

Index reveals EU's IT innovation deficit

A new index measures the strength of IP protection for the IT industry in 10 key markets. **Meir Perez Pugatch** explains how the index was compiled, and discusses some of the findings

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

In order to narrow such gaps, and with the intention of providing quality information, the Stockholm Network, Europe's leading pan-European think-tank and market-oriented network, in association with *Managing Intellectual Property* and The Progress & Freedom Foundation, has developed a new and innovative statistical index aimed at measuring the strength of IP rights in the IT sector in different countries.

The IP-IT Index was launched at a seminar in Brussels in November 2006 where we explained the background and methodology of the project. The Index positions countries' IP environments relevant to the IT industry on a mathematical scale from 0 to 4. The IP-IT Index factors in 14 components that are relevant to the IT sector, including the term of exclusivity, scope and coverage of essential components, strength of exclusivity and enforcement.

When applied to a selection of countries, the US was found to have the strongest level of IP protection (3.92), followed by Singapore (3.73). The European Union as a whole, on the other hand, scored only 2.47, which is 37% lower than the US. But individually some of the EU countries are quite strong. Germany is on top of the list with a score of 3.59, followed by the United Kingdom (3.50), Sweden (3.37), Norway (3.37) and France (3.11).

IT-related IP elements that are particularly weak at the EU level include:

- the term of copyright protection;
- failure to harmonize the patentability of computer-implemented inventions;
- parallel importation of copyrighted and patented products;
- preference for open standards based on open source, which seek to override IP rights;
- shift towards a predatory approach that seeks to establish the supremacy of competition rules over IP rights; and
- a relatively high level of piracy.

A brief history of IP 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 copyright, 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. These included coverage of inventions, examination procedures, term of protection, transferability of rights, compulsory licensing and effective enforcement against infringement.

Generally speaking, the RR index assigns the value 5 when national laws conform to the proposed standards of the US Chamber of Commerce, and the value 0 when there are no national laws to protect IP rights. According to the RR index, countries that scored the value of 5 included the US, the UK, France, Germany, Switzerland and Sweden. Countries that received a low score, either 1 or 0, included 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 measuring 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 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 industry, thereby making the

Table 1 IP-IT Index: Countries' scores

Country	Term of exclusivity	Scope and coverage of essential components	Strength of exclusivity	Enforcement	Total
United States	1.00	1.00	1.00	0.92	3.92
Singapore	0.89	1.00	1.00	0.84	3.73
Germany	0.89	0.80	1.00	0.89	3.59
United Kingdom	0.81	0.80	1.00	0.89	3.50
Sweden	0.89	0.80	0.80	0.89	3.39
Norway	0.89	0.80	0.80	0.88	3.37
France	0.89	0.80	0.80	0.81	3.31
Japan	0.81	0.80	0.40	0.89	2.90
Brazil	0.69	0.60	0.80	0.74	2.84
EU	0.81	0.40	0.40	0.86	2.47

Table 2 IP Index for the IT sector: structure, subcategories and weights

Category	Sub-categories - explained	Weight (%)
Term of exclusivity (total 25%)	Term of patent protection	40%
	Term of software copyright protection	40%
	Term of protection of topographies of semiconductor products	20%
<i>Total</i>		<i>100%</i>
Scope and coverage of essential components (total 25%)	Patentability of computer-implemented inventions	40%
	Legislation that allows for the active use of digital rights management (DRMs)	20%
	Database protection (either via copyrights or via sui-generis rights)	20%
	Complete ban on parallel imports without the IP owner's consent	20%
<i>Total</i>		<i>100%</i>
Strength of exclusivity (total 25%)	Restrictions on the use of compulsory licences in copyrighted and patented products (use of the essential facilities doctrine is restricted to exceptional cases and refusal to supply an IP right is not treated as an abuse as such)	40%
	Clear limitations on the principle of fair-use based on the Berne three-step test	40%
	Government procurement policies are not biased towards standards based on open-source and/or do not discriminate against the use of proprietary standards	20%
		20%
<i>Total</i>		<i>100%</i>
Enforcement (total 25%)	Level of piracy rates (based on BSA figures)	40%
	Effective civil and procedural remedies (injunctions, damages for injuries, destruction of infringed and counterfeited goods)	20%
	Effective criminal procedures, including the possibility of imprisonment	20%
	Dedicated policing actions against piracy and counterfeiting	20%
<i>Total</i>		<i>100%</i>

Table 3 Baselines values

Term of exclusivity	Baseline in years	Legislation model
Patents	20	WTO TRIPs Agreement
Software copyrights	95	United States
Topographies of semiconductor products	10	WTO TRIPs Agreement
BSA Piracy Rates (2005)	Level of piracy rates	0%-100%

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 and 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 telecommunications sectors.

Second, existing indices tend to focus on a single IP component, such as patents or copyright. 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.

The IT-IP Index therefore seeks 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.

The IP-IT Index explained in brief

The IP-IT Index measures four major categories: term of exclusivity, scope and coverage of essential components, strength of exclusivity and enforcement.

Categories

Each category is further divided into sub-categories, including:

Term of exclusivity

- 1) Term of patent protection.
- 2) Term of software copyright protection.
- 3) Term of protection of topographies of semiconductor products.
- 4) Patentability of computer implemented inventions.

Scope and coverage of essential components

- 5) Legislation that allows for the use of digital rights management (DRM).
- 6) Database protection.
- 7) Complete ban on parallel imports without the IP owner's consent.

Strength of exclusivity

- 8) Restrictions on the use of compulsory licences in copyrighted and patented products (use of the essential facilities doctrine is restricted to exceptional cases and refusal to supply an IP right is not treated as an abuse as such).
- 9) Clear limitations on the principle of fair use based the three-step test.

- 10) Government procurement policies are not biased towards standards that are based on open source and/or do not discriminate against the use of proprietary standards.

Enforcement

- 11) Level of piracy rates.
 12) Effective civil and procedural remedies.
 13) Effective criminal procedures.
 14) Dedicated policing actions against piracy and counterfeiting.

For a fuller description of the sub-categories see Table II.

Calculations

Each category can score values between 0 and 1. The cumulative score of the Index ranges between 0 and 4. Each category includes sub-categories of a binary nature, that is each category is assigned either the value of 0 – if the particular IP component does not exist in a given country – or 1 – if the particular IP component does exist in a given country.

The category term of exclusivity is calculated numerically by dividing the actual term of exclusivity of each sub-category by the maximum existing baseline of that category (see Table 2). For example, the baseline of the maximum copyright term is 95 years (in the US). Therefore, the numerical formula for this sub-category is $n \text{ years of copyright term}/95$.

Piracy rates are also calculated numerically. They are based on the Business Software Alliance (BSA) and IDC Global Software annual studies on global piracy in the software sectors.

Weights

Based on previous indices (the Ginarte Park Index in particular), it is assumed that the four major categories of this Index should have an equal weighting. Therefore, the weight of each category equals 25% (and in total 100%).

Within each category the Index applies two different weights, which reflect the relative importance of each component. 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 an IT-IP regime in a given country – weight equals 20%.

Implications for the EU

While the IP-IT score of the EU is disappointing it is certainly not surprising!

Formally, the EU has recognized the importance of innovation to its economic future, including the need to protect IP rights. But although the past decade has been filled with grand master plans, such as the Lisbon Agenda and other follow-on strategies that seek to improve the EU's IP environment (such as in the case of the computer-implemented inventions directive), the EU has yet to catch up with its major trading partners.

Different indicators suggest that the innovation gap between the EU, the US and Japan has not been narrowed and possibly has even increased.

For example, the gap in the patenting trends, broadly measured as the ratio of the number of patent grants per person, between the EU, the US and Japan is a serious cause of concern. A gap of 50% was identified between the US and the EU. Also, the EU is a net importer of IP-protected products.

Also, in 2004 the US had a trade surplus of \$28 billion from

IP-related activities while the EU had a net trade deficit of \$17 billion from such activities.

The Index provides yet another proof that the EU must improve its IP environment, and fast, if it wants to have a real shot in the global innovation game.

A few examples may be given. The Index demonstrates that while most of the European countries (as well as the US and Japan) do allow for the patenting of computer-implemented inventions, the EU has failed to pass such legislation at the pan-European level. One can recall the fiasco of the failed CIID legislation last year (July 2005). The Index also finds a serious gap between the pan-European and national levels towards the issue of interoperability and standards. For example, the European Interoperability Framework for Pan-European eGovernment Services (2004) recommends that, with regard to standards that are based on IP rights, the “intellectual property – ie patents possibly present – of (parts of) the standard is made irrevocably available on a royalty free basis”. When comparing the relationship between IP rights and competition rules, the Index finds that EU members as well as the US recognize the importance of the former and do not treat the issue of the refusal to license an IP right as an abusive act as such. On the other hand, the European Commission's approach towards this issue seemed to have shifted towards a much more predatory mode. The European Commission seems to no longer adhere to the *Magill* principle established by the European Court of Justice in 1995 – according to which a compulsory licence will be invoked in *exceptional circumstances* and when the refusal to license prevents the launch of a *new product* for which there was proven consumer demand. De facto, the EU's competition authority today, especially in light of its legal battle with Microsoft, seems to promote a policy that favours the supremacy of competition rules at the expense of the protection of patents and trade secrets.

The recent motion for resolution of the European Parliament (October 4 2006) on the future of patent policy in Europe seems to be a step in the right direction. But one can only hope that, this time, the attempts to improve Europe's IP environment will not go down the drain.

Advantages and weakness of the IP-IT Index

First, and most importantly, the new IP-IT Index, perhaps for the first time, provides a more sector-specific tool for the measuring of national IP environments relevant to the IT sector.

Existing IP indices, as surveyed above, tend to focus on the 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 pharmaceutical IP protection (and, at times, several IP deficiencies) is overlooked in terms of measurement.

The IT-IP Index provides 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 copyrights. This is highly important because, traditionally, the IT sector is usually associated with copyright. However, today, the increasing complexity of the process of as well as the challenges facing the commercialization of IT products 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. Therefore, it is 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 enables both policy makers and corporate officials to compare and evaluate the level of IT-

related IP protection in different countries. Moreover, since the 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 IP regimes over different points of time (this feature is also based on the GP index), thereby identifying national protection trends.

Fourth, at a later stage, the Index could be adjusted to measure IP protection in other fields of technology, such as pharmaceuticals.

The IT-IP Index also has weaknesses.

The issue of discretionary weighting (though confined to two groups, as explained above) makes the Index more arbitrary compared to other indices such as the GP index. The choice here 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 Index breaks new ground with regard to the protection of IT-related IPRs, it is possible that the 14 indicators above do not fully represent the entire IT spectrum. It is also possible that there may be other relevant factors that do not appear in the Index. One suggestion is to measure the time it takes to obtain a patent in a given country. Another suggestion is to include elements that are related to trade marks.

Nevertheless, it is also likely that the above 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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