

IP Management in the Software Industry – Part 1

Who owns the knowledge?

The software industry as a part of the knowledge economy

The term knowledge economy stands for the current form of our society, where individual and collective knowledge and the organization of knowledge in the transition from the industrial to the postindustrial society become the decisive factors of social and economic life.¹

Today, without appropriate software solutions, structuring and organization of this knowledge would not be possible any more. Databases, search engines or social networks became essential tools to support us in finding and exploiting the exponentially growing knowledge. And again, all such tools and solutions are based on an enormous knowledge base and respective know-how.

The products of the SW industry are therefore primarily built on knowledge and belong to the so-called intangible goods. They comprise not just the program code but also the respective specifications, documentation, test know-how, deployment know-how, etc.

For a software company it is therefore essential to gain and keep a knowledge advantage versus the competition and to convert this advantage finally into profits. However, knowledge by itself has no value. Knowledge, which is publicly accessible, cannot be monetized. For example, free scientific publications, which are posted on the Internet, do not create any money flows for the authors. At the same time, you can't gain profit from knowledge which you keep for yourself because it cannot create value for the society if hidden in a person's mind.

Economic knowledge exploitation through innovation

A software company will be more successful than its competition if it succeeds to commercialize its knowledge advantage better than the competitors. This requires the transformation of knowledge into innovation, wherein in this context innovation is to be understood as successfully turning knowledge into marketable solutions.

In the 1950s Robert Solow² (Noble price 1987) recognized that innovation is the primary growth driver for an enterprise. Therefore, the expectation is that innovative SW companies will show higher growth rates than competitors being less innovative. The faster growing companies will permanently increase the distance from the competition. A good example for innovation driven growth is SAP AG, which succeeded to dominate the market for business software for decades by introducing the innovative client-server architecture and maintaining a significant knowledge gap over the competition for a long time. As a consequence many software companies pursue a corporate strategy which is focused on innovation leveraging their knowledge advantage in innovative products.

¹ Lexikon der Politikwissenschaft; 4., aktualisierte Aufl.- München: Beck, 2010, S. 1231

² A Contribution to the Theory of Economic Growth Robert M. Solow, The Quarterly Journal of Economics, Vol. 70, No. 1. (Feb., 1956), pp. 65-94.

However, software companies often forget that in our society it may be a good idea to own the innovation which you want to market successfully. The principle of property is taken for granted in our daily life when referring to tangible goods. Nobody would use his neighbor's car without the neighbor's permission.

For intangible goods, as they are created in the software industry, the perception of property rights is often quite low. This can also be observed in the current public discussion with regards to the ACTA³ agreement, which, among other topics, is supposed to strengthen the international enforcement of IP rights. One reason for the low perception of property may be that the property in a SW innovation is only definable through immaterial rights in the SW. Whoever owns such rights to the innovation will earn the profits from the innovation in the long term and can achieve sustainable value growth of the company. Whoever makes use of innovations, where he does not own the respective rights, should expect long-lasting litigations and finally the profit leaking to the actual owner of such rights.

An impressive example is the recently started litigation of Yahoo against Facebook, where Yahoo complains that Facebook's complete model of the social network is based on Yahoos' technology protected by Yahoo's patents. The timing of this litigation just before the planned IPO of Facebook is tremendously increasing the pressure on Facebook to enter quickly into a settlement agreement. Otherwise it is hard to imagine that an investor would like to invest in a software company which does not own the rights for its innovative business model. Facebook quickly found support from IBM selling off several hundreds of patents to Facebook to defend against Yahoo. This clearly shows that the ownership question is not just a question between two fighting parties but can also involve the interests of other players in the industry.

The crucial question for a software company therefore is: how do I gain the ownership of my innovation, which is mandatory for sustaining profits in the market.

The answer sounds simple: by gaining the respective IP rights. However, in practice this is anything but trivial. There is a whole bunch of mechanisms representing such rights (intangible assets) and having major impact on the value of innovation and the company value, respectively.

Protection mechanisms for gaining competitive advantage

In a software company there are typically various classes of innovation. For protecting such innovation classes appropriate protection mechanisms are required for each class. By way of example we consider the following innovation classes:

- mental models, business models, organization
- documented knowledge
- technical systems / solutions
- design

Without claiming completeness the innovator can use the following protection mechanisms:

- copyright
- trade secrets
- patent

³Anti-Counterfeiting Trade Agreement <http://register.consilium.europa.eu/pdf/de/11/st12/st12196.de11.pdf>

- utility models
- design patents
- trademarks

The following table explains some fundamental differences between some of the protection mechanisms which we perceive to be relevant to the software industry.

protection mechanism	Properties
copyright	<ul style="list-style-type: none"> • protection against unauthorized copying, trivial extensions or adaptations for works of literature, science or art (including computer programs) • exists automatically when the work is created • ends 70 years (Germany) after the death of the author • no real blocking effect (only against imitation) • no protection for generalized conceptual solutions
trade secrets	<ul style="list-style-type: none"> • protection of internal information, whose value is based on secrecy. Publication destroys protection. • protects the overall concept if it is non-obvious and accessible only by a limited group of people • consequences under criminal and unfair competition law • no blocking effect (independent developments by 3rd parties are allowed)
patent	<ul style="list-style-type: none"> • protection for technical inventions if new, inventive and industrially applicable - against producing, offering for sale, putting in circulation, using, importing or owning an infringing embodiment of a 3rd party (prohibitive right) • for 20 years max • expensive but has real blocking effect
utility model	<ul style="list-style-type: none"> • like a patent for technical inventions (but not for methods) • not examined by the patent office, only registered • for 10 years max
design patent	<ul style="list-style-type: none"> • protection for new features of aesthetic characteristics such as form, color and design having a certain degree of originality • for 25 years max • protects the registered form of appearance of an entire product or a part of it
trademark	<ul style="list-style-type: none"> • protects marks, business indications, geographic indications to identify and distinguish the goods of one manufacturer or seller from goods manufactured or sold by others, and to indicate the source of the goods. • protects against similar signs, which may cause confusion with the protected signs • for 10 years (can be extended through fee payment) • with an obligation to use

In the following we will assign protection mechanisms to innovation classes, where the protection mechanisms are suitable to support property claims on the respective innovation.

Mental models, business models, organization

For pure mental models (abstract ideas) the only effective protection mechanism is secrecy. Models, such as for example flow models, organizational models or semantic models, normally correspond to

the original knowledge, which cannot be protected through IP rights. However, business models may include patentable aspects if they are based on a business method having technical character. An example is a cloud-based service model, where the business model of the cloud service provider is based on an improved security solution to protect sensitive customer data. Ideally business models are often associated with trademarks to create a kind of “we are the original” protection. Of course this does not prevent imitation of the business model but just think of your preferred online book store (is it Amazon?)

Documented knowledge

In most cases knowledge documented in any form (e.g., graphically or in writing) is protected by copyright. This may include the program code, specifications, design documents, training material, web page content, etc. Thereby copyright can be seen as a kind of by-product of the works itself because it is automatically created together with the creation of the works without additional cost. The copyright regime also covers all variants of open source software licenses. Of course, secrecy is also an option, as it is for all other innovation classes.

Technical systems / solutions

Technical inventions, which are part of SW solutions, can be protected by patents, utility models or trade secrets. Thereby, utility models cannot be used to protect algorithms or technical methods in general. However, contrary to a wide spread erroneous belief, SW innovations in the form of computer programs, systems and algorithms can often be subject to patent protection. A patent certainly is the strongest IP right for this innovation class because of its real blocking nature. It does not matter whether an infringer was aware of the patented invention. The only question is whether the solution falls under the claimed property of the patentee. A patent, other than copyright, is associated with additional cost.

Design patent

Design patents can be used for protecting designs, such as layouts, user interfaces or icons. However, the scope of protection is very narrow and, especially in the case of SW product related designs, a potential infringer can quickly redesign and redeploy a design around version with low efforts. Unfair competition aspects may play a role when imitating a design with the intention to create the impression that the imitation is the original.

Summary

Overall, the right protection mechanism can help the owner of the respective right to gain a competitive advantage, which finally should turn into profits. Thereby monetary effects can be achieved by either charging premium prices for the protected SW solutions or by generating additional revenue streams through corresponding license agreements. Whoever owns the innovation will also own the associated long-term and sustainable profits. The topics “patent protection of SW innovations” and “opportunities and risks when using open source” will be discussed in more detail in follow-up publications.

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