

Industry Case Study Series on IP-Management

Hilti

Business model transformation to adapt to the digitization in the construction industry

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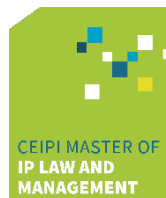


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Dr. Stefan Nöken

Since the beginning of 2007, Dr. Stefan Nöken is member of the Executive Board at Hilti cooperation, Schaan, Liechtenstein. He is responsible for the Fastening & Protection business, Application, Corporate Logistics as well as Intellectual Property. Dr. Nöken studied mechanical engineering at the Technical University of Aachen, Germany. After graduation, he worked in different positions at the Fraunhofer Institute for Production Technology, Aachen, Germany and finished his PhD in mechanical engineering. He joined Hilti in 2000 as Head of Corporate Engineering. In 2004, he took over responsibility for Supply Chain Management with the global plants, procurement and global logistics.

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PART I

About Hilti

Kleenex is synonymous with paper tissues, Aspirin with pain killers, Scotch with adhesive tape, and BIC with correction pens. In fact, these brands have lent their names to entire product categories, evoking direct associations with quality and functionality in their target groups' minds. The Hilti brand has managed to become synonymous with professional and uncompromising rotary hammers, and Hilti tools have become a must-have among tradespeople. All over the globe, the red Hilti case with white lettering is the epitome of professionalism and longevity, and as a logical consequence, the signal color Hilti Red (RAL 3020) is a protected color mark.

The company was founded by two brothers, Martin and Eugen Hilti, in a garage in Schaan/Liechtenstein in 1941, counting just five employees at the time. Engineer Martin Hilti received his first patent related to fastening technology in 1948. In the early 1950s, the company manufactured its first (hand-operated) tools and nail guns for driving nails or bolts into walls. The serial production of the DX 100 piston based fastening tool marked the beginning of the triumphant success of the Liechtenstein-based construction equipment company. The world's first powder-actuated tool, the DX 100 was an innovative technological breakthrough in 1957. The underlying principle had already been known for some time, and was originally applied in sunken ships in order to fix the leaks with steel plates and subsequently fill the

hull with air to salvage the vessels. Owing to Hilti, this gun-like 'shooting device' evolved into a patented and secure fastening tool.

In 1967, Hilti launched the first electro-pneumatic rotary hammer, the TE 17, and turned the TE series into the most comprehensive power tool series on the market. The category of small rotary hammers weighing 5 kg is Hilti's most popular product range. These power tools are slightly larger than conventional electric hand drills, but considerably more efficient, thus making it significantly easier to drill into concrete with relatively little contact pressure being required from the user. This efficiency advantage has led to the widespread diffusion of this technology in the construction industry.

Also in the 1960s, Hilti developed the first mechanical anchor fasteners. At the same time, the company internationalized, opening production facilities in Austria and Germany, followed by additional sites around the globe in the 1970s. Today, the Hilti brand is synonymous with innovative and reliable drilling and fastening technologies among its target group. In 1985, Hilti established separate divisions with their own product management, R&D, logistics, controlling, procurement, and production for the anchor fasteners, direct fastening, and drilling and demolition segments of their business. The 1990s were marked by Hilti's globalization. The noughties were characterized by the standardization of business processes and the integration of a unified IT system in order

to increase efficiency and productivity. In 2015, a new innovation center for more than 450 employees, aimed at developing future-proof technological solutions under the same roof, was inaugurated at the headquarters in Schaan (Lichtenstein). Hilti's main focus in sales is on strong customer loyalty. Among other things, this is achieved by means of a B2B direct sales organization (similar to that of Vorwerk in their B2C business for the Thermomix, see case study "Vorwerk Thermomix Part I-III"). For a B2B mass-market product, this is a very unique type of sales organization which enables the generation of very profound customer insight. Some two thirds of Hilti employees are in daily contact with customers. A quarter of these more than 250,000 contacts/day are processed via the Internet and another quarter via call centers. The rest, i.e. about half of all contacts, are personal interactions of Hilti employees with product users (similar to the intensive B2B customer at IFM, see case study "IFM – PMD in optical sensors"). This is the most cost-intensive type of sales organization overall.

Hilti generated annual sales of CHF 5,1 billion in 2017, employing more than 28,000 members of staff and operating branches in over 120 countries. In addition to drilling and demolition technology, Hilti is active in eight business segments: anchor systems, direct fastening, fire protection systems, diamond systems, measuring systems, installation systems, power tools and accessories, and tool services.



Hilti has been the market leader for fastening systems in the construction industry for decades. The company manages to continuously achieve double-digit growth rates in terms of both revenue and profits. This success is primarily due to:

- a strong management team;
- a captivating vision and an aligned strategy;
- Decades of targeted and intensive investment in customer development and customer loyalty.

The power tools industry is currently undergoing a major transformation. Increasingly powerful lithium-ion batteries are leading to the lasting transformation of various industrial and market sectors, including electromobility, e-bikes, stationary battery storage, and especially cordless power tools. At industry level, the peak in the sale and operation of wired power tools has probably already been exceeded, and cordless tools will continue to conquer further market segments. Simultaneously, the power tools industry is characterized by sustained and fierce price competition, and great competitive intensity. The markets are not just dominated by price competition in the highly price-sensitive DIY segment, but also in the

specialist trade and professional segments. In the professional segment, quality is an additional competitive factor to price, with tradespeople mainly focusing on increased efficiency. In construction circles, Hilti is considered the Rolls-Royce of power tools, but more innovative.



The industry differentiates between various strategic set-ups of its players. On the one hand, there are full-range global players such as Bosch, Metabo, Hitachi, Makita, Stanley, Black&Decker, or TTI. On the other, there are companies specializing in the professional segment, including Eibenstock, Fein, Festool, Mafell, and Hilti. In addition, there are small, highly specialized niche providers in the professional segment, including Alki-Technik, Baier, and Duss, for example. And finally, there are trading enterprises who purchase products from OEMs and contract manufacturers such as BTI and Würth, as well as trading companies in the DIY sector who purchase from contract manufacturers from the Far East such as Einhell, Mannesmann, and Worx. These providers mainly sell via DIY stores and increasingly online. The total value of the “manufacturing of hand-held power tools” sector in Germany is approximately EUR 5 bn, with exports accounting

for about 2/3. Success factors within the industry include:

strong brands with high customer loyalty and proximity to the different markets (especially in the professional segment);

- innovation and quality in the professional segment;
- great product quality and flexibility;
- specialization in niche solutions, as well as a comprehensive product range and system solutions with service options.

The development trends in the industry can be summarized as follows:

- increasing competitive pressure, especially in the mid-range market and technology segments, and in particular from China and the Far East;
- increasing importance of service options in an increasingly globalized growth segment;
- growing demand for customized solutions with the need for great flexibility and simultaneous standardization (modularization, modular solutions);
- digitization, including the integration of mechanical engineering expertise with information technology (Industry 4.0 and digital business model innovations).

Innovation in the industry is based on the “vision of the cordless construction site” and the digitization of the construction industry. However, innovation in the industry is slow since the traditional product groups are considered very stable. A distinction can be made between the following fields of innovation in the power tools industry:

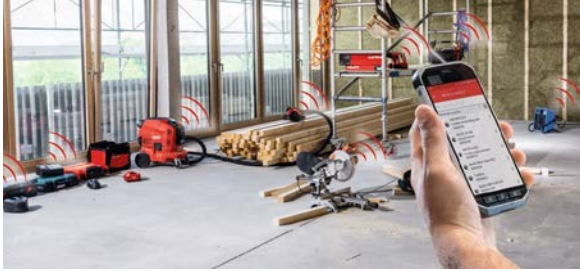
- Battery technology: performance, capacity, durability, lightweight construction, new charging systems (e.g. inductive charging), battery interfaces (“ecosystems”)
- Drive technology: brushless and maintenance-free EC motors with greater efficiency
- Networking and digitization: intelligent resource management, tool tracking, inventory management, fleet management, measuring devices networked with smartphones via an app, etc.
- Systems and complete solutions: modular systems, integrated offers of power tools and extraction systems, integration of tools and accessories in packaging systems, etc.
- Machine optimization – increased productivity and ease of use: efficient, multifunctional, powerful, lightweight, easy to handle, compact.
- Health and safety: ergonomics, lightweight construction, vibration and noise reduction, dust-free operation, sensors (e.g. to reduce the risk of injury from kick-back).
- Processing of new (raw) materials: including composites, high-strength steels, honeycomb panels, insulation panels.
- Service: “all-inclusive service”, “value-added packages” with extended warranty, 45-hr repair guarantee, leasing programs, learning apps (for tool handling).



In parallel to these developments in the power tools industry, digitization is happening in the construction industry. Digitization in the construction industry primarily affects four levers aimed at improved value creation. These are: digital data which must be collected and analyzed, the use of networks for integrating and synchronizing previously separate or independent activities, automation and therefore the use of new technologies enabling autonomous, self-organizing systems, as well as digital mobile access to the Internet and internal networks. This digital transformation is changing productivity along the entire construction value chain:

- Electronic tenders are becoming the standard
- Digital procurement platforms are becoming more efficient
- Construction site logistics are being optimized
- 3D information is becoming available through drones and the use of robots
- Construction supply companies are digitizing their production
- Digital sales are leading to a more direct service
- The construction of buildings is shifting towards the operation of buildings

- BIM (Building Information Modeling) is going to become the standard tool for everyone involved in construction: from digital planning to digital construction



Looking at this list, it is important to realize that the construction industry is not a very innovative industry. In general, product life cycles are very long, and due to the systemic interaction of different trades and players, change is difficult to enforce. Especially high price sensitivity, but also the organization of work, which is directly related to productivity, ensures that TCO arguments resonate with customers from the construction industry. Whoever can demonstrate that purchasing a costly laser measuring device will lead to significant time savings in measuring boreholes and therefore an increase in the productivity of drilling machines, for instance, will also be able to enforce higher prices.

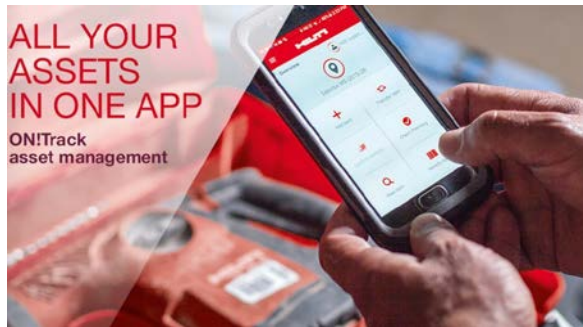
The challenge:

digitization and business model transformation

Hilti's business model transformation is by all means groundbreaking for European companies from the mechanical and systems engineering sector. Until recently, the traditional way of bringing innovations to market was to gradually introduce improvements in

small and reliable steps, and in close coordination with the customer. As a rule, the focus was on product quality, and any direct or associated services were only provided as a half-hearted add-on to achieve customer loyalty. But the ever-increasing penetration of the industry with software is making tools increasingly intelligent, and allows them to communicate with each other and with the cloud. These technical possibilities are leading to an evolution and revolution in terms of business models. Hilti develops innovative and differentiated product, software, and service solutions for professional customers, which are distributed via worldwide direct sales and revolve around fastening and demolition. More and more modern-day construction projects undergo detailed digital planning before the actual construction project is kicked off. To some extent, this entails fundamental changes to the work processes of Hilti's customers. Hilti must ensure that the fastening and fire protection solutions are already taken into account in digital models, and must develop and take into account its own digital capabilities as well as those of its customers. Increasingly, decisions on products and solutions are made long before the start of construction, leading to changes in the timing and collaboration between Hilti and its customers. On the product side, especially the Internet of Things opens up many new fields of application for the use and management of electrical tools and devices. Virtually all value chain processes are being transformed by the possibilities provided by digitization: training, recruiting, logistics, invoicing, reporting, etc.

These developments are catered for by adapting one's business model.



The step from being a seller of products to becoming a provider of complete solutions goes beyond additional service and traditional after-sales services or spare part provision. Providing complete solutions offers Hilti a variety of benefits:

- Additional revenue from additional services
- Satisfaction of customer needs through customized solutions
- Competitive differentiation in a globalized market

The basic fleet management idea at Hilti is derived from the automotive industry and comes as a one-stop package. Customers, and especially economically-savvy business customers, appreciate a one-stop service which is tailored to their individual needs and optimizes their own productivity. In return, they are prepared to pay a significantly higher price. At a fixed monthly fee, Hilti provides construction companies with a fleet of power tools that meets their exact needs. Among other things, the package also includes customized equipment labelling, online inventory management, a repair service, insurance against theft, and the provision of new models after the agreed term of

use. The amount to be paid also includes all equipment, service, and repair costs. From the customer's perspective, this ensures that:

- the required equipment is always available, reducing downtime – e.g. whenever a product fails, a replacement is provided immediately;
- peak times and slumps are balanced out;
- costs become plannable.

For customers, this means a more streamlined balance sheet, protection of liquidity, and the outsourcing of administrative processes. In addition, peaks in demand no longer pose a problem since additional tools can easily be ordered at any time. From Hilti's perspective, the customer pays for "intangible" costs, e.g. the assumption of risks. In order to position itself as a provider of solutions, Hilti had to leave the trodden path of selling power tools. The company no longer thinks in terms of products and output, but rather in terms of solutions and results. What is more, the focus is no longer on sales transactions, but on lasting customer relationships. Value creation is no longer a downstream process starting with the manufacturer, but rather an upstream process starting with the customer, and value is no longer created by tangible goods, but rather by intangible relationships and value perceptions. Or, as Management Professor Peter Drucker put it: "What the customer buys and considers value is never a product. It is always a utility, that is, what a product does for him." In other words: customers are not interested in owning a washing machine, but in having clean clothes. From the supplier's perspective,

however, that means that an in-depth understanding of the customer's actual requirements is needed. In particular, suppliers must not reduce themselves to the question of what tool a customer wants, but should rather ask what benefits he needs. Which processes occur in the customer's mind? How much change are the stakeholders in the value chain or in a value added network willing to support?

Direct sales is an important competitive advantage in the innovative fleet business model, because it effectively takes wholesalers and retailers out of the equation, and reorganizes the division of labor between manufacturers and trade. By contrast, wholesalers and retailers continue to have a say on the provision of entire product fleets in the case of Hilti's competitors. As a rule, wholesalers

and retailers are not interested in offering the Hilti model, because it requires a great deal of support and because they prefer not to rely on the products of just a single manufacturer. The transition from a business model based on equipment sales to one that works like a leasing concept, has a dramatic impact on balance sheet figures. But implementing such a change would be a much greater challenge for a listed company than for a family business, because it is much more difficult to explain it to the financial market. The success of the "Fleet Management Program" is tremendous. More than 1 million items of equipment are currently on lease and over 100,000 customers are using the Fleet Management program.

Part II

IP strategy and strategic positioning

Overall, innovation is an important competitive factor for companies. However, it must not be reduced to new products or technical innovations only. Business model innovations are usually significantly more profitable and, especially as a result of digital transformation, more profound than mere product innovations. In other words, Hilti's Fleet Management means that the company is no longer selling drills but holes. The dimensions of the business model can be described as follows:

- WHO are the target customers? Construction companies requiring tools to provide their services; different requirements from the tools, depending on the material to be processed and the area of application
- WHAT is the benefit for the customer? Procurement of individual tools; case-by-case maintenance is mainly performed by independent providers
- HOW is that benefit created? Wholesale or direct sales of tools & machinery; sales reps contacting purchasing departments
- HOW does the company make money? Highest possible one-off payment for each item sold

Based on this simplified description, two characteristic innovation approaches come to light in the business model: "Reliability" and

"costs" are major weaknesses of the product's mechanics:

- Defective drills can lead to great losses for construction companies since tasks in the construction industry are completed in a set order, leading to follow-up costs for undrilled holes. In addition, special-purpose drills are expensive.
- In the event of repairs, spare parts and service companies are often not available fast enough. On the cost side, high purchase costs lead to less frequent purchases.
- Another problem related to reliability is due to the fact that valuable tools often get stolen from construction sites. The potential non-availability of equipment is leading to the creation of equipment stores, which can be used in an emergency but do not count as productive assets.

Hilti's Fleet Management aims at establishing a long-term maintenance system with leasing contracts, and to enable long-term, sustainable, and stable customer relationships. The Fleet Management Program minimizes machine downtime from the customer's point of view, and the decentralized "Hilti Centers" ensure permanent tool availability for customers.

- WHO are the target customers? Especially large construction companies requiring a stable and high-quality availability of drills, as well as smaller customers in emerging markets

- WHAT is the benefit for the customer? Guaranteed availability of the right tool in the right place and at the right time; all power tools are state-of-the-art; Hilti experts provide maintenance, repair, battery replacement, and theft protection; instead of buying drills, a leasing contract is arranged, where the customer only pays a usage fee
- HOW is that benefit provided? A direct sales team visits customers on site, establishing the customers' exact requirements and problems; the Hilti Centers act as a comprehensive service network.
- HOW does the company make money? The maintenance and leasing contracts make for regular but small inflows of revenue; customers do not have to make large one-off investments; the customer-oriented all-round service enables strong customer loyalty with high follow-up sales

Adding this business approach means to refocus employees and management on operational KPIs, and the ways in which the company interacts with its customers. The company's captivating vision and clear strategy must be communicated and operationalized in order to motivate the employees. In such situations, IP design serves as a management tool. Implementing a new business model requires the integration of IP into the organization of the enterprise beyond the IP department. Business as usual is not an option here. Instead, what is needed is a change process and a customized IP culture. IP must be generated in such a way that it serves the business model. In the case of Hilti I's differentiation-based competitive strategy, a general

strategic goal can be defined: i.e. the development of exclusive, legally enforceable, and sustainable customer benefits. In order to create customer benefits which meet these requirements by means of IP, it is necessary to integrate the company's market intelligence with its IP efforts and to put in place an IP culture. IP management stakeholders must learn to think in terms of legally enforceable exclusivities and define their need for IP accordingly. IP departments must learn to meet this need in close cooperation with market research and R&D, in a targeted manner, and based on the expected impact of the results. Effective management requires meaningful strategic goals. By its very nature, IP is complex and required advice from legal experts. It is therefore necessary for the IP management stakeholders within a company to define objectives as clearly as possible and in close relation to the realities within the respective functions.

If a strategy is to serve as a management tool, it must pursue a goal which is as simple, transparent, and comprehensible as possible. Management does not only mean to know where the right path leads, but also to be able to motivate employees to pursue this path together. Companies like Hilti, who compete for their customers' goodwill with frequently complex technological products, a meaningful, customer-oriented IP strategy goal must be defined, which is so narrowly worded that it initially takes precedence over the also very complex world of IP. This does not mean an undue simplification, nor that the implementation of the goal does not require any expert

knowledge in each specific case. However, good (i.e. simple, transparent, and comprehensible) strategic goals have the benefit of including all stakeholders who are not IP experts in executing the strategy in a joint, consistent, and coherent manner.

Hilti must meet the four key goals of competitive differentiation:

- securing its own value creation;
- making its critical (VRIN) resources exclusive;
- designing its own market position, and
- leveraging the customer's willingness to pay by communicating the USP based on a deep understanding of customers' problems and the provision of tailor-made solutions.

The latter two IP strategy goals belong to the market perspective of the business model and the goal matrix. The market perspective is responsible for the revenue-generating effect of the business model. The aim of this part of the IP strategy is to leverage the customer's willingness to pay in an optimal way. This is achieved by charging premium prices for a product which, in the eyes of the customer, provides a significantly superior customer benefit compared to the competition. This also includes the ways in which the customer pays, i.e. payment mechanisms. As Hilti's Fleet Management example demonstrates, the deeper one's product or service interacts with the customer's value chain, the sooner a clever, value-oriented payment mechanism will provide leverage over the customer's willingness to pay. IP is a way of

making such payment methods exclusive and exploiting them in industrial operator models for production resources.

Using digital patents to protect business models

The ongoing vivid debate on business models among scientists and practitioners is a relatively recent phenomenon. It gained global interest with the emergence of the so-called "New Economy" in the late 1990s, and the debate on the importance of transforming a commodity-based and production-oriented economy into a service-based economy. The deliberations on business models have also triggered a debate on success factors and typifications of business models as such, as well as their constituent elements. Descriptions of these deliberations in the context of digital business models have been emerging especially since the beginning of the so-called "New Economy". The literature describes Hilti's Fleet Management both as an innovative and as a digital business model, since its success is essentially based on the targeted and business model-oriented processing of data.

Business models can be understood as an economically meaningful framework coordinating the independent action of individual employees. The constituent elements of business models are recurrent and are applied re-combinantly in business practice. Digital business models can be understood as re-

combinant models combining similar structural components in novel ways in order to leverage different success factors.

The resource-based approach allows us to understand the company as a set of resources, which constantly adapts to changing framework conditions such as the above-mentioned developments in the power tools industry and the digitization of the construction industry. On the resource side, patents can be understood as tools for creating a VRIN quality for valuable resources. Within the resource-based view, patents ensure that resources which contribute relevant value are rare, difficult to imitate, and difficult to circumvent by the competition.

On the market side, patents can be understood in such a way that their barrier effect is used to influence market forces with respect to a company's own market position. Within the scope of the market-based view, patents ensure the suppression of substitute solutions for a company's own offerings, the creation of market entry barriers, and the undermining of the bargaining power of suppliers and customers.

Depending on the business model element in question, the exclusivity achieved by the barrier effect of a patent results in different degrees of value added within the scope of the business model as a whole. From a patent point of view, the business model is an appropriation mechanism for internalizing the

prohibitive effect. In analogy to the typification of the economic effects of patents, it is also common to typify the inventive subject matter and the challenges leading to the generation of inventions, as well as the claim structures of patents. The basic approach to arriving at explanatory descriptions of the real world is to recognize recurring patterns in creative thinking and business model design.

In terms of their inventive subject matter, digital patents relate to the elements of a digital business model and the barrier effects internalized in the context of this business model. Their typification relies on recurrent objects and economic effects. Digital patent types are inherently digital to the extent that they can be used in order to protect digital business models from imitation. Descriptions of digital patent types are neither a systemization of inventive subject matters nor a classification according to claim structures (as would be the case with computer-implemented inventions). The classification of digital patents serves the purpose of identifying recurrent elements in digital business models which can be protected by means of patents and are suitable for suppressing the imitation of the business model by means of appropriately designed barrier effects.

What is apparent is the use of digital patents in Hilti's patent development activities.

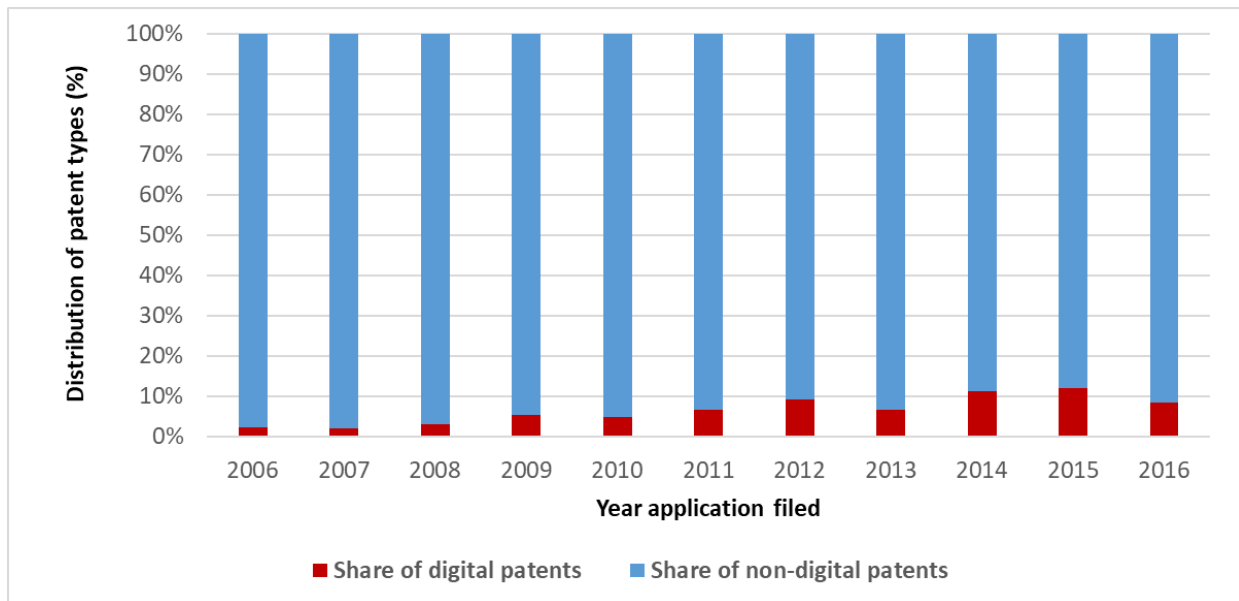


Figure 1: Hilti's applications for digital patents since 2006.

The cumulative portion of digital patents in the overall patent portfolio from Hilti is continuously rising quite dynamic. While the average yearly growth rate of applications for non-digital patents is 2 percent the average yearly growth rate on digital patents is four times higher at 8 percent.

Impact on the overall portfolio

The structure of digital patents follows the logic of business models used in Industry 4.0 approaches. A fundamental principle in this respect is the application of four distinguishable dominant logics which are used to generate economic advantages in the business models:

- competence logic
- data and information logic
- simulation and representation logic
- networking logic

These logics constitute the cognitive map of companies implementing I4.0 business models. The dominant logic determines the relevant activities of the companies implementing these logics, e.g. the ways in which customer needs are met at Hilti. Eight different technical concepts can be applied based on these dominant logics:

- Success-critical preference systems
- Assistance systems
- Cyber-physical systems
- IoT systems for networked empowerment
- Value added networks
- Collaborative infrastructure
- Data model and simulation concepts, and
- Integrated system architectures

The application of these concepts, which were applied in an integrated manner in Hilti's case, leads to different efficiency and

effectiveness-based added benefits for customers and user groups in business models:

- Human empowerment (effectiveness increase)
- Object empowerment (effectiveness increase)
- Horizontal networking in value added networks (efficiency increase)
- Vertical networking within the automation pyramid (efficiency increase)

The figure below illustrates the systematics between the dominant business model logics, the technical concepts used, and the efficiency and effectiveness increases for customers and user groups.

These empirical findings result in a taxonomy of digital patents. This taxonomy is based on the dominant logics and their technical imple-

mentation in digital business models. The taxonomy presented here is a highly abstract rough structure of the typically applied digital patents, aimed at achieving greatest possible systematic consistency with the logics of business models. The use of digital patents in order to protect Hilti's business model is illustrated by some examples below.

The "Hilti Fleet Management" service shows the orientation of Hilti's business model towards the company's cultural and market-related success factors: quality, service, and an in-depth understanding of customer needs. Technology is secondary. In the company's understanding, construction companies buy the

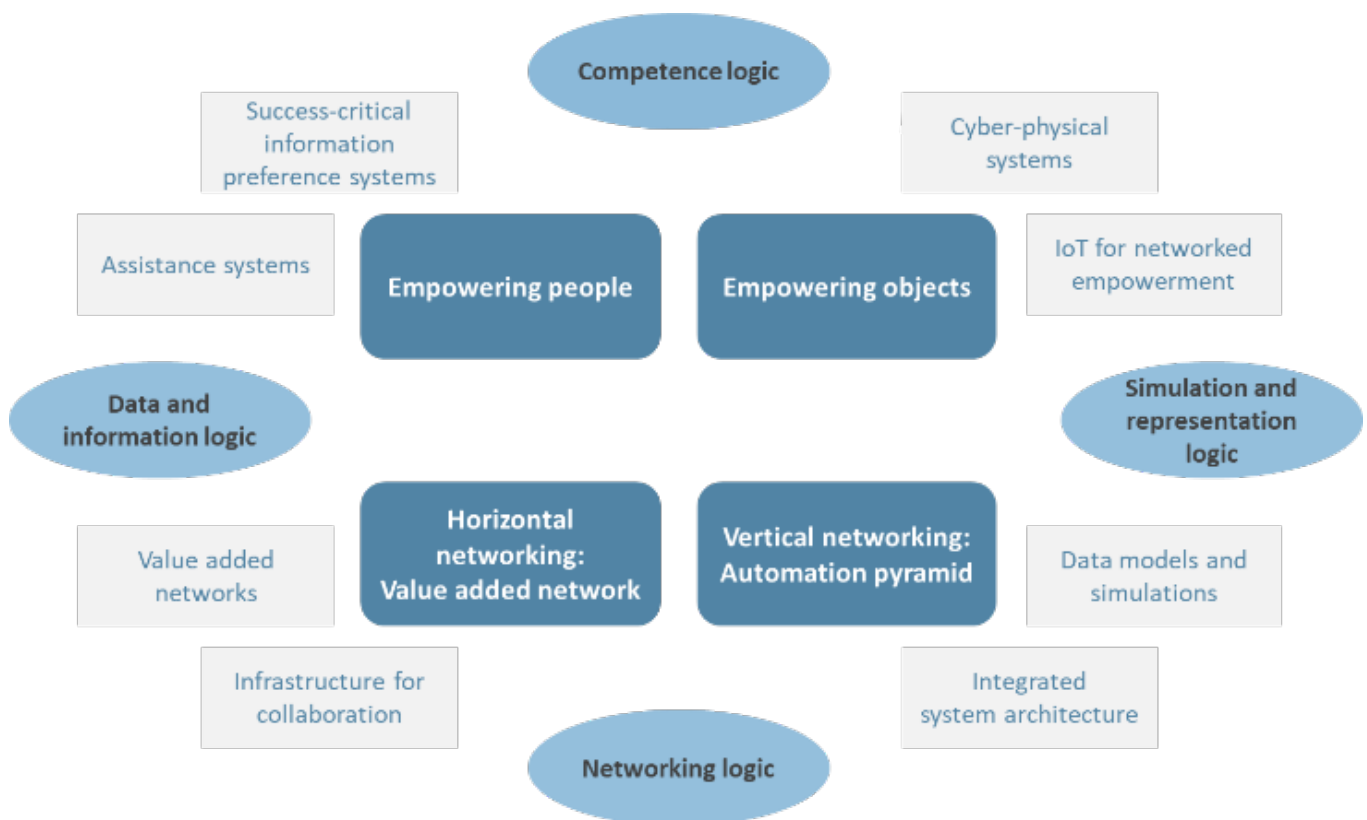


Figure 2: Dominant business model logics and their application in digital I4.0 business models.

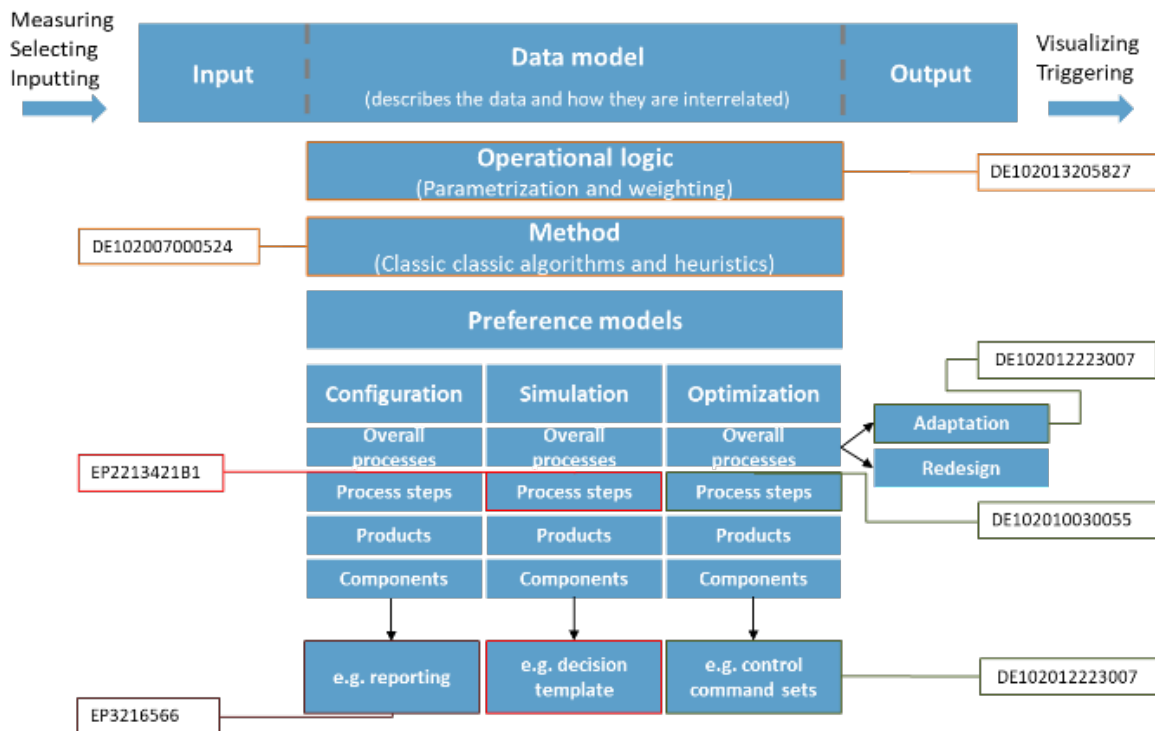


Figure 3: Digital patents in Hilti's business model

productivity of Hilti's equipment, i.e. they primarily buy a customer benefit and the technical implementation of this benefit is of secondary importance. The more intangible a product offer becomes, the less existing customers are interested in the technical details of the solution, and the more important it becomes to communicate the specific customer benefit and to protect it against the competition by means of IP.

The direction of Hilti's patent activities was complemented by strategic prohibition and market design. In addition to preventing the infringement of third-party patent positions and suppressing the imitation of the company's own developments, strategic prohibition is primarily aimed at marketing and product management, and at the desired positions of exclusivity in terms of the customer

benefit. With this IP-strategic approach, prohibitive rights no longer result from direct proprietary R&D results, but rather from the business model and the business objectives (see Fig. 4).

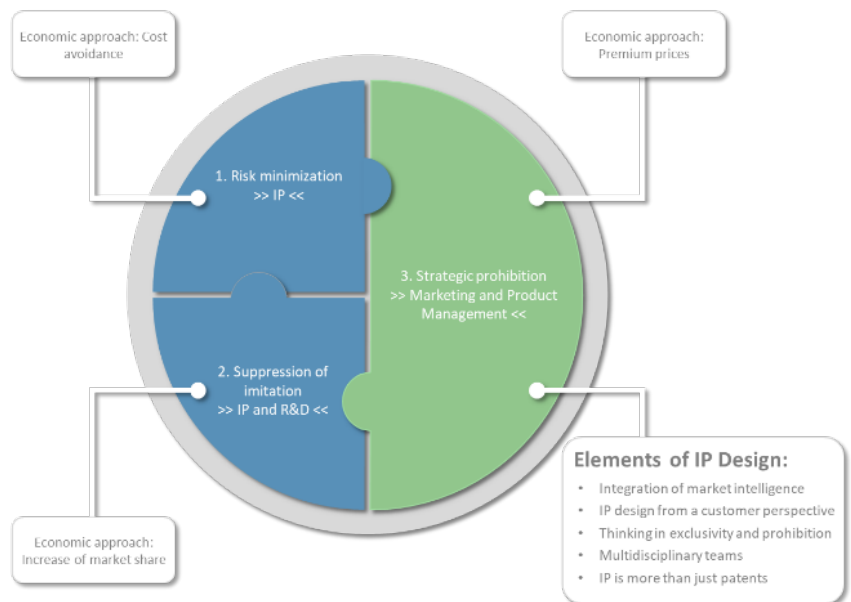


Figure 4: IP-strategic approaches

PART III

Summary and benefits for Hilti

Hilti has integrated key success factors such as high customer loyalty, a deep understanding of customer requirements, and the willingness to develop customized solutions into its IP strategy, IP design, and IP management. Hilti has fully captured the digitization of the construction industry and is actively involved in shaping the transformation of planning, construction, maintenance, and logistics processes. However, Hilti does not reduce itself to adapting the process landscape in its traditional business model of device sales, but has adapted the traditional business model in order to meet customer requirements in the best way possible. Having adopted a market-oriented IP culture and having adapted its IP management to its business model, the company now benefits from the protection of its business model through the use of IP. Especially the use of digital patents ensures sustainable access to key resources as well as an economically advantageous positioning in the market. The company's patent strategy and organization were gradually adapted to the new circumstances. The patent strategy has been extended beyond the reactive approach of protecting proprietary R&D results to now include the proactive and business model-oriented creation of positions of exclusivity. The observable sustainable success of Hilti proves that the continuous adaptation of IP management and IP strategy is the way forward.

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What is the MIPLM?

The 21st century marks a new era as our economies increasingly rely on knowledge-based production processes and services. Consequently, the institutions responsible for education and research in the field of intellectual property law in Europe must provide appropriate training for staff from the respective professional environments to acquire or reinforce their ability to initiate, control, protect, exploit and increase the value of intangible assets. The knowledge-based economy integrates research and development activities, innovation, industrialization and the marketing of products and services including intangible assets and completely revolutionizes enterprise management. It creates new professions specialized in dealing with intangible assets: this branch of law attracts consultants and intellectual property experts from among managers, jurists and lawyers. Indeed, every innovation process generated by new economic activities assumes the intervention of the law, the installation of tools and structures for developing or planning in order to control the intangible assets and to optimize their valorization. It has therefore been the duty of CEIPI, University of Strasbourg, as a leading center for Intellectual Property Studies in Europe, to propose a master program on "IP Law and Management" (MIPLM) since 2005, which complements the existing training course for engineers, scientists and lawyers. This "European" master program features a continuous training scheme aimed at experts in the field of intellectual property. It provides a genuine education program based on an investigation carried out in large enterprises in Europe. The teaching staff comprises academics and experts from various countries, renowned for their work and competence in dealing with the impact of intellectual property on the policy of enterprises.



M. Yann Basire
Director General of CEIPI

Intellectual property has become a crucial factor and driving force in the knowledge-based economy. The economic development and the competitiveness of companies increasingly depend on the generation and exploitation of knowledge. Intellectual property can convert investment in corporate knowledge creation into economic benefits. Thus IP-based appropriation strategies form the basis for creating wealth and competitive advantages for companies from their R&D and innovation activities. The development and implementation of sustainable strategies for IP exploitation require a concerted integration of the disciplines involved in order to achieve an interdisciplinary perspective on IP. In a knowledge-based economy, companies can only achieve a competitive edge by combining the economic, legal and technological sciences. IP management within such a holistic approach provides optimized appropriation strategies and thus essentially contributes to the creation of wealth within a company. Accordingly, IP management needs skilled managers who can combine the economics of intangible assets in an intellectualized environment with multidisciplinary knowledge in order to maximize the benefits of IP. A new type of competencies, skills and underlying knowledge enters the arena of management and management education. The increasing impact of intellectualized wealth creation by investment in knowledge, R&D and innovation followed by its exploitation and IP-based appropriation calls for seminal new education concepts. The CEIPI program "Master of IP Law and Management" offers such a new type of management education. It follows an intrinsically multidisciplinary approach to meet the challenges and requirements of the knowledge-based economy. This master program combines legal, economic and management sciences and includes lectures from leading scholars in the field of IP law and management. Its ultimate objective is to qualify experienced IP professionals for acting as practically-skilled IP managers with a sound knowledge of the principles of wealth creation in our knowledge-based economy.



Alexander J. Wurzer

Director of Studies, CEIPI | Adjunct Professor

Director of the Steinbeis Transfer Institute Intellectual Property Management

Concepts of the Studies Intellectual property and economics in the present context are two disciplines that exist in parallel.

Experts are found in each discipline, but with a lack of mutual understanding and training. Both "worlds" are nowadays bridged by experts, called IP managers, who link both disciplines through knowledge and experience. The CEIPI studies pursue a holistic approach and engage experts for the developing market of an IP economy. They are experts for basic economic management processes with specific assets. Management is understood in the broad sense of an overall company management and accordingly divided into six general functions:

- 1. Strategy
- 2. Decision
- 3. Implementation
- 4. Organization
- 5. Leadership
- 6. Business Development

On the basis of this differentiation skills should be allocated to management functions, and relevant knowledge to the functions and skills. The teaching concept focuses on both areas, skills and knowledge, as relevant to business with intellectual property.

Skills can be allocated to the specific management functions as relevant to the practical work within IP management. The skills are thus determined by the daily challenges and tasks an IP manager encounters.

For example, the "Decision" function includes skills such as "valuation and portfolio analysis techniques", and "Organization" as a function requires skills to manage IP exploitation and licensing including economic aspects as well as contractual design and international trade regulations with IP assets.

Special knowledge of economy and law is required in order to implement and deploy these skills in business. This includes knowledge of economic basics such as function of markets and internal and external influence factors. Additional management knowledge is also included such as value-added and value-chain concepts.

The legal knowledge includes contractual and competition law, and special attention will be paid to European and international IP and trade law, e. g. litigation, licensing, dispute resolution. Following this concept, IP law and management can be combined in clusters formed of specific skills and knowledge defined within each management function.

The lectures have a high international standard; the lecturers possess a high reputation and long experience in the teaching subject with academic and practical backgrounds.

The top-level experts come from the fields of law, economics and technology. The experts and the students work closely together during the seminar periods. Exchange of experience and, as a consequence, networking are common follow-ups.

Participants & their Benefits This European master's program was designed especially for European patent attorneys, lawyers and other experienced IP professionals.

Its ultimate objective is to qualify experienced IP professionals to act as IP managers with the practical skills and knowledge to deal with the new challenges of wealth creation and profit generation. Participants acquire first and foremost a new understanding of how intellectual property works in business models and are conveyed the necessary skills to achieve the systematic alignment of IP management and business objectives.

The course provides an international networking platform for IP managers and in addition enables participants to build long-lasting relationships and to further develop relevant topics within the field of IP management. Being part of this international alumni network also offers new job opportunities and publication possibilities.



Past lecturers and academics

Prof. Jacques de Werra,
University of Geneva

Prof. Estelle Derclaye,
University of Nottingham

Prof. Christoph Geiger,
University of Strasbourg

Prof. Jonathan Griffiths,
School of Law, Queen Mary,
University of London

Dr. Henning Grosse Ruse-Kahn,
Faculty of Law, University of
Cambridge

Prof. Christian Ohly,
University of Bayreuth

Prof. Christian Osterrith,
University of Constance

Prof. Yann, Ménière,
CERNA, École des mines de
Paris

Prof. Cees Mulder,
University of Maastricht

Prof. Julien Penin,
University of Strasbourg, BETA

Prof. Nicolas Petit,
University of Liege

Prof. Alexander Peukert,
Goethe University,
Frankfurt/Main

Prof. Jens Schovsbo,
University of Copenhagen

Prof. Martin Senftleben,
University of Amsterdam

Prof. Bruno van Pottelsberghe,
Solvay Business School

Prof. Guido Westkamp,
Queen Mary University London

Prof. Alexander Wurzer,
Steinbeis University Berlin

Prof. Estelle Derclaye,
University of Nottingham

Prof. Ulf Petrusson,
Göteborg University

Past lecturers and speakers, practitioners and institutions

Arian Duijvestijn,
SVP BG Lighting Philips

Kees Schüller,
Nestlé S.A.

Thierry Sueur,
Air Liquide

Heinz Polsterer,
T-Mobile International

Dr. Fabirama Niang,
Total Group

Philipp Hammans,
Jenoptik AG

Dr. Lorenz Kaiser,
Fraunhofer-Gesellschaft

Leo Longauer,
UBS AG

Nikolaus Thum,
European Patent Office

Bojan Pretnar,
World Intellectual Property
Organization

Romain Girtanner,
Watson, Farley & Williams

Peter Bittner,
Peter Bittner & Partner

Prof. Didier Intès,
Cabinet Beau de Loménie, Paris

Malte Köllner,
Köllner & Partner Patentanwälte

Dr. Dorit Weikert,
KPMG

Keith Bergelt,
Open Innovention Network

Selected companies

3M Europe S.A.

ABB Corporate Research Center

ABB Motors and Generators

AGC France SAS

Agfa Graphics

Air Liquide

Airbus Defence and Space

Akzo Nobel NV

BASF Construction Chemicals

Boehringer Ingelheim Pharma

British Telecom

Clyde Bergemann Power Group

Danisco/Dupont

DSM Nederland

Fresenius Medical Care

Groupe Danone

Jenoptik

Kenwood

Nestec Ltd

Novartis AG

Philips

Plinkington

PSA Peugeot Citroen

Rittal

Sanofi/Aventis

SAP SE

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Kategorie: MIPLM Industry Case Studies

Digitization of water: How IP-design is used to protect Apps and Eco-System for LUQEL- case study

3. Dezember 2019 Alexander J. Wurzer Luqel, MIPLM Industry Case Studies, Publication



LUQEL revolutionize the way people drink water, thanks to sustainable products that individually adapt to the digital lifestyle and requirements of each person – with fascinatingly precise and user-friendly technology and design. The LUQEL digital eco system consist of a water station, a smart bottle and an app. With the LUQEL Water Balancer App, users can create their individual water recipes at home, mobile or in the office.

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2. September 2019 Alexander J. Wurzer Heraeus, MIPLM Industry Case Studies



Heraeus is one of the world leaders in putting to work material and technology know-how for industrial purposes. With Heraeus Amloy, the company is becoming pivotal in shaping the digitization of materials science. With IP-design Amloy creates new digital business models and protect them with IP.

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