN DEVELOPING COUNTRIES

*Steven Yarger*

Intellectual property (IP) assets are of paramount importance in the developed world. Yet the regulations used to protect these assets artificially limit their application in developing countries that could benefit from the ideas these assets utilize. In the software industry, and because of distinct characteristics of software IP, this paper offers a solution that shares the value of these assets among various parties to improve outcomes for all. Through a partnership between local government and software IP owners, the labor enhancing benefits of software can be spread throughout the developing world legally and efficiently.

*He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me. That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density at any point, and like the air in which we breathe, move, and have our physical being, incapable of confinement or exclusive appropriation. Inventions then cannot, in nature, be a subject of property.*

—Thomas Jefferson

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*Steven Yarger is a Master of Public Policy and Master of Business Administration candidate at the University of Michigan (seyme@umich.edu).*

## INTRODUCTION

Ideas are more important than things. This truth is becoming apparent as the developed world moves rapidly toward a knowledge economy, in which value derives not from ownership and utilization of hard assets, but from the processing and interpretation of information. Such a system requires an adjustment of the way societies protect private property. Whereas physical assets allow straightforward protection due to their tangibility and excludability—only one entity can own a machine or piece of land at one time—idea assets are different. Thomas Jefferson, the father of American intellectual property law, best expressed the non-excludability of ideas in the quote at the opening of this paper.

But the special quality of non-excludability, together with the concept of non-diminishing returns on idea assets Jefferson also mentions, presents a conundrum to a knowledge economy: how to protect the ownership of assets, as stated by Jefferson, which cost nothing to share “in nature”? The developed world has solved this problem by instituting intellectual property (IP) laws that grant idea generators exclusive rights to their ideas—most importantly the right to prosecute for infringement—for a limited length of time. The reasoning behind these laws goes to the core of free market economic systems: assigning private ownership encourages innovation and efficiency that increase the quality of life for all citizens. If this reasoning is accepted, two important questions remain for IP adherents:

1. How should societies be treated that do not believe in the importance of private ownership of ideas? Should they be allowed to benefit from these ideas too, as they certainly could, given the non-excludable nature of ideas?
2. If some societies cannot protect ideas, should they be allowed to benefit from them? If so, how?

These are the questions with which this paper is concerned. More specifically, I consider them in the context of privately owned software IP. Typically, discussion of intellectual property in the developing world focuses on pharmaceutical or entertainment products, probably due to their visibility. News articles about expensive drugs and pirated copies of *Titanic* are sure to sell. Software piracy, on the other hand, provokes much less attention. For this reason alone it deserves more consideration. But software piracy merits study on other grounds as well. Most prominent among them is that software (as opposed to entertainment products) is a productivity enhancing investment good; its purpose is to increase the value of labor.<sup>1</sup> For example, U.S. Bureau of Labor Statistics estimates that

software and IT equipment contributed between one-third and one-quarter of all non-farm labor productivity gains in the 1990s—approximately \$50 billion annually (Bureau of Labor Statistics 2005). This positive externality characteristic of application software presents a compelling rationale for encouraging the spread of software as opposed to pure consumption goods.

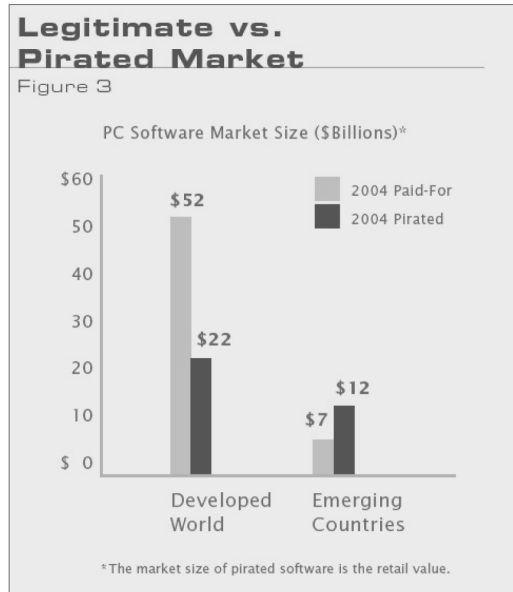
## BACKGROUND

Software IP is an important issue in the developing world today. As technology enabled communication spreads with the growth of international trade, losses due to piracy of the software products which facilitate much of this growth are reaching alarming levels—over \$33 billion globally in 2004 (Figure 1). These figures do not even include the economic value of lost jobs and services due to piracy, which can more than double piracy's cost according to the Business Software Alliance (BSA), a U.S. based software industry association (Business Software Alliance and International Data Corporation 2005). The easiest victims to identify are large Western software IP owners whose products, which may retail into the tens of thousands of dollars per copy, are routinely sold in pirated versions for as little as one dollar locally. Microsoft estimates its losses due to software piracy at over \$2 billion annually in China alone (Schafer 2005). In total, software firms estimated their lost revenues due to piracy at approximately \$12 billion in the developing world during 2004 (Figure 1). To date, software firms' only recourse has been to ignore the developing world entirely and focus their products on those markets which allow them to be compensated for their IP. But the harm extends beyond Western corporations. Secondary victims include local citizens and businesses which endure mismatched, lower quality products, poor training, and nonexistent support that could greatly enhance the benefits the pirated software ideally could provide.

Regulations regarding software IP are routinely ignored in the developing world. A recent independent study commissioned by the BSA concluded that 63 percent of software installed in the developing world in 2004 was illegal (Figure 1). In countries such as China and Russia, this figure approaches 90 percent (Figure 2). Other research shows that for every 1 percent decrease in the global software piracy rate, \$40 billion of global economic benefits are created through new jobs and increased efficiencies (Business Software Alliance and International Data 2005). Even though the size of these numbers has been disputed, it is generally accepted that billions of dollars of software are illegally installed in the developing world annually. If even a portion of this lost value could be captured within the

formal economy, it could improve the benefits of software to the developing world by driving the development of more targeted and useful localized software applications. Local demand-driven support and training that increase the software’s usefulness could be created to promote and encourage the widespread legal diffusion of software’s labor enhancing benefits.

**Figure 1: Legitimate vs. Illegal Software Revenues in Developed and Developing World**



Source: Business Software Alliance, 2004

**Figure 2: Top 10 National Software Piracy Rates, 2003-2004**

Country	2004	2003
Vietnam	92%	92%
Ukraine	91%	91%
China	90%	92%
Zimbabwe	90%	87%
Indonesia	87%	88%
Russia	87%	87%
Nigeria	84%	84%
Tunisia	84%	82%
Algeria	83%	84%
Kenya	83%	80%

Source: Business Software Alliance, 2004

This paper begins with a review of the current state of intellectual property internationally, paying particular attention to its expression in the developing world and the institutions designed to manage it. First, a brief background on the development of intellectual property and review of the nine major classes of IP protection that exist in the developed world currently are provided. Following this overview, the paper covers major arguments for and against weakening IP for use in the developing world. Next, it proposes a policy solution that allows developing nations to benefit from the developed world's ideas while laying a foundation for their own IP infrastructure in a sustainable manner. Finally, the paper summarizes the discussion and offers practical suggestions for first steps towards implementing the proposed solution.

## INTERNATIONAL INTELLECTUAL PROPERTY TODAY

*The Congress shall have Power... To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Rights to their respective Writings and Discoveries.*

—U.S. Constitution, article I, section 8

Intellectual property is incredibly important to developed economies. Up to two-thirds of the market value of firms listed on the New York Stock Exchange derives from intangible assets consisting of expressions of ideas protected by intellectual property laws (Mossinghoff 1999). Analysts estimate Coca-Cola's intellectual property alone to be worth \$67 billion, over four times the firm's book value ("The Top 100 Brands" 2005). In this globalizing world, owning the means of production is becoming less unique, and therefore less valuable. The ideas that inspire production, however, if protected, retain their value.

### History

The concept of intellectual property protections stretches back to 15<sup>th</sup> century Venice when owners of novel devices were required to register with the state in order to receive protection against infringers. ("Patent - Wikipedia, the free encyclopedia" 2005) At that time intellectual property was used to protect machines and other physical inventions. The era of scientific inquiry heralded by the Enlightenment saw intellectual property expand to include new types of ideas, including cultural works, and, later, chemical compounds. Soon international standards were needed to

coordinate intellectual property regulations throughout Europe. Accordingly, the 1883 Paris Convention outlined industrial (patent) protections and the 1886 Berne Convention formed the basis for copyright protection (Commission on Intellectual Property Rights 2002). These were the precursors to today's international IP institutions.

### **International IP Institutions**

The two international IP organizations most active today are the World Intellectual Property Organization (WIPO), and the World Trade Organization through its Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement. WIPO began as an independent body coordinating IP treaties worldwide, until it was merged into the United Nations in 1974. Since that time WIPO has operated as a separate UN Agency "to promote the protection of intellectual property throughout the world ... [including] ... assist[ing] developing countries in their capacity building for greater access to, and use of, the IP system" (World Intellectual Property Organization 2005).

As with most other UN organizations, WIPO is solely an advisory body and has no sanctioning authority. Seventy-seven percent of WIPO's \$194 million budget is supplied by firms who pay to obtain internationally recognized patent licenses through WIPO's Patent Cooperation Treaty (PCT) (World Intellectual Property Organization 2005). Theoretically, these protections are valid across all 183 WIPO signatories which include many developing nations. Despite its broad membership, WIPO has recently been criticized for defending rich country IP interests at the expense of the developing world, which owns relatively few IP assets. Critics note that of the 277,827 PCT applications filed between 1999 and 2001, less than 2 percent came from developing nations (Commission on Intellectual Property Rights 2002; World Intellectual Property Organization Statistics 2005).

The WTO, through its TRIPS agreement, constitutes the second relevant international IP organization. This agreement, included at the urging of the developed world as a condition of WTO membership in 1994 during the Uruguay Round of WTO negotiations, requires all WTO members to guarantee minimum IP requirements within their national borders (Commission on Intellectual Property Rights 2002). As was recently the case with Russia, this rule effectively demands new domestic IP legislation as a condition of WTO membership for many developing countries ("Russia's Lower House OKs Tougher Fines for Counterfeiters" 2005). Because the WTO has sanctioning authority, TRIPS allows countries to prosecute

alleged IP violations through the established WTO Dispute Settlement Resolution mechanism. At the time of its inclusion in the WTO, developing countries conceded to the addition of TRIPS in return for removal of the developed world's import restrictions contained in the Multi-Fiber Arrangement, an exchange that has been widely debated.

### Current Forms of IP Protections

Many different IP classifications exist depending on which national laws are consulted. WIPO recognizes nine categories (Figure 3).

#### Figure 3: Intellectual Property Classifications Recognized by WIPO

- Patents: Grant exclusive rights of ownership to an inventor for a limited period of time. Disclosure, novelty, usefulness and non-obviousness are required.
- Industrial Designs: Protect the aesthetic features of an invention rather than its technical capabilities, which are protected by patents.
- Trademarks: Grant exclusive, indefinitely renewable ownership rights to unique symbols or colors used to identify products. Must be distinctive to the product.
- Geographical Indications: Protect the use of geographical origin indicators in product advertising, reserved for specific products from the given location.
- Trade Secrets: Protect commercially valuable proprietary information from illegal espionage if properly controlled.
- Copyrights: Grant exclusive ownership rights to authors for creative works for a limited time.
- Integrated Computer Circuits: Grant sui generis protection of original designs for a limited time period.
- Plant Breeders' Rights: Grant sui generis ownership of innovative plant varieties to their designers for a limited time.
- Database Protections: Grant sui generis protections to database owners. Only valid within the EU.

Source: *Commission on Intellectual Property Rights 2002.*

In most nations, the IP classification applicable to software products is copyright, similar to literary works. In the United States, the Copyright Act of 1976 delineates these protections (Title 17 U.S. Code). Their principles are outlined in several court cases, including *Baker v. Seldon*, which establishes that the purpose of copyright is to protect the expression of an idea, but not the idea itself (*Baker v. Selden*, 101 U.S. 99 (1879)).<sup>2</sup>

## REVIEW OF THE DEBATE: DEVELOPING WORLD ACCESS TO IP

Now that a foundation in the design and purpose of IP protections has been established, the questions posed in the introduction return; namely, should those who are unable or unwilling to protect software IP still have access to it, and if so, how? There is a deep and vigorous debate on this topic, ranging from those who advocate that the developing world be granted free access to all IP at no cost, to those who wish to see the same IP protection standards applied as in the developed world. In the following sections, the main arguments are summarized before presenting a proposed solution for the future.

### Common Arguments to Relax IP Protections in Developing Countries

A wide variety of entities wish to reduce IP protections for the developing world. One organization, the Creative Commons, has created a freely distributed “Developing Nations license” which allows copyright holders to publish their work under conventional IP protections in the developed world while designating that these protections are waived in the developing world (Creative Commons 2005). Generally, the vast majority of those in favor of allowing reduced IP protections in the developing world feel that restricting IP utilization in poorer countries is either immoral, inefficient, or both.

*Access to knowledge is a fundamental human right:* Proponents of this view argue that, similar to education and health care, knowledge is a basic necessity of life that should be freely available to all. Therefore, any restrictions on the use of available knowledge, especially among the poor, are unethical and should be removed. This argument is used, for example, to attack biotechnology firms that own IP protecting enhanced crops which they wish to sell to developing world farmers at a profit.



*IP protections have no effect on economic growth:* Opponents of IP enforcement in developing countries claim that IP is unnecessary for economic growth, countering one of the main justifications of IP enforcement among the poor. These advocates cite several studies and historical examples to support their claims (Chang and Grabel 2004). For example, Switzerland had no patent laws until 1888 despite a long history of commercially valuable innovations. The United Kingdom and United States both industrialized while largely disregarding international IP protections; at the time, these countries believed such a regime was in their economic interests (Commission on Intellectual Property Rights 2002). More recently, Taiwan, South Korea and Japan all grew quickly by exploiting weak domestic protections on foreign IP (Lohr 2002). In light of these arguments, some would argue that developed world enforcement of IP protections is protectionist and hypocritical in a historic perspective.

*The developed world holds an unbreakable monopoly on innovation due to IP:* Some IP opponents argue that since the developed world is much more advanced than the developing world, and arguably controls the IP institutions discussed earlier, it occupies an unfair monopoly position over innovation: 97 percent of all worldwide patents are held by the developed world (United Nations Development Programme 1999). Furthermore, as the lifetime of copyrights often extends seventy years or more, and sophisticated patent holders can extend their patents through various techniques—much IP is protected indefinitely for all practical purposes. This argument holds that developing countries should be allowed to break the monopoly by disregarding rich country IP protections through the unrestricted copy, distribution, and usage of software IP. Though these opponents may agree that an international IP regime is required, they argue that the current WIPO/TRIPS system is too inflexible to serve the diverse needs of developing countries.

*The TRIPS agreement is misplaced:* In addition to being skewed towards developed world interests, some feel that TRIPS is faulty because it does not belong in the WTO as a matter of structural integrity. They point out that the WTO has been effective due to its focused mandate of promoting free trade backed by the real threat of sanctions. If myriad special interest lobbies, such as IP and labor, are allowed to attach provisions to WTO rules, then the WTO's effectiveness will be diffused and diminished (Bhagwati 2002).

***Protecting IP is wasteful unless it can be properly administered:*** Some IP enforcement critics feel that that developing countries should spend their resources first addressing fundamental problems such as governance, health care, and education, before attempting to grapple with an issue as complex and “unessential” as IP protections. These critics claim that building IP protection infrastructure, estimated to cost \$1.5 million to initiate plus ongoing expenses, is money wasted in many developing countries (World Bank 2001). Since these countries have neither the formal laws to protect IP nor the resources to enforce them, efforts will be in vain. In fact, many developing countries have no legal history of IP protection at all (Long 2001). Furthermore, one World Bank study estimates that developing nations spent a minimum of \$7.5 billion on IP related payments in 1999, money that might have been better spent elsewhere (World Bank 2001). Finally, valuable human capital, often in short supply locally, will be diverted away from more important goals such as building responsible fundamental government institutions.

### **Common Arguments to Enforce IP Protections in Developing Countries**

Arguing against sharing IP with the developing world is a delicate endeavor: one must avoid appearing insensitive to the challenges these countries face, while proving that private ownership of ideas encourages innovation and its erosion should be avoided if developing countries are to maximize their potential returns from IP. Tactically, proponents of this view often argue for IP protection in conjunction with technical assistance to aid developing nations in building their own domestic IP infrastructures.

***Developing countries need to develop IP institutions, not destroy them:*** This opinion holds that rich countries should encourage and support poor countries to develop their own IP protection infrastructure so that they too can share in the benefits IP provides. The first step in this process is to demand that developing countries respect rich country IP. By anchoring IP among the poor, developing nations will eventually unlock the inventiveness of their own populations and drive internal growth. Conversely, if they are simply allowed to ignore IP, developing nations are, in effect, trading short term aid for sustainable long-term growth. The philosophical underpinnings of this reasoning are explained by Hernando de Soto in *The Mysteries of Capital*, in which he argues that the absence of property rights in Latin America has constrained economic potential by restricting capital formation.

*Countries that protect IP attract investment and trade:* Contradicting the previous argument that IP protections do not aid economic growth, proponents of this view claim that IP protections encourage economic development by making markets “safe” for IP intensive investment. Keith Maskus has estimated that several developing economies could add half a percent to their GDP growth by instituting and enforcing IP protections, although he acknowledges that benefits may not accrue to the poorest of the least developed countries (LDCs) due to their lack of ability to attract investment for other reasons (2000). This is a long term argument; if developing countries create a predictable IP environment, multinationals will be willing to make productivity enhancing IP investments locally, including associated beneficial technology transfers. Foreign trade will increase, assuming it is allowed, as firms no longer fear losing control of their IP in the invested country. Eventually local innovators will be encouraged to develop their own IP as well.

### Assessment

Both sides of this issue have posted credible arguments supporting their claims. Recently, reform proposals promoting the differing visions of developed and developing nations were introduced. In summer 2004, a Brazil-Argentina led “Development Agenda,” with 14 developing nation co-sponsors, was presented to WIPO. It proposed that a set of exceptions to WIPO IP protections be granted to aid developing countries. In response, in April 2005, the United States proposed a new Partnership Program within WIPO that increases technical assistance to developing nations to help them establish their own IP protection regimes (Intellectual Property Watch 2005). As of April 2006 discussion remains ongoing in both cases.

When the preceding arguments for and against developing world IP protections are considered only through the prism of software IP, several distinct characteristics of software are important to remember. These characteristics include:

1. Software IP protection can be easily circumvented using commodity inputs (e.g., unskilled labor, blank CDs, cheap duplication “burner” machinery).
2. Software enhances the productivity of labor for both individuals and firms, for which they are willing to pay some price.
3. Infrastructure for duplicating and distributing software already exists in developing countries through informal and/or illegal piracy networks.
4. Most software increases in value through “network effects,” meaning that the more people who use it, the more valuable it becomes (known as “Metcalfe’s Law”).

Given these inherent properties of software, I believe that software IP protections can and should be relaxed for developing countries through a solution that distributes benefits of the IP among rights holders, local governments, and developing world market participants.

## **A SOFTWARE IP PROPOSAL**

The key to solving the problem of software piracy in developing countries is integrating the interests of relevant stakeholders. Governments must have an incentive to legislate and enforce software IP protections, software IP owners need to receive a return on their IP assets, and distributors must retain the ability to profitably operate their networks. Each of these participants needs to agree on a solution in order to capture the benefits of a legal software IP deployment mechanism discussed in the introduction to this paper, including job creation and increased labor efficiencies. Currently only the distributors are motivated to perform efficiently.

Before presenting a proposal to unite the interests of developing country parties which allows them to optimize the value of software IP, I must address the skeptics who fear that the entrenched corruption and lack of governmental control in many developing countries make any solution impossible. In Ghana, prior to the enactment of a new copyright enforcement system in 1992, 90 percent of music sold domestically was pirated. The institution of a mandatory “banderole” licensing system modeled on Portugal’s successful system reversed this trend. It required all music sold to bear a government certification “banderole” stamp bought by vendors as a prepaid income tax, which caused the piracy rate for music in Ghana to drop below 15 percent (Mould-Iddrisu 2005). A lively domestic recording industry, spurred by foreign investment, subsequently established itself (Mould-Iddrisu 2005). Although music is different from software economically due to its consumption as opposed to investment purpose, both goods rely on copyright IP protection and share identical means of production and distribution, making them comparables in terms of market development. Similarly, the U.S. Trade Representative has recognized Malaysia for making steady progress on IP enforcement in recent years, especially regarding the reduction of CD piracy including software (Office of the United States Trade Representative 2005). Although both examples concern mainly entertainment content, there should also be great incentives to establish a working model for software, given software’s productivity enhancing effects, which create strong adoption incentives for all stakeholders.

My proposed solution to integrate these stakeholders consists of five steps:

### **A Proposal to Maximize the Benefits of Software IP in the Developing World**

1. Establish a public-private partnership entity (“DevWare”) that produces legitimate copies of the software products and distributes them initially at, or slightly below, their current pirated black market cost in selected developing countries.
2. DevWare is managed and operated as a private multinational corporation wholly owned by the software copyright IP owners.
3. Profits from DevWare are distributed equally between local government and copyright IP owners.
4. Distribution is assigned to existing networks currently selling pirated products, but they must register with DevWare before buying their (low priced) products.
5. Copyright IP owners are granted tax breaks in their developed country domiciles for a limited percentage of the lost revenues incurred by selling their IP below its home domicile average market price. In return, developed world software IP owners agree to waive TRIPS compliance in DevWare countries for a limited phase-in time period.

***Step 1: Establish a public-private partnership entity (“DevWare”) that produces legitimate copies of the software products and distributes them at or slightly below their current pirated black market cost in selected developing countries.***

Neither local governments nor software IP owners have the power to establish functioning software distribution mechanisms on their own in the developing world. As the case of Ghana shows, properly motivated governments have enforcement power, but they don’t have products, such as Microsoft Excel or Autodesk AutoCAD, that citizens can use to increase productivity. Software IP owners, on the other hand, have products and lack enforcement power, as they are merely private firms without law-making authority. However, working together, motivated by self-interest, these two parties can compliment each other’s weaknesses. Software IP owners such as Microsoft and Autodesk can be encouraged to support their products locally if they are assured their IP will be protected, which local governments can ensure by agreeing to persecute illegal software piracy, receiving increased tax revenues and greater labor productivity in return.

For the plan to succeed, DevWare products must be cost competitive with existing pirated competitors, at least initially, or they will not be ac-

cepted by the market. As discussed previously, software piracy is too easy and too cheap to be regulated out of existence in developing countries with poor enforcement mechanisms.

All of the costs in the packaged software industry are incurred up-front in research and development expenses; once the product is released, its marginal cost of production is essentially zero—just the cost of the physical CD platter upon which the software code is imprinted. For this reason, software firms have a strong economic incentive to sell as many copies of their existing products as possible, even at low price points. Since all of the associated expenses have already been paid, any additional sale goes directly to the firm's profit. Software firms are loath to lower prices much, however, for two reasons. First, poor public relations might cause low future price expectations among consumers. Second, the billing complexities involved in maintaining different prices across hundreds of markets and sales channels quickly become unmanageable. All the same, some firms do adjust prices in the developing world in pursuit of growth. Microsoft, for example, slashed its consumer software prices over 90 percent in Thailand in 2003, mainly to ward off the growing threat of the competing Linux operating system (Yong-Young 2003).

It costs less than fifty cents to manufacture a typical CD used to distribute software. It is to be expected that a large, well capitalized profit-seeking multinational such as DevWare will be able to more efficiently produce these CDs than the existing small scale piracy shops that currently supply the black market in the developing world. Therefore, DevWare's lower costs should allow it to enable this strategy by supplying the product at or below current black market prices. Distributors using legitimate DevWare products in the developing world will be able to out-compete their illegitimate competition based on price alone, not to mention increased product quality and consistency.

***Step 2: DevWare is managed and operated as a private multinational corporation wholly owned by the software IP owners.***

In order to achieve the lower costs from economies of scale outlined in Step 1 necessary for this plan to work, DevWare must be managed efficiently. For several reasons, the most appropriate corporate governance structure to ensure this outcome for DevWare is a private multinational corporation. Most prominently, given the lack of management capacity in developing world governments, and its surfeit among private sector software copyright IP owners, DevWare should be owned and operated by the IP owners to ensure it operates efficiently, utilizes its scale, and

remains independent from local political influence. Private ownership ensures that DevWare—which is a business, not a charity—can employ the private sector incentive structures and flexibility necessary to make any commercial venture successful.

DevWare's initial shareholders should be the software firms whose products it distributes. Ownership should be established proportionally based on the percentage of revenues that derive from any single firms' products, which guarantees that the firms with the best local products are rewarded for serving DevWare markets better than their competitors. As with any corporation, shareholders will elect the DevWare management team responsible for operating the company. Ownership proportions should be adjusted annually based on the previous year's product revenues to ensure innovators are rewarded.

***Step 3: Profits from DevWare are distributed equally between local government and the software IP owners.***

Both local governments and software IP owners must be motivated to participate in developing world software markets. By recapturing the profits from the black market software piracy trade, estimated to be in the tens of billions of dollars annually in the developing world, both local governments and IP owners will have concrete incentives to participate in this plan.

Positive externalities for local governments could be just as important as recovered revenues. By legitimizing a portion of their underground economy, local governments will spread the rule of law and learn effective management techniques they can apply to other areas of their bureaucracies.

***Step 4: Distribution is assigned to existing networks currently selling pirated products, but distributors must register with DevWare before buying and distributing DevWare products.***

Any plan that hopes to succeed must take into account the interest groups that profit from the current situation, as they can be expected to defend the status quo vigorously unless offered a premium alternative. Distribution of DevWare products should be assigned to existing piracy networks to gain their cooperation and exploit their existing productive capacity, which will now be transferred to legitimate means. Of course, competition should also be invited from new distribution partners as well. All distributors will be required to register and maintain accounts with DevWare as in any normal product distributorship business agreement. Registration provides a significant boost towards encouraging the establishment of legitimate business operations that can be effectively regulated.

Distributors will register with DevWare for several reasons. First and most importantly, as discussed previously in Step 1, the DevWare products will be at least as cheap as their existing providers. Second, they will benefit from the improved quality and consistency that an efficient and legitimate multinational supplier can provide. Third, given the choice, most distributors will prefer a legal supplier to their alternative black market sources due to the lower risk it provides in terms of government prosecution. This third reason is reinforced by local governments which are now motivated to crackdown on illegal software piracy in order to boost their previously uncollected tax revenue through DevWare.

*Step 5: Copyright IP owners are granted tax breaks in their developed country domiciles for a limited percentage of the lost revenues incurred by selling their IP below its home domicile average market price. In return, developed world software IP owners agree to waive TRIPS compliance in DevWare countries for a limited phase-in time period.*

Software IP owners will lose money (possibly hundreds to thousands of dollars per copy) relative to the developed world market price on every product sold through DevWare. Of course, previously they received nothing due to piracy, but still their perceived losses are likely to be too large to entice their participation without other incentives.

For this reason, developed world governments should establish limited tax credits for software IP owners based on a percentage of lost revenues on products sold through DevWare. For IP owning firms, the economic incentives would be similar to current corporate Research and Development (R&D) credits, which have been very effective in stimulating corporate R&D. These credits, which totaled \$6.4 billion in the United States in 2001, grew at an annual rate of 11 percent throughout the 1990s, as compared to just 5 percent growth for non-tax credit R&D expenditures (Moris 2005). Software firms accounted for \$603 million of the total, proving their affinity for such incentives.

Foregone government taxes should be classified under the foreign aid budget, providing an attractive market based solution for developed countries looking to support recent development aid proposals such as the UN's Millennium Development Goals, but unable to find projects that meet their standards of accountability (LaFraniere 2005). Administration of the program would be carried out by the Internal Revenue Service using a process similar to IRS Form 6765, which is currently used by firms to claim the R&D tax credit.



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## CONCLUSION

Intellectual property protections are well established in the developed world. As rich countries continue their transformation to more information-intensive activities, IP protected intangible assets constitute an increasingly valuable portion of their economies. Under current international IP law, the developing world is effectively limited in maximizing the benefits from these knowledge assets despite the fundamental non-excludable nature of ideas. Sound principles and determined stakeholders advocate opposing views of how to reconcile the developing world's access to these assets. Some argue for the maintenance of these laws, and some believe they should be weakened. The international community is currently attempting to decide how to resolve the issue.

Software constitutes a special class of IP assets with certain characteristics that suggest a properly designed solution is possible to extend the benefits of software IP to the developing world. Any functional program, however, must incorporate the interests of all stakeholders if it is to succeed, including the established software distribution infrastructure in developing countries. A public-private partnership including local developing world governments and private sector software IP owners can be structured to effectively improve benefits for all. By establishing a revenue sharing agreement, maintaining private sector ownership, employing existing distribution networks and leveraging developed world aid budgets, such a partnership can deliver success while encouraging the growth of effective government in developing countries.

## NOTES

<sup>1</sup> Of course, this point restricts my definition of software for the purposes of this paper to include “application” software only—excluding software designed for entertainment purposes such as video games.

<sup>2</sup> Up to this point when I spoke about protection of “ideas,” I actually meant protection of “expression of ideas,” a simplification I will continue to make throughout the text.

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