



# The new challenges of organizing intellectual property in complex industries: A discussion based on the case of Thales



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## ARTICLE INFO

Available online 24 February 2014

### Keywords:

Intellectual property  
Complex industries  
Organization  
Outsourcing  
Case study

## ABSTRACT

The defense industries in France and elsewhere have, in recent years, undergone important technological, organizational and institutional changes that have profoundly altered their architectures. These changes have introduced a new division of labor bringing new opportunities for interaction leading to the creation of additional assets. In this context, the issue of protecting innovations and their exploitation has become central. Managing intellectual property rights (IPR) requires industrial groups to draw on additional capabilities. This article analyzes these evolutions and focuses in particular on the new organizational arrangements that have accompanied them. Using the case of Thales, which in 2005 outsourced its Intellectual Property (IP), we answer questions such as: why should IP be outsourced; how should the outsourcing of IP activities be organized; and, how should capabilities involved in this new organizational arrangement be managed. These issues lie at the center of this research and illustrate new challenges inherent to in-house and outsourced IPR management strategies.

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## 1. Introduction

The issue of intellectual property rights (IPR) is increasingly important in the business sphere and in academic literature. This paper aims to contribute to this literature by focusing on the outsourcing of IPR activities. Until the mid 1990s, non-legal literature on IPR was limited both in scope and quantity (Hanel, 2006). The growing interest in IPR is directly linked to the rise in patent applications during the 1990s, generally described as a patent surge (Neuhäusler, 2012). This is characteristic of *intellectual capitalism*, which results from the combination of a capitalist economy and a knowledge economy in which intellectual capital plays a major role and is considered as the principal economic asset (Granstrand, 2000). Over recent years, IPR management has become the cornerstone of corporate strategy and firms' competitive positioning (Hanel, 2006). Numerous studies have analyzed the reasons for this patent surge by outlining the various uses of patents (Blind et al., 2006). The first of these is obviously to protect the revenue from specific inventions. Recent research by Goldenberg and Linton (2012) refers to the compound option approach, which assesses the value associated with this primary motive to patent. From that perspective, a patent is primarily considered as an option to sue, "*which in turn is an option to collect*

*cash flows associated to winning the legal suit*" (Goldenberg and Linton, 2012, p. 181). But as mentioned by the authors, patents may offer other benefits, such as IP blockades, an extended market, increased reputation, exchanges and licensing potential. Often mentioned as *Strategic Patenting*, these alternative uses of patents are clearly responsible for the increase in applications and non-legal literature's interest in patents (Granstrand, 2000; Hanel, 2006). For example, thanks to a textual analysis of the papers published in Technovation during 2009 and 2010, Linton (2011) points out that patents feature among the most frequently occurring terms (along with funding, absorptive capacity and alliance). More broadly, Candelin-Palmqvist et al. (2012) analyzed IPR articles published from 1970 to 2009 in the leading journals focusing on innovation management (the journal selection is based on Linton and Embrechts, 2007). This is the first study that systematically analyzes IPR research over a long period. As mentioned by the authors, it outlines the main trends in the fast-growing research field of IPR and enables researchers to position their studies better in terms of both method and content. Referring to this state of the art, our present research contributes to IPR literature in two ways.

First, regarding methods, Candelin-Palmqvist et al. (2012) highlight the lack of recent studies at firm level. The authors mention that almost 90% of published studies have focused on macro-level and secondary data, and encourage new longitudinal and firm-level analysis that "*may provide more feasible implications for innovation-management practitioners working on the organizational level*"

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(Candelin-Palmqvist et al., 2012, p. 508). They also call for more qualitative studies to answer *how* and *why* questions related to IPR issues. In the same vein, in his recent literature review on patent strategy, Somaya (2012) encourages case study research in order to improve the understanding of processes and mechanisms by which firms develop sophisticated patent management capabilities. In this context, our article tries to fill this gap by scrutinizing the organizational devices that accompany innovative firms. Based on a case study, we study the outsourcing of intellectual property (IP) and its implications for IPR management.

Secondly, regarding content, only very few studies have specifically focused on the question of organizing protection. The work done by Granstrand (1999), which constitutes an invaluable reference in the matter, only provides a very succinct treatment of outsourcing. Literature on IPR management has only recently specifically focused on outsourcing. Three major studies should be mentioned here: Reitzig and Wagner (2010), Mayer et al. (2012) and Moen et al. (2013). These research studies are based on quantitative analyses and center on the outsourcing of patent prosecution (activities related to filing and obtaining patents). They study the development of various types of human capital and their impact on outsourcing (Mayer et al., 2012), the hidden costs of outsourcing (Reitzig and Wagner, 2010) and the factors that influence the concentration of a firm's supply portfolio (Moen et al., 2013). This present paper fits in with these recent published studies but takes a different methodological slant with a focus on firm level, thus aiming to gain a deeper understanding of how firms can organize themselves to manage their IPR. More specifically, it is based on an analysis of outsourcing, a kind of organizational arrangement that has been little explored in literature on IP management.

An analysis of the case of Thales, a French group in the defense industry that in 2005 opted to hand over the running of its IP to an external firm, provides a significant illustration. It offers a unique insight into an emerging model of IPR management. In France, new forms of governance and a new division of labor in the defense industry have led to the development of in-house technological capabilities aimed at better controlling the value chain (Hobday et al., 2005; Prencipe, 1997; Serfati, 2008). The distinction between state and private activities that resulted from a reform of the DGA (Délégation Générale pour l'Armement – military procurement agency) led to the emergence of new industrial groups (Guillou et al., 2008), and the creation of original types of partnerships to create new assets. This situation offers possibilities of hitherto unauthorized interaction, based on the creation of complementary assets. It totally modifies the issue of IPR and their management. The way that IP is organized typifies this renewal, and can lead to new types of coordination being put in place. We should point out here that IP comprises both industrial property (which includes patents) and the protection of literary and artistic works. This article focuses on the protection by patent, which is only one aspect of IP. Our empirical data characterize the new division of activities to better comprehend the current issues involved in organizing protection. Protection, by nature, raises questions of confidentiality that *a priori* set it at odds with outsourcing, especially in the highly sensitive industry of defense. Why should IP be outsourced? How should the outsourcing of IP activities be organized, and how should the capabilities involved in this new organizational arrangement be managed? These are the questions that our research tackles. The answers to these questions will contribute to a better understanding of how to manage IPR activities.

To respond to these questions our article is divided into the following sections. In Section 2, we present the theoretical framework, mobilizing transaction cost theory and the capabilities perspective. Section 3 presents the case of Thales and the

evolution of the defense industry, which is representative of these transformations in terms of IP management. Section 4 provides the results of our empirical findings, notably organizational changes for supervising IPR in Thales. Section 5 discusses the theoretical and managerial implications of this research.

## 2. Literature review

Some investigations highlight how IP is organized to fit in with R&D strategy (Tsuji, 2002), or the growing trend for companies to manage IPR like an asset in its own right (Hanel, 2006). Research led by Granstrand (1999) focusing on major Japanese firms takes an original angle by presenting several possible ways of organizing IP. Although outsourcing is presented as one possible alternative, this issue is neither developed nor explained. An approach combining transaction cost and capability theories provides a useful analytical framework for understanding outsourcing (McIvor, 2009). This framework is used here in the particular case of outsourcing IP.

Williamson's work on transaction costs (1998) has been widely developed to explain the motivations behind outsourcing. We should briefly mention here that a company looks for a suitable form of organization by comparing the costs generated by a transaction with a service provider with the costs of integration. The level of the transaction costs is determined by three critical factors: the specificity of the assets, the frequency of transactions, and the uncertainty. An activity is thus outsourced in the following cases:

- The service or product does not involve specific assets;
- The transaction does not occur too frequently;
- The uncertainty surrounding the transaction is low.

Among these attributes, the specificity of assets plays a large role in explaining the type of governance (McIvor, 2009). In fact, it is the idiosyncratic character of certain assets that warrants carrying out activities internally. On the other hand, assets with low specificity are more advantageously outsourced. In this field, some authors have illustrated that strategies in terms of outsourcing R&D are also defined according to the specificities of innovation and technological assets (Huang et al., 2009). This specificity is particularly important in managing IPR, which involves knowledge of legal and technological aspects, and increasingly knowledge of strategic aspects (Ernst, 2003; Rivette and Kline, 2000). For instance, Herscovici (2008) shows that over the last twenty years, patents have more and more frequently been granted to inventors of processes. Rights may be granted, therefore, on the “*virtual applications of a generic process*” (e.g. computer algorithms). Patents are sought increasingly early on, making it difficult to evaluate their potential application. Granstrand (2000) also mentions that one of the most challenging problems in intellectual property is the “*IP assembly problem*”. This means that products and services become more “*multi-technological*” (using new technologies but also combining more traditional ones). This has led to increasing interdependence between patents and businesses. Additional difficulty arises in the incorporation of the cumulative and systemic knowledge that is characteristic of complex industries (Hobday et al., 2000). The increased complexity of using IPR thus underlines the highly specific nature of IP and brings about new challenges as soon as the question of outsourcing arises. The study by Moen et al. (2013) enriches this perspective. The objective is to analyze the portfolio of law firms (suppliers) used by client companies for outsourced patent legal work. The authors examine the factors that influence the concentration of a firm's supply portfolio (i.e.

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