A new way to measure success in the IT industry

Meir Perez Pugatch introduces a project organized jointly by MIP and the Stockholm Network, in association with Progress & Freedom Foundation, to assess the level of IP protection available for the IT industry in the world's major markets

One of the most fundamental problems in the current public discussion on IP policies is the lack of sufficient information about the specific composition of an IP environment that would best support the high-tech industries (in general) and the information technology sector (IT) in particular.

With the intention of providing quality information, *Managing Intellectual Property*, the Stockholm Network (SN), Europe's leading think tank and market-oriented network, and the Progress & Freedom Foundation, a leading US-based think tank, have developed a statistical index aimed at measuring different elements of IP protection at the national level. Based on a model developed by Meir Pugatch, head of the Stockholm Network IP & Competition programme, this Index aims to provide a tool for measuring the strength of IP rights in the IT sector in different countries.

Initially the IT-IP Index will focus on the US, on selected EU members and Japan. In subsequent stages the IT-IP Index could also be applied to additional countries, both developed and developing, in order to increase the measurement sample. The initial results of the Index will be presented at the Index launch event later this year.

This Index aims to provide a tool for measuring the strength of IP rights in the IT sector in different countries

Two elements are essential for this exercise:

- First, we need to construct a coherent and transparent method of measuring the strength of national IP environments for the IT sector. This method should strive to be as scientific and objective as possible to allow for accurate measurements. In doing so we will be able to compare different national environments, as well as to establish the relative strengths or weaknesses of IT-related IP rights in a given country.
- Second, we need to create a broad template that would essentially allow us to measure national IP environments across the board. In other words, while our analysis focuses on the national context, it should not be confined to a specific country, but rather be applicable also to other countries, both developed and developing.

Existing measurements and indices

Over the years, there have been numerous studies aimed at assessing or even measuring the strength of national IP regimes, using both quantitative and qualitative methods of analysis. But it was not until the late 1980s that the attempts to measure the strength of national IP regimes across the board became more systematic and serious.

Gadbaw and Richards initiated the first study of this sort. They surveyed the national IP environments of seven developing countries (Argentina, Brazil, India, Mexico, South Korea, Singapore, and Taiwan) between 1984 and 1998, examining the protection of copyrights, patents, trade marks, semiconductors, chip design and trade secrets. They found that between 1984 and 1988 the level of IP protection in these countries was lower than the minimum IP standards provided by developed countries.

In 1990, Rapp and Rozek (RR) constructed the first statistically based cross-country analysis of IP regimes, based on the patent laws of 157 countries. The perceived strength of national patent protection was based on the recommendations of the US Chamber of Commerce Intellectual Property Task Force dealing with the minimum standards of patent protection, which include: coverage of inventions, examination procedures, term of protection, and transferability of rights, compulsory licensing and effective enforcement against infringement. Generally speaking, the RR index assigns a value of 5 when national laws conform to the proposed standards of the US Chamber of Commerce and a value of 0 when there are no national laws to protect IP rights. According to the RR index, countries that score the value of 5 include the US, the UK, France, Germany, Switzerland and Sweden. Countries that receive a low score, either 1 or 0, include China, Brazil, India, Indonesia, Peru, Turkey and Oman.

The Ginarte and Park (GP) index of 1997 is probably the most widely used and accepted standard for measuring cross-national strength of IP rights.

By building on the approach of Rapp and Rozek, but making it more comprehensive, the GP index focuses solely on the measurement of IP rights. It also ranks countries from 0 (weakest level of patent protection) to 5 (highest level of patent protection), but the statistical construction was more sophisticated than the RR index.

The GP index originally measured the cross-national strength of patent rights in 110 countries for the period 1960 to 1990, but has since been extended. The index was coded on the basis of five categories of patent law. Each of the main categories consists of sub-categories that describe conditions that either exist or are absent in a country's patent regime.

In many respects the GP index has become the common standard in studies that focus on or relate to the measurement of IP rights. Numerous studies have also used the GP index to

Table 1 – terms of exclusivity: baseline values

	Baseline in years	Legislation model
Term of exclusivity Formula: Country's *n* years of basic IP right term/baseline value		
Basic patent	20	TRIPs
Basic copyright	95	US
Basic term of topographies of semiconductor products	10	WIP0
	BSA/IDC data	
Piracy rates Formula: (100 – % country's piracy rate)/100		
Level of piracy rates	0%-100%	

analyze patent changes in the post-TRIPs era. For example, two separate studies by Mahaevanvijaya, and Park and Wagh have updated the GP index to cover the years 1995 and 2000.

Nevertheless, the GP index suffers from two weaknesses. First, it focuses only on patents. Second, since the GP index is designed to measure the overall strength of national patent regimes, it does not take into account components that are specifically relevant to the IT sector, thereby making the index much less reliable for this sector.

To sum up, there is a significant amount of research, as well as existing models, aimed at statistically measuring the strength of national IP environments.

Nevertheless, these measurements are subject to two major weaknesses:

- First, existing indices are based on generalizations. They do not make a distinction between different sectors that are influenced by national IP policies. This means that we can use the existing indices to learn about the overall strength of a given national IP environment, but not to analyze the specific IP strength of different sectors, such as the IT, pharmaceutical and telecommunication sectors.
- Second, existing indices tend to focus on a single IP component, such as patents or copyrights. But since different industrial sectors are based on multiple IP components, it is not possible to assess the real strength of different national IP environments using only a single-factor index.

Therefore, the IT-IP Index will seek to further build on existing IP indices (and specifically on the GP index) in order to measure the national IP strength of a specific sector – the IT sector.

We therefore propose a methodology for constructing a sector-specific IP Index that is based on specific IP components relevant to the IT sector.

IT-IP Index: proposed methodology

Categories

The proposed model is based on the methodology of the GP index, but with one distinct difference. Unlike the GP index, which is based only on patents, the IT-IP Index consists of various forms of IT-related IP rights. Naturally, the Index includes patent protection, but it also considers other protection elements, including copyright-related factors.

Statistically, the Index measures four major categories:

- Term of exclusivity.
- Scope and coverage of essential components.
- Strength of exclusivity.
- Enforcement.

Each category is further divided into sub-categories:

Term of exclusivity

- Basic term of patent protection.
- Basic term of copyright protection.
- Basic term of topographies of semiconductor products.

Coverage of essential components

- Patentability of computer-implemented inventions (CII).
- Existence of digital rights management (DRM) legislation.
- Database protection (either via copyrights or via *sui-generis* rights).
- Prohibition of parallel imports without the IP owner's consent.

Strength of exclusivity

- Restrictions on the use of compulsory licences on copyrighted and patented works.
- Use of competition rules as a tool for overriding IP rights is restricted to cases that involve clear abuse of IP rights such as preventing the introduction of new and innovative products to the market.
- Use of open standards is subordinate to IP right protection (both for copyright and patents).
- Clear limitations on the fair-use paradigms based on three-step test.

Enforcement

- Piracy rates (from 0% to 100% based on Business Software Alliance (BSA) figures).
- Civil and procedural remedies (injunctions, damages for injuries, destruction of infringed and counterfeited goods).
- Criminal procedures, including imprisonment.
- Special designated (by law) policing actions against piracy and counterfeiting.
- Overall the Index consists of 18 indicators.

Scores

Each category can score between 0 and 1 and the cumulative score of the Index ranges between 0 and 5.

Similar to the GP index, each category includes sub-categories of a binary nature, that is, each category is assigned either the value 0 – if the particular IP component does not exist in a given country – or 1 if the particular IP component does exist.

The category term of exclusivity is calculated numerically. This is done by dividing the actual term of exclusivity of each sub-category by a standard base line.

For example, the standard base line of the basic patent term is 20 years. Thus, the numerical formula for this sub-category is *n* years of basic patent term/20. If a country has a patent term of 20 years the value it scores in this sub-category category equals 1. If it has less then 20 years basic patent term then the score will be less than 1.

In the enforcement category, piracy rates are also calculated numerically. Piracy rates are based on the BSA and IDC Global Software annual studies on global piracy in the software sectors. In their studies of 2003 and 2004, the BSA and IDC examined operating systems and consumer applications. Generally, the BSA/IDC methodology of calculating piracy rates in each country is based on the following phases:

Table 2: weighting for each sub-category

Category	Sub-category	Weight (%)	Total
Term of exclusivity (total weight 25%)	Basic term of patent protection	40%	
	Basic term of copyright protection	40%	
	Basic term of topographies of semiconductor products	20%	
		Total	**100%**
Scope and coverage of essential components (total weight 25%)	Patentability of computer-implemented inventions (CII)	20%	
	Existence of digital rights management (DRM) legislation	20%	
	Database protection (either via copyrights or via *sui generis* rights)	20%	
	Prohibition of parallel imports without the IP owner's consent	20%	
		Total	**100%**
Strength of exclusivity (total weight 25%)	Restrictions on the use of compulsory licence in copyrighted and patented products	40%	
	Use of competition rules as tool for overriding IP rights is restricted to cases that involve clear abuse of IP rights, which aim to prevent the introduction of new and innovative products to the market.	20%	
	Clear limitations on the fair-use paradigms based on a three-step test	20%	
	Use of open standards are subordinate to IP protection (both for copyrights and patents)	20%	
		Total	**100%**
Enforcement (Total weight 25%)	Piracy rates (based on BSA figures)	40%	
	Civil and procedural remedies (injunctions, damages for injuries, destruction of infringed and counterfeited goods)		
	Civil remedies	20%	
	Criminal procedures	20%	
	Dedicated (dictated by law) policing actions against piracy and counterfeiting	20%	
		Total	**100%**

1) Calculating total software base: the total amount of software, legitimate and pirated, installed during the year. This figure is obtained by multiplying the number of PCs receiving new software during the year by the average number of software packages per PC that were installed in 2004.
2) Calculating total of pirated software: the difference between paid-for and legitimate packaged software units and the total software base.
3) Calculating total piracy rate: the percentage of the total packaged software base that is pirated.
4) Calculating total value of pirate software: the retail value of pirated software. It is calculated using the size of the legitimate software market and the piracy rate. The actual formula is: value of pirated software = (legitimate market)/(1 – piracy rate) – legitimate market.

Accordingly, the numerical formula for this sub-category is (100 – % country's piracy rate)/100. For example, if a country has a piracy rate of 40% the value it scores in this sub-category equals 0.6. If it has a piracy rate of 0% than the value it scores is 1 and so forth.

Baseline values are based on the maximum values that can be found in a country's IT-IP legislation models.

Weights

Ginarte and Park have demonstrated in their paper that the GP index is not sensitive to equal weighting (or un-weighting) of categories. It is therefore assumed that the categories of this Index should also have an equal weighting. This assumption is logical from an intuitive perspective, given that each category of the proposed Index is essential to the existence of a robust IT-IP regime.

However, while the principle of equal weighting (or-non-weighting) may apply to principle categories, there is a need to apply weights to the different sub-categories. This is because some sub-categories are more important than others in terms of substantial IT-related IP protection. For example, for the purpose of this model, we assume that the basic terms of patents and copyrights weight more than the term of topographies of semiconductor products.

The obvious methodological problem of applying unequal weighting to different categories is the risk of making the index more arbitrary. Nevertheless, given the choice between applying different weights – that are based on arbitrary yet logical assumptions on the relative importance of different IP components – and the application of equal weights – which are not arbitrary yet illogical – the former alternative is preferable.

It should also be noted that, for the purpose of consistency and coherent application of weighting to the different sub-categories, two weights are applied according to the following criteria:

- **Core component** – a component that is fundamental to the existence of an IT-IP regime in a given country: weight equals 40% or more.
- **Significant component** - a component that greatly contributes to the level of IT-IP regime in a given country: weight equals 20%.

The weights proposed for each sub-category are shown in table 2.

Strengths and weaknesses of the proposed IT-IP Index

First, and most importantly, the new IT-IP Index provides a more sector-specific tool for measuring national IT-related IP environments than any other index.

Existing IP indices, as surveyed above, tend to focus on national protection of IP rights as a whole, without making a distinction between different fields of technology. This means that there may be cases in which a weakness in the level of IP

protection (and, at times, several IP deficiencies) provided to the IT sector are overlooked in terms of measurement.

The proposed IT-IP Index can provide a more accurate measuring tool of the level of IT-related IP protection in a given country.

Second, the new IT-IP Index expands beyond the measurement of patents and copyright. This is highly important because the IT sector is usually associated with copyright. Today, the increased complexity of product development, as well as the challenges facing the commercialization and interactions of IT products and services in different markets, require a much wider set of IP factors. So far, these factors have not been taken into consideration in terms of measurements. It is therefore important both to identify these factors and to measure their contribution to the overall level of IT-related IP protection in a given country.

Third, the new IT-IP Index may enable both policy makers and corporate officials to compare and evaluate the level of IT-related IP protection in different countries. Moreover, since the proposed index is numeric by nature (as it is based on the GP index) it will be best utilized when sampling as many countries as possible. The ability to compare a large sample of countries is further strengthened by the ability to measure the strength of national IT-related IP regimes over different points of time (this feature is also based on the GP index), thereby identifying national protection trends.

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Fourth, the proposed index could at a later stage also be adjusted to measure IP protection in other fields of technology, such as music and films, electronics and pharmaceuticals.

The proposed IT-IP Index has two main weaknesses. As noted earlier, the issue of discretionary weighting (though confined to three groups) makes the index more arbitrary compared with other indices such as the GP index. The choice is between applying an equal weight to each sub-category (which reduces the risk of discretion but makes the index quite illogical, as some sub-categories are clearly more important than others) and applying weights that are based on subjective estimates. Between these two alternatives, the latter seems more appropriate, yet the risk of discretion remains, in the sense that opinions can vary about the relative weight of each sub-category.

Also, given that the proposed Index breaks new ground with regard to the protection of IT-related IP rights, it is possible that the 18 indicators above do not fully represent the entire IT-related IP spectrum.

Nevertheless, it is likely that the indicators provide a fairly comprehensive picture of the status of IT-related IP protection in a given country. Naturally the Index can be, and should be, improved in the future.

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