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SME Patent Strategies for IoT-Based Business Models



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SUMMARY			
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Abstract

This article describes an intellectual property (IP) strategy which is developed jointly by academics and businesses. The methodology was designed to meet the framework conditions of smaller companies in the context of industry 4.0 and the Internet of Things (IoT). The work describes how the role of IP — and in particular that of patents — is evolving as a competitive instrument. And how, especially the small and medium-sized companies (SME), often underestimate this role. It further provides an overview of the methods and tools which effectively allow to protect digital business models by means of IP under these new digital industrial conditions.

Summary

The Internet of Things (IoT) is transforming industries through digital technologies. Machine-to-machine communication is allowing to create networks that extend to all the machinery and systems in every stage of the value creation chains in virtually all environments. Smart-homes, smart-factories, smart-grids for energy supply and smart-mobility have become possible thanks to ubiquitous availability of computing power and network interfaces. These instruments also support trends like the increasing individualization of customer requirements and making larger parts of the manufacturing processes autonomous.¹

The transformation driven by IoT does not only affect products, processes and client relationships, it is also changing established frameworks like business models. Consequently, the role of IP as a competitive instrument is changing too. A business model illustrates the precise way in which a company will attempt to be successful in the market, it describes the resources needed, the value creation architecture and the benefits that the company will provide to its consumers. “If a company successfully manages to prevent the competition from offering a similar customer benefit, it is in an exclusive position to leverage the customer’s willingness to pay.”² The technologies which allow the machine-to-machine communication and the handling of the data acquired have become very important in the generation of consumer benefits, and the patents on those technologies are turning into gatekeepers to their

¹ See p. 266.

² P. 268.

exclusivity. The result is that the price premium associated to the added value is also ultimately protected by IP.³

It is of significant relevance to analyze digital business models looking for relevant solutions that can be patented. The authors suggest the SAILS methodology, the acronym stands for: Standards, Architectures, Integration, Linkages and Substitutions. Those are the areas that must be observed for technological developments and change mechanisms.

- Standards help all the devices and machines to achieve interoperability, which is a key success factor for IoT business models. Patents can be obtained for several components of technological standards, including interfaces, transmission types, the processing of data for controlling device reactions, etc.
- Architecture refers to the planned design and development of systems. IoT architectures usually present patenting opportunities related to the deployment/hierarchy of the systems and the management of data access among them.
- Integration is the combination of elements to achieve enhanced or new functionalities. It can refer to the integration of devices in the physical level, or to the integration of the company's processes with those of suppliers, customers or competitors.
- Links can be communication paths or another form of coordination among physical and digital levels. They are the practical means underlying the value creation architecture.
- Substitutions are an integral component of IP strategies. It refers to the replacement of an element with another one. Substitution is very broad because all elements can be substituted: features, components, products, hardware, software, and even entire business models.

The entire IoT-based model must be analyzed along the whole value chain in order to identify positions at which it is convenient to develop proprietary exclusivity. The identified invention environments must then be exploited, bearing in mind the intended contribution to the value chain and the intended customer benefit. That is, the value positions must be translated into technological challenges and their solutions. This will lead to patent portfolios that are aligned with the requirements of the owner's IoT business model, which is specifically beneficial for SMEs.

³ See p. 267.