

SMEs AS PATENT APPLICANTS

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SMEs represent a prime target for public authority awareness-raising policies especially as regards innovation and filing patents. Yet it is not always easy to get a handle on this corporate population in terms of statistics, meaning that it is particularly difficult to systematically identify in the patent databases those SMEs that do file applications.

A previous census of SMEs which had filed patents was conducted in 2004, organised jointly by OSEO and the INPI. The objective was to identify applicant SMEs among the companies that filed a patent application in 1999 and whose application had been published 18 months later. The aim of the survey, performed 5 years after the patent filing, was to measure the impact of the patent filing on the development of the applicant SME. The census was supplemented by a questionnaire-based survey.

This dossier presents the results of a second census of SMEs which have filed patent applications, conducted in collaboration between OSEO and the INPI. It covers patent applications published in 2007 via the national route. The objective of this second survey is slightly different from the first. It involves measuring the importance of SMEs as regards innovation based on patent filing at a given moment in time. To do this, the last available year's patent statistics were analysed. The objective was therefore to identify the SMEs among all the French companies that had a patent application published in 2007 via the national route in order to measure the evolution of the proportion of patents emanating from SMEs and to analyse the profile of those SMEs.

The study was supplemented by a telephone survey conducted by IPSOS on behalf of OSEO, questioning 400 of these SMEs during summer 2008.

I- THE CHARACTERISTICS OF THE SMEs THAT FILE PATENT APPLICATIONS

SMEs accounted for 2,010 patent applications published in 2007 resulting from filings via the national route. In total, 1,438 separate SMEs were identified among the total French applicant population of corporate bodies. There were only 271 intermediate-sized¹ applicant companies, accounting for 113 published applications.

¹ Intermediate-sized companies are defined herein as comprising between 250 and 2,000 employees. They may be independent structures or part of a group whose total workforce does not exceed 2,000 employees.

- ✓ **SMEs accounted for 19.3% of all patent applications published in 2007 by French corporate bodies.**

Table 1 – Breakdown of patent applications published in 2007, resulting from applications via the national route, by applicant legal status (fractional counting) – source INPI (OPI) 2008

	number of patent applications published	as a % of the total of applications published	as a % of the applications by French corporate bodies
FRENCH CORPORATE BODIES	10,395	68.7%	100.0%
SMEs	2,010	13.3%	19.3%
SMEs between 1 and 9 employees (VSE)	776	5.1%	7.5%
SMEs between 10 and 49 employees	785	5.2%	7.6%
SMEs between 50 and 249 employees	449	3.0%	4.3%
INTERMEDIATE-SIZED COMPANIES*	271	1.8%	2.6%
250-999 employees	182	1.2%	1.8%
1,000-1,999 employees	89	0.6%	0.9%
Groups, group parent companies and group subsidiaries, companies comprising more than 2,000 employees	7,281	48.2%	70.0%
Universities, research organisations, foundations	701	4.6%	6.7%
Professional federations or trade organisations	2	0.0%	0.0%
Unspecified	130	0.9%	1.3%
FOREIGN CORPORATE BODIES	2,256	14.9%	
NATURAL PERSONS	2,470	16.3%	
TOTAL APPLICATIONS PUBLISHED	15,121	100.0%	

*independent companies or groups with a total salaried workforce of between 250 and 2,000 employees

In total, French corporate bodies represented some 69% of the 15,121 patent applications that were published via the national route in 2007. The other applications were filed in almost equal proportions by foreign companies (14.9%) and natural persons (16.3%).

Among the French corporate bodies, large companies accounted for the most significant proportion of the applications (70%, i.e. more than 48% of all applications). As for the SMEs (13.3% of the total applications published), they represented 19.3% of the applications filed by French corporate bodies. Research organisations accounted for a relatively small proportion, with 6.7% of French corporate patents.

In the previous patent survey conducted on the 1999 patents (patents filed in 1999 via the national route and subsequently published), SMEs accounted for 19.5% of patents. The SME share of French corporate patents has remained stable. However, the breakdown of patents between the various applicant categories has changed significantly.

Table 2 - Evolution of patent applications published (national route) between 1999 and 2007, by applicant legal status (fractional counting) – source INPI (OPI) 2008

	number of patent applications filed in 1999 and published	number of patent applications published 2007	Evolution 1999/2007
FRENCH CORPORATE BODIES	9,454	10,395	+ 9.9%
of which SMEs	1,839	2,010	+ 9.3%
of which universities, research organisations, foundations	556	701	+ 26.1%
FOREIGN CORPORATE BODIES	2,830	2,256	- 20.3%
NATURAL PERSONS	2,898	2,470	- 14.8%
TOTAL PATENTS PUBLISHED	15,182	15,121	- 0.4%

* this table only includes the applicant categories that are comparable between the applications filed in 1999 and published and the applications published in 2007

While the total number of patents published has dropped very slightly (-0.4%), the number of French corporate patents increased by almost 10% between 2000-2001 (the year in which the 1999 patents were published) and 2007, at the expense of patents originating from foreign corporate bodies (-20%) and patents from natural persons (-15%). The number of patents emanating from public research organisations also moved up significantly (+26%). The 1999 data does not provide information to be able to calculate the progression of patents filed by intermediate-sized companies.

However, within the evolution of filings made by companies and research organisations over the period under study, a number of individual results stand out very sharply:

- The total number of French corporate patent filings over the period rose by 10%. In fact, this is entirely due to the increase in the filings made by 2 companies which are currently the 2 major patent applicants.
- The number of filings made over the period by research organisations rose by 26.1%. If the number 1 applicant in this category is excluded, the increase only represents 3.8%.

Given these observations, it is quite remarkable that SME filings have increased over the base period by 9.3% (around 1.3 – 1.4% on average per annum). These applications come from a large number of separate applicants (1,438 for the patents published in 2007, with an average of 1.4 patents per applicant).

✓ Nearly 2/3 of French companies filing patents are SMEs

In 2007, a total of 2,430 separate French corporate bodies had at least one patent published, to which must be added 850 foreign corporate bodies and 2,584 natural persons.

Among the French corporate applicants, 1,438 were SMEs. SMEs therefore made up almost 59% of the French companies that filed, whereas they constituted less than 20% of the patent applications that were published. Among the SMEs filing patents, 43% were micro-enterprises (comprising less than 10 employees).

The intermediate-sized businesses are very few in number: 113 separate applicants.

Table 3 – Breakdown, by legal status, of those filing patent applications via the national route in 2007 (in number of separate applicants) – source INPI(OPI) 2008

	Number of separate applicants	as a % of French corporate bodies	Average number of patent applications published
SMEs	1,438	59.2%	1.4
SMEs between 1 and 9 employees	621	25.6%	1.2
SMEs between 10 and 49 employees	535	22.0%	1.5
SMEs between 50 and 249 employees	282	11.6%	1.6
INTERMEDIATE-SIZED COMPANIES	113	4.7%	2.4
250-999 employees	88	3.6%	2.1
1,000-1,999 employees	25	1.0%	3.6
Groups, group parent companies and group subsidiaries, companies comprising more than 2,000 employees	667	27.4%	10.9
Universities, research organisations, foundations	131	5.4%	5.4
Professional federations or trade organisations	4	0.2%	0.5
Unspecified	77	3.2%	1.7
FRENCH CORPORATE BODIES	2,430	100.0%	4.2
FOREIGN CORPORATE BODIES	850	/	2.7
NATURAL PERSONS	2,584	/	1.0
TOTAL	6,785	/	2.6

Although there are a lot of SMEs that apply for patents, they actually file few. Hence, 983 SMEs, 68% of SMEs, had only one patent published in 2007 and 201 SMEs (14%) had two published, whereas only 37 SMEs, corresponding to less than 3%, had 5 or more patents published.

Hence, SMEs had an average of 1.4 applications published in 2007, whereas for large companies the average was 10.9.

On average, research organisations filed more applications (5.4 applications published).

Between the patents filed in 1999 and those published in 2007, the average number of patents published per applicant company has increased for the total corporate population (from 3.5 in 1999 to 4.2 in 2007), especially for large groups (from 8.4 to 10.9) and to a lesser extent for SMEs whose average was 1.3 in 1999 compared to 1.4 in 2007.

Furthermore, the number of SMEs filing applications advanced by 2% between 1999 and 2007, moving up from 1,408 to 1,438 SMEs in 2007, whereas the total number of French corporate bodies increased by 1.3% over the same period.

The number of (separate) patent applicants only increased very slightly over the period, whereas the patents filed by French corporate bodies climbed by almost 10%, the main explanation being the increased volume of filings by a handful of very large patent applicants.

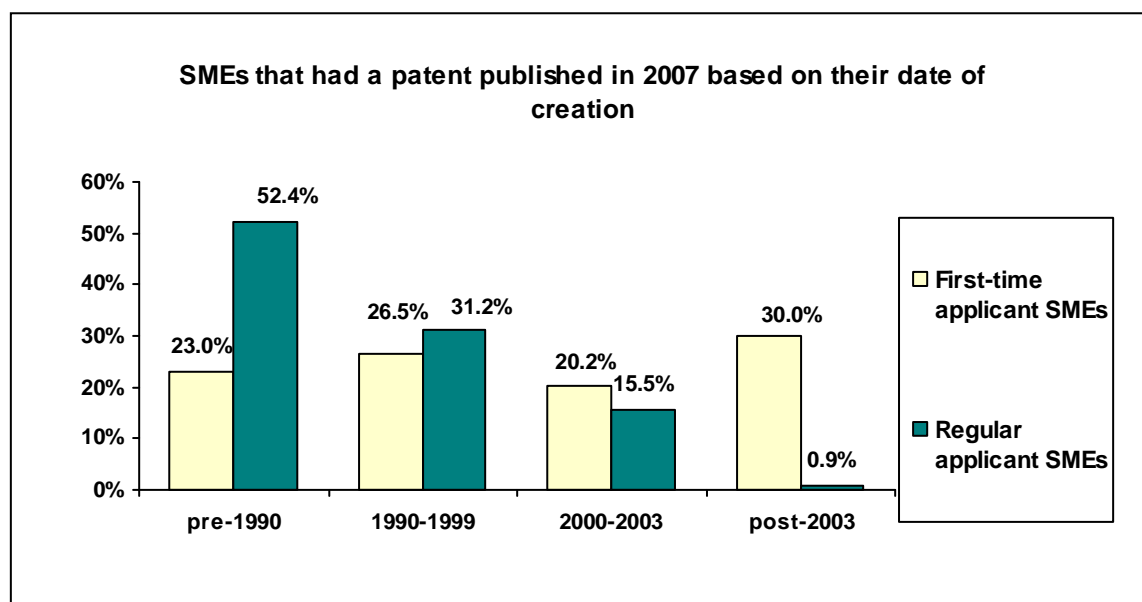
✓ **A substantial proportion of first-time applicants among the SMEs**

The SME applicants of patents that were published are relatively young, with one out of three being established since 2000.

It is worth distinguishing those SMEs that had their first patent published in 2007, referred to as first-time applicants, from the others which file patents on a more regular basis. Out of the 1,438 SMEs which had a patent published in 2007, 38% are first-time applicants and 62% had already filed at least one patent application before the one that was published in 2007.

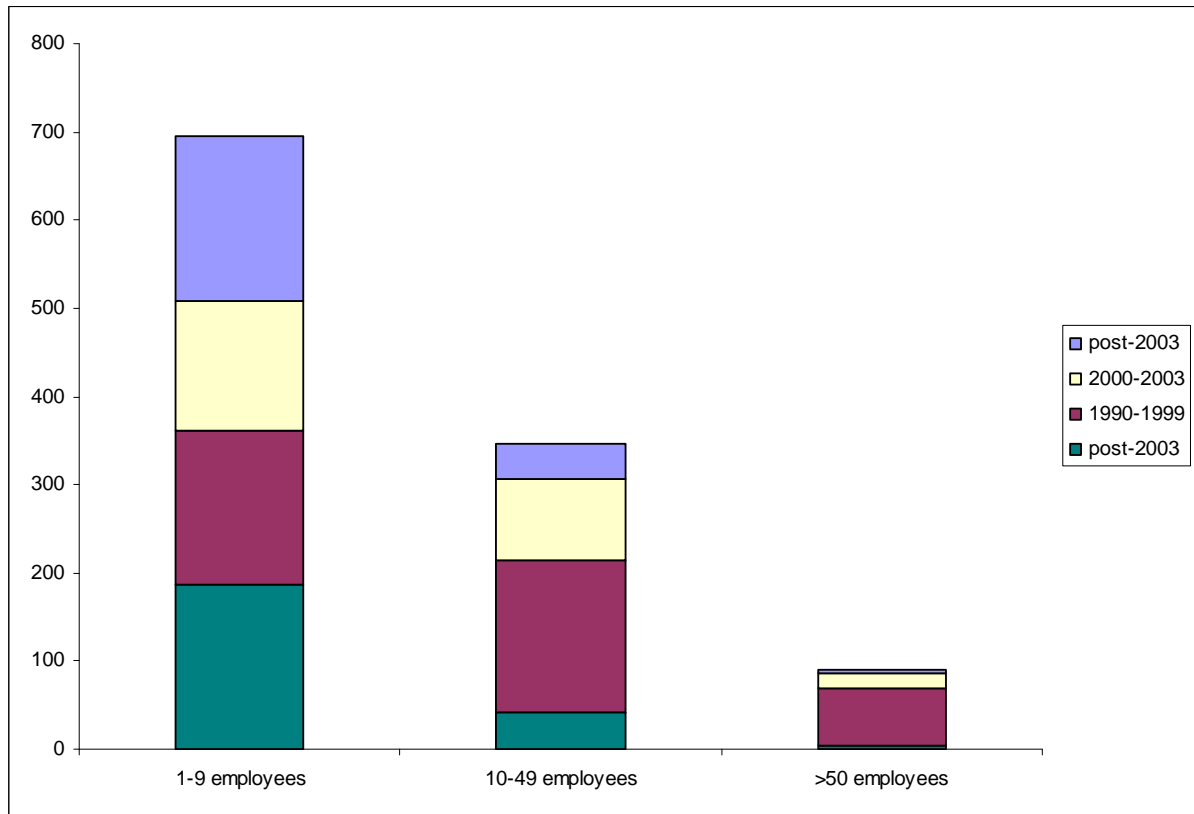
The SMEs that are first-time applicants are essentially young SMEs: 30% of them were created after 2003 whereas this criterion covers less than 1% of the SMEs that file patent applications regularly. For the young, first-time applicant SMEs, the patent application published in 2007 was filed in 2005-2006, less than three years after the company set-up. Conversely, more than 50% of the SMEs which had already filed patents were created before 1990.

Chart 1 – SMEs that had a patent published in 2007 based on company creation date - source OSEO/INPI(OPI) 2008



Quite logically, the youngest companies are also the smallest in terms of salaried workforce, with more than 80% of the companies created post-2003 having less than 10 employees. However, a large proportion of old-established companies also employ few staff: 21% of the 536 applicant SMEs created pre-1990 also have less than 10 employees. It can reasonably be thought therefore that it concerns SMEs whose activity, having reached maturity, needs no additional staff, or companies which, for economic reasons, are unable to increase their workforce.

Chart 2 – Staff numbers of applicant SMEs based on their date of creation – source OSEO/INPI(OPI) 2008



✓ **Less than half the SME applicants are classified within the industrial sectors**

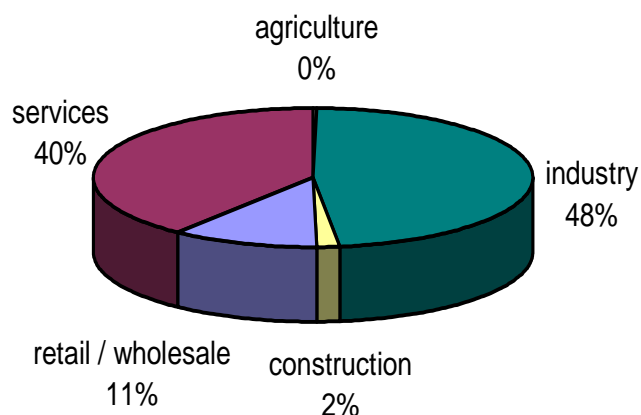
The census of SMEs conducted in collaboration with OSEO enabled the sectors of activity of the applicant companies (NAF code*) to be identified, as was the case for the SMEs that filed applications in 1999.

The proportion of industrial companies among applicant SMEs has dropped from 62% to 48%, while that of service sector companies has moved up from 21% to 40%. It primarily concerns companies specialising in R&D, project engineering and design consultants, employing less than 50 staff in the majority of cases.

The main core are SMEs which are active in research and development in physical and natural sciences, particularly start-ups in biotechnology (NAF code 731Z) and in the systems engineering and design consultancy sector (742C). They are often companies with a small workforce, employing less than 50 staff in the majority of cases. Other applicant SMEs have an activity focused on software and IT such as software publishing (NAF code 722 A), IT system consultancy (721Z) or actually designing software programmes (722C).

* NAF: classification of French business activity

Chart 3 – Breakdown by sector of SMEs that had a patent published in 2007 – source OSEO/INPI(OPI) 2008



✓ **There is a substantial SME presence in the instrumentation and building & public works sectors**

Alongside the information regarding the company's sector of business activity, the SME census also enables the information about the technological areas covered by the patents published to be analysed. Each patent application is coded based on the International Patent Classification (IPC) which relates, not to the company's sector of activity, but to the invention's scope of application, grouped into technological areas (cf. appendix).

The analysis of the technological areas covered by the patents filed by SMEs reveals the extremely strong patent focus on specialisations in certain specific areas. Hence, more than 57% of the patents published in the area of medical technologies and 48% of those concerning building and public works emanate from SMEs.

This is also the case in the area of data processing methods, technical instruments, furniture and games. In all these domains, the proportion of SME patents exceeds 30%.

The proportion of SME patents is situated between 20 and 30% in other areas such as audiovisual technologies, machine tools or chemical engineering. SMEs are often well-represented in certain industrial niches or leading-edge technologies. It is these specialisations which make SMEs key innovation players in certain technologies.

Conversely, in some technological areas the proportion of SME patents is lower. This is notably the case in heavy industries such as chemicals, transport, engines, etc.

**Table 4 – Breakdown of SME patents by technological area –
source INPI(OPI) 2008 (detailed tables in the appendix)**

Area	Sub-area	Patents of French corporate bodies	SME patents	proportion of SME patents
Electrical engineering		2,176	338	15.5%
	Energy – electrical machinery	645	63	9.7%
	Audio-visual technology	174	53	30.2%
	Telecommunications	426	64	15.1%
	Digital communication	280	46	16.5%
	Basic communication processes	85	8	9.3%
	Computer technology	367	84	22.8%
	IT methods for management	24	10	42.2%
	Semiconductors	175	10	5.5%
Instruments		904	344	38.1%
	Optics	191	37	19.6%
	Measurement	500	87	17.5%
	Analysis of biological materials	53	14	26.3%
	Control	160	40	25.0%
	Medical technology	288	165	57.4%
Chemistry – Materials		1,824	270	14.8%
	Organic fine chemistry	502	40	8.0%
	Biotechnology	83	17	20.3%
	Pharmaceuticals	258	53	20.5%
	Macromolecular chemistry , polymers	80	2	2.2%
	Food chemistry	70	20	28.5%
	Basics materials chemistry	124	25	20.5%
	Materials, metallurgy	141	14	9.6%
	Surface technology, coating	101	15	14.4%
	Nanotechnologies and microstructures	31	1	3.5%
	Chemical engineering	207	56	26.8%
	Environmental technologies	227	28	12.5%
Machines – mechanical – transport		4,089	615	15.0%
	Technical instruments	399	151	37.9%
	Machine tools	245	70	28.8%
	Engines – pumps – turbines	581	16	2.7%
	Machines for textiles and paper-making	112	23	20.5%
	Other specialised machines	372	140	37.7%
	Thermal processes	165	30	18.4%
	Mechanical components	531	82	15.5%
	Transport	1,686	102	6.0%
Other		1,114	444	39.8%
	Furniture, games	248	85	34.3%
	Other consumer goods	289	80	27.6%
	Building and public works	577	279	48.3%
Total		10,107	2,010	19.9%

II – RESULTS OF THE SURVEY

In addition to the exhaustive statistical analysis of the SMEs filing patent applications, in July 2008 OSEO contracted the IPSOS consultancy to conduct a telephone survey of a sample of 402 companies: 334 SMEs and 68 intermediate-sized companies, all of which had had at least one patent application published in 2007. (cf. survey methodology in the appendix). The objective of this survey was to get a better handle on the vision and utilisation of the patent by SMEs.

In some instances, the results of this survey are compared with those of the survey of patent applicants in 1999, conducted in 2004 by OSEO and the INP (patent applications filed in 1999 and published in 2000-2001).

✓ Company profiles and organisation

- **Some SMEs are accustomed to filing patents**

It can be seen that some companies are very much used to filing patents. This is evidenced by the 62% of SMEs questioned and 90% of the intermediate-sized companies questioned that had already filed a patent before the one which was published in 2007.

**Chart 4 – With what frequency does your company file patents?
– IPSOS/OSEO data 2008 (based on 281 regular patent filing applicants)**

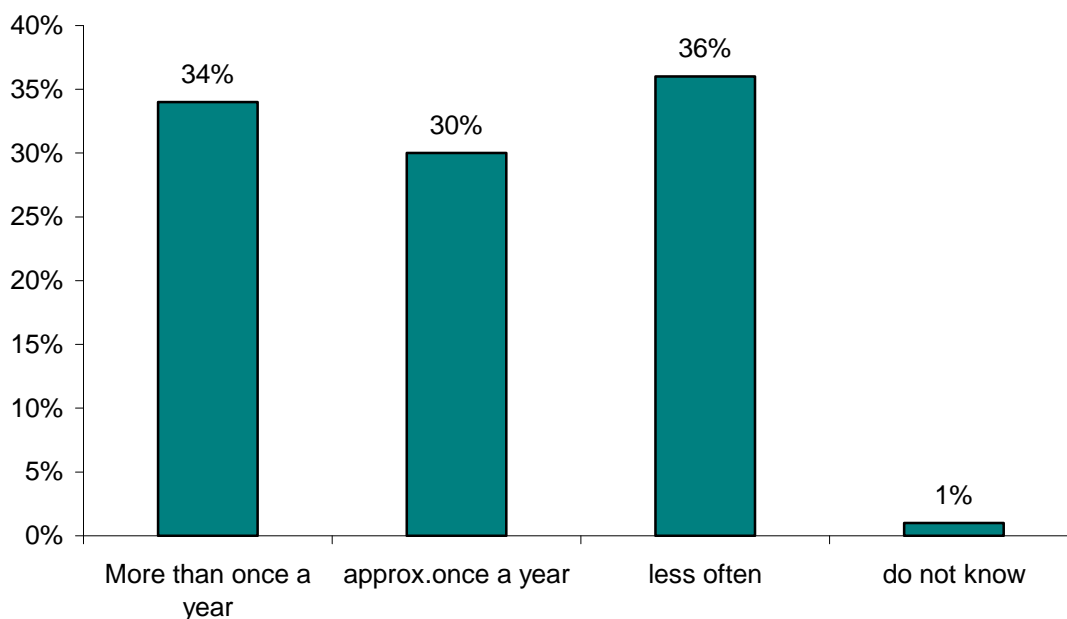


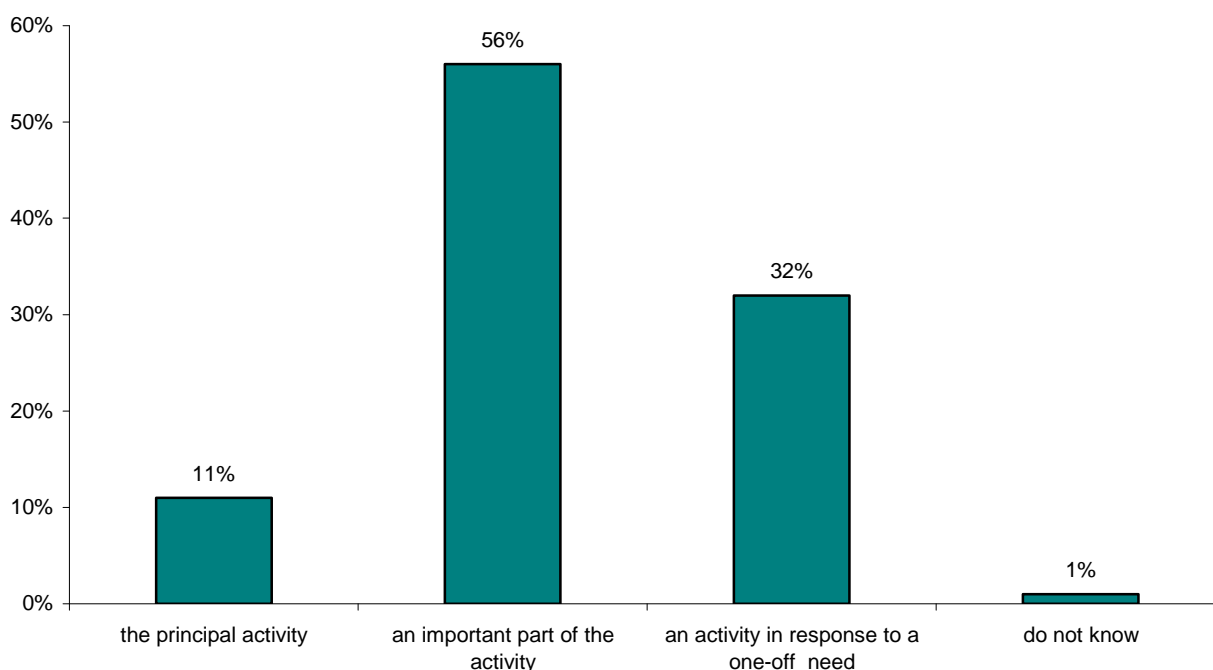
Chart 4 shows that patent filing represents a regular activity: among those companies for which it was not the first patent, 42% of them file a patent application more than once a year and 29% roughly one application a year. Furthermore, the greater the salaried workforce, the more frequent the applications.

- **SMEs which are involved in R&D**

The SMEs surveyed represent a pool of innovating companies: 11% of them state that R&D constitutes their principal activity and 56% that it represents an important part of the company's activity.

There is no obvious change regarding the estimation of the part played by R&D in company activity: in 2007, as in the 2004 survey, 6 SMEs out of 10 stated that R&D was their principal activity or an important part of their activity.

**Chart 5 – What does the R&D function represent for your company?
– IPSOS/OSEO data 2008**



According to their answers, SMEs rarely resort to project engineering consultancies for their research and development activity. For 75% of the respondent companies, this activity is fully managed in-house. For 24%, part of the R&D is outsourced, no doubt in response to one-off needs, and 1% outsource their research completely.

It is worth noting that for the vast majority of SMEs, invention activity, even if it is retained in-house, is not necessarily structured within a clearly identified business function. It may simply emerge from teamwork between staff in different areas of the business (technicians, production staff, executives, etc).

- **Regular collaboration with public laboratories**

One out of five companies surveyed declared already having collaborated with a public research laboratory in work which led to a patent filing. As regards companies which are part of an industry cluster, 45% of them declare that collaboration with a public laboratory has led to a patent application being filed.

- **The company manager deals with industrial property issues himself**

As a general rule, it is the manager of the company who deals with industrial property matters. This can be as high as 90% for small companies of less than 10 employees, and drops down to 52% for SMEs with a workforce of more than 50. In intermediate-sized companies, industrial property is usually dealt with by one specific person (47%).

Quite a significant number of SMEs do have somebody who is specialised in industrial property. This is invariably the case for companies in which R&D represents an important part of the activity and which strive to generate income from their innovations. Furthermore, when the company is structured with an industrial property department, more often than not it is the same department which is responsible for research and development.

**Table 5 – Who deals with the industrial property issues in SMEs?
– IPSOS/OSEO data 2008**

	2007
The company manager	79%
An in-house industrial property specialist	10%
Another department	11%

- **Using an IP Attorney is the general rule**

Help from an IP Attorney in filing a patent is the general rule for regular applicants. However, among SMEs applying for the first time, 13% do not employ the services of an IP Attorney to help them in the patent-filing process.

**Table 6 – Proportion of companies that use an IP Attorney when
filing patents
– IPSOS/OSEO data 2008**

First-time applicant SMEs	87%
Regular SME applicants	95%
Regular intermediate-sized companies	95%

- **Companies are well aware of the sources of aid and support available for innovation**

6 SMEs out of 10 stated that they have benefited from public aid on at least one occasion during their recent innovation process. Among the first-time applicants, half have received public assistance.

Among the SMEs and intermediate-sized companies which have benefited from public support resources, national aid such as OSEO's aid for innovation or the research tax credit are the most used facilities.

Taking into consideration all the SMEs that were questioned, almost one SME out of two has already received aid from OSEO in its innovation process. This aid is spread over the whole SME population, regardless of the number of staff employed or where they are established. 14% of applicant SMEs indicated that they belong to an industry cluster. In the main, these SMEs are regular patent applicants.

The IP pre-diagnosis, driven by the INPI, a recent aid resource, has already been taken up by 4% of applicant SMEs.

Table 7 – What type of support have you benefited from in the context of your innovation process? – IPSOS/OSEO data 2008

Number of employees	1-9	10-49	50-249	all SMEs	250 and +
no aid	45%	36%	40%	40%	48%
... benefited from OSEO* ANVAR* aid	38%	58%	47%	48%	31%
... benefited from a research tax credit	25%	46%	39%	37%	38%
... benefited from a CRITT* aid	12%	14%	13%	13%	10%
... benefited from RDT* support	11%	7%	5%	8%	2%
... employed a CIFRE* doctoral student	7%	12%	15%	11%	20%
... is part of an industry cluster	10%	15%	18%	14%	16%
... won a competition/award for innovation	11%	12%	11%	11%	6%
... belong (or belonged) to an incubator	9%	2%		4%	1%
... benefited from an INPI pre-diagnosis	7%	3%	2%	4%	1%
Others	7%	11%	10%	9%	2%
does not know			1%	0%	1%

*Note: OSEO: Public body providing assistance and financial support to French SMEs and VSEs
 ANVAR: National agency for research enhancement
 CRITT: Regional centre for innovation & technology transfer
 RDT: Technological development network
 CIFRE: Industrial agreements for research-based training

✓ Intellectual property strategies

• The reasons that prompt a patent filing vary little, regardless of company size

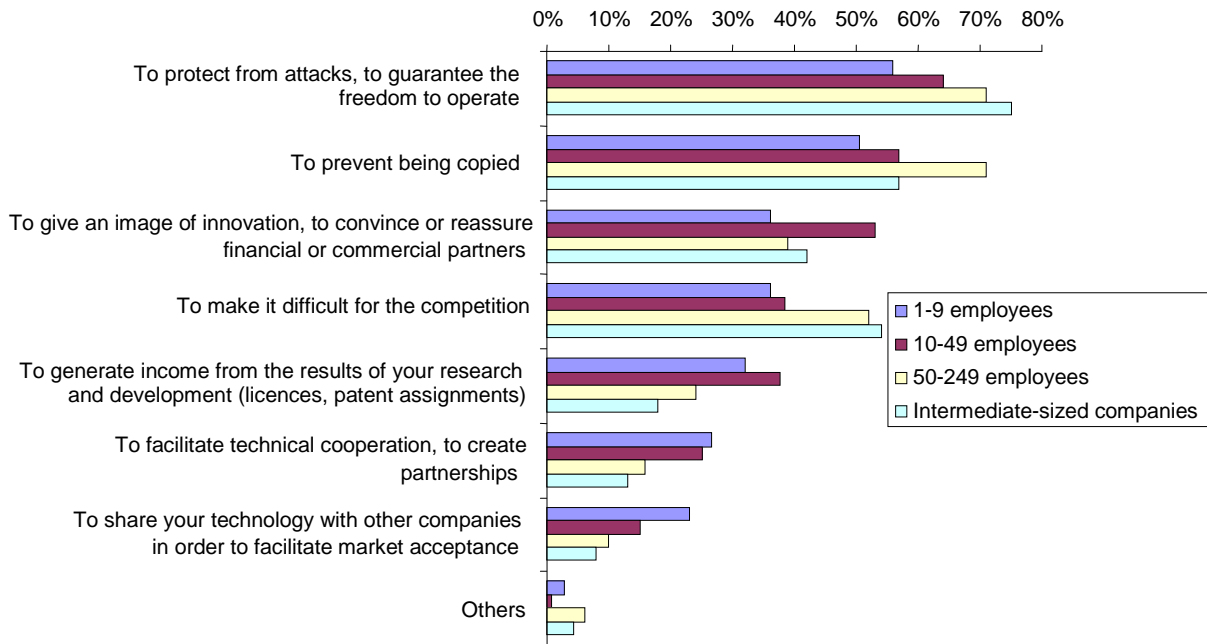
For the majority of SMEs, the patent is filed above all in order to guarantee the freedom to exploit their invention (for 63% of SMEs) and to prevent it being copied (for 57% of SMEs). This means companies that wish to protect themselves against infringement and tends to imply medium-sized companies which exploit their invention themselves.

The third reason is linked to the image of the innovating company that the patent bestows: it serves to convince and reassure financial or commercial partners. This reason was put forward by 44% of SMEs and 42% of the intermediate-sized companies.

At the same time, quite a significant number of companies seek to generate financial income by filing patents. This is the case for 33% of the SMEs and the companies comprising less than 50 employees are particularly influenced by this aspect.

Lastly, it can be noted that the companies surveyed consider technical cooperation or technology sharing as being relatively unimportant reasons for filing a patent application.

**Chart 6 – What reasons prompted you to protect your inventions?
– IPSOS/OSEO data 2008**



- **Comprehensive use of industrial property rights**

This survey shows that a substantial number of SME patent applicants also file applications for other industrial property rights.

In addition to their first patent filing, some 35% of first-time applicant companies, regardless of their size, have also filed a trademark or design application.

As regards the other applicants, the proportion is significantly higher: in total, 58% of applicants generally accompany their patent filing with a trademark or design application. 49% of the SMEs that are accustomed to filing a patent actually file a trademark application at the same time as their patent application. The size of the company has relatively little impact on these filing strategies.

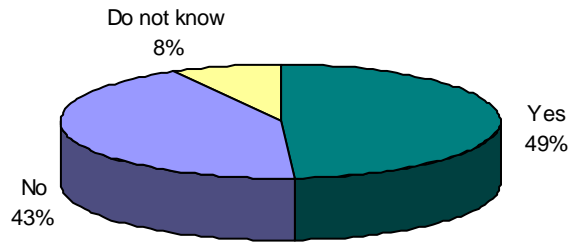
Table 8 – Do you usually file an application for another IP right at the same time as you file a patent application? - IPSOS/OSEO data 2008

	First-time SME applicants	Regular SME applicants	Intermediate-sized companies
a trademark	29%	49%	48%
a design	12%	28%	33%
<i>S-t</i> Yes	35%	58%	58%
No	65%	42%	42%

- **The choice of the trade secret for some patentable inventions**

The respondent companies also make quite frequent use of the trade secret as regards inventions which could be patentable. One company out of two has already opted not to patent an invention: this proportion does not vary with company size.

**Chart 7 – Have you ever opted for the trade secret for some patentable inventions?
- IPSOS/OSEO data 2008**

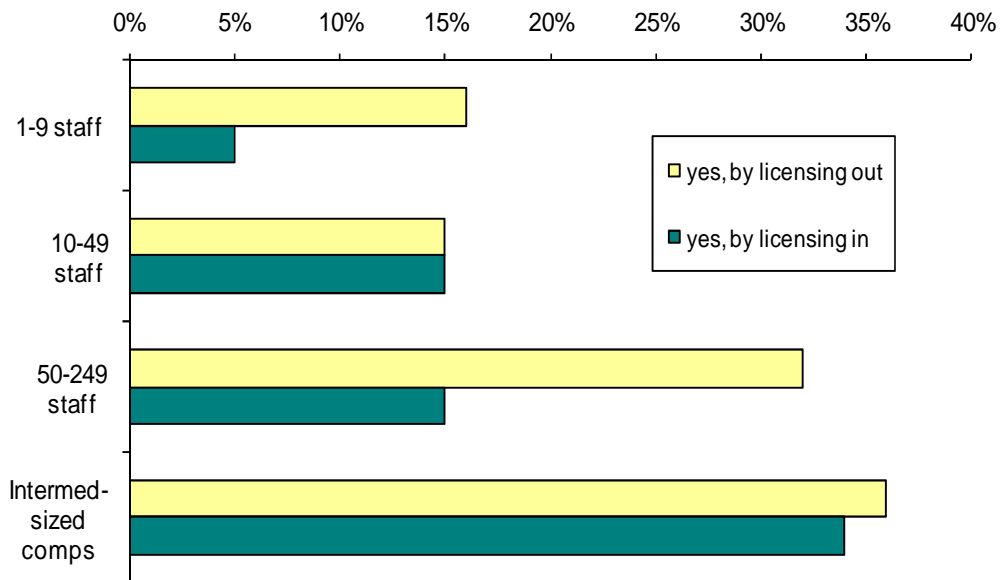


- **The practice of licensing varies depending on the size of the company**

In total, 26% of the SMEs and 49% of the intermediate-sized companies have already concluded licence agreements, be it to license their technology to other companies (licensing out) or conversely, to acquire other companies' technology (licensing in).

There is a sharp contrast depending on the size of the company since 19% of the smaller SMEs have already practised licensing, of which 16% licensing out, whereas this proportion shoots up to 49% for the intermediate-sized companies (of which 36% for licensing out). Furthermore, the larger the company, the more it practises licensing in, in order to acquire the technology of other companies.

**Chart 8 – Have you ever concluded any licence agreements?
- IPSOS/OSEO data 2008**



- **Patent applications aimed at being extended internationally**

One first-time SME applicant out of two envisages extending its first patent, essentially to Europe (90%).

Meanwhile, more than 8 out of 10 SMEs that are used to filing patent applications extend their patent abroad, almost all to Europe at least and $\frac{3}{4}$ to the United States.

Intermediate-sized companies follow a very similar pattern to that of the SMEs. Almost all of them say that they often or sometimes move on to extend their patent abroad, mainly to Europe (96%) just like the first-time applicants, then to the United States (82%), Asia (65%) and other countries (26%).

Table 9 - Do you envisage extending your patent internationally? If so, where?

	Yes	No/do not know
First-time applicants	48%	52%
... of which to Europe	90%	
...to the United States	38%	
...to Asia	19%	
... others	10%	
Regular applicants	81%	19%
... of which to Europe	97%	
...to the United States	77%	
...to Asia	53%	
... others	13%	

- **1 SME out of 4 has already experienced patent infringement litigation**

While, overall, it can be said that one SME out of four replied that it had already been involved, at some point in its history, in a dispute which resulted in legal proceedings, there are very contrasting pictures, depending on the size of the companies.

Only 8% of the companies comprising less than 10 employees have had this type of dispute. It is true that these companies are younger than the average.

On the other hand, nearly half the SMEs of between 50 and 250 employees and 57% of the intermediate-sized companies have already experienced such a dispute.

For all the categories of companies the legal action taken has, in the majority of cases, been for enforcement against infringers of products protected by the company's patent. Hence, contrary to the generally accepted idea, SMEs are not reluctant to enforce their patent rights.

Chart 9 – Have you ever been involved in a dispute which resulted in legal proceedings, regarding patent infringement? - IPSOS/OSEO data 2008

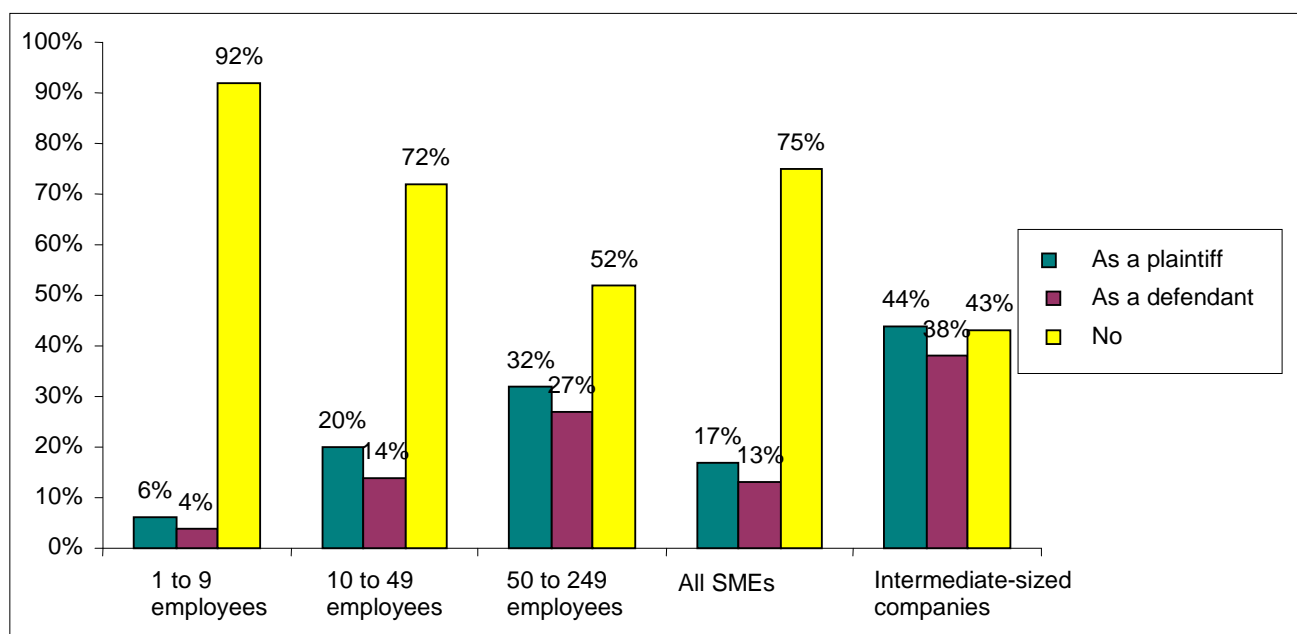


Table 10 – Breakdown of disputes encountered by SMEs by type of opposing company

Opposing companies	An SME	A large group	At the same time an SME and a large group	Others / Do not know	All
SME disputes					
.. SMEs enforcing their rights against infringers	54%	14%	28%	4%	100%
.. SMEs accused of infringement	45%	29%	24%	2%	100%
Total	52%	18%	26%	4%	100%

In the majority of cases, the dispute experienced by SMEs enforcing their rights (17% of total SMEs) has been exclusively with another SME and more rarely with a large group. As regards SMEs confronted by an infringement accusation, the situation is more nuanced: SMEs represent half of the opposing parties, large companies a third.

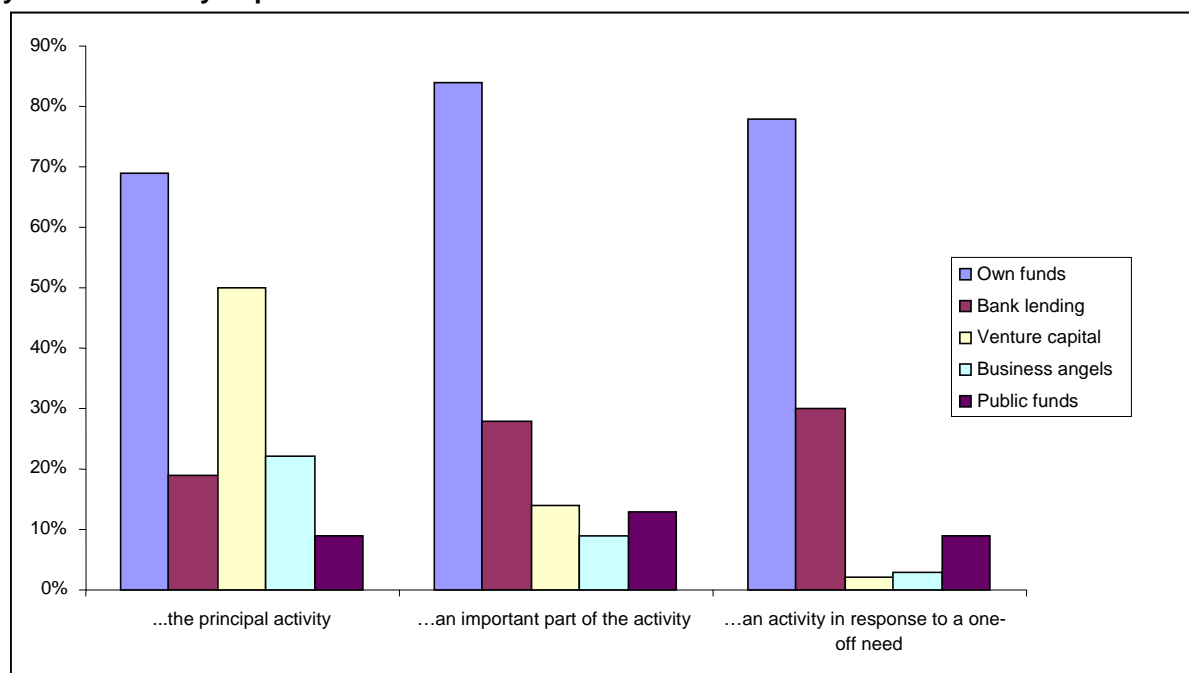
- **The exploitation of innovations protected by patents appears to be mainly financed out of the company's own funds.**

According to the respondents, it is essentially the SMEs' and intermediate-sized companies' own funds that have to be employed to finance the exploitation of the innovations once patented. Only one SME out of three relies on bank financing and barely one out of ten on public financing.

The importance of R&D in the company's activity has an influence on the company's choice of financing options available:

- in one case out of two, SMEs where R&D is significant cite venture capital as a possible source of financing and in one case out of five the cash input from "business angels". It is also these SMEs which are the keenest to generate income from their inventions through licences or patent assignments.
- conversely, the SMEs that are the least committed to R&D rely more on their own funds and bank lending to exploit their innovation(s).

Chart 10 – In order to develop products protected by your patents, what type of financing do you have or do you plan to use? - IPSOS/OSEO data 2008



Conclusion

SMEs accounted for nearly 20% of the patent applications published by French corporate bodies in 2007 via the national route. This proportion is stable compared to the previous 1999 patent survey. SME patents have advanced by just over 9%, in line with the progress of patents filed by the entire population of French corporate bodies. Totalling 1,438 in number, SMEs represent more than half the population of French corporate bodies filing patent applications.

This census highlights the emergence of an increasingly important category of SMEs, namely the small SMEs (less than 10 employees) whose prime activity is directly that of research and development.

Furthermore, the proportion of SMEs that had a patent published for the first time is significant, indicating the substantial renewal of applicant SMEs and the reservoir of patentable innovations that exists within SMEs.

As confirmed by the survey, applicant SMEs are highly involved in an innovating process and a large proportion have benefited from aid from OSEO and from research tax credits.

Filing a patent is not conducted by chance, it is an integral part of an overall approach and a trademark or design application is often made at the same time.

Methodology

Definition of SMEs and intermediate-sized companies:

Identification of the SMEs was conducted within the European definition which takes into account several criteria:

- the number of employees is less than 250,
- sales are less than 50 million euros,
- the company is independent: it must not be more than 25% owned by another company which does not itself meet the SME definition. Within the SMEs, there are also the VSEs, or "very small enterprises", also referred to as micro-enterprises, which correspond to SMEs of between 1 and 9 employees.

To keep abreast of the evolution of public policies in their support for companies, we decided to create a category of intermediate-sized companies: these consist of independent companies or groups whose total salaried workforce is comprised between 250 and 2,000 employees. A decree (decree n°2008-1354) was published on 18 December 2008 specifying the criteria used in determining the category to which a company would belong for statistical and economic analysis requirements. Regrettably this decree was published too late to enable the INPI company category criteria to be harmonised.

Data enhancement of the patent applicants' file and SME identification:

Constitution of a file of French companies filing patent applications

15,121 patent applications were filed via the national route in 2005-2006 and published in 2007. Of the total of these filings, 10,395 applications were made by French corporate bodies.

The INPI gave the list of these French corporate applicants to the Insee (National Institute for Statistics and Economic Studies) in order to obtain their Siren code (National identification number attributed to companies).

Enhancing the file with Siren data

The INPI provided OSEO with a file of 2,326 unidentified French corporate bodies corresponding to some 4,503 patent applications published in 2007. The Siren code was missing for 126 of these 2,326 applicants. They were identified thanks to a manual search in various databases containing legal information on companies.

Enhancing the file with information from the DIANE database²

The company data recorded was then enhanced using data taken from the DIANE database, such as sales, workforce, NAF code (French classification of activities), date of creation, etc. This enabled SMEs to be identified within the community definition³, that is to say meeting the following criteria:

- workforce: the number of employees must be less than 250
- sales: must be less than 50 million euros
- independence: the company must not be more than 25% owned by another company which itself does not meet the SME definition. Companies which met the first two criteria and whose majority shareholder was a natural person were categorised as SMEs,
- belonging to a group: in the case of a business combination, aggregate workforce and aggregate sales of all the companies in the grouping must not exceed the limits governing the community definition of the SME.

Identifying those SMEs which are active as regards filing patents simply on the basis of the applications published via the national route is somewhat restrictive. To get a much more complete picture, the applications filed via routes other than the national route also need to be taken into consideration. However in fact, for 90% of French inventions which give rise to a patent filing, the application is filed via the national route⁴. It is therefore fair to take the view that the initial enhancement process, albeit limited to the national route, does nevertheless provide quite a good approximation of the patent filing process as conducted by French SMEs.

French corporate body:

The patent databases enable the corporate or natural person status of the applicant to be identified. The nationality given is that of the applicant. In cases where there has been a joint patent filing by several applicants, a fractional proportion of the filing is attributed to each of the applicants (fractional counting).

² This is the Coface SCRL financial database published by the Van Dijk Bureau. This database uses the company accounts obtained from the registry of the Commercial Court and general information on 1,135,045 French companies in total, notably the information regarding the shareholding structure which enables independent companies within the community definition to be identified.

³ http://ec.europa.eu/enterprise/enterprise_policy/sme_definition/sme_user_guide.pdf

⁴ Cf. Dossier from the Observatory for IP, "The Inventions of French origin", July 2004, INPI, www.inpi.fr.

APPENDICES

Appendix 1: Methodology of the survey

A telephone survey was conducted in July 2008 using an initial sample of 420 French companies with less than 2,000 employees which had at least one patent published in 2007 via the national or European route. The company file on which the survey was based was the one sourced by the INPI and used in the first part of this study. This survey picks up several of the same questions that were asked in a previous survey, the results of which were published in 2004 in a report entitled "SMEs as patent applicants in France: characteristics and developments".

The file was constituted using the quota method in order to provide a representative sample of independent SMEs within the community definition and of intermediate-sized companies. In constituting the sample, the fact that the company was a first-time or regular applicant was also taken into account.

As it turned out, the IPSOS Institute questioned 402 companies from this file, broken down as follows:

- 334 independent SMEs
- 68 intermediate-sized companies, that is to say companies of between 250 and 2,000 employees
broken down as:
 - 121 first-time applicants
 - 281 regular applicants

The response rate to the survey was particularly high: 1,507 addresses were used to perform 402 interviews. In total, 27% of the addresses used led to an interview.

Appendix 3: The International Patent Classification (IPC)

Since 1975, patents are structured into a very precise technological classification which is used by all countries in their patent system: the international patent classification, commonly referred to as the "IPC". It is a very precise hierarchical structure which, in its eighth edition, divides technology into eight sections comprising approximately 70,000 subdivisions. Each subdivision is allocated a symbol consisting of Arabic figures and Latin characters. The relevant IPC symbols are indicated on each patent document (published patent applications and granted patents), of which more than a million have been established each year for the last 10 years. The IPC symbols are allocated by the national or regional industrial property office which publishes the patent document.

The classification system is extremely useful when searching for patent documents in the context of a "state of the art" search. This search is necessary for patent granting authorities, potential inventors, research and development units, as well as all those who take an interest in the applications or development of technology.

Unfortunately, this classification is ill-adapted to analysis in terms of technological strategies. It was therefore necessary to define groupings providing the link with the categories used in industrial economy and in the analysis of technological policies. The OST (Observatory for Sciences and Technologies) and the INPI, in collaboration with the Fraunhofer Institute in Karlsruhe drew up a technological nomenclature comprising areas and sub-areas. As this nomenclature no longer corresponded with the 8th classification which came into force on 1st January 2006, the WIPO revised this nomenclature in 2008.

Correlation table between technological areas and IPC –Table revised by the WIPO in May 2008

	Field of Technology	International Patent Classification (IPC) Symbols
I: Electrical engineering		
1	Electrical machinery, apparatus, energy	F21#, H01B, H01C, H01F, H01G, H01H, H01J, H01K, H01M, H01R, H01T, H02#, H05B, H05C, H05F, H99Z
2	Audio-visual technology	G09F, G09G, G11B, H04N-003, H04N-005, H04N-009, H04N-013, H04N-015, H04N-017, H04R, H04S, H05K
3	Telecommunications	G08C, H01P, H01Q, H04B, H04H, H04J, H04K, H04M, H04N-001, H04N-007, H04N-011, H04Q
4	Digital communication	H04L
5	Basic communication processes	H03#
6	Computer technology	(G06# not G06Q), G11C, G10L
7	IT methods for management	G06Q
8	Semiconductors	H01L
II: Instruments		
9	Optics	G02#, G03B, G03C, G03D, G03F, G03G, G03H, H01S
10	Measurement	G01B, G01C, G01D, G01F, G01G, G01H, G01J, G01K, G01L, G01M, (G01N not G01N-033), G01P, G01R, G01S; G01V, G01W, G04#, G12B, G99Z
11	Analysis of biological materials	G01N-033
12	Control	G05B, G05D, G05F, G07#, G08B, G08G, G09B, G09C, G09D
13	Medical technology	A61B, A61C, A61D, A61F, A61G, A61H, A61J, A61L, A61M, A61N, H05G
III: Chemistry		
14	Organic fine chemistry	(C07B, C07C, C07D, C07F, C07H, C07J, C40B) not A61K, A61K-008, A61Q
15	Biotechnology	(C07G, C07K, C12M, C12N, C12P, C12Q, C12R, C12S) not A61K
16	Pharmaceuticals	A61K not A61K-008
17	Macromolecular chemistry, polymers	C08B, C08C, C08F, C08G, C08H, C08K, C08L
18	Food chemistry	A01H, A21D, A23B, A23C, A23D, A23F, A23G, A23J, A23K, A23L, C12C, C12F, C12G, C12H, C12J, C13D, C13F, C13J, C13K
19	Basic materials chemistry	A01N, A01P, C05#, C06#, C09B, C09C, C09F, C09G, C09H, C09K, C09D, C09J, C10B, C10C, C10F, C10G, C10H, C10J, C10K, C10L, C10M, C10N, C11B, C11C, C11D, C99Z

20	Materials, metallurgy	C01#, C03C, C04#, C21#, C22#, B22#
21	Surface technology, coating	B05C, B05D, B32#, C23#, C25#, C30#
22	Micro-structural and nano-technology	B81#, B82#
23	Chemical engineering	B01B, B01D-000#, B01D-01##, B01D-02##, B01D-03##, B01D-041, B01D-043, B01D-057, B01D-059, B01D-06##, B01D-07##, B01F, B01J, B01L, B02C, B03#, B04#, B05B, B06B, B07#, B08#, D06B, D06C, D06L, F25J, F26#, C14C, H05H
24	Environmental technology	A62D, B01D-045, B01D-046, B01D-047, B01D-049, B01D-050, B01D-051, B01D-052, B01D-053, B09#, B65F, C02#, F01N, F23G, F23J, G01T, E01F-008, A62C
IV: Mechanical engineering		
25	Handling	B25J, B65B, B65C, B65D, B65G, B65H, B66#, B67#
26	Machine tools	B21#, B23#, B24#, B26D, B26F, B27#, B30#, B25B, B25C, B25D, B25F, B25G, B25H, B26B
27	Engines, pumps, turbines	F01B, F01C, F01D, F01K, F01L, F01M, F01P, F02#, F03#, F04#, F23R, G21#, F99Z
28	Textile and paper machines	A41H, A43D, A46D, C14B, D01#, D02#, D03#, D04B, D04C, D04G, D04H, D05#, D06G, D06H, D06J, D06M, D06P, D06Q, D99Z, B31#, D21#, B41#
29	Other special machines	A01B, A01C, A01D, A01F, A01G, A01J, A01K, A01L, A01M, A21B, A21C, A22#, A23N, A23P, B02B, C12L, C13C, C13G, C13H, B28#, B29#, C03B, C08J, B99Z, F41#, F42#
30	Thermal processes and apparatus	F22#, F23B, F23C, F23D, F23H, F23K, F23L, F23M, F23N, F23Q, F24#, F25B, F25C, F27#, F28#
31	Mechanical elements	F15#, F16#, F17#, G05G
32	Transport	B60#, B61#, B62#, B63B, B63C, B63G, B63H, B63J, B64#
IV: Other fields		
33	Furniture, games	A47#, A63#
34	Other consumer goods	A24#, A41B, A41C, A41D, A41F, A41G, A42#, A43B, A43C, A44#, A45#, A46B, A62B, B42#, B43#, D04D, D07#, G10B, G10C, G10D, G10F, G10G, G10H, G10K, B44#, B68#, D06F, D06N, F25D, A99Z
35	Civil engineering	E02#, E01B, E01C, E01D, E01F-001, E01F-003, E01F-005, E01F-007, E01F-009, E01F-01#, E01H, E03#, E04#, E05#, E06#, E21#, E99Z

QUESTIONNAIRE

SURVEY OF SMEs and INTERMEDIATE-SIZED COMPANIES THAT FILED A PATENT APPLICATION WHICH WAS PUBLISHED IN 2007

Your company

To companies of less than 250 employees only

Q1: Is your company part of a group which in total comprises more than 250 people?

- Yes
- No

Your company and innovation

To first-time applicants only

Q2: Was the patent filed by your company in 2005-2006 its first?

- Yes
- No

To regular applicants only

Q3: On average, how often does your company file patents?

- more than once a year
- approximately once a year
- less often

Q4: For your company, is the research and development function?

- The principal activity
- An important part of the activity
- An activity in response to a one-off need

Q5: Is your company's research and development function outsourced?

- Yes, totally
- Yes, partially
- No

Q6: In the context of your innovation process, have you resorted to public aid?

- Yes
- No

To the people who answered "Yes" to Q6

Q7: What type of public support have you benefited from in the context of your innovation process?

- Your company is part of an industry cluster
- Your company belongs (belonged) to an incubator
- You have won a competition/award for innovation
- You have benefited from OSEO ANVAR aid
- You have benefited from support from a Technological Development Network (RDT)
- You have benefited from a research tax credit
- You have been in contact with the Regional Centres for Innovation and Technology Transfer (CRITT)
- You have employed a CIFRE doctoral student
- You have benefited from an INPI pre-diagnosis
- Others, specify

The patent filing

Q8: What reasons prompted you to protect your invention(s)?

(Several answers possible)

- to prevent being copied
- to generate income from the results of your R&D (licences, patent assignments)
- to facilitate technical cooperation, to create partnerships
- to share your technology with other companies in order to facilitate market acceptance
- to give an image of innovation, to convince or reassure financial or commercial partners
- to protect against attacks, to guarantee the freedom to operate
- to make it difficult for the competition
- Others, specify

To first-time applicants only

Q9: Do you envisage extending your patent(s) published in 2007 internationally?

- Yes
- No

To those who replied “Yes” to Q9

Q10: Where do you envisage extending your patent(s) published in 2007?

- To Europe
- To the United States
- To Asia
- Others: specify...

To regular applicants only

Q11: Do you usually extend your patents internationally?

- Yes, often
- Yes, sometimes
- No

To those who replied “Yes” to Q11

Q12: And as a general rule, where do you extend your patent to?

- Europe
- The United States
- Asia
- Others: specify...

To all

Q13: Have you ever concluded any licence agreements? *(Several answers possible)*

- yes, in order to license my technologies out to other companies
- yes, in order to acquire technology from other companies
- no

To all

Q14: Have you had collaboration with a public research laboratory which led to a patent being filed?

- Yes
- No

Your company and industrial property

To first-time applicants only

Q15: Did you file an application for another IP right at the same time as you filed your patent application?

- Yes, a trademark application
- Yes, a design application
- No

To regular applicants only

Q16: Do you usually file an application for another IP right at the same time as you file a patent application? *Both “yes” answers are possible*

- Yes, a trademark application
- Yes, a design application
- No

To first-time applicants only

Q17: Did you use an IP attorney when filing your patent?

- Yes
- No

To regular applicants only

Q18: Do you usually use an IP attorney when filing your patents?

- Yes
- No

To all

Q19: Who deals with the industrial property issues in your company?

- The company manager
- An in-house industrial property specialist
- A specific department

To those who answered “A specific department” to Q19

Q20: Which department deals with the industrial property issues in your company?

- The legal department
- The production department
- The marketing department
- The research and development department
- Another department: specify

To all

Q21: Have you opted for the trade secret for some of your patentable inventions?

- Yes
- No

Financing the exploitation of the patent(s) published in 2007

Q22: In order to develop products or services associated with your invention(s) protected by a patent, what type of financing do you have or do you plan to use?

(several answers possible)

- Own funds
- Traditional bank financing
- Venture capital

- Contributions from Business Angels
- Contributions from public seed funds
- Others, specify

Patent disputes

Q23: Have you ever been involved in a dispute which resulted in legal proceedings regarding patent infringement?

(both “yes” answers are possible simultaneously)

- yes, as a plaintiff, bringing proceedings against infringers
- yes, as a defendant accused of infringement
- no

To those who answered “Yes” to Q23

Q24: With which type of company did you have this or these dispute(s)? Was it ... ?

- An SME
- A large group
- At the same time an SME and a large group
- (Other)

To those who answered “Yes” to the item “SME”

Q25: What was the geographic origin of this SME?

- European
- American
- Asian
- Other: specify.....

To those who answered “Yes” to the item “large group”

Q26: What was the geographic origin of this large group?

- European
- American
- Asian
- Other: specify

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