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In addition, the IPI consultancy team would like to express its strong thanks to the members of the expert advisory group (EAG) for the time, ideas and energy they have devoted to the project.

The expert advisory group was installed in June 2013 with the aim to review the work done by the consultancy team, to give suggestions and ideas. The EAG participated in all consortium meetings of the project. The EAG members were :

- Ian Harvey (Adjunct Professor at Imperial College Business School, London , ex-CEO of BTG plc, Chairman of the UK government's Intellectual Property Advisory Committee from 2001 to 2005, UK)
- Josep Maria Pujals (Customer Service Department Manager in an Intellectual Property Law Firm, ES)
- Pierre Loyer (Independent patent engineer, FR)
- Björn Wolf (Head of the department for technology transfer and legal affairs at Helmholtz-Zentrum Dresden-Rossendorf, DE)

The IPI consultancy team would also like to express its strong thanks to the attendees of the workshop held in the premises of the European Commission in Brussels. It gave the opportunity to present the work done and the first draft of the analysis and recommendations. The discussion with the attendees was a great help for the writing of the final report.

### Executive summary

The IPI project provides a new concept for exploitation of IP for industrial innovation, and is one of the first European projects to focus on unused/underutilised IPR so-called “sleeping patents”.

Innovation is the cornerstone of the competitiveness of SMEs in today’s world. Most SMEs innovate internally and generate their own Intellectual Property (IP; mostly patents); however, new trends such as open innovation, indicate that external IP can reduce the time to market of innovation, alleviate issues such as lack of R&D internal resources, as well as permitting more ambitious innovating. Unfortunately, the vast majority of SMEs is not aware of these opportunities.

The goal of the “Exploitation of IP for Industrial Innovation” study is to assess whether and, if so, how and under which conditions, an effective policy instrument (based on a project model) can be designed that increases the likelihood of new business development based upon external IP acquisition and more specifically, unused patented inventions. The project provides a new concept for the exploitation of IP for industrial innovation, and is one of the first European projects to focus upon unused/underutilised IP Rights, so-called “sleeping patents.” The ultimate objective of the project is to boost the motivation, competence and framework conditions of SMEs and individual innovators, in order to build new business fields based upon a sustainable competitive advantage, i.e. strong IP.

The project model was tested in a field trial by four Industrial Settings that are well known intermediaries for their respective SMEs’ sector. They raised SMEs’ or individual innovators’ awareness of external IP, harvested their technological requirements and forwarded them to the partners searching patent databases and marketplaces. They then helped the SMEs to evaluate the IP found, and offered support to decide whether to start the acquisition process or not. Results of the field trial indicate that SMEs are not sufficiently aware of external IP and don’t always have a clear understanding of how to formulate their technological requirements in a way that can be searched in databases; however, when the demand is clear, IP is almost always found.

Over the course of the study, several hundred SMEs/innovators were informed of the service provided, 65 technology demands were formulated by 36 SMEs/innovators, 56 demands obtained at least one match and overall 309 matches were obtained (5,5 matches on average per demand). All matches were reviewed and evaluated for acquisition potential by the ideas’ owners. Even though most SMEs found the matches compatible with their idea, only a few matches evolved towards the negotiation phase (One has entered into negotiation, two other SMEs are still in the process of deciding whether or not they wish to continue at the time of publication).

The IPI study has allowed many insights to be gained about the patent pull service offered and many “lessons learnt” to improve it. It also demonstrated that it is not possible to develop a policy focused exclusively on sleeping patents as it is almost impossible to identify them; however, it has demonstrated that a policy instrument can be developed to increase the use of external IP by SMEs. The proposed policy can be defined as addressing three objectives: (i) support the SMEs in their external IP acquisition, (ii) increase awareness and provide tools to SME support organisations and (iii) increase awareness in SMEs. It is based on the development of a specific voucher instrument to accelerate the IP use. Such a policy favouring such IP use would encompass sleeping patents.

## Revision History

The following table describes the main changes done in the document since it was created.

Revision	Date	Description	Author (Organisation)
V 1	August 2014	Draft of the final report	inno AG
V 2	November 2014	Second Draft of the final report Comments and inputs (written and during the last consortium meeting) from the project officer, the partners and the EAG members were taken into account.	inno AG
V3	January 2015	Comments and inputs from the workshop with European Commission taken into account.	inno AG
V4	February 2015	Comments from the European Commission taken into account	Inno AG
V5	March 2015	Comments from the European Commission taken into account	Inno AG
V6	April 2015	Comments from the European Commission taken into account	Inno AG

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## 1. INTRODUCTION

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The project "Exploitation of Intellectual Property for Industrial Innovation" (IPI) aims to assess whether and, if so, how and under which conditions, an **effective policy instrument** can be designed that raises the likelihood of **new business development based upon demand for unused patented inventions**.

The goal of the exploitation of suitable unused patents in this context is one of an industrial nature: **solving a technical problem for a process or product of an existing or future business** for a small and medium sized enterprise (SME), or for the founding of a new company. For small firms, a patent will provide freedom to use the solution (via a licence) or the right to stop others from using it; however, the invention usually needs further development, or related knowhow for it to become a product.

The motivation of the potential policy instrument is not financial, i.e. to generate revenues to the holders of the unused patents, but based on the willingness to accelerate the development of the SMEs mainly by using external IP

The background for such an initiative is the 22<sup>nd</sup> commitment the Commission has made as part of the Innovation Union Flagship<sup>1</sup> of the Union's Europe 2020 Strategy for Growth. The efficiency of the market for intellectual property, patents in particular, is amongst the main topics. **The idea is to better link buyers and sellers of patents and to increase the hitherto exploitation of unused patents.**

This action is part of the general objective of the Union's Policy area *Enterprise and Industry* of promoting innovation as a source of growth, especially by improving framework conditions and support measures. This action is implemented under the CIP-EIP with a view to enhancing the business environment for SMEs, and has the Competitiveness and Innovation Framework Programme as a legal basis.

This first chapter deals with:

- ▶ The importance of innovation for SME development and the place of IP in the process of innovation
- ▶ The focus upon unused patents
- ▶ The existing European IP support organisations

It concludes in the description of the next sections of this report.

### 1.1. Towards a new innovation process model

Innovation is part of the key areas covered by the five key targets set in "Europe 2020", the seven year growth strategy adopted by the European Union with a view to creating a more competitive economy with higher employment. It has never been so important to foster the "virtuous circle" leading from business research and development (R&D) investment to innovation and creation of value.

The innovation capacity of industry depends, not only on large enterprises with market power, but crucially on ambitious entrepreneurs and small enterprises aiming for radical innovations and fast growth<sup>2</sup>.

Several policies have been developed at EU and national levels to support innovation within companies, especially SMEs. Those policies are structured according to the following principles:

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<sup>1</sup> Communication (2010) 546 of 6.10.2010

<sup>2</sup> HORIZON 2020 WORK PROGRAMME 2014 – 2015

- ▶ Being careful not to interfere with market forces, policy in general and European policy in particular, focus on **providing businesses with effective framework conditions which support the creation of new knowledge and its commercial and non-commercial valorisation.**
- ▶ To **focus and work on the framework conditions** which are defined by legal/tax regulations, availability of qualified staff, physical infrastructure, engagement of public bodies in innovation procurement, etc.
- ▶ To **increase knowledge generation** (for instance by increasing the budget of H2020 compared to FP7 and even more so to FP6).

### 1.1.1. Innovation is the integration of ideas

In today's global economy, in order to retain a competitive edge, SMEs need to create new and higher value products and processes. SMEs must continually improve the features, benefits, and performance of their products because of continuous advances in technology and international competition.

Working on new R&D projects can be a real challenge for SMEs and the logic of an internally oriented approach is changing towards open innovation. "Opening up" innovation processes is an important issue and the lack of R&D resources of SMEs and the need to accelerate their entry into the market could be motives for looking beyond organisational boundaries for technological knowledge.

Open innovation is based upon a landscape of abundant knowledge, which must be used readily if it is to provide value for the company that created it. For example, a company should no longer lock up its IP, but instead it should find ways to profit from third parties use of that technology through licensing agreements, joint ventures and other arrangements.

*"Open Innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology."*

by Henry Chesbrough, Adjunct Professor and Executive Director, Center for Open Innovation, Haas School of Business, University of California.

In this logic of open innovation, **exploitation of IP** could be a **useful tool** for encouraging innovation, and could help SMEs to diversify their business activity and gain better market access.

### 1.1.2. Innovation process using external patents

While the internal knowledge development is still predominant in SMEs, more and more companies are looking at using external knowledge through technology transfer or acquisition of patents (or IP).

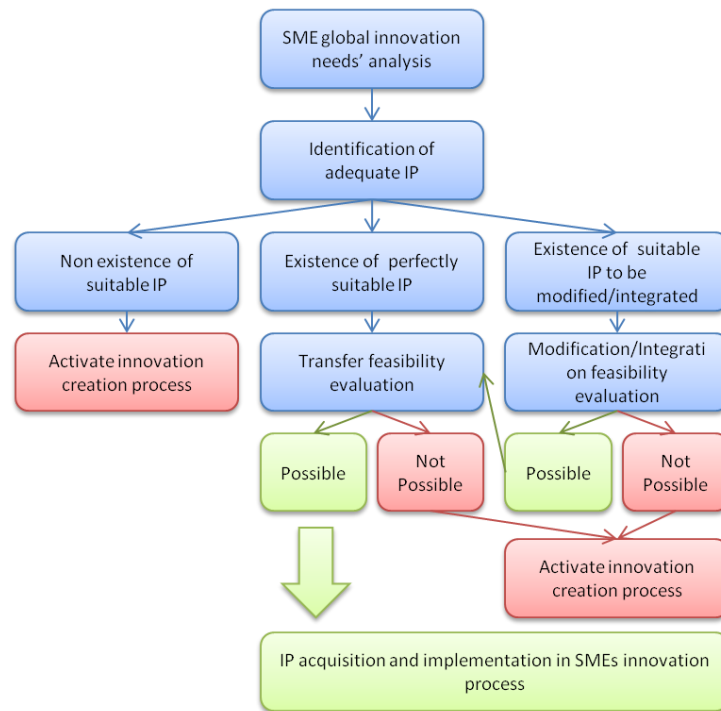
**Figure 1** is adapted from A.C. Caputo et al<sup>3</sup> and shows the path to be followed by a company from the identification of a need to the acquisition of knowledge decision. The model shows that the company must be capable of searching patents, evaluating them and negotiating their acquisition.

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<sup>3</sup> A.C. Caputo, F. Cucchiella, L. Fratocchi, P.M. Pelagagge, F. Scacchia, (2002) "A methodological framework for innovation transfer to SMEs", *Industrial Management & Data Systems*, Vol. 102 Iss: 5, pp.271 - 283



## Exploitation of IP for industrial innovation



**Figure 1:** Decision model to acquire external IP (adapted from A.C. Caputo<sup>3</sup>)

Unfortunately, for a company to follow this path, it needs to consider external patents not only as a source of knowledge to keep abreast with the latest technologies in their field, but also as a source of knowledge which can be acquired and used for its innovations.

IP acquisition must become part of a strategy, integrating long-term vision and immediate tactics within their R&D and internal IP strategy; however, in our opinion, SMEs still prioritise the use of their own IP because it is a more familiar approach to IP for them.

Matching a technological need to an external patent for acquisition can be referred as a **patent pull model**.

### 1.1.3. External IP are underexploited by SMEs

Unfortunately in Europe, external IP, especially patents, is currently underexploited by SMEs. There are several possible explanations of the lower exploitation of IP by SMEs:

- ▶ Lack of strategies and understanding of IP;
- ▶ Difficulty to evaluate the problem that will require technological solutions;
- ▶ Problem of cost and lack of internal funds;
- ▶ Length of negotiations.

Too often, SMEs do not understand IP and the various strategies that can be developed. The **first barrier to address is the need for SMEs to understand the value of external patents**. Indeed, external patents are useful to SMEs for a number of reasons<sup>4</sup>:

- ▶ Technical reasons
  - **Avoid unnecessary expenses in researching what is already known**
  - **Identify and evaluate technology for licensing and technology transfer**

<sup>4</sup> <http://www.wipo.int/>

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- **Identify alternative technologies**
- Keep abreast with the latest technologies
- Find ready solutions to technical problems
- Get ideas for further innovation

### ▶ Commercial reasons

- Locate business partners
- Locate suppliers and materials
- Monitor activities of real and potential competitors
- Identify niche markets

### ▶ Legal reasons

- Avoid possible infringement problems
- Assess patentability of their own technology
- Oppose grant of patents wherever they conflict with own patent

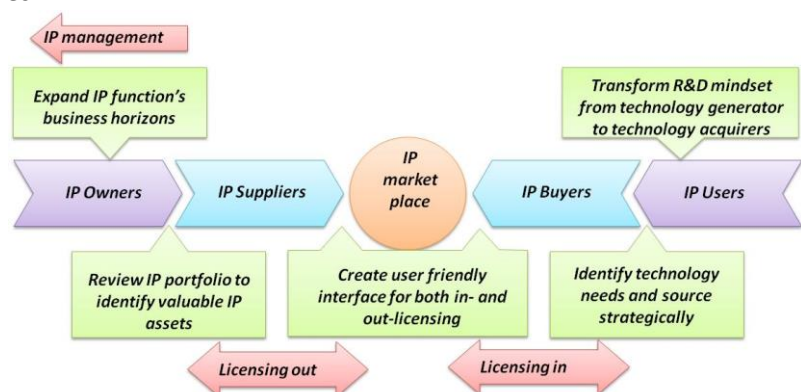
The **second and third barriers** to address relate to the fact that SMEs and entrepreneurs might not be **aware of their needs** (and opportunities) and are usually **not prepared or able to invest large amounts of time and / or money to satisfy them**, once identified. Often the innovation managers are unsure whether a need can be met with existing IP or whether internal / external research or development might be necessary.

These *three* barriers indicate limited resources of SMEs in acquiring IP. This suggests that SMEs need to access patents much more efficiently and effectively.

The problem is compounded though, when looking at the suppliers' side, e.g., the public research organisations (PROs). It is even more difficult for a research institution to know about possible beneficiaries of a specific patent when they try to push a patent towards acquisition. It's the **patent push model**. This imbalance is understandable given the difference in motivation in both settings – where a company needs to stay competitive and will eventually search for a solution, research exploitation (valorisation) is often a minor function for PROs. Also, even large PROs employ little to no personnel for this task (often paid below standard researchers salaries). Their patents very often remain commercially unused.

Intellectual property is an economic asset and could be optimised through proactive EU strategy and policy. At a national level, some Member States have developed strategies, activities to stimulate and support the exploitation of IP. Best practices are few and not sufficiently shared, and there is a need for mechanisms to assess the effectiveness of support schemes.

In fact, effective management of IP is crucial, and markets for intellectual property, patents in particular, can be made more efficient, especially in terms of the process by which buyers and sellers of patents can find each other (**Figure 2**). It is nevertheless necessary to ensure that the system should be a useful innovation instrument. At the same time, there have been several EU calls and initiatives dedicated to improving innovation in SMEs, however, the



**Figure 2:** IP market place. Source: Adapted from "Technology Broker, a new profession?" presented at the "Intellectual Property: les entretiens de Paris 2007" meeting by Stephen Potter.

question of unused patents has not yet been raised and nor has the role of exploitation of IP in supporting innovation.

### 1.1.4. Sleeping patents

The term **sleeping patents** refers to “patents (or applications for a patent) that are consciously not being used by the patent holder, directly or through a third party, neither to launch an application to market, nor for strategic reasons”<sup>5</sup>.

In the context of this report, several elements are added to this definition:

- ▶ To have a further detailed segmentation, taking into consideration that amongst the sleeping patents, some of them are under a proactive commitment to commercialise (market place, Enterprise Europe Network) while others are fully sleeping, with nobody taking care of their use.
- ▶ Strategic reasons to block out competitors, or an intention to use them as a currency in future cross-IP deals. It is considered that half of the unused patents are not used for strategic reasons.

While dealing with patent use, it should be considered the different cases where a patent is used:

- ▶ A patent can be used in several applications.
- ▶ A patent can be embodied in a portfolio of patents.
- ▶ A patent can be used by the inventor himself.
- ▶ A patent can be used through selling the patent or licensing it.

Overall, there is a pool of (European) patents which are completely sleeping or not fully used (e.g. non-exclusive licences are given, but many more could be given). In 2011, 244,436 patents were filed in Europe, either directly or as part of a Patent Cooperation Treaty internationalisation. It is also noteworthy that a 2011 report from the European expert group on IPR Valorisation found that 8-24%<sup>6</sup> of all European patents were not used – meaning that between 20,000 (8%) and 58,000 (24%) of all patent filings in each and every year are not exploited.

Some of the sleeping patents can be explained by the fact that when patents need to be applied for, it is usually not known in advance whether it is going to be technically or commercially successful. For example, within the pharmaceutical industry patents are applied for a long time before clinical trials and therefore many drug candidates are patented but fail to become an actual drug. Also, free and fundamental sciences in particular need to pursue avenues that in hindsight might prove inefficient or speculative. Indeed, PROs have the highest shares of unused patents (27-34%)<sup>7</sup>, meaning almost a third of their patented inventions, mostly financed by public funds, fail to realise their potential.

In some cases, technologies sit under exploited or not exploited at all on company shelves. This may imply duplication of inventive efforts or technologies that never reach the market. According to the European Patent Office (2001), the duplication of inventive efforts costs the European Union \$20 billion each year. Moreover, some industry estimates point out that a patent intensive company may shelve up to 70% of their patents, a proxy for inventive activity. Un(der)exploitation has become especially striking nowadays, when knowledge required in one sector may come from a completely unrelated sector. In fact, recent estimates point out that some companies have begun to transfer technology - embodied in (neglected) intellectual property assets - to outside industries.

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<sup>5</sup> Universitat Pompeu Fabra, February 2003. Other definitions exist. The term is conceived also differently in literature.

<sup>6</sup> [http://ec.europa.eu/enterprise/policies/innovation/files/options-eu-instrument-patent-valorisation\\_en.pdf](http://ec.europa.eu/enterprise/policies/innovation/files/options-eu-instrument-patent-valorisation_en.pdf), page 5, further on pages 21-25

<sup>7</sup> [http://ec.europa.eu/enterprise/policies/innovation/files/options-eu-instrument-patent-valorisation\\_en.pdf](http://ec.europa.eu/enterprise/policies/innovation/files/options-eu-instrument-patent-valorisation_en.pdf), page 23, numbers mostly based on the PATVAL-I survey

Patent-intensive firms are more likely to have a high percentage of their patents as sleeping patents. For instance, IBM, Philips or Siemens were reported to only use approximately 40% of their intellectual property portfolio (According to Financial Times, July 2001).

According to The McKinsey Quarterly (2002, Number 4), 10% of the patent portfolio of a company with at least 450 patents and \$50 million spent in R&D expenses may be transferred to outside industries. There are a lot of examples of technologies coming from external industries: the fibreglass cables in the telephone industry that were developed by a glass company, Corning; the Olestra molecule from Procter & Gamble that started out as a low-fat ingredient for snack foods and ended up as a pollutant remover on contaminated soil; a technology developed by Boeing as part of a military application, that was used for Touchbridge Systems as part of an integrated networking system in the home environment. Nowadays, there is an open innovation business model for consulting firms that find external technologies for their clients.

Individual countries or organisations are taking measures to increase the valorisation of these sleeping patents. For example, the field of Japanese IP has undergone significant change. A fund has been created under the cooperation of the public and private sectors to promote the utilisation of IP rights in Japan; particularly in terms of the utilisation of ‘sleeping’ patents (patents which have been granted but not commercially exploited) which reside in corporations and which might involve high technologies. Similar initiatives also exist in Europe to encourage the utilisation of unused patents – for instance, the French CNRS launched in 2011 the PR<sup>2</sup> programme (Partenariat renforcé PME-Recherche), through which SMEs were given the possibility to acquire CNRS’s unused patents at a reduced lump-sum.

Obviously, one must not assume that each sleeping patent can satisfy an existing need; comparable to the labour market where not each unemployed individual can take any job. However, also comparable to the labour market, goal-oriented measures can help to simultaneously satisfy companies’ demands for qualified staff and individuals’ demands for good jobs. European and National structures dedicated to providing IP assistance to enterprises can be in charge of such goal-oriented measures.

### 1.1.5. Structures providing IP support to SMEs: European landscape

In all European countries, National Intellectual Property Offices and other IP related structures provide different services to support SMEs on IP matters. Those services are generally more focused on IP creation, but some structures are explicitly helping on IP acquisition. The recent initiative of the European Commission of a European Network of National Intellectual Property Offices, INNOVACCESS, brings together 30 different National Intellectual Property Offices, with the aim of “streamlining IP services for Small and Medium-sized Enterprises (SMEs) that are provided by the individual national offices to offer an improved IP service portfolio for SMEs in Europe” and enabling a clearer overview of the different services provided by those national structures.<sup>8</sup> Those national structures can be seen as complementary to European ones.

Indeed, at European level, three main structures are dedicated to IPR, addressing SMEs, and cooperating with national structures: the European Patent Office, the European IPR Helpdesk and the Enterprise Europe Network.

The **European Patent Office (EPO)** core activity is to centrally examine patent applications and to grant European Patents. The EPO has undertaken various initiatives to support the patenting activities by SMEs interested in creating new Ips, such as a reduction of fees to SMEs, which relates to the translations of patent applications at the EPO. One service the EPO has developed is the “European Patent Academy”, which consists of open access online training (tutorials, podcasts and lectures), online courses (courses are only given at a certain time during the year) and offline seminars. Each year the EPO organises the European Inventor Awards that include a specific category for SMEs. Another way to support SMEs is to

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<sup>8</sup> <http://www.innovaccess.eu/>

facilitate access to patent information. The EPO's patent databases (e.g., Espacenet, European Patent Register) are available to the public without restriction, but do not give any information on whether the patents are licensable or not.

The **IPR Helpdesk**<sup>9</sup> is a European Commission funded project designed to provide IPR assistance and training to participants in EU-funded research projects and SMEs in transnational partnership agreements. The IPR Helpdesk offers several services on IPR issues and **cooperates closely with the Enterprise Europe Network**. As a matter of fact, the European IPR Helpdesk created an "Ambassador scheme" involving IP specialist members of the Enterprise Europe Network. As "local points", they facilitate contact between the Helpdesk and its users and manage users' IP issues (50 ambassadors in 22 countries). Another main tool of the IPR Helpdesk is the Helpline, through which a team of IP experts offers tailored, confidential and free advice on individual IP and IPR questions. The IPR Helpdesk can also be seen as a major IP platform for contractors as it relays EPO & national IP organisation events. More than 5000 registered users trust the IPR Helpdesk's services.

In contrast to the EPO and the IPR Helpdesk, the only authority being explicitly active in **IP acquisition** at European level is the **Enterprise Europe Network**<sup>10</sup>, whose mission includes bringing together technology offers and demands in order to facilitate IP licensing for SMEs. It offers free assistance to SMEs wishing to acquire patented technology (but its scope also includes other forms of IP), based upon a large network of local experts. Its database, also public, is also more specifically designed for IP acquisition and gives crucial information on the possibility or otherwise of licensing the patent.

Table 1 gives an overview of the main characteristics of those structures. This overview also aims at highlighting what is still lacking to develop IP acquisition opportunities at European level – such as the standardisation of given information for all databases (e.g. on whether an IP is licensable or not). Besides, it also shows that the missions and target groups of the three European structures largely overlap. In this field, the Enterprise Europe Network and European IPR Helpdesk's efforts to cooperate and to use the same network of experts can be seen as a good practice.

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<sup>9</sup> Evaluation of the IPR Helpdesk

<http://ec.europa.eu/DocsRoom/documents/4326/attachments/1/translations/en/renditions/pdf>

<sup>10</sup> Evaluation of EEN in the framework of the Entrepreneurship and Innovation Programme:

[http://ec.europa.eu/cip/files/docs/eip-final-evaluation-report\\_en.pdf](http://ec.europa.eu/cip/files/docs/eip-final-evaluation-report_en.pdf), p. 114

## Exploitation of IP for industrial innovation

	European Patent Office (EPO)	European IPR Helpdesk	Enterprise Europe Network
<b>Core activity</b>	Central examination of applications for and grant of European patents	Assistance and information on IPR issues	SME support on internationalisation and innovation
<b>Target groups</b>	<ul style="list-style-type: none"> <li>▶ Inventors that seek patent protection in Europe</li> <li>▶ IP professionals</li> <li>▶ Research centres</li> <li>▶ SMEs</li> </ul>	<ul style="list-style-type: none"> <li>▶ Participants in EU funded research</li> <li>▶ SMEs                             <ul style="list-style-type: none"> <li>○ Only if they participate in EU transnational partnerships</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▶ SMEs</li> </ul>
<b>Focus</b>	IP creation	IP creation, management	International SME partnerships including on technology transfer and IP (acquisition and licensing)
<b>Raising awareness activities</b>	<ul style="list-style-type: none"> <li>▶ Free access to patent data (notably Espacenet)</li> <li>▶ European Inventor Award with special SME category</li> <li>▶ Online training (“European Patent Academy”)</li> <li>▶ Seminars (offline)</li> </ul>	<ul style="list-style-type: none"> <li>▶ Helpline</li> <li>▶ Awareness raising &amp; Training events (also together with EPO &amp; national IP organizations)</li> <li>▶ Publication and Informative Material</li> <li>▶ Web-based training</li> </ul> <p><b>Collaboration with the Enterprise Europe Network (Ambassador scheme)</b></p>	<ul style="list-style-type: none"> <li>▶ Local contact points</li> </ul> <p>Services provided <b>in cooperation with the IPR Helpdesk (Ambassadors etc.)</b></p>
<b>Services costs</b>	Some services with costs others are free	Free	Free
<b>Structure financing</b>	Revenues from procedural and patent renewable fees	European Commission	European Commission, Network members
<b>Database characteristics</b>	Public <b>No information</b> on whether the IP is licensable or not	No database	Network members only Enables to see whether the IP is licensable or not
<b>Link</b>	<a href="http://www.epo.org/">http://www.epo.org/</a>	<a href="http://www.iprhelpdesk.eu/services">http://www.iprhelpdesk.eu/services</a>	<a href="http://een.ec.europa.eu/">http://een.ec.europa.eu/</a>

**Table 1:** Main characteristics of three European IP support structures.

### 1.2. Hypothesis

In order to facilitate the use of European sleeping patents, the hypothesis that a patent pull model is a realistic scenario is formulated. It means that technology requirements expressed by SMEs can be matched to sleeping patents and lead to external IP acquisition. This can boost innovation and reduce market time.

### 1.3. Study questions

Within the framework of the IPI project, the importance of IP for the technological and commercial innovation success of SMEs is analysed. More specifically, the following questions are addressed:

- ▶ What types of SMEs have which types of needs for external IP?
- ▶ Which factors prevent them from identifying, approaching, acquiring and integrating external IP (e.g. not being aware of their needs, no IP available (does not exist or is not open), not knowing that IP is available, transaction costs too high, etc...)?
- ▶ What measures could be undertaken in order to overcome the identified barriers?
- ▶ What policy measures need to be taken, and by whom, in order to ensure that structures/programmes/strategies are established which remain beyond the lifetime of the project?

This report is structured in four parts, aside from this one and the conclusion:

- ▶ Chapter two aims to provide the global methodology of the project:
  - The detailed methodology model was explained in the process model report. The basis for the methodology was to start from the demands of companies and to cover the whole path from the awareness of companies to the use of external knowledge right through to the acquisition of a patent. From a demand perspective, the consortium opted for a pluridisciplinary approach to identify suitable innovators. The effects of the project were explored in four different Industrial Settings, which differed both in thematic focus (ICT, dry mix mortar, health care and global innovation through usages) and types of connected networks (cluster, community manager, economic development company and research institute).
  - Details about the challenges faced by the different industrial sectors in terms of IP, the role of the intermediaries in the process, the different patent search methods, and the sources of patents are given.

- ▶ Chapter three presents the results and the analysis.
  - The on-going results of the field trial are described, specifically:
    - The way in which the companies are approached;
    - The methods to raise their demands in terms of external knowledge;
    - The process by which the patents are searched;
    - The methodology used to obtain the feedback of the SMEs regarding the matches;
    - The on-going process to enter into negotiation to acquire the patents.

This section will give details, for each industrial setting, on how many demands have been raised and how many matches have been found.

- ▶ Chapter four analyses the results of the field trial and the ground for policy. It more specifically addresses:
  - The influence of the industrial sector and the industrial settings
  - IP search methods
  - Sleeping status assessment
  - Lack of awareness
  - Confidentiality issue
  - Guaranteed interest from the SMEs
  - External IP for company creation
  - Difficulties to formulate the demand
  - Difficulties in the assessment of the quality and added value of the matches
  - Benefits for SMEs, industrial settings and intermediaries
  - Efficiency of the patent pull process and economic viability of the process
- ▶ Chapter five aims to present the policy instrument to generate and stimulate new business activity based on external IP acquisition.

## 2. FIELD TRIAL METHODOLOGY

To test the hypothesis that a patent pull model is a realistic scenario in which to use European sleeping patents, the IPI project used a very pragmatic approach based upon a field trial run by well-known intermediaries to raise the awareness of SMEs to external IP, to detect their technological needs, to provide them with IP solutions and to offer them support in acquisition negotiations. Figure 3 describes the overall methodology of the field trial.

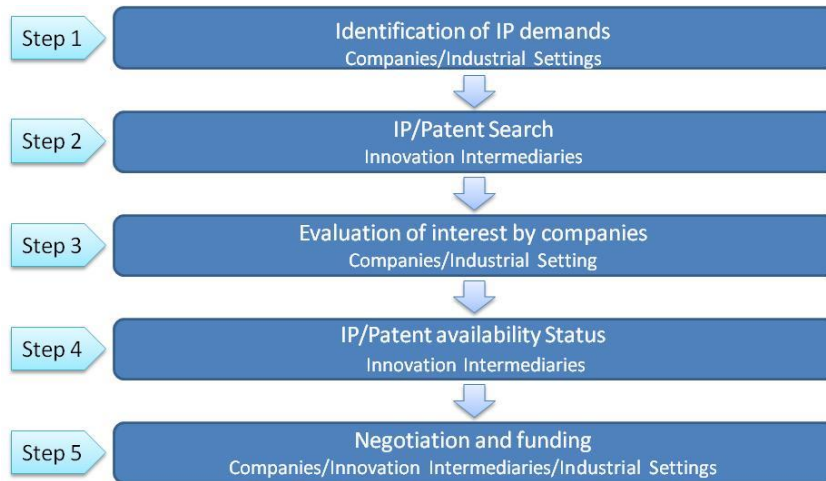


Figure 3: Methodology

To return to the **decision model to acquire external IP** (Figure 1), one can see that the service proposed by the IPI project represents the various steps of **IP identification**, **evaluation** and **negotiation**. It is highlighted in Figure 4.

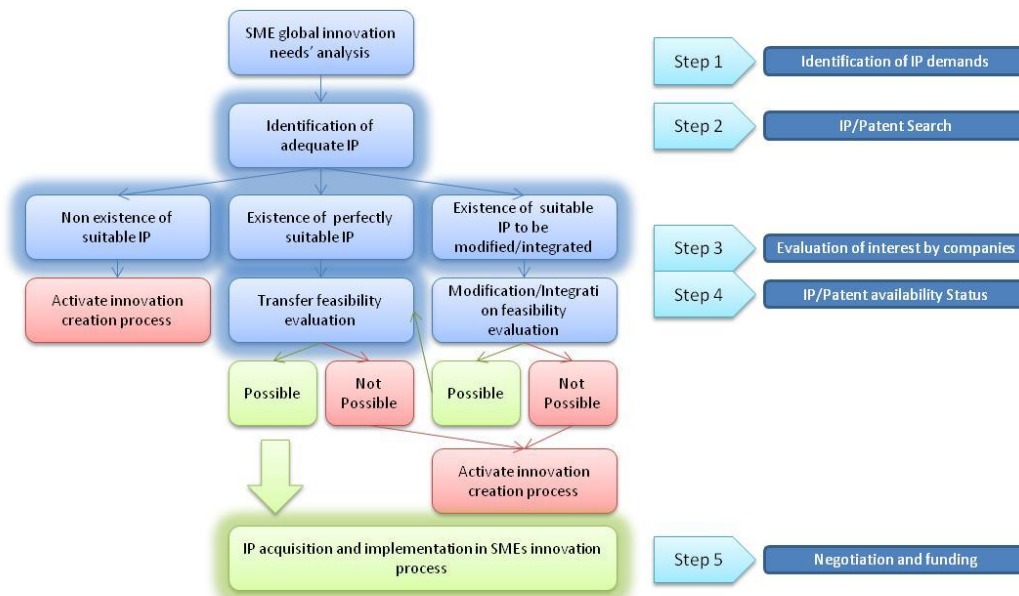


Figure 4: Integration of the IPI service within the decision model to acquire external IP



### 2.1. Generic steps descriptions

#### 2.1.1. Step 1: Identification of IP demands

The first step of the field trial was similar to a consulting service geared towards offering SMEs a patent pull service (i.e. to start from a technology demand and to search for sleeping patents able to respond to that demand through databases, networks and market places). The service provider, an intermediary experienced in working with SMEs/innovators, promoted the service to SMEs and individual innovators, identified interested SMEs and collected technological demands. The intermediaries are referred to Industrial Settings. Their identity and sector are detailed in paragraph 2.2.

#### 2.1.2. Step 2: IP search

The second step of the field trial involved matching the technology demands obtained by the Industrial Settings in step 1 to relevant IP. This support service was run centrally by two Innovation Intermediaries whose main activity, beside their activities within the IPI project, is to provide similar services. The added value to run this support service centrally was mostly high throughput and competencies.

A requirement sheet was developed by one of the Innovation Intermediary to allow the Industrial Settings to efficiently and easily gather the required information about the innovators problems, thus allowing a verbalisation of the demand. In this way, most of the data necessary for an effective patent search was gathered: the Innovation Intermediaries obtained a complete picture of the demands and were able to perform their respective work efficiently and with minimal need for expert intervention. If clarification or increased detailing of a demand was required during the searches, the Innovation Intermediaries contacted the Industrial Settings, allowing for an interactive process.

Once matches were obtained, the Innovation Intermediaries presented the results in two very different formats:

- ▶ Matches found in the Enterprise Europe Network database were presented in the form of a standardised document comprising one to two pages of text in English, each one containing a summary, a description, advantages of the technology and an innovation section.
- ▶ Matches found in the other database types were presented on a excel spreadsheet with links to the IP databases or IP publications in the language of the country of origin of the IP or of the database (German, Chinese, Japanese, etc.). Sometimes, PDFs of the IP publications were transmitted to the industrial settings, when such documents were available.

These results were then sent to the Industrial Settings to obtain feedback from the companies.

As it was not necessary for the Innovation Intermediaries to enter into direct contact with the SMEs/Innovators, the Industrial Settings were the SMEs' only contacts, allowing for a more personal and efficient relationship between the SMEs and the service providers. This approach also saved the SMEs precious time as they did not have to interact with several intermediaries.

#### 2.1.3. Step 3: Evaluation of SMEs interest

In order to obtain SMEs/innovators' feedback for the matches identified, the Industrial Settings transmitted the raw data they received from the Innovation Intermediaries directly to the SMEs/innovators by email. They then contacted them by phone or met with them directly to obtain their feedback and discuss their expressions of interest. This step was performed by the Industrial Settings because they were the only SME

contact. It was important to the project consortium to keep a close relationship between the SMEs/innovators and the Industrial Settings because it allowed trust and efficiency.

An “expression of interest” was the declaration of the SME/innovator that it was interested in obtaining more information on a match (one IP offer). One SME/innovator could be interested in several matches to a specific demand. SMEs/Innovators were subsequently considered to be “ready for transaction” when they explicitly declared interest in starting the transaction process (the first step being to contact the owner of the IP).

### **2.1.4. Step 4: IP availability and “sleeping” Status**

Once the SMEs expressed an interest in the matches, the next step was to check for the availability status of the IP, to obtain some more details about the IP such as the owner details and to initiate first contact with the owner. Both the Industrial Settings and the Innovation Intermediaries were concerned as the Industrial Setting remained the main contact for the SME and contacted the local Enterprise Europe Network office for matches from the network and the Innovation Intermediary, engage, contacted the owner of the patents identified in the other databases.

At this step the “sleeping” status of the IP was assessed via the methodology described in §2.4.

### **2.1.5. Step 5: Negotiation and financing**

This was the phase where the involved parties contacted each other and started discussions about:

- ▶ The scope of the IPR
- ▶ The field of use and market restrictions
- ▶ The exclusive, non-exclusive or sole rights
- ▶ The payment form (royalty based or not)
- ▶ etc.

The project partners considered that this step started when companies had signed a Non Disclosure agreement (NDA). The Innovation Intermediary, engage, had the competencies to assist the SMEs in IP negotiation. Upon finalisation of the negotiation process, both parties should consult a lawyer to secure both parties legal aspects of the agreement. The assistance from the project should also continue, in particular in order to supervise that the agreement is finalised.

Within step 5, the Innovation Intermediary, engage, could have supported cases where applicable and provided further assistance e.g. on negotiation strategies, contracts or a sound business case for ensuring the financing of an innovation project. If applicable this can mean providing contacts to venture capitalists or other forms of high-risk capital.

### 2.2. Industrial Settings and Sectors

Considering the diversity of the innovation process across sectors, the approach was applied in diverse settings. Using such a comparative design improved the robustness of the approach. In order to cover a broad range of options and achieve a maximum impact, four completely dissimilar approaches were pursued to overcome the challenges of identifying, winning, and supporting individuals and SMEs to engage in the process. The four different approaches were each carried out by a unique Industrial Setting. They each designed their own approach model (filter database for most pertinent SMEs; wide nest casting; focused survey – details in Chapter 3). Three of these Industrial Settings covered different industrial sectors, namely health sciences/medical technologies, digital innovations, and dry mortars. They were service providers involved with SMEs: an economic development company, a cluster, and a community manager, respectively. A fourth Industrial Setting was chosen for its involvement with individual innovators wishing to exploit an idea/innovation, possibly via start up creation. In this latter case, the service was more about giving these innovators a feel to whether their idea was already implemented in an invention or if it could benefit from an existing invention. The last Industrial Setting was a research institute, relay to individual researchers and engineers.

Their approaches allowed us to find the most effective and efficient way and method of contacting potential innovators. They differed in the following points:

- ▶ Targeted sector;
- ▶ Geographical coverage;
- ▶ Method used to contact potential innovators and to identify ideas;
- ▶ Type of innovators;
- ▶ Appetence for external IP;

but also had some key common characteristics that we judged decisive for success:

- ▶ They were all based on pre-existing trust between the individual/SME and a service provider (e.g. an industry association or cluster);
- ▶ They were all scalable both within their respective approach (e.g. within a pilot cluster) and much more so by expanding them to comparable systems (e.g. with support from the European Cluster Alliance to other clusters).

#### 2.2.1. ICT sector/Systematic

##### 2.2.1.1. Systematic

Systematic is a cluster with over 400 SMEs as members dealing with complex systems, especially based on ICT, for different fields: automotive, space, defence and security, telecommunication. Systematic has been labelled by the French government as a pole of competitiveness and it is one of the most important in France. The cluster has deep knowledge of the companies as well as personal contacts with most of them. Furthermore, the cluster knows which companies are participating in several collaborative projects, which is considered a sign that they are looking for additional knowledge in several directions and that they should be interested in external IP to speed up their process and development.

##### 2.2.1.2. IP appetite and challenges

According to a United Nations report, the ICT sector is defined by aggregating complete ISIC<sup>11</sup> classes according to several guidelines, on the one hand for manufacturing (the products of a candidate industry

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<sup>11</sup>International Standard Industrial Classification

must be intended to fulfil the function of information processing and communication by electronic means, including transmission and display) and, on the other hand, for services (the products of a candidate industry must be intended to enable of information processing and communication by electronic means to function).

In the ICT sector, especially on the services side, the appetite for IP (internal or external) is not as high as in the health sector. Indeed a new product is faster to develop and to implement and requires less additional competences. In this sector, IP is rather used to protect the product and to impede copy and paste competition than to accelerate the development of new products. Moreover the software, which very often comprises the main part of a new product, is not patentable. However, in order to not misunderstand the exclusion in European patent law against protection for software, it is essential to distinguish the two very different IP rights - patents and copyright – when working in the ICT sector.

On the contrary, the demand for external IP from ICT companies is much more precise and understandable than in other sectors, due to the appropriate and updated wording existing in this sector. However interoperability is one of the main issues to solve.

On the manufacturing side of the ICT sector, the demand for IP is more important, although the fast evolution of the technologies requires a focus on very recent discoveries.

### **2.2.2. Dry mix mortar sector/drymix.info**

#### **2.2.2.1. Drymix.info**

Drymix.info is an industrial association which provides networking events with technical lectures, several annual publications and an extensive industry directory exclusively for the dry mix mortar industry and its suppliers. Drymix.info currently has over 100 industry partners. It also reaches over 7000 people worldwide with its monthly newsletter and the industry directory currently lists over 1800 supply companies and events. Drymix.info has a deep knowledge and an easy contact with the dry mortar and cement manufacturers but also with their suppliers. It is representative of a sector where the innovation lies not with the manufacturers of the final product, but with their suppliers. Like a cluster or a business service company, it can provide direct contact with companies and it has sufficient knowledge to raise their demands.

#### **2.2.2.2. IP appetite and challenges**

In the mortar industry and more generally in the construction sector, the appetite for IP is rather low and innovation is mostly carried out by the suppliers of raw materials, mostly the chemical industries. According to the European Chemical Industry Council (ECIC), for over a century, the European chemical industry has brought new products to the market place in many areas and Trade Secret and Intellectual Property (TS&IP) have played a key role in supporting that. If TS&IP did not exist, the conversion of new ideas into useful products would be significantly inhibited.

In the chemical sector, the products have a long life and are strongly based on IP. New developments increasing the quality and the potential of a product are searched and IP acquisition can be a solution. This idea to concentrate the search of sleeping IP on suppliers can be applied to other sectors who are less innovative in terms of final products.

### 2.2.3. Health sector/RTC North

#### 2.2.3.1. RTC North

RTC North, as an independent company, is a trusted delivery partner of business support, innovation and enterprise programmes on behalf of regional development agencies, the European Commission, local authorities and central government. It is delivering initiatives and business services which support economic growth. Its team includes professional IP lawyers and patent agents, marketing consultants and IP managers. It is active in a range of sectors including telecommunications, electronics, engineering, biotechnology, IT, pharmaceuticals and medical devices. For this project it mostly focused upon the health sector.

#### 2.2.3.2. IP appetite and challenges

The appetite for IP is very strong in the health sector. It is due to the fact that a final product in the health sector takes a very long time to reach market (drugs as well as medical devices) and acquiring IP is a way to accelerate the process and to reduce the risks; however, IP acquisition is often done via mergers and acquisitions from big companies. SMEs are usually the ones being bought.

There has traditionally been a trend for SMEs in the healthcare sector to either create and register their own IP, which may originate from occupational experience and/or their Research and Development departments; or to take advantage of specific opportunities provided to them as a result of a “technology push”; for example, IP that originated in the NHS that was presented to them and relevant to their sector of the healthcare arena.

Partly as a result of the new Government structure, the NHS and indeed SMEs, are becoming more and more aware of the importance and value of IP, with SMEs increasingly becoming engaged both with the process of identifying and protecting their own IP as well as engaging in licensing opportunities with respect to IP originating from other sources such as the NHS.

In comparison with the awareness of SMEs of the benefits associated with creating and registering their own IP, and moreover, the benefits of interacting with third parties such as the NHS in connection with the licensing in of IP when that IP is offered to them, for example (that is, a “technology push”), SMEs are not quite so aware of the “technology pull” option which may also be available to them. The idea of SMEs having a “shopping list” of IP which they would like to attain, whether by means of assignment or licensing, and then being provided with opportunities in that regard, is a comparatively unexplored option for them, and it is this that was explored during the IPI project.

It is not necessarily the case that the SMEs do not believe the acquisition of sleeping IP to be key to their operations, rather that they are often simply not aware of the existence of a reservoir of sleeping IP which could potentially help to grow their business and increase their foothold in the healthcare sector.

### 2.2.4. Final user-focused new products sector/ Fraunhofer

#### 2.2.4.1. Fraunhofer society

The last industrial setting is the Fraunhofer society with its specific position as a research institute. This organisation is working on a new and very innovative approach which stems from the need of the final users to gather around an identified need and several types of expertise (researchers, existing companies). The aim is to answer the need through the diversification of an existing company which sees a market opportunity in line with its competences, or through the creation of a new company, or through a mix of both approaches.

2.2.4.2. IP appetite and challenges

The last industrial sector that has been tested is based upon final user demand which is used as leverage to gather researchers and companies around a new idea/service/product. By definition, the cases issued from this approach managed by the Fraunhofer society are very often based upon the creation of a new company. In that case, a search for IP is perceived by the entrepreneur as a mean to determine if initiatives already exist in this field. It could also provide opportunities to acquire licences and then to accelerate the development.

This approach is not really an industrial sector but being part of the IPI project is worthwhile as most future business successes will probably be based upon new concept/new usage/new needs that are not currently known and that are difficult to imagine without using multidisciplinary and multicultural approach as done by Fraunhofer.

Table 2 summarizes the four different settings, their typology, targeted sector, and method.

	Clusters	Industry organizations	Regional development agencies	Research Institutes
Entity	Systematic	drymix.info	RTC North	Fraunhofer
Targeted Sectors	ITC	Construction Chemistry	Health care/Medecine	All sectors
Geographical coverage	Paris Region	Europe	North-East England	Berlin Region
Method used to contact potential innovators	Filters based on the expertise of the cluster management office	Filters based on geography and expertise of drymix.info	Broad net casting and expertise from the agency	Innovators interested in innovation through usages
Type of innovators	Innovative SMEs	SMEs	SMEs, doctors, scientific and clinical staff, medical personnel	Researchers interested in becoming entrepreneurs

**Table 2: Summary of the four different industrial settings**

These four approaches are different and similar at the same time. The common factor is the recognition of the partners by the SMEs/innovators they are working for. Therefore each of them can add its own knowledge to a systematic approach based upon databases, surveys and workshops.

### 2.3. Innovation Intermediaries and IP search

The focus of the IPI project was to try to identify sleeping patents. Figure 5 shows the different patent types the search identified, with the green emphasis on the hoped for patent status for the IPI project. In the diagram, a “pushed” patent is a patent whose owner wishes to licence or sell.

In order to identify “matching” IP for the demands identified by the Industrial Settings (Fraunhofer, RTC North, drymix.info, and Systematic), four different approaches were designed and ran by the Innovation Intermediaries (engage and acreo).

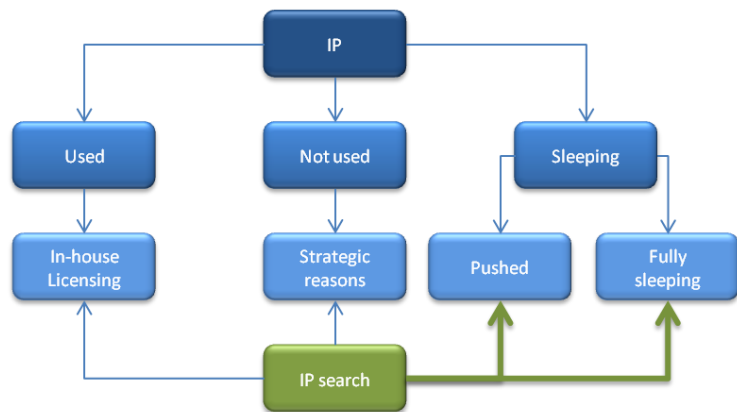


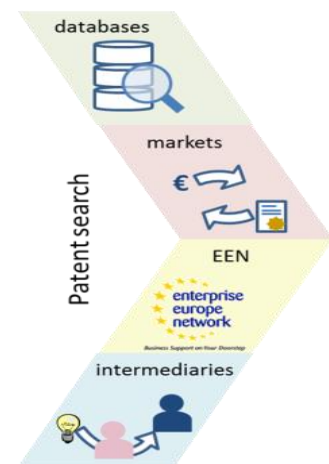
Figure 5: Different types of patent status the IP search will collect

To identify the databases that were to be used in the study, several databases were selected, evaluated and preliminary tests (using the first cases) were undertaken by engage. The main criteria for including a database were the quantity of IP offers and the ease of use. In the practical tests it quickly became evident that many databases did not deliver the necessary volume or, on the other hand, delivered too broad a selection and no means to structurally filter the results. In addition, overall it was found that many databases do not provide sensible user interfaces that allow for easy identification of unused or underutilised IP, probably owing to the somewhat neglected status of this IP class. The results of this evaluation can be found in Annex A.

Once the Innovation Intermediaries received the technology demand forms (Annex B), they ran searches via four different types of IP sources (details in Annex A):

► **Marketplaces and brokerages**

- Several marketplaces were searched and brokerages contacted;
- Additional actions, such as participation in fairs or IP auctions, were discussed, but the project refrained from such approaches for several reasons:
  - Results are not replicable. This is evidenced by the low volume of IP moving through even the largest IP auctions.
  - Costs for entry and participation are high (e.g. fees for fair entry but also lot auctions)
  - The biggest reason not to use auctions was that innovators would be confronted with possibly matching IP and would have to decide without reasonable time to complete their due diligence. In addition, a –to them– unknown intermediary, engage, would act on their behalf. While this could be resolved in advance it would likely require a lot of trust and negotiation. Similarly, the project



was not equipped to afford innovators individual participation in IP fairs or auctions.

### ► Patent databases and specialised software:

- Patent portals and websites: engage selected to scan the databases of the German patent office (DPMA), the UK intellectual property office, the Danish patent and trademark office, as well the database of the worldwide intellectual property office (WIPO). These also interface directly with the datastore of the European patent office, so relevant matches were included.
- One way to identify patents available for licensing is to use a “licence flag option” offered by some national databases such as the UK intellectual property office and the German patent office. Indeed, these patents offices offer the possibility to the patent owner to have the official register marked “licences of right”<sup>12</sup> for his patent in exchange for reduced renewal fees.
- Direct access to expert IP software: Preliminary searches with an expert IP software had yielded unfavourable results, e.g. it was as fast or faster to query the databases as they are available on the internet. In accordance with these results engage chose to not use expert IP software for this field trial.

### ► Intermediaries

- engage was in a good position to directly exchange with other intermediaries; for example, engage was able to use the annual SIGNO/ technology alliance meetings (network of all German patent valorisation agencies sponsored by the German ministry for research and education BMBF) to interface directly with other patent valorisation agencies. Also, engage used its connections and access to more than 30 research institutions in Germany and regularly addressed the innovation demands directly with the officers in charge.
- Additionally, intermediaries were addressed through the individual networks and with a targeted (e.g. branch- or sector-specific) approach.

### ► Enterprise Europe Network

- The 2500 Technology Offers (TO) IP profiles stored in the Enterprise Europe Network database were searched with the internal web based search tool.

## 2.4. Sleeping status assessment

In general, it is very difficult to assess sleeping patents as only the patent’s owner can choose to give this information (or not...). Indeed, products do not have to be marked as patented, licence agreements do not have to be in the public domain and the inherent definition of a patent is “the right to exclude others from making, using or selling an invention”<sup>13</sup>. This status is not mentioned in any database and the only way to determine it is to ask the owner. Asking the owner is a very long process (it needs to be identified, the right

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<sup>12</sup> After a patent has been granted, the patent owner can inform the Registrar to enter in the register that licences under his patent is available as of right. That means that the patent owner cannot refuse to license the invention. By making licences to his patent available as of right, the patent owner enjoys a reduction of his renewal fees. The purpose of this provision is to encourage patent owners to come forward and make known their intentions to license-out. The terms of licences of right (LOR) are to be negotiated between the patent owner and the licensee. If the parties cannot agree on the terms, the Registrar may be asked to settle the terms of the LOR for them.

<sup>13</sup> Oxford dictionary



person to answer needs to be found, and the correctness of the answers needs to be ascertained) and his honesty might decrease the value of its patent. For instance, to indicate early on that the patent is externally used may lead to a decrease of its value for a buyer looking for a competitive advantage.

However, at step 4 of the field trial, it seemed pertinent to determine the “sleeping” status. A methodology consistent with previously published studies was followed by using the line of questioning described in the PatValSurvey<sup>14</sup>. The questions of interest to us from the survey were:

“F.2 Has the applicant/owner ever used this patent for commercial or industrial purposes?  
Yes / No / Not yet, but still investigating the possibilities”

“F.3 Has this patent been licensed by (one of) the patent-holder(s) to an independent party?  
Yes / No / No, but willing to license”

“F.4 Has this patent been exploited commercially by yourself or any of your co-inventors by starting a new company?  
Yes / No”

We propose to add a fourth question related to the current use of the patent concerning strategic reasons, i.e. the patent is not available for licensing or selling for defensive reasons:

Is your patent used for strategic reasons?

We then categorised a patent as a sleeping patent if NO was answered to all the questions. It is very important to note that no one can force the patent owner to answer or to be truthful.

This approach was tested on 25 randomly selected patent matches from the field trial. The result showed that definite information about the patent status (sleeping or not) was only obtained for four patents (none of them sleeping). Also:

- ▶ None of the respondents would say whether they currently used the patent - only whether a license was possible.
- ▶ Patent holders would tell whether they've already licensed the patent in some cases only.
- ▶ Often a general “Sure, we license all our IP, but we need to see the particular case”-response was given. We cannot really probe deeper and also can't say whether it's dormant or strategic as companies would probably not disclose this.

This led us to conclude the following things:

- ▶ Determining “sleeping” status is a time-intensive task.
- ▶ Patent holders don't easily know or don't want to tell whether they utilize a particular patent.
- ▶ Step 4 is indeed the most relevant step to assess sleeping status as the contact with the IP owner is based on a true acquisition interest by an SME.

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<sup>14</sup> [http://ec.europa.eu/invest-in-research/pdf/download\\_en/patval\\_mainreportandannexes.pdf](http://ec.europa.eu/invest-in-research/pdf/download_en/patval_mainreportandannexes.pdf)

## 3. EXPERIENCE AND RESULTS

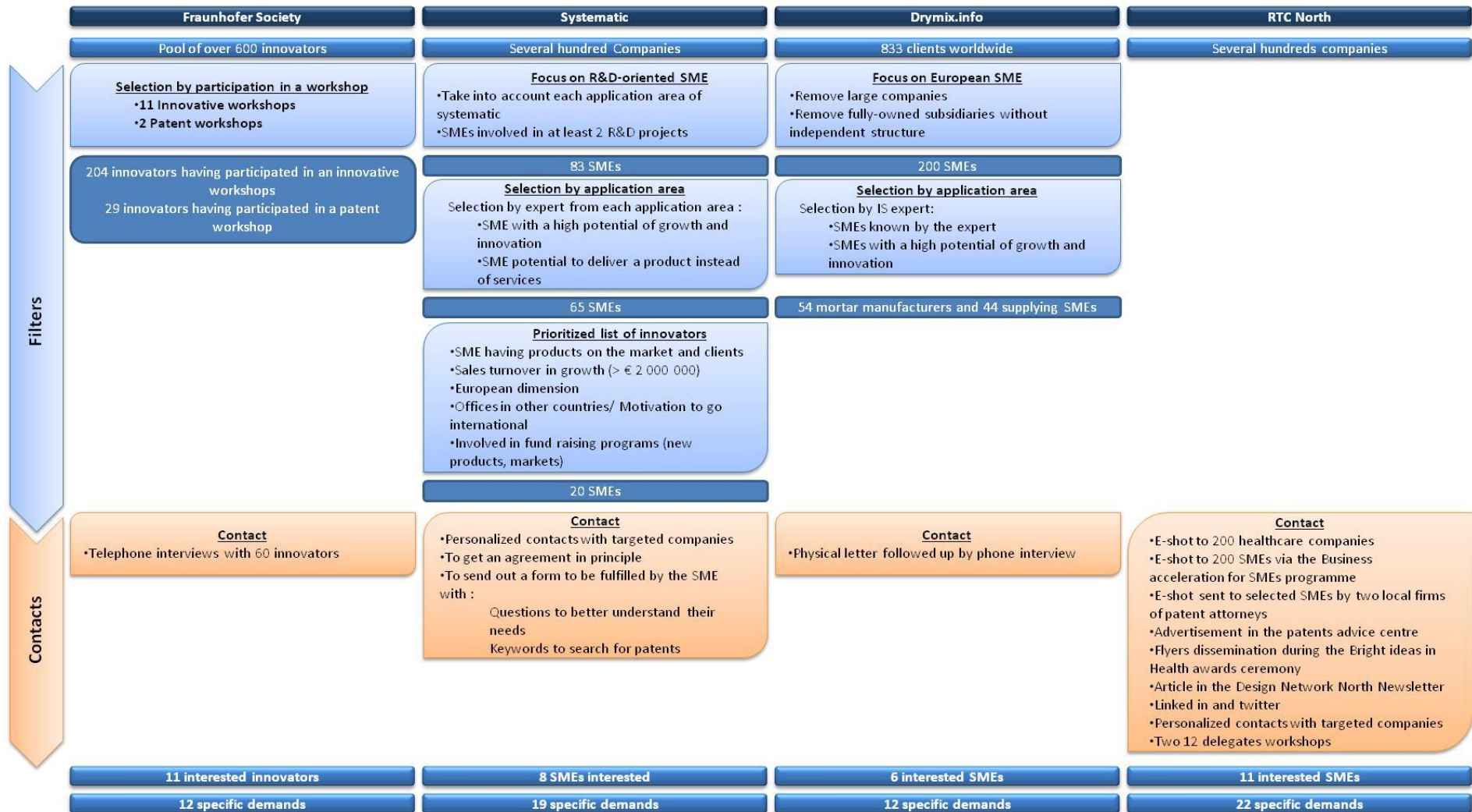
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This chapter presents the results and lessons learnt from the field trial. It describes the steps followed by the project consortium and details the similarities and differences between the various approaches taken by the Industrial Settings.

### 3.1. Step 1: Identification of IP demands

The four Industrial Settings started the identification of IP demands by the identification of potentially interested SMEs or innovators. Figure 7 shows the four different approaches used to filter and contact the SMEs/innovators as well as the number of technology demands obtained.

## Exploitation of IP for industrial innovation



**Figure 6:** Method of identification of SMEs and technology demands, results

### 3.1.1. ICT/Systematic

Systematic Paris-Region is an ICT cluster comprising more than 650 actors. Systematic does not provide IP services to its members and therefore the IPI service was novel, not only to its members but to the staff as well. Systematic used a very focussed approach, targeting only those companies that were active in a research project in previous years and contacting these directly to present and discuss the project. 65 companies were contacted in this manner. In parallel, Systematic also organised a workshop dedicated to IP and participated in the IP Summit 2013. They were able to mention the project and services offered but they did not recruit any SMEs in that manner.

During these identification steps, Systematic was able to identify a couple of issues and design good practices:

- ▶ In France, SMEs are very reluctant to expose technological needs because this might uncover their development strategy to competitors;
- ▶ A relationship of confidence needs to be established between the expert and the SMEs;
  - SMEs have to know the expert to reinforce trust between the parties;
  - Phone exchanges or individual appointments are better and emailing should not be used;
  - The expert needs to individually explain the IPI project and ask the questions to fill out the demand form.

*IP acquisition doesn't seem to be a priority for ICT SMEs even though they are engaged in collaborative R&D projects and have a technological need. They are more focused on patent application and/or technology development*

Only half of the identified SMEs were interested in the project. Those who were not interested indicated that:

- ▶ Looking for new IP is not a priority;
- ▶ They need to sell IP rather than acquire new IP.

At the end of the process, Systematic identified 8 SMEs who completed a total of 19 technology demand forms. Over half of the companies filled out one technology demand form; however, one filled out 3, another one filled out 5 and the last one filled out 6. The time required for this whole process over a 6 month period was about 15 days, which corresponds to 15 hours per SME providing at least one technology demand form. Targeting only the most probable users of the service gained Systematic some time compared to other Industrial Settings.

### 3.1.2. Construction chemistry/Drymix.info

Drymix.info used its contact database to generate interest in the project through two anonymous surveys (one targeting mortar manufacturers and one targeting suppliers to the industry). They contacted more than 300 companies and received feedback from 120 of their members. The survey allowed drymix.info to find out whether this industrial sector would be inclined to use external IP to develop in-house products. Its results showed:

- ▶ Internal research plays the major role at this point in time;
- ▶ Innovation is focused upon product development;
- ▶ External know-how comes mostly from suppliers (not universities);
- ▶ There is a lack of knowledge about external know-how;
- ▶ There is an openness to include external know-how;

- ▶ There is no firm strategy to find external know-how.

Then, drymix.info filtered its client database to identify the long list of innovators according to the following criteria:

- ▶ Keep European SMEs with an independent structure;
- ▶ Keep SMEs known by the drymix.info expert;
- ▶ Keep SMEs with a high potential of growth and innovation.

The initial contact was made through a physical letter explaining the project. Then, the SMEs were telephoned and in some cases a meeting was organised to fill out the technology demand form. Drymix.info was already identified as a service provider capable of understanding and solving SMEs' technological challenges (via partners identification for example); however, IP services were not part of the usual services for drymix.info.

*This industrial sector is not highly innovative and adapts to its market through small changes. The SMEs lack the belief that there is something out there for them.*

During this process, it was noticed that:

- ▶ The manufacturers lack the belief that there could be something useful to them out there, especially in unused patents;
- ▶ By contrast, the supplying SMEs are more open to external IP and are particularly interested in "processing", "product improvement" and "new applications";
- ▶ Most of the IS contacts were in R&D departments, therefore knowledgeable in technologies and capable of formulating technology demands; however, most of them did not have the authorisation to do so;
- ▶ It can be difficult to reach the person within the company who can approve participation;
- ▶ In small companies one person may combine several functions and have limited time for the IS;
- ▶ Most companies are secretive and don't wish to talk about future developments.

6 SMEs filled out 2 technology demand forms on average. The time required for this whole process over a 6 month period was about 10 days, which corresponds to 13 hours per SME providing at least one technology demand form. As was the case with Systematic, targeting only the most probable users of the service gained drymix.info some time compared to other Industrial Settings. Also, the Industrial Setting knows the companies well and has good contacts information.

To summarise "good practices" and the practices that were not as good:

- ▶ **Good practices**
  - Online survey to assess the potential for use of external IP
  - Identify target person with the help of top management
  - Authorisation of top management level to talk to the IS
  - E-mail and phone preparation of target individual
  - Structured phone interview
  - Anonymising demand if need be (a Non Disclosure Agreement could also have been used)
- ▶ **Practices that were not as good**
  - Physical letter to the SMEs
  - Letting target person fill their own technology demand form
  - Bottom-up search of responsible person (too time consuming)

### 3.1.3. Health/ RTC North

As an organisation similar to a regional development agency, RTC North has good relations with the companies in its immediate region and maintains an extensive network. This network was addressed in several ways, from e-mails providing information on the project to individual workshop invitations. The project was also promoted in other ways such as direct phone calls to targeted individuals by the IS, social networking with LinkedIn and Twitter, flyers at conferences, flyers in different strategic buildings, etc. Overall, more than 400 individual companies and innovators were contacted through the measures. Furthermore, RTC North provides IP services related to IP creation and is well versed in this topic.

At the end of the process, only 11 companies were interested in filling out a technology demand form. The IS identified that:

- ▶ Targeting known contacts (phone or email) is the best strategy to involve the innovators;
- ▶ A physical meeting is necessary to obtain a technology demand form;
- ▶ Trust is necessary between the SME and the IS;
- ▶ It is not easy for companies to allow strategic information, such as future product developments or innovation needs, to exit the company;
- ▶ It is easier to obtain a technology demand form when the IS helps to fill it out.

*Broad net casting allows for awareness of the action; however, direct contacts within a trusted relationship (IS/SME) is critical to engage SMEs in an external IP acquisition process.*

Therefore, only companies that trusted the IS (the actual person contacting them) listened and took the time to get involved in the study. 22 specific technology demands were obtained from 11 SMEs.

Over half of the companies filled out one technology demand form; however, two filled out 4 each, one filled out 3 and another one filled out a record 7 forms. The time required for this whole process over a 6 months period was about 30 days, which corresponds to 22 hours per SME filling out at least one technology demand form. Many different communication channels were used to identify potential innovators and that was very time consuming. The subsequent physical meetings were also time consuming but they allowed for good quality demands as the IS was there to help.

### 3.1.4. Innovation through usage/Fraunhofer

Fraunhofer is a research organisation and it was a unique setting to identify individual innovators rather than companies. To obtain technology demands, the Fraunhofer team screened their contacts for participation in at least one workshop related to innovation or patents (Patent workshops, "Innovationsakademie" sponsored by the German ministry for research and education, several workshops in the scope of the existing Discover Markets projects: Discover Markets-Health, Discover Markets-Energy and Discover Markets-Materials). These workshops were used to bring together researchers and potential users in a thematic field and generate innovation or product ideas between them. The IPI project was presented during these workshops (~20 minutes presentation and explanation) in order to generate interest. Besides the users, the other participants were all innovators involved in research either within Fraunhofer or within another scientific or design setting. The Fraunhofer team selected the innovators who seemed to have project ideas that could benefit from the use of external IP. Contact was made by phone with 60 of them and 32 expressed an interest in the service provided; however, once they received the technology demand form to fill out, many of them dropped out. In the end, 12 specific demands from 10 innovators were completed: 5 demands from 4 Fraunhofer innovators, 4 demands from 3 designers from the Berlin University of Arts and 3 demands from 3 researchers from other research institutions. The Fraunhofer society has a technology transfer and patent office; however, the IPI team was from another

department, which created some mistrust among the researchers who did not wish to divulge too much information about their innovations. Revealing an idea before a patent application is filed can destroy its patentability unless a proper Confidentiality Agreement is in place, which was done between members of the IPI patent search team and Fraunhofer. Unfortunately, it soon became clear that Fraunhofer has very strict guidelines concerning idea disclosure and many scientists didn't feel free to use the IPI service once they realised how much detail was required in order to conduct an efficient patent search.

The time required for this whole process over a 6 month period was about 33 days, which corresponds to 24 hours per innovator providing at least one technology demand form. It is fairly time consuming especially because of the different workshops necessary to generate ideas. The acquisition of participants, arrangement of the workshop setting and the performance of the two workshops were fairly time consuming itself. Additionally the evaluation of the workshop and the generated ideas within are also time consuming factors, as are the screening and identification of potential innovators and the subsequent phone interviews to obtain the technology demands.

*The user-centered workshop approach allows for identification of early stage ideas, not entirely in phase with the project because it is harder to formulate IP demands when the technological need is still unfocused*

Some very important conclusions were drawn from this part of the field trial of the IPI project. The main one is that no matter the origins of a research contract (on behalf of the industry or publicly funded), the goal of research institutions and therefore also Fraunhofer's, is always to engage its researchers to create their own IP. Furthermore, entrepreneurs and innovators coming from a research setting, no matter if it is a huge organisation like Fraunhofer or a university, lack the funds and means to access external IP to implement their ideas. Moreover, the 60 phone interviews showed that:

- ▶ If an idea is at a very early stage of conception, it is very hard for the researcher to formulate patent needs;
- ▶ If the idea is already well developed, scientists are more inclined to develop it further on their own and to try to patent their idea themselves;
- ▶ Innovators didn't always understand the advantages of the use of external patents to develop a product;
- ▶ Regardless of the stage development of an idea's development, the researchers have to be very careful about revealing their idea or its technical functionality, as the possible IP for it belongs to their employer (Fraunhofer) and so they have to seek approval before talking about it;
- ▶ Some researchers interpreted the technology demand form as a query for a patent application, which they are not allowed to fill out without the approval of the Fraunhofer patent department.

Concerning the researchers from other research institutes or universities, they participated in the workshops within the Fraunhofer setting and were encouraged to collaborate with Fraunhofer's researchers or to use Fraunhofer's own IP.

### *Teachings from step 1: Identification of IP demands*

From this step of the field trial, it can be noticed that even though each Industrial Setting used a different technique, general teachings can be drawn:

- ▶ The SMEs and the innovators need to **know and trust** the Industrial Setting:
  - It is very difficult for the Industrial Setting to convince an innovator/SME to fill out a technology demand form if they don't know each other beforehand;
  - The process is less time consuming when the Industrial Setting knows the **SMEs' decision makers**;
  - The best results are obtained when the Industrial Setting is able to reach the SMEs' decision makers directly, who can refer the Industrial Setting to a R&D employee if necessary;
  - SMEs/innovators do not have much time to dedicate to such services.
- ▶ The **Industrial Setting needs to understand IP** issues very well in order to explain the process of using external IP to the innovators/SMEs;
  - Most SMEs/innovators aren't aware of dormant patents (or indeed external IP, they tended to be not IP aware in general);
- ▶ SMEs/innovators are very **reluctant to expose their unprotected ideas** or strategy;
  - Anonymising the demands is possible but a Non-disclosure Agreement would be the best option;
- ▶ The technology demand forms are better completed when the Industrial Setting completes them with the innovators/SMEs:
  - It guarantees that the form is entirely completed in a timely and useful manner;
  - The **Industrial Setting needs to be knowledgeable on the technology**, as the Industrial Setting should help formulate demands that will be understood by the IP search team (it needs to be fairly detailed in order to obtain quality matches).
- ▶ The Industrial Setting needs to have a **motivation to offer this service**:
  - It is a service that can satisfy their members and add value to their organisation;
  - It can be an entry service to promote other services.

### 3.2. Step 2: IP search

The Innovation Intermediaries were able to identify matches for the majority of the technology demands they received. Indeed, 86% of the demands obtained at least one match and on average there were 5.5 matches per demand. The highest number of matches per demand was achieved for the Health Care/Medicine technology demands, which is consistent with the fact that this is a field with a patenting culture. It is also a field where use of external IP is the most developed.



Table 3 summarises the results of the matching process via the different search methods.

Sector	Number of technology demands	Number of demands with at least 1 match	Number of matches	Average number of matches/demand	Number of matches per search method			
					Enterprise Europe Network	Patent Database	Use of intermediaries	Patent marketplace
Cluster: ICT / Software	19	17	86	5.1	21	31	8	26
Industry organization: Construction chemistry	12	8	43	5.4	13	5	7	18
Regional development agency: Health Care / Medicine	22	21	131	6.2	27	80	4	20
Research institute: innovation through users	12	10	49	4.9	8	28	3	10
<b>Total</b>	<b>65</b>	<b>56</b>	<b>309</b>	<b>5.5</b>	<b>69</b>	<b>144</b>	<b>22</b>	<b>74</b>

**Table 3:** Number of technology demands and their matches per industrial setting and per search method

Most of the matches came from the patent databases because they are the most comprehensive ones, with the German DPMA database containing more than 1,500,000 active patent entries<sup>15</sup>. Even though the Innovation Intermediaries searched only for licensable patents (and not all patents), this still amounts to a tremendous number of patents. For example, in the DPMA database alone, more than 32,000<sup>16</sup> licensable patents exist, with another 10,000<sup>17</sup> in the UK database.

Regarding the individual industrial partners and Innovation Settings, some observations can be made, allowing for some conclusions:

- ▶ Drymix.info: Profiles from drymix.info were generally highly elaborate, showing the high amount of care put into their creation, though it has not translated into successful IP transactions.
- ▶ Systematic: Demands often showed the unfamiliarity of innovators with the patent system, as Systematics customers often operate with copyright protection. This led to matches that were sometimes harder to grasp and accordingly required higher effort in clarification. Though all IP types were searched, only a small number of non-patent items of IP were identified. Companies also often elected to have only recent IP shown (<10 years), which might be due to shorter product cycles in the software industry.
- ▶ RTC North: Demands from RTC North clearly showed the deep experience of the intermediary with the patent system and were very usable with minimum need for clarifying discussion.
- ▶ Fraunhofer: Especially in the earlier project phase, demands were often “fluid” and needed a high amount of clarification, sometimes even changing significantly in the discussion with the innovator. This is probably as a result of the peculiar phase and setting of the invention/innovator as well as to

*The technical expertise of the IS often helps the SMEs to better formulate their demands allowing for better IP matches.*

<sup>15</sup> 1.510.596 as of 31-07-2014: <https://register.dpma.de/DPMAreger/pat/experte> with the following search command : ST = anhaengig-in-kraft UND SART = patent; then click on „die Gesamtanzahl zu bestimmen“.

<sup>16</sup> 32.185 as of 31-07-2014: <https://register.dpma.de/DPMAreger/pat/experte> with the following search command: ST = ANHAENGIG-IN-KRAFT UND SART = PATENT UND ( LIZ = LIZENBEREITSCHAFTSERKLAERUNG-VORHANDEN ODER LIZ = LIZENZINTERESSEERKLAERUNG-VORHANDEN ODER LIZ = ZWANGSLIZENZ-VORHANDEN )

<sup>17</sup> <https://ipo.gov.uk/types/patent/p-os/p-dl-licenceofright.htm> - number of hits can be seen at the bottom of page.

## Exploitation of IP for industrial innovation

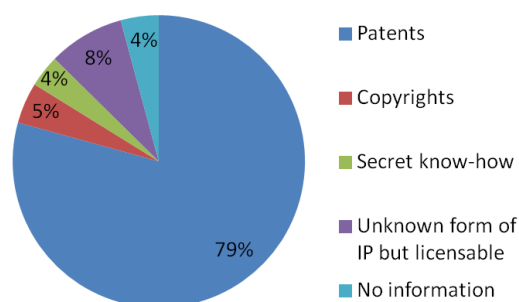
the process employed by Fraunhofer and it became “steadier” as the project went on. This has made identifying matches a very specific challenge for the Innovation Intermediaries.

The Innovation Intermediaries also looked at the IP format, the country of origin as well as whether it originated from public research centres or from the industry (Table 4).

Sector	IP Form				Private vs public IP			Owner country of origins			
	Patents	Copyrights	Secret know-how	Other/Unknown	Private	Public	Unknown	EU 28	North America	Asia	Other/Unknown
Cluster: ICT / Software	64	6	6	10	50	31	5	44	32	5	5
Industry organization: Construction chemistry	34	0	2	7	18	23	2	25	11	4	3
Regional development agency: Health Care / Medicine	107	5	1	18	90	33	8	58	26	43	4
Research institute: innovation through users	40	3	2	4	31	14	4	24	15	8	2
<b>Total</b>	<b>245</b>	<b>14</b>	<b>11</b>	<b>39</b>	<b>189</b>	<b>101</b>	<b>19</b>	<b>151</b>	<b>84</b>	<b>60</b>	<b>14</b>

**Table 4:** Distribution of IP forms, public/private IP origins and IP country of origins

79% of the IP matches were patents as these were the primary forms of IP looked for (Figure 7). There were some copyrights (5%) except within the construction chemistry field, which is not surprising considering this field is more about chemistry and physical processes than software. There was also some secret know-how (4%) (assumedly also containing software and/or copyrighted materials), mostly within the ICT/software field, probably because innovation in this field evolves rapidly and the patenting time frame is too slow. Secret know-how allows for a quick IP licensing possibility. This secret know-how originated from the Enterprise Europe Network.



**Figure 7:** Distribution of the IP format from the matches

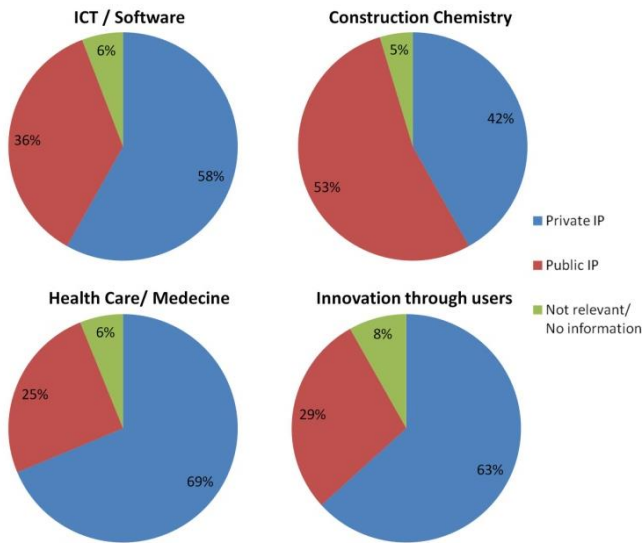
The Innovation Intermediaries also looked at whether the matched IP originated from the private sector or from public research organisations (Figure 8). Overall, 61% of the matches originated from the industry but this percentage varies depending on the technology demand fields. For example, within the construction chemistry field, there were more matches from academia than from the industry (53% versus 42%). On the other hand, matches from the health care/medicine field mostly came from the private sector (69%).

When considering the geographical origin of the IP matches (i.e. the country where the company or the research organisation is located), about 50% of them originated from the EU 28, 30% from North America and 20% from Asia (Figure 9). When looking at the results within each field of the experiment, the results are fairly similar for ICT/Software, Construction Chemistry and Innovation through users; however, within the Health Care/Medicine field, results between Asia (33%) and North America (20%) are inverted.

## Exploitation of IP for industrial innovation

The search for appropriate IP to match the technology demands is highly time-consuming as, on average, it takes a day per demand. There were 65 demands, therefore it took about 65 days over a 6 months period (one person half time).

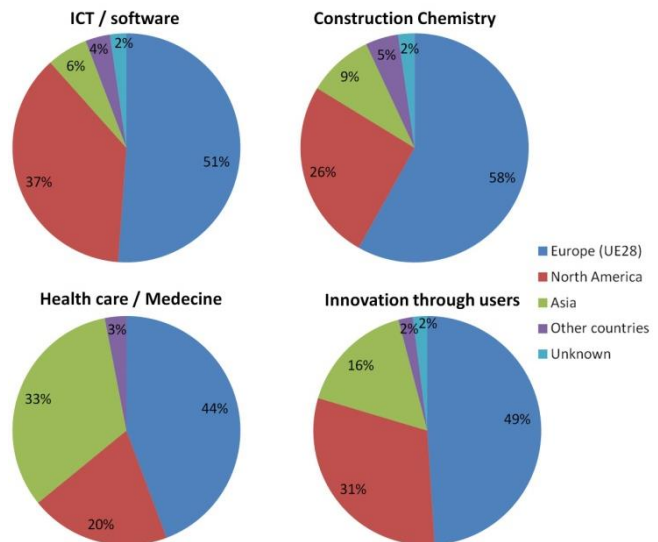
At this stage of the field experiment, it was also not possible to determine whether the patents were sleeping or not. The reasons and the methodology to assess this status were explained in a separate document, “sleeping patent’s assessment methodology.” It is summarized in §2.4. Briefly, the document demonstrates that the dormant status of the patents will be determined during the IP availability status step of the field trial.



**Figure 8:** IP matches private versus public origins per field

Overall, 65 technology demands were transmitted to the innovation intermediaries to search for IP matches through various IP databases. 56 demands received at least one match. It is actually 309 matches that were identified for these 56 demands (5.5 matches per demand).

The matches were mostly patents from the private sector located within the EU 28.



**Figure 9:** Distribution of IP matches geographical origins per field

### *Teachings from step 2: IP matching*

From this step of the field trial, general teachings can be drawn out:

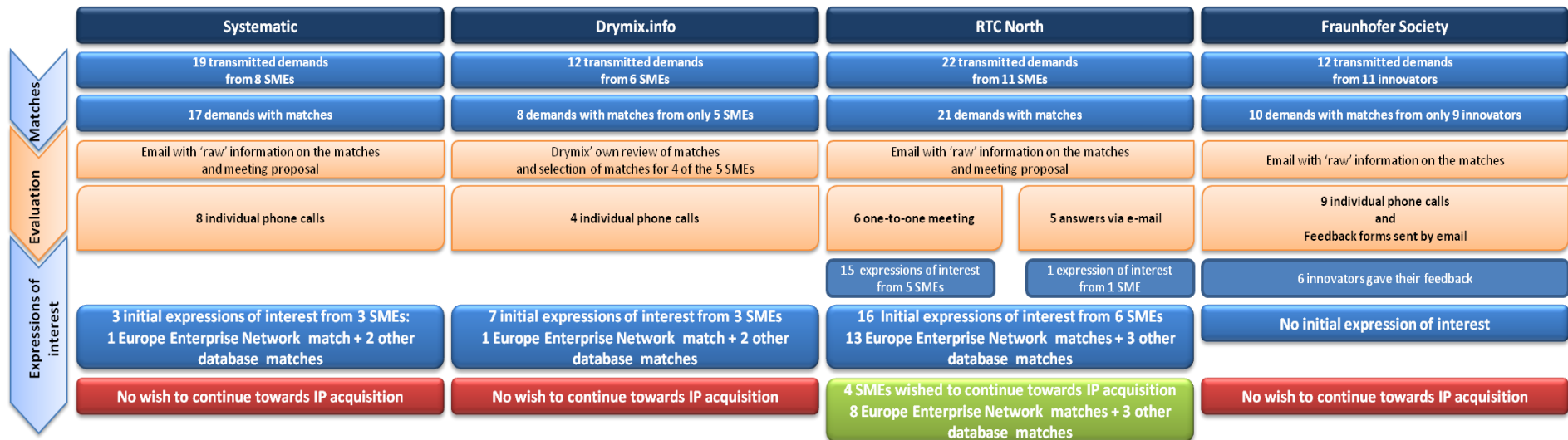
- ▶ It is not necessary to search a higher number of databases;
- ▶ The data resources are suitable;
- ▶ The technology demands were of higher quality when the IS helped the SMEs to fill them out and had some technological expertise;
- ▶ The technology demands need to be specific for the search to be efficient and fruitful:
  - Wide demands result in too many irrelevant matches;
  - The searches are run manually and it is less time consuming when the demand is specific;
  - It is also correlated to the seriousness of the SME/innovator in terms of using the service with a true IP acquisition strategy.

### 3.3. Step 3: Evaluation of SMEs interest

In order to obtain SMEs/innovators' feedback for the matches identified by the Innovation Intermediaries, four different approaches were used by the Industrial Settings (Figure 10).

The raw matching result data was usually what the Industrial Settings transmitted directly to the SMEs/innovators by email. They then contacted them by phone or met with them directly to obtain their feedback and discuss their expressions of interest. The exact methodology and results of each Industrial Setting are described below.

## Exploitation of IP for industrial innovation



**Figure 10:** Methods used to obtain the SMEs/innovators feedbacks on the matches and the resulting expressions of interest

### 3.3.1. ICT/Systematic

Systematic transmitted 19 demands from 8 SMEs to the Innovation Intermediaries. Each SME received at least one matched demand. Overall, 86 matches were identified for 17 demands (5.1 matches/demands on average). To obtain feedback from the SMEs, Systematic sent the raw matches by e-mails and subsequently called each SME individually. At the end of this process, 3 SMEs expressed interest in one of their cases (37% success rate).

The following reasons were provided by those SMEs who did not express any interest in the matches:

- ▶ Two SMEs declared the matches were not interesting;
- ▶ One SME indicated that they preferred to apply for their own patents;
- ▶ Many SMEs wanted to participate in the project because they saw it as an opportunity to obtain free monitoring on IP and technologies but had not planned on actually acquiring external IP.

In summary, the given reasons highlight a misunderstanding of the SMEs for the service provided. It is a possibility that they were not provided with sufficient information on external IP and the opportunities that it could provide.

Among the 3 expressions of interest from the 3 SMEs, none declared itself ready to go further with a transaction. The reasons given by these SMEs were: -

- ▶ They were not ready to spend time on the matches and to undertake the audits and adaptation of the technology that would be necessary for the exploitation of the matches;
- ▶ They considered that the costs and the risks were higher than expected (some even thought that the acquisition of sleeping patents would have been free);
- ▶ They would rather develop their own patents.

To obtain the SMEs' feedback, Systematic estimated it needed about 10 days over a 6 months period, which corresponds on average to 10 hours per SME having obtained at least one match.

### 3.3.2. Construction chemistry/Drymix.info

Drymix.info transmitted 12 specific demands from 6 SMEs to the innovation intermediaries. At least one match was found for 5 of the 6 SMEs. Overall, 43 matches were identified for 8 demands (5.4 matches/demands on average).

To obtain the feedback from these 5 SMEs, drymix.info chose a unique method:

- ▶ Due to their extensive knowledge of the technologies in the field, drymix.info conducted the initial assessment of the matches. It allowed them to only present highly relevant results to the SMEs as well as to save the decision makers' time.
- ▶ This initial filtering led to only 4 SMEs obtaining relevant matches via email.
- ▶ The emails were followed by phone interviews to obtain the SMEs' feedback.
- ▶ 3 SMEs expressed interest in 4 Enterprise Europe Network matches and in 3 matches from the other databases.

At this stage, the interest rate was average (50% of SMEs), since 3 SMEs expressed an interest in a total of 7 matches.

Regarding the 3 SMEs who didn't express interest in the matches, the following reasons were given:

- ▶ One did not have any matches to its technology demands; however a not proprietary solution was found by the Industrial Setting, demonstrating that technology solutions are not always proprietary.
- ▶ One did not obtain any matches after drymix.info's filtering process.
- ▶ One is still in the process of reviewing the matches.

Later on, out of the 3 SMEs having expressed an interest, none decided to go any further. The reasons were varied:

- ▶ In one case, the contact person left the company without securing support from top management;
- ▶ In another case, the company was sold and the contact person was promoted to a larger division and did not wish to invest any more time in the project;
- ▶ Finally, the last SME did not find the matches interesting after a more detailed analysis.

The methodology used by drymix.info was fairly time consuming as it took them approximately 10 hours per SME to review the matches and to conduct the feedback assessment by phone. As only 5 SMEs obtained matches to their demands, the estimated time is 50 hours or roughly 6 to 7 days over a 6 months period. Even though it is a time consuming service/SME, there is high value in this service for the SMEs as it saves them analysis time and allows them to focus upon only the most promising matches. It also demonstrates the value of drymix.info, who are capable of understanding the needs of the SMEs and providing them with relevant solutions.

Some methodology recommendations were drawn from this process:

- ▶ Phone interviews and physical visits yield the most success;
- ▶ Timely follow-up improves the receptiveness of the SMEs;
- ▶ Top-level contacts have to be informed and willing to participate from the very beginning;
- ▶ Target oriented processes have to be established, especially deadlines for certain milestones (Technology demands, review, identification of potentials).

### 3.3.3. Health/RTC North

RTC North transmitted 22 demands from 11 SMEs to the Innovation Intermediaries. Each SME received at least one matched demand back. Overall, 131 matches were identified for 21 demands (6.2 matches/demands on average). To obtain feedback from the 11 SMEs having submitted Technology Demand Forms, RTC North first sent emails to each innovator providing details of their matches, and proposing a meeting to discuss the cases.

As a result:

- ▶ 6 meetings between RTC North and the SMEs were held to discuss the results. After these meetings, 5 SMEs were still interested in pursuing the process.
- ▶ 5 SMEs gave their feedback only by email. One of them was interested in the match.

At this stage, the interest rate was average (55% of the SMEs), since 6 SMEs expressed an interest in a total of 16 matches.

In general, the SMEs appreciated the efforts provided by the Innovation Intermediaries to find potential matches; however, in some cases, the matches did not meet their needs and they did not wish to continue with the service of the IPI study. The reasons for this were varied, but tended to be because either the

SMEs could not dedicate any further time to the project, or the proposed solution, although sensible, did not fit their commercial plans.

Later on, out of the 6 SMEs having expressed an interest (16 matches), 2 eventually decided to not go any further (representing 5 cases). The reason for both of these were that the SMEs did not have enough time available to devote any further attention to the project, having a lot of demands on their time and being in an environment where they were focusing on other areas of their business such as funding applications. As a result, 8 months into the field trial, 4 SMEs were ready to start a transaction for 11 matches, which represent a success rate of about 36%. 8 of those ready-for-transaction matches were found through Enterprise Europe Network database, while the 3 others were found through the other databases.

To obtain the SMEs' feedback, RTC North estimated that it needed about 15 days, which corresponds to 10 hours per SME having obtained at least one match. It involves contacting the SMEs multiple times and meeting with most of them, on at least one occasion. It also involves contacting the Innovation Intermediaries on a number of occasions to obtain further information about the matches, sometimes providing the SMEs with a translation to some matches. However, there is high value in this process as the interest rate achieved by RTC North is the highest of the field trial (36% SMEs ready to start a transaction).

### 3.3.4. Innovation through usage/Fraunhofer

Fraunhofer transmitted 12 demands from 11 different innovators to the Innovation Intermediaries. At least one match was found for 9 of the innovators. Overall, 49 matches were identified for 10 demands (4.9 matches/demands on average). To receive feedback from the 9 innovators, Fraunhofer sent e-mails and phoned each innovator individually. In addition, as a reminder, the innovators were provided with feedback sheets by email.

After talking to all of the innovators on the telephone and trying to obtain their feedback, the response rate was 50 %, as only 6 feedback sheets were received. None of them expressed any interest in the matches.

The following reasons were given by the innovators for not being interested in the matches: -

- ▶ The innovators are already well supported by the legal and patent department at Fraunhofer;
- ▶ They are encouraged to apply for their own patents;
- ▶ Researchers from other institutes are encouraged to collaborate with Fraunhofer's researchers and/or to use Fraunhofer's patents;
- ▶ Some results were simply not relevant to their technological problem;
- ▶ They used the service as a way to monitor current IP.

The participation in the project may have been understood as a way to get free monitoring on inventions rather than being motivated by a real interest in acquiring external IPs due to the fact of the already existing good support by legal and patent departments.

Fraunhofer spent about 10 days on obtaining the feedback from the identified innovators, which corresponds to 9 hours per innovator having obtained at least 1 match. Fraunhofer contacted them to talk about the matches prior to sending the feedback sheet. After this the innovators had time to review the matches and to give their feedback. All the innovators were called again after the set period of time for sending back the feedback sheet. With some of them the feedback results were discussed, others did not send a feedback sheet back, so they were asked about their feedback on the telephone. Interview results showed that there is little demand for further patent relevant research support once a development process is well advanced. The innovators who were able to answer the questions on the interview and



feedback sheets were not really interested in doing that, because scientists are already well supported by legal and patent departments, especially at Fraunhofer. Researchers who are at a very early stage of development, on the other hand, are not really able to formulate their demand in a clear and appropriate way for an IP screening.

### *Teachings from step 3: Matches evaluation by SMEs*

General teachings from this part of the field trial include:

- ▶ Most SMEs do not understand external IP and how it can be used;
  - Some think that sleeping patents are free;
  - Some do not realise that a patented technology needs to be developed and/or adapted in order to be commercialised. This process requires money and time.
- ▶ Some decision makers were never interested in the whole service and just wanted the monitoring of IP in their field;
- ▶ Innovators from research institutes are unlikely to benefit from the service provided because they are encouraged to apply for their own IP and do not have the financial resources to buy external IP.

### 3.4. Step 4: IP availability Status

Once the SMEs have expressed an interest in the matches, the next step is to check for the availability status of the IP, to obtain some more details about the IP such as the owner details and to initiate first contact with the owner. In this project, 11 matches interesting to 4 SMEs have made it to this step. All matches originated with RTC North. Both the Industrial Settings and the Innovation Intermediaries continue to be involved in this step, as the Industrial Setting remains the main contact for the SME at least until it has established a direct contact with the owner of the match. The Innovation Intermediary, engage, contacts the owner of the IP identified in the databases other than the Enterprise Europe Network to confirm the validity of the contact data in the IP document and inquire whether the IP is still available. For matches from the Network, an Industrial Setting has to pass through its local Enterprise Europe Network office, which will contact the local Enterprise Europe Network of the IP owner to bring the two companies together.

It is also at this stage of the process that the sleeping status of the IP can be evaluated. One of the matches for which the contact had been established could be considered to be sleeping as it is not:

- ▶ Used internally for commercial or industrial purposes;
- ▶ Already licensed;
- ▶ Used to start a new company;
- ▶ Used for strategic reasons.

This step is fairly time consuming for the Industrial Setting as it requires many contacts with the SMEs, the local Enterprise Europe Network office and the other Innovation Intermediary (such as engage). Indeed, the time to assist the SMEs with getting ready for the negotiation phase was estimated at about 15 days, which corresponds to 20 hours per SME continuing towards transaction.

### *Teachings from step 4: IP availability status*

General teachings from this part of the field trial include:

- ▶ The process takes a long time for several reasons:
  - Efforts of the industrial setting being the SME and innovation intermediaries go-between;
  - The fact that within the Enterprise Europe Network two offices have to be involved (the one from the IP owner's location and the one from the IP acquirer's location)
  - Long delays between each contact
- ▶ Outside the process itself, it has been observed that the SME's time is often taken up by many other activities and that IP acquisition is not their priority

### 3.5. STEP 5: Negotiation and financing

About 12 months into the field trial, one NDA has been signed. It concerns a match found through the Enterprise Europe Network by ACREO for the industrial setting RTC North. The negotiation is assisted by RTC North, which is in contact with the local Enterprise Europe Network offices, the one from the interested SME and the one from the IP owner. The assistance from the project remains available. The negotiation process has been suspended several times, because the companies are always busy with daily issues and that this task can easily be treated as lower priority.

In this case, assistance from engage has not been necessary.

## 4. ANALYSIS AND GROUND FOR POLICY

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The field trial has yielded very mixed results about the validity of a patent pull process (to start from the demand of a SME to find an appropriate patent to use). Even though more than 85% of the demands expressed by companies have received a match (an average of 5.5 matches per demand) and that the companies' feedbacks were mostly positive (they appreciated the work done and found the results interesting), only few cases have asked for the IP availability status (and identification of IP owner). Most companies that had received a match for their demands have not gone beyond the identification of matches, declaring a lack of time and money. The impression could not be helped that some of them had used the IPI project and process as a free of charge service for providing a technology survey/watch while knowing from the start that they would not engage in a patent acquisition.

Nevertheless, the 18 month field trial has provided many insights about the behaviour of the SMEs facing potential acquisition of external IP to speed up their development, about the way to approach those companies and about the different processes and techniques to find potential patents. All those learning effects are described here after. They regard the following aspects:

- ▶ The influence of the industrial sector and the industrial settings
- ▶ IP search methods
- ▶ Sleeping status assessment
- ▶ Lack of awareness
- ▶ Confidentiality issue
- ▶ Guaranteed interest from the SMEs
- ▶ External IP for company creation
- ▶ Difficulties to formulate the demand
- ▶ Difficulties in the assessment of the quality and added value of the matches
- ▶ Benefits for SMEs, industrial settings and intermediaries
- ▶ Efficiency of the patent pull process and economic viability of the process

All the lessons learnt about these topics are coming exclusively from the field trial although the experience of the IPI team and of the advisory board generally reinforces the comments.

### 4.1. Influence of the industrial sectors and Industrial Settings

To analyse the influence of the intermediaries on the results of the "patent pull process", the comparison between Systematic and RTC North is very fruitful: they both have a large number of members in their networks and both are providing services to companies in terms of innovation, internationalisation and R&D activities. However RTC North is experienced in providing services linked to intellectual property matters while Systematic is new to this activity. RTC North is able to describe the process of patent acquisition, the importance of acquiring technologies as an alternative to developing its own R&D, the cost of acquisition, etc..., creating in such a way a climate of "IP trust" with the SME. On the contrary, Systematic is new in the intellectual property services, focusing instead on collaborative R&D projects and internationalisation. Therefore Systematic had more difficulties in motivating innovators to participate, despite having a strong methodology to select them (based upon the number of collaborative R&D projects they have carried out (which is a sign that they are ready to explore new technologies and fields of knowledge)). Secondly, Systematic had difficulties in convincing innovators to go further, once the matches were presented. Several reasons have been supplied: lack of money (SME thought that the process will be without costs until the acquisition of patent) and time, too much difficulty in adapting the patent to a marketable product, etc... As a consequence, all innovators, including those who had expressed positive

feedback, did not go further toward acquisition. What is positive is the fact that Systematic is looking for developing new services about patents, being convinced that it is an efficient support for SMEs development.

Other lessons can be extracted from the two other intermediaries: drymix.info has demonstrated a strong and deep knowledge of its members, based upon personal relationships, and therefore was able to identify the innovators and to raise demands from them. Matches were obtained for most of them and some positive feedback was received, but no SME wished to go further toward acquisition. Top management levels were not convinced that the time, effort and money required for IP acquisition were justified. As an intermediary, Fraunhofer was able to identify innovators, using its methodology (workshops) to raise a demand for new products based upon new use. Matches were successfully obtained although the descriptions of the demands were very general. It was quite difficult to get feedback from the innovators and none wished to go further toward acquisition. One main reason can explain this: the Fraunhofer office for technology transfer could not see other sources of patents interfering in its process to exploit the results of the Fraunhofer research.

The role of intermediaries cannot be fully analysed without taking into account the sector in which they operate. Looking at the four different sectors, the patent pull process is more effective in innovative fields as innovators are more aware about open innovation, the necessity to innovate and the importance of Intellectual property. Regarding sectors where start-ups are predominant, it is the norm to create a company based upon one's own patent. Last but not least, traditional sectors with low technology intensity would be more adapted to a patent push approach because in that case, the patent owner has identified the impact on the sector when issuing its patents.

As a conclusion on the role of intermediaries and on the influence of the sector, it appears that (i) to convince SMEs that open innovation and especially the search for existing patents can provide more and quicker added value to a company, (ii) to raise the demands of the companies, (iii) to do the follow-up in order to assess the quality of the matches and (iv) to enter into the negotiation process for acquisition or licensing, it is good to have an organisation in contact with SMEs on a daily basis, either because it is its client base, or because that is its role in terms of public support to SMEs, to act as an intermediary. Such organisations most likely work on a regional basis. Obviously it is much better if such intermediary has already developed knowledge and services on IP matters.

Higher education institutes (HEI) and RTO (research and technology organisations) are less appropriate as intermediaries because they are more IP producer than IP buyer and also because they are farther away from SMEs.

### *Ideal Industrial Setting*

Based upon the field trial, the ideal Industrial Setting for a patent pull approach is an organisation that:

- ▶ Delivers services to companies;
- ▶ Has a strong member database;
- ▶ Works in an innovative sector, familiar with IP;
- ▶ Is knowledgeable about technical issues of its innovative sectors;
- ▶ Is knowledgeable about IP issues (either with internal competencies or through cooperation with another organisation), both for IP application and IP acquisition;
- ▶ Is trusted by its members;

### 4.2. IP search methods

During the field trial, various IP databases were selected based on the quantity of IP offers proposed and their ease of use. Four different types of IP databases were retained (marketplaces, patents databases, intermediaries and Enterprise Europe Network), three of which with several databases retained (Section 2.3. .

The four different ways of identifying IP all gave different results and had different benefits and limitations:

#### ▶ Marketplaces/brokerages

The most active marketplaces were identified and actively searched for matching patents but the small amount of available patents and the restrictions concerning how long one can access those patents make the possibility of a match less likely than the database approach (74 matches). A point of attention is the possibly higher transaction costs, due to the fees and interest of other bidders (e.g. in case of auctions); however, it can be noticed that several marketplaces are free of charge, not offering any advice on trade acquisition matters. For instance, IP Marketplace, created in 2007 and managed by the Danish Patent and Trademark Office, is an online display window where you can look for trading partners and other kinds of partnership. It is free of charge for both buyers and sellers. The IP Marketplace can be used to sell or license IP rights (patents, patent applications, utility models, design and trademarks) , or to search for IP rights to buy or license-in, or to find partners for innovation projects that build upon patentable knowledge. Marketplaces are also developed by private companies. For instance, Dupont has sponsored the online forum “yet2.com,” an Internet-based technology which now acts independently. It was the source of no less than 15-30 new deals per year from its beginning.

#### ▶ Patent Databases

From Table 3, it can be noticed that most matches (144) come from patent databases maintained by official national patent offices, where the large volume provides a higher hit rate, though not all patents would be available for licensing – whereas all matches from other sources used by the IP search team are indeed obtainable (as these sources only report available IP).

Therefore, as a number of national patent offices (English, German) have an option to search for licensable patents which greatly improves the chances for an IP transaction by reducing the sheer volume of available IP, a focus during the field trial has been made on such patent databases having a special flag indicating that the patent is available for licensing. It can certainly reduce the chance to have a match, but it is compensated by the large number of patents in such databases and by the increased facility to go further in the process (cost-effectiveness).

#### ▶ Intermediaries

Intermediaries and technology transfer platforms were regularly consulted, often delivering promising results. The amount of available IP is not as high as with the official patent offices, but often a match can still be found (22 matches).

### ▶ Enterprise Europe Network

The Enterprise Europe Network database provides a large number of patent offers and a relatively high matching hit rate has been obtained (69 matches). It has to be said that those patents result from a proactive initiative to commercialise them, which translates into availability for licensing. It may happen that some of them are already used but the probability seems to be very low (in case the IP acquirer is interested in an exclusive licence).

In addition, the quality of the search also depends on the quality of the demand.

#### *Ideal Technological demand for efficient IP search*

Based upon the field trial, the ideal technological demand:

- ▶ Details the demands and specific needs while being a careful balance between too technical and too vague;
- ▶ Explains unique functional levels and how that can create new business opportunities;
- ▶ Indicates whether the patent should be granted or only applied for, as well as options such as joint venture;
- ▶ Is formulated to allow non-experts to understand it

A well formulated technological demand, focused on the SMEs' requirements, allows for an efficient IP search yielding about 5 IP matches (a reasonable number of matches not overloading the SMEs during the evaluation phase).

### 4.3. Sleeping Status Assessment

During the field trial, which focused on sleeping patents, it was very difficult to assess whether a patent was sleeping or not. It was decided during the first phase of the study (design of the model of the field trial) to use four criteria to assess whether the patent is sleeping or not:

- ▶ Has the patent been used for internal commercial or industrial purposes?
- ▶ Has the patent been licensed to an independent party?
- ▶ Has the patent been exploited commercially by starting a new company?
- ▶ Is the patent used for strategic reasons?

If the answer is yes to one of the questions, the patent is not classified as sleeping.

As this status is not mentioned in any database, the only way to determine it is to ask the owner the four above questions. First, to ask the owner is a very long process (it needs to be identified, the right person to answer needs to be found, and the correctness of the answers needs to be ascertained,...). Secondly, deciding whether a patent is used or not can be a complicated and expensive process. The owner actually may neither know, nor want to spend the time and effort to decide whether a given patent is "used" or not. Furthermore, experts from the EAG very often underline that, for a patent owner, to give answers to the above four questions is not good for business reasons, decreasing the value of the patent. For instance, to indicate early on that the patent is externally used may lead to a decrease of its value for a buyer looking for a competitive advantage.

Due to those difficulties and the time needed, investigations on the status of the patents have not been made on all matches, but only on those entering the negotiation step as well as on a sample of 25 patents (see §2.4. .

It has to be underlined that SMEs expect to solve their problem and do not care if it is a sleeping or not sleeping patent that can match their demand.

### 4.4. Lack of awareness

The fields study has revealed a strong lack of awareness on how external patents, can be a source of competitive advantage of companies. This lack of awareness has a direct impact upon the detection of needs from the SMEs.

Companies have showed a lack of motivation to participate in the actions launched by the Industrial Settings (IS) at the very beginning, because they were not entirely convinced that external patents, not only sleeping patents, can do something for them, either by increasing their competitive advantage or by speeding up the development of a new service or product. When approaching SMEs, IS put the focus on sleeping patents, which was welcomed by the SMEs as a mean to reduce the cost of licensing in. But at the end, SMEs were more interested in getting a match with any kind of patents, sleeping or not.

To solve those difficulties and thereby motivate a sufficient number of companies, each IS diversified their efforts as indicated in chapter 3 (intensive e-mail campaigns, dedicated workshops, selection criteria of most promising companies, enquiries, creativity workshop, individual interviews). The diversification of efforts was needed even within the health sector which is more familiar with IP issues (but mostly IP creation and not IP acquisition). The efficiency of the approach would increase a lot if awareness of the value of external IP was more developed in SMEs.

It has to be noticed that the EU IPR Helpdesk and other helpdesks and – on general awareness – patent offices and innovation intermediaries already do this.

### 4.5. Confidentiality issue

Very quickly in the field trial, when SMEs had to express their demand, the confidentiality issue appeared. It was another barrier in the process and it demanded more efforts from the Industrial Settings, either to convince the SMEs that it was a trust-based agreement, or to sign a NDA (not disclosure agreement). This issue was first mentioned by Fraunhofer which dealt with creation of new companies and new ideas with a bigger fear of disclosing their needs. It was followed by companies approached by Systematic which consequently became “anonymous” for the innovation intermediaries. It can be explained by the fact that IP services were new for Systematic and therefore the SMEs felt less confident in providing detailed technological demand to external parties. Companies approached by RTC North only demanded an NDA when entering the negotiation process. It was an NDA between the patent owner and the SME. With Drymix.info, there was no specific confidentiality issue as the trust between the IS and the companies is very strong.

To increase the trust of the SMEs, an NDA should always be signed between the SME, the Industrial Setting and the Innovation Intermediary. This would also insure that decision makers within the company are involved and that IP acquisition is strategically approved.

To save time and to facilitate the patent pull process, the format of the NDA between the industrial setting and the innovation intermediaries could be prepared on an EU level and adapted to the local situation, the same for the NDA between a potential patent buyer and a patent owner. The models, used in the field trial, could serve as a basis for those documents. EU IPR Helpdesk can help to formulate such template.

Moreover, in the future, new regulations would be adapted, e.g. a directive on trade secrets has been proposed recently, which could help to solve this issue.

### 4.6. Guaranteed interest from the SMEs

After step 3 of the field trial, when SMEs received the matches for their demands, it was surprising to see that most SMEs decided not to follow the process by entering into negotiation phase on licensing or acquiring patents, although they have generally given a positive feedback on the quality of the matches.

The main reason seemed to be insufficient information to innovators when they were selected. It had been explained that the innovators would receive assistance with defining a demand, finding a patent and facilitating the acquisition of the patent. It was not sufficiently discussed that the acquisition process would need investment in time and in money whilst the assistance would be less as it should mainly be private discussion between the owner of the patent and the innovator. Also some innovators have perceived the IPI project as a source of information about the state of the art of some technologies without any willingness to go beyond that.

The latter point indicates that the patent pull process can also serve the needs of the SMEs even if there is no patent acquisition or license. The innovator is interested in making an overview of the state of the art in his domain. It is especially true for young innovators looking for creating a new company (Fraunhofer industrial setting). Regarding the communication of the service, this externality should be proposed and explained. However, as the goal is to increase the use of patents, the selection of SMEs must focus on companies really interested in external patents.

### 4.7. External IP for company creation

An important feature of the field trial was not only to have diversified industrial sectors and types of intermediaries, but also to integrate company creation as a potential target to increase the use of external patent.

At the very beginning of the IPI exercise, the idea was to use the workshops (mixing final users, researchers and companies) organised by Fraunhofer to detect innovators with a demand for a technology, especially through an existing patent. Some times after, the idea was somewhat transformed, focusing upon the detection of innovators with a technology demand, complementary to the knowledge provided by Fraunhofer. The idea was to build a bundle of knowledge at the starting point of the company. This modification was more in line with the expectations of the Fraunhofer society, for whom the priority of such workshops is to valorise the Fraunhofer results of research and their associated patents. However, after a while, to try to provide other sources of patents, even if they are complementary to a Fraunhofer one, was not admitted by Fraunhofer organisation, especially the office of technology transfer of Fraunhofer. Therefore another idea was to use the IPI process to give some insights on the markets to innovators: it was not so much accepted by Fraunhofer and is completely out of the scope of the IPI project, the focus of which being to better exploit the existing patents.

In addition, the experts from the EAG expressed their common view on the fact that, in almost 100% of the cases, a young start-up has no money to invest in the acquisition of a patent and spends the majority of its time and energy in marketing its own products coming from its own patents or IP. It seems that the



position of the TTO of Fraunhofer can be generalised to other research institutions which give priority to their own knowledge and which generally have no authorisations or means to acquire additional technologies (patented or not). Moreover, in the process of creating new company, there rarely are several patents involved as the time to move from patent to a marketable product is long enough as it is.

The result of the field trial, regarding innovators creating new companies, was that 11 innovators expressed a demand, that matches were found for them, but that none of the innovators were interested in pursuing towards patent acquisition. The analysis tends to demonstrate that company creation is not really a target for a patent pull process and confirms that TTO, PRO, incubators are more interested in pushing their own patents and their knowledge into the market (patent push model).

### 4.8. Difficulties in formulating the demand

During the field trial, once the SMEs were convinced of the value of using external patents (including sleeping) and reassured about the protection of their data (confidentiality), the innovation intermediaries in charge of finding matches for technology demands faced difficulty in getting appropriate description of the demand. Indeed, SMEs could easily express their demand in terms of function of a product or of a component but had more difficulties with expressing their needs in terms of technology and patents. A requirement sheet was developed by the project, but filling it in was not so obvious to them.

The role of the industrial setting was essential in helping the company formulate its demand and, in the case of the IPI project, to fulfil the requirement sheet. One form has been used for the IPI project which can be improved and circulated to other stakeholders who would like to promote such a scheme on external patents. Other tools could also be developed to refine the demand of the companies on-line by an interactive exchange.

The high rate of success from the EEN database when searching for matches can be explained by the fact that the technology offers are written in a more understandable sense for a potential user, meaning more in terms of function and impact, while patent descriptions are more technical and legal. Unfortunately, simplifications of patents' wordings and descriptions are not possible because they have to follow international rules. Support from trained intermediaries can help the SMEs to understand these patents.

In order to reach SMEs which are not already actively collaborating with external innovation partners and looking for patents, it is highly beneficial, if not necessary, to start from the SME's needs. This can best be done by an institution or an individual who has a trust-based relationship with the SME, even if it might not hold a strong competence in IP-related issues. This first level contact (e.g. drymix.info) serves as a kind of "General Doctor" who can mediate the SME (or just the request) to a professional technology valorisation body (e.g. engage), a broker (e.g. EEN), or in some instances even directly to the source of technological competence (e.g. a research institute or private business).

Within the project, it became obvious that the position of these first level contacts became strengthened by further developing their intermediary functions. However, this gain in competitiveness and reputation would most likely not constitute sufficient motivation to serve this function free of charge beyond the lifetime of the project. Consequently, the project partners have started an intensive exchange of experiences and views on possible incentives (ranging from charging the SME a success fee, charging the IP provider a success fee, receiving a mandate and resources from e.g. regional development agencies).

The development of the open innovation 2.0 and the reinforcement of the innovation ecosystems will contribute to improve this matter. SMEs can hardly be reached directly by commercialisation efforts of Research Technology Organisations.

### 4.9. Difficulties in the assessment of the quality and added value of the matches

Once the SMEs expressed their needs, and the IP specialists reached out and found potential IP that matched the SME's demand, the companies had to evaluate whether or not they were interested by the potential patent proposed and by the next step (i.e. entering into negotiation). It can be quite challenging for innovators to understand patents, the described technologies and how they could be integrated in their products.

For companies, especially those who have no R&D team, it is sometimes difficult to understand the exact content of the patent. Some difficulties can also arise as a result of the language of the patent, as it is no longer compulsory to translate the patent description (some patents were only written in the language from the initial filing country). A tool translating patents has been made available by the European Patent Office and similar services can be tested at WIPO (Korean, Chinese), but they are not yet known by the SMEs (or the Industrial Settings).

As outlined above, there is a need for assistance for such companies and an interaction between the company, the IS and the holders of access to IP bearers. This exchange should be simplified while preserving confidentiality and being interactive as much as possible.

### 4.10. Benefits for SMEs, industrial settings and intermediaries

During the field trial, impacts on the different parties of the process have been measured, mostly in a qualitative way. The impact has been very positive on all industrial settings as most of them have declared to have increased their visibility and services to their members. RTC North has valorised its IP competences by organising a full process with its members, providing them with an opportunity to raise technological demand and to get a support at European level to match them. For members of RTC North and for RTC North itself, it has been proven useful and efficient.

The cluster Systematic has experimented the development of a new service to its members based on IP acquisition. It has the willingness to further develop this service. The Systematic members have been difficult to convince and most of them declined to proceed to IP acquisition, once the matches were found and approved, for two main reasons, time necessary to precisely assess the added value provided by a potential acquisition and cost to acquire IP.

Drymix.info has reinforced its visibility with its members, providing them with opportunities to work on innovation and IP. The companies in the dry mix sector also declined to go further, especially because of a lack of management level involvement and time availability.

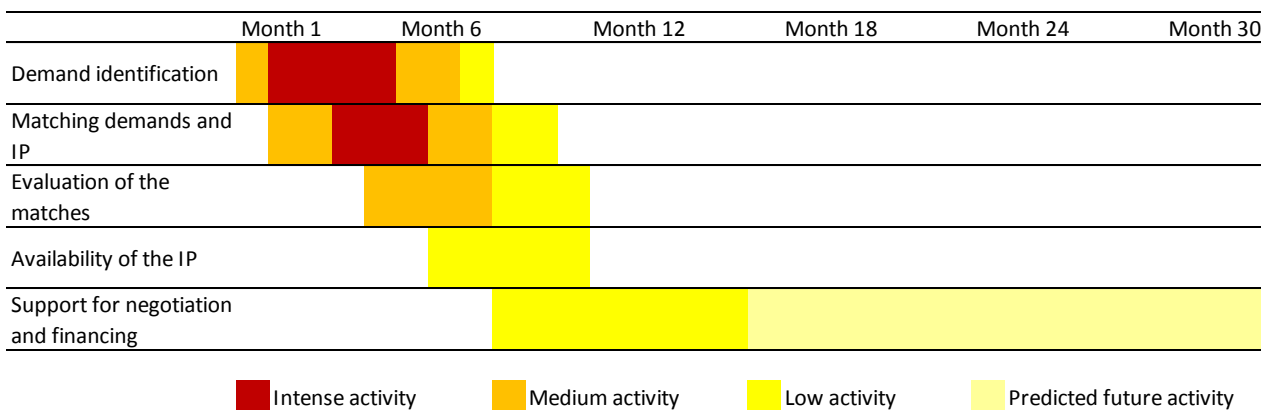
For Fraunhofer, the benefit was to experiment this new service for their daily activities regarding development of new businesses. Probably this new service will not be implemented, despite the matches found, as the priority of Fraunhofer is to privilege exploitation of their own IP.

For engage and Acreo, the field trial gave opportunities to enrich their process and to face a large variety of technological demands. They have developed new tools to formulate technological demands, analysed the way to identify IP status (availability, sleeping) and selected the most appropriate sources of data.

#### 4.11. Efficiency of the patent pull process and economic viability of the process

When considering the entire process developed in the field trial, it appears that such patent mediation is time consuming and must be efficient in order to be effective, i.e. we must ensure that finding a solution (e.g. a patent) satisfying the needs of an SME is neither too costly, nor too time consuming. Although there is no fixed limit on what is “too costly” and “too long”, first impressions indicate that an SME (a) is not willing to wait more than three months before it receives a value contribution, and (b) is not willing to pay anything for an effort of a third party that does not bring tangible results.

The field trial ran for over a year (after the first phase on the model design) with major activity within the first 8 months, as shown in Figure 11, corresponding to steps 1 (identification of IP demands), 2 (IP matching) and 3 (evaluation of the matches by the SMEs). These steps were extremely time consuming as they involved marketing of the service to SMEs/innovators, collecting the requirement sheets, matching the IP and obtaining the feedbacks from the companies. The negotiation step also is long: from the EAG point of view, it would be between 18 and 24 months, not only because of the discussion on the price and the conditions, but also because the freedom to operate must be assessed<sup>18</sup>. However, it did not require that much time from the Industrial Settings or Innovation Intermediaries; it is more a bilateral discussion between the patent owner and the potential buyer.



**Figure 11:** Intensity of activities from the Industrial Settings and the Innovation Intermediaries over time (actual during the field trial and predicted after the field trial)

One major question is the efficiency of the patent pull process, i.e. the ratio between the efforts to achieve a patent acquisition and the impact on the business of the company. If we report the cost from the innovation intermediaries (engage and Acreo) and from only RTC North (with one match in negotiation and two others at the gate), the cost can be estimated at 15 to 45 K€ per successful case (30 days of RTC North to identify 22 demands, around 22 days from engage and Acreo to make the search and 30 days of RTC North to get the feedback and to help with the negotiation).

This is about as far as the analysis of the efficiency can go as it is still unknown whether or not the negotiation phase will pan out and if it does lead to IP acquisition and positive impacts on the buyer. This being said, at this stage, the process does not seem very efficient mostly due to three factors:

- ▶ The Industrial Settings had to spend a lot of time to convince SMEs/Innovators to use the service;
- ▶ A lot of the SMEs were not entirely truthful and never considered acquiring IP via the service;

<sup>18</sup> Freedom to operate is not automatic when you acquire a patent. It depends on the dependency with other patents covering the same product or process. A patent attorney is the best professional to offer this kind of service.

- ▶ The technology demands were not always expressed in a clear and efficient manner.

Another challenge is the difficulty for companies to appreciate the effort required to transform a patent into a marketable product or industrial process. If the patent one intends to license is already used for commercial or industrial purposes (and the acquirer plans a similar use), then the efforts needed to adapt the technology are fairly easy to assess. Although, it will also depend on the know-how necessary and the cost of its acquisition (discussed during the negotiation). On the contrary, if the patent is not yet developed for the desired purposes, then the R&D efforts, time, human resources and financing necessary are difficult to estimate and/or difficult to assume for a SME. In several cases, innovators have considered that there was too much risk in investing, as regards the potential added value which can be gained.

As a conclusion on the cost efficiency of the process, if we compare the total cost of the study with the number of innovators that have entered into the negotiations (that being the proof of the added value provided by the project), and if we consider the time necessary to achieve it, it is hardly efficient. However the goal of the IPI project was to assess, through a pure field trial, the possibility of valorising sleeping patents and to test different implementation models in different sectors with different types of intermediaries and targets of innovators. Therefore, there have been a lot of learning effects during the two year IPI project and the efficiency can be expected to increase if the process restarts with more appropriate tools to inform and to select innovators, with intermediaries filling the criteria mentioned above, with better methods to express the demand, to find the matches, to obtain the feedback from innovators and to assist the negotiation phase. There is sufficient space for improvement that would decrease the cost of the patent pull approach.

### 4.12. Ground for policy

The above analysis of what happened during the field trial can provide several insights for the design of a future policy, aiming at increasing the competitiveness of SMEs by providing them better access to existing knowledge, patented or not. This policy tends to fill a gap in a sense that most innovation and knowledge policies dealing with SMEs development are working on a push process from the providers of knowledge instead of starting from the demand of companies.

The first conclusion is about the status of the external IP, sleeping or not, patented or not. The analysis has shown how important is solving the need of the SME and how weak is the impact of the IP status. Indeed, good results have been obtained through not patented IP (the EEN database) and most results have been obtained with patented IP. Whether the patent is sleeping or not has not influenced the process of IP acquisition, although the case which has entered into negotiation is based on a sleeping patent.

Regarding the difficulties to really assess if a patent is sleeping or not, the **future policy whose objective is to solve an existing technological problem by way of using external IP should work on IP that solves the problem and is available for usage, whatever its status.**

The second conclusion is about the target groups of SMEs. The field trial has demonstrated that the companies in creation generally have few needs of external IP, concentrating their first developments on developing their business from their own patent or knowledge. The field trial has also shown that better results were obtained when SMEs are working in sectors that are used to working with new ideas, innovation and new technologies. However, very innovative sectors, like the ICT one, are not as eager to integrate external IP, while on contrary a less innovative sector like dry mix mortar has shown some appetite from SMEs. It is therefore difficult to target any specific sectors and the suggestion is for **the policy to target SMEs independently of their sector.**

The third conclusion is about the importance of the mediation made by the industrial settings (SME support organisations) and of the services provided by the innovation intermediaries (e.g. engage and Acreo). Suitable industrial settings have been described as having a strong basis of SMEs with a trusting relationship between them, to work in an innovative sector and to have knowledge on IP value and impact. In each region, such industrial settings are present, either as an Enterprise Europe Network partner, an innovation agency or as a cluster. Therefore, the **future policy should continue to use such mediators to help SMEs to access knowledge** (external IP). It has to be noticed that the **role of the industrial setting requires proximity** and therefore the **regional level seems to be the most appropriate**.

The fourth conclusion is that the entire process will be facilitated by higher awareness of SMEs on the additional value provided by external IP acquisition. Indeed in the field trial, much effort and time was spent in convincing SMEs to search for external IP to solve their technological needs. This **increase of awareness is a pre-requisite and part of the policy**.

The fifth conclusion is that the time expended on formulating the demand, searching for matches and assessing found matches is costly. The field trial has demonstrated that SMEs are not prepared to pay for the effort in formulating the demand and in searching for matches through different databases and market places. It also showed that some SMEs were not fully committed to the IP acquisition process. Therefore **the policy should propose a specific tool to help SMEs to access those services**. This tool should not cover all costs, but part of them to ensure commitment from the SMEs. This tool should also be flexible to allow SMEs to really select the service and the provider they need. A voucher system is a solution. The most well-known voucher schemes are innovation vouchers that are very common practices throughout regions in Europe. Typically, voucher schemes follow these conditions:

- ▶ Support SMEs to purchase services (usually R&D but it also exist for IP creation);
- ▶ The support amount is usually limited (typically no more than 20 000€);
- ▶ Co-financing from the SMEs is not mandatory;
- ▶ It is usually issued by a regional or national agency to pay the service provider directly;
- ▶ They are lighter and faster than typical grant programmes.

Finally, the field trial has shown that the entire process is very long (time to recruit SMEs unfamiliar with IP acquisition, time to obtain their demands and their evaluation of the matches and delays during the negotiation phase); however, public support should not be indefinite and we suggest that **the duration of the SME support should not exceed a year** as this measure would encourage the commitment of the SMEs and help them stay focused on their project to acquire IP. Within a year, it is possible that some SMEs will only have reached the evaluation of the IP phase; however, we suspect that most SMEs, because of their commitment and contribution, will have selected interesting matches more rapidly and have already entered the negotiation phase after a few months (less than 6 months).

Overall, the results obtained with the approach in the field trial and their analysis suggest that (1) there is still need for a public policy on the use of external IP and that (2) the approach refined by the lessons learnt can be part of such a policy. The policy we propose is described in the next chapter.

## 5. EXTERNAL IP ACQUISITION FOR SMES POLICY

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### 5.1. Rationale

During the innovation process, technical challenges usually need to be solved. Most SMEs will develop their own solution either internally or in collaboration with research organisations or other companies, especially when they lack R&D resources. Very few SMEs will look at external IP acquisition as a viable method to solve their technical challenges and develop a new product or process. Yet, acquiring external IP to develop new products can reduce time to market for the SMEs compared to creating new IP.

In order for SMEs to accelerate their entry into the market and/or to address their lack of internal R&D competencies, they need to be made aware of the value of external IP and have access to capacities, internal or external, for the detection and acquisition of such external IP. This process has been proven in the field trial as very time consuming, because it needs:

- ▶ Identification of SMEs interested to be involved;
- ▶ Formulation of their technological demands with the appropriate keywords to identify the need, but also to search in IP market places or databases;
- ▶ Finding the patent and/or IP matching the demand;
- ▶ Getting the interest of the SMEs in the matches found;
- ▶ Assessing the status of the IP;
- ▶ And finally, supporting the IP negotiation.

Large companies have developed their own strategy in IP acquisition and are working with private services companies to identify IP opportunities and to proceed to their acquisition. For those companies, the private sector can find its economic sustainability as the work is precisely defined and shared among the service provider and the own IP resources of the large group.

When talking about SMEs, the context is not the same. The strategy in terms of solving technological needs is not often defined, the awareness about the IP issues and benefits is not well developed and there is a lack of human resources to accompany the IP identification and acquisition.

The field trial has demonstrated that the patent pull process can be improved and refined, but that all steps described here above will remain valid and cannot be afforded by SMES if they use a private service provider. In addition to that, some efforts should be done to increase awareness of SMEs towards IP acquisition and open innovation.

It is the reason why we propose a public policy to give the means to SMEs to engage into the patent pull process at reasonable costs. On the contrary, it could be expected (the field trial has not been long enough to verify this point) that the IP acquisition, once the match has been found and validated, does not need public support as, in the negotiation, the acquisition costs could be balanced by the expected benefits.

### 5.2. Objectives

The objectives of the proposed policy are:

- ▶ **To provide SMEs with the means to detect and acquire external IP.** As described here above, the final aim of the policy is to encourage SMEs to acquire external IP and to use it to reinforce their competitiveness, to reduce their time to market and/or to address their lack

of internal R&D competencies, but the policy itself will concentrate on IP identification and validation as well as negotiation support. The financial supports for the acquisition itself and for the investment necessary to transform the IP into a product are not included in the policy. Indeed the acquisition itself can be undertaken directly with the assets of the company, or can be part of eligible costs in a R&D&I project. The investment to transform an IP into a product can be funded by other policies dealing with innovation, prototyping, etc... The goal of the proposed policy mainly is to facilitate the access to industrial settings and intermediaries.

- ▶ **To increase awareness of SME support intermediaries and provide them with tools to address open innovation.** The field trial has shown how important is the role of industrial settings in helping SMEs to engage in an external IP acquisition, starting from their technological demands. The policy will help to identify them, to provide them with tools (methodology, template, directory of IP search service providers, etc.), training, best practices and improvements through capitalisation exercise.
- ▶ **To increase awareness of SMEs towards the value of external IP.** The field trial has shown that SMEs are not sufficiently aware of the benefits they can gain in terms of time to market and innovation capacities through external IP acquisition. The policy must include actions to increase awareness as complementary to other actions.

### 5.3. Instruments

#### 5.3.1. Development of an external IP acquisition voucher

##### 5.3.1.1. Description

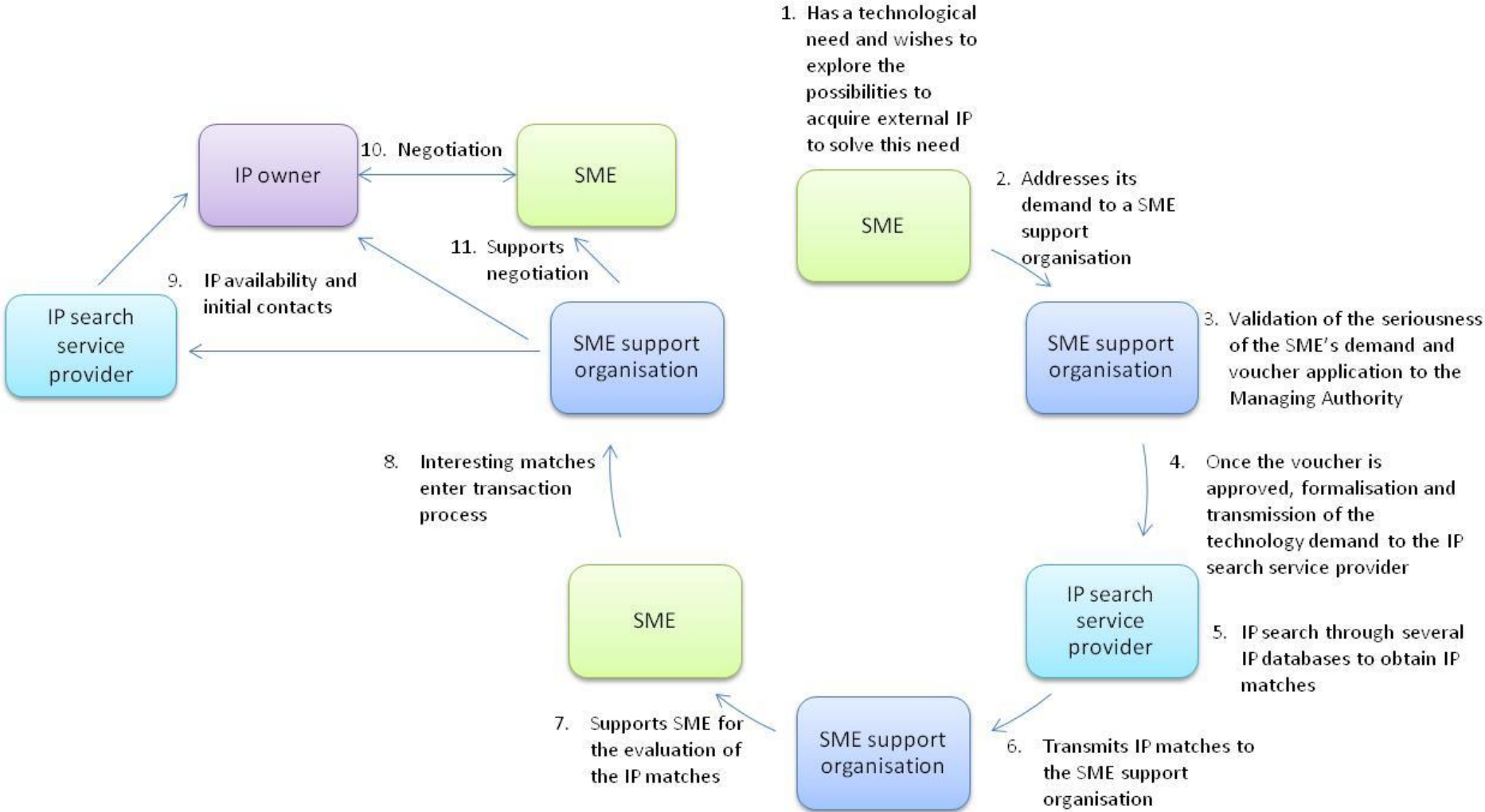
In order to support SMEs in their search for and acquisition of external IP, a voucher instrument is proposed. This external IP acquisition voucher is targeted towards SMEs wishing to fast-track their product development or internal process by acquiring external IP. This instrument is very similar, in its operational implementation, to innovation vouchers (see § 4.12. . The beneficiary SMEs would have access to several services delivered by two different service providers:

- 1) Services from a SME support organization to formalize their technological needs, to support them with their interactions with IP search providers and with IP owners (if relevant), to help them with the evaluation of the IP matches provided by the IP search provider and to support them during the negotiation phase.
- 2) Services from an IP search provider to identify existing IP matching the SME's needs and to initiate contacts with the IP owner.

Even though the proposed voucher does not directly provide financial support for the acquisition of IP, it provides a global set of services supporting IP acquisition as a whole (Figure 12).

**Figure 12 details the services provided within the voucher scheme:**

**Exploitation of IP for industrial innovation**



**Figure 12:** Details of the services provided



## Exploitation of IP for industrial innovation

To implement this scheme, the best way seems to be a management by regional or national stakeholders.

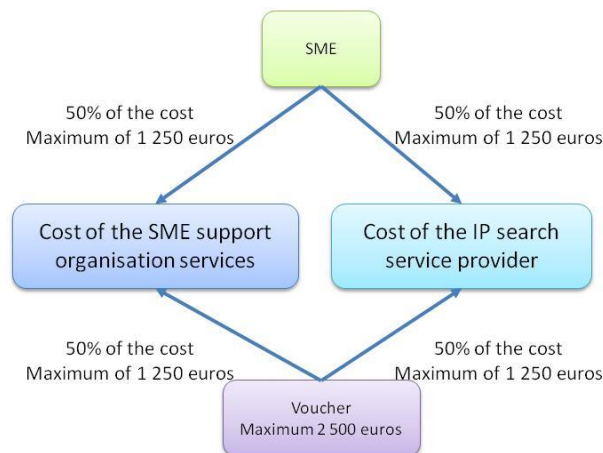
In the following descriptions paragraphs, we describe the voucher scheme in details.

### *Management level of the external IP acquisition voucher*

The regional or national level is best to implement such an instrument as most SME support is already managed at these levels and it offers proximity. It is of course possible to offer a national or regional scheme with co-financing from the European Regional Development Fund (ERDF). Indeed, funding for this instrument could originate from the Thematic Objective 1 (Strengthening research, technological development and innovation), and its investment priority 1b (promoting business investment in R&I...) within the ERDF operational programmes. The regional or national entities that will implement the voucher scheme are referred as managing authorities, thereafter.

### *Grant amount of the external IP acquisition voucher*

The voucher is designed to support SMEs' access to two different service providers: the SME support organisation and the IP search service provider. The voucher is equal to 50% of the SME support organisation services' costs and 50% of the IP search service providers services' costs with a maximum value estimated at 2 500 euros. The remaining 50 % of the services are paid by the SME. The voucher is divided equally between the SME support organisation and the IP search service provider because their efforts are considered of similar importance and to simplify the process. The service providers will be paid directly by the managing authority for the voucher contribution once the SME has paid its 50% of the services. Figure 13 describes the financial flows of the voucher scheme.



**Figure 13:** Financial flows of the voucher scheme

### *Eligible companies*

The scheme should be opened to all established SMEs, regardless of their activity sector. Some managing authorities may choose to limit the voucher to newcomers to this service and therefore award only one voucher per company.

## Exploitation of IP for industrial innovation

### Eligible services to be provided

SME support organisation	
<b>Technology demand formalisation</b>	The SME support organisation helps the SMEs to precisely identify their technological need and to subsequently fill out a technology demand form. This service can take up to a day.
<b>Interactions with the IP search provider</b>	SMEs have little time and experience for this kind of interactions. This service may take up to a day.
<b>Support in the evaluation of the IP matches</b>	IP, such as patents, are not always easy to understand for laymen. Some training and support of the SME may be necessary. This service may take up to a day.
<b>Interactions with the IP owner and support during the negotiation phase</b>	Once an interesting match has been identified and the SME is interested in starting a transaction, it will probably need support and funding schemes. This task may take up to a couple of days.
IP search provider	
<b>Search of patents or other IP forms databases based on the technology demand forms</b>	Databases include: the Enterprise Europe Network database, national patents databases (UK intellectual Property office, German Patent and trademark office, Danish Patent and Trademark Office), the WIPO (World Intellectual Property Organization) database, IP market places (ICAP patent brokerage, Innovation Accelerator Foundation/iBridge, innoget, yet2 Marketplace). This service can take 1 to 2 days.
<b>Transaction preparation and support during the negotiation phase</b>	In relation with the SME support organisation, the IP search provider would collect any details necessary for the SME to decide whether or not to enter negotiation. Details include patent availability, patent owner, licensing status, support to understand the technology.... This service can take 2 to 3 days.

## Exploitation of IP for industrial innovation

### Eligible services providers

Two types of service providers are necessary for this scheme:

SME support organisation	
<b>Clusters, innovation agencies</b>	<p>The success factors for these organisations to run a patent pull approach include:</p> <ul style="list-style-type: none"><li>▶ Is trusted by its members;</li><li>▶ Deliver services to companies;</li><li>▶ Has a strong members' database;</li><li>▶ Works in an innovative sector;</li><li>▶ Is knowledgeable about technical issues of its innovative sectors;</li><li>▶ Is knowledgeable about IP issues;</li><li>▶ Is already financed to offer services to SMEs.</li></ul> <p>These organisations could be labelled by the managing authority.</p>
IP search provider	
<b>Public or private technology transfer organisations, private consultancy, patent attorneys</b>	<p>The service provider needs to be able to understand technology demands and run efficient searches on all the indicated databases.</p> <p>In order to keep quality at a maximum, it is suggested for the Managing Authority to use public procurement to select several IP search providers. It would allow the SME to choose one among several with the help of the support organisation and to also have some service providers specialised in certain innovative sectors.</p> <p>Foreign service providers should be accepted.</p>

### Application process

A voucher is typically an instrument that should be easy to run and that offers reactivity to the SME. The length of the application (which is not the technology demand) should be between 3 to 5 pages and the time for approval should average a week. The SME should apply once the SME support organisation has validated the quality of the demand. The application is then sent to the Managing Authority.

### Number of vouchers per regions

Each managing authority would have to decide the number of vouchers they wish to grant and therefore the budget they can spend on this scheme. Then, selection being year around, first come, and first serve would apply.

### Advertisement of the voucher

The first step to grant vouchers is first to let SMEs know they exist. The availability of the vouchers can be advertised by the SME support organisations, chambers of commerce, economic development agencies through conferences, emailing, mailing and phoning. Each of these organisations has members that they can easily reach. Furthermore, broad press release could be used.

### 5.3.1.2. Initiate scheme's implementations

The IP acquisition voucher scheme is a new instrument that has not yet been implemented by any region. To demonstrate concretely its feasibility, to generate success stories and to improve it if relevant, it would be easier if few regions are candidates to implement it and subsequently act as models to other regions. To encourage some regions to become pilots and to implement the IP acquisition voucher scheme first, an EU involvement seems the most favourable methodology. EU involvement could take the form of a call for proposals or the launch of a study to select five independent pilot regions ready to implement the voucher scheme and to capitalise on the exercise. The pilot regions would still be expected to finance the voucher scheme autonomously; however, this method would insure that the EC has some input on the quality and improvement of the patent pull methodology and would allow for wider communication of the success stories, which could then snowball towards new regions implementing the scheme, this time on a complete autonomous way. It would also allow for validation of the economic model. The duration of these five initial implementations would last 2 years.

Concretely, the call for proposals would detail the "external IP acquisition" voucher, the requirements to implement the voucher, the benefits for regions to participate and the capitalisation exercise. Each pilot region will have its own proposal, which will increase the number of cases in terms of sectors, type of support organisations, type of SMEs,...

#### *Benefits for Regions to participate*

Regions should participate because it would give them European visibility, methodological support to implement the voucher and to motivate their eligible SME support organisations to commit themselves (by providing support on topics like how to approach SMEs with such a scheme; how to make sure they are really committed; how to help them with their technology demands...) and participation in the capitalisation methodology.

#### *Timeline*

If the selection of candidates regions is made in 2016, regional "external IP acquisition" vouchers could be implemented as soon as 2017. The capitalisation exercise would then take place in 2019. Following the capitalisation exercise, success stories could be advertised and new regions could implement the voucher autonomously. This process is a one shot action and only five regions will benefit from the EU organisational support (not financial support). After that, other regions will either be interested to implement it on their own....or not.

#### *Partnership between the 5 pilot regions and the EU*

First success stories of the field trial would be made available rapidly to the pilot regions and new success stories raised in the 5 pilot regions would be shared. The EU would also support the SME support organisations and give them different materials necessary (technology demand forms, electronic communication flyers...). The capitalisation exercise will take the form of a one-day workshop organised by the EU and focusing on the results from the 5 pilot regions. It will be based on an individual evaluation of each voucher scheme's implementation and impacts (indicators below). Best practices will be shared and suggestions to overcome newly identified challenges will be discussed.

To evaluate the impact on SMEs and the return on investment, indicators will need to be given to the managing authority. Some indicators are performance indicators:

- ▶ Number of SMEs made aware of the initiative;
- ▶ Number of SMEs applying to an acquisition voucher;

- ▶ Number of SMEs granted an acquisition voucher;
- ▶ Number of matches obtained per acquisition voucher;
- ▶ Number of IP matches entering negotiation step (SME with the technology demand and IP owner contacts);
- ▶ Number of IP acquired.

Other indicators are impact indicators:

- ▶ R&D savings generated after IP acquisition;
- ▶ Generated turn over after IP acquisition;
- ▶ Job creation supported after IP acquisition;
- ▶ Mindset change towards IP acquisition.

### 5.3.2. Evolution of current instruments and tools

Besides the development of a specific voucher scheme to facilitate the identification of external IP and the increase of awareness, the policy must be supported by the evolution/modification of existing instruments, particularly those which are at EU level.

The acquisition of external IP as a means to accelerate product or process development must enter into a global promotion of, and communication on, open innovation. Commonly, companies are following the path comprising R&D and IP protection (patent). This is reinforced by the fact that almost all calls for proposals (in collaborative projects) are focused upon internal R&D with low reliance upon external IP and patent acquisition. An effort should be made at regional, national and EU levels to promote open innovation and accordingly patent acquisition. For example:

- ▶ Within Regional, National or European R&D collaborative projects, **assessment of prior external IP, including acquisition assessment**, by the consortium could be made mandatory prior to obtain public funding, e.g. in collaborative projects financed by H2020. This could be very effective to improve patent awareness. It would also help the Commission to focus the funding towards projects oriented towards valorisation of results.
- ▶ Support the Enterprise Europe Network to provide an IP pull process accomplishing both the roles of SME support organisation and IP search service provider with the search of the Enterprise Europe Network database (and no other IP databases). Indeed, very often the structures chosen as Enterprise Europe Network partners are well identified as support services by SMEs. They should increase their missions in the field of international open innovation and external IP acquisition.

It has to be noted that with the implementation of the SME instrument within H2020, IP assessment (phase 1) is possible as well as IP acquisition (phase 2).

### 5.3.3. Awareness raising

As a complementary action to the voucher “external IP acquisition for SMEs” implementation, the increase of awareness in SMEs on the value of an external IP is essential as it could increase the number of SMEs interested in engaging in the process and reduce the efforts to motivate them.

## Exploitation of IP for industrial innovation

Broad awareness raising is difficult and not always efficient. Therefore, it is proposed to focus this action around the implementation of the voucher as described previously. The different steps involved, i.e. call for proposals, selection of the Regions, communication from the Regions, success stories..., can all lead to communication actions at the European, national and regional levels.

As a side note and besides the direct input from the field trial, other ways to increase awareness have been mentioned by the EAG members who have a strong experience in it. Have been mentioned:

- ▶ Students should be educated in IP, including students in business school. It has been seen in China where, from secondary school, students are trained on IP value.
- ▶ To enable innovation support organisations to disseminate information in SMEs about external IP acquisition, some of them need to be trained first, not having the entire expertise in that field.
- ▶ Intermediaries similar to the project's Industrial Settings, as well as innovation support organisations which work on innovation management coaching, should systematically address open innovation.

Those actions can be encouraged at EU level but will be implemented at national and regional level. EU can reserve some means to select regions, to provide them with coaching and to help the disseminations and capitalization of all results obtained through the patent pull process.

## 6. CONCLUSION

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In a context where SME competitiveness is a priority for the overall economic development of Europe and where open innovation and access to existing knowledge is developing, being recognised as a source of acceleration for the development, the initiative to experiment a patent pull process to better exploit “IP for industrial innovation” (IPI) can find its complete rationale.

The basic idea of this initiative is that external IP can help SMEs in innovating and developing process and products, that existing IP and knowledge are not sufficiently used by companies, and that few programmes and actions start from the demand of the potential users when dealing with IP exploitation.

The main strength of the IPI project is its focus on the field trial, providing insights on what can be done coming from the reality, from the behaviour of SMEs and of intermediaries of any kind which support the development of SMEs in terms of IP and innovation.

The IPI action consisted of three phases:

- ▶ The model design to properly define how the field trial was to be managed and implemented (6 months),
- ▶ The field trial where the entire process from the selection of SMEs to the negotiation between an IP owner and the SME potential user was set up (18 months)
- ▶ The analysis and writing of the report (4 months).

The different phases were conducted in parallel and the total duration of the IPI action was 24 months.

As the focus was on experimentation, many parameters were introduced to test different options. Therefore four industrial sectors were selected, four types of industrial settings and two types of IP search service provider (innovation intermediaries) with different sources of information.

The results showed 25 companies and 11 innovators involved in the process, 65 demands expressed, 309 matches found and three cases entering into negotiations between an IP owner and a potential user.

These results are mitigated but they show that a patent pull process starting from the needs and the demands of SMEs can provide some impacts, helping innovators to accelerate their development in the market by finding technologies and knowledge additional to their own products and processes. The expert advisory group put in place for the IPI project has confirmed this statement.

The advantage of the field trial is the fact that it has provided real data based on the reality of SMEs behaviour and expectations, on the competences and strategy of a wide range of industrial settings, on methods and know-how of two IP search service providers.

Those data are sufficiently numerous and consolidated, mostly regarding the steps covering the identification of SMEs, the formulation of technological demand, the search for matches and the validation of the matches.

In addition to that, the field trial has covered a wide range of situation in terms of sectors, types of innovators (SMEs, start-ups), type of industrial settings, IP databases and market places, giving strength and coherence on the conclusions that can be extracted from that.

Therefore it has been possible to suggest a policy to support external IP acquisition by SMEs. This policy is based on a strong rationale, including the fact that the private sector cannot answer the needs of such process at reasonable and affordable cost, especially for SMES.

The proposed policy is based on several conclusions, coming from the field trial, namely:

The first conclusion of the IPI action is that it is not possible to make a policy exclusively on sleeping patents, as it is almost impossible to identify them. In addition, it would not be an efficient process as it would not give SMEs the best technical solution, as many more patents or IP are likely to be available for possible licensing.

Secondly, the role of intermediaries, either to support the SMEs in expressing their demand and analyse the matches obtained, or to search matches through the different sources of IP, has appeared as essential for the success of the patent pull process. At a regional level, the SME support organisations, which need proximity with the SMEs, must be reinforced and trained. Regarding the IP service providers, they need high level of competences. Therefore not all regions have such organisations in their territories and often it is necessary to find them beyond the limits of the territory. In any case, the SMEs would keep their freedom to choose the adequate service provider.

Thirdly, SMEs need an incentive to engage themselves in this long process which very often is new for them. This incentive is a subsidy to access specific services implemented through a voucher scheme. Indeed, two vouchers could be provided at regional level to SMEs, one to ask intermediaries to support the SME in expressing its demand and to assess the appropriateness of the matches, the second to commit an IP service provider to find matches. The two vouchers would cover 50% of the services' costs. This instrument will be put in place under the responsibility of regional authorities. To start the implementation in the regions, EU could select five regions through a call for interest, providing them with coaching, quality insurance of the methodology, capitalisation process and tools. The implementation in those five regions would also enable a refinement of the patent pull process.

Fourthly, the IPI action also showed that SMEs are not sufficiently aware of the added value of external IP. Therefore, as a complementary action to the policy and in the policy itself, it is necessary to use all opportunities to convince SMEs to exploit existing IP for their product development in addition to their own efforts of R&D. At a European level, the initial implementation in the five selected regions may give the opportunity to increase the awareness of intermediaries and SMEs through the coaching and training provided. Those regions can also offer success stories which could be used for increasing awareness.

Fifthly, other existing instruments from other policies (for instance R&D&I policy) could be used to reinforce awareness and numbers of external IP acquisition. Assessment of prior external IP, including acquisition assessment, by the consortium could be made mandatory prior to obtain public funding (e.g. collaborative projects). The SME instrument already is prepared to support external IP issues as validation of the IP status (in phase 1) and as IP acquisition (in phase 2).

Taking into account the above conclusions, the proposed policy can be defined as addressing three objectives: (i) support the SMEs in their external IP acquisition, (ii) increase awareness and provide tools to SME support organisations and (iii) increase awareness in SMEs.

The focus of the policy is on the identification of appropriate external IP and on advice for its acquisition. For the acquisition itself, no financial support is planned as it is expected to work on a private form (although the field trial was not long enough to prove it). The transformation of the IP (once acquired) into a product can be supported by other R&D&I policies.



## Annex A Patents databases, marketplaces and brokers

Name	Description	Specificities
<b>Marketplaces, brokers</b>		
ICAP Patent Brokerage	US database	The major international IP brokerage
Innovation Accelerator Foundation / iBridge	US database	Patents from private or public sector, mostly used by US research institutions
innoget	European database	Patents from <u>private or public</u> sector
yet2 Marketplace	US database	Patents from <u>private or public</u> sector
<b>Patent databases</b>		
German Patent and Trademark Office	National database also containing international patents protected in Germany	Only searched for effective and <u>licensable patents</u> Patents from <u>private or public</u> sector
UK Intellectual Property Office	National database also containing international patents protected in the UK	Only searched for effective and <u>licensable patents</u> Patents from <u>private or public</u> sector
Danish Patent and Trademark Office	National database also containing international patents protected in Denmark	Only searched for effective and <u>licensable patents</u> Patents from <u>private or public</u> sector
Worldwide Intellectual Property Organisation	International database of the WIPO	Only searched for effective and <u>licensable patents</u> Patents from <u>private or public</u> sector
<b>Intermediaries</b>		
IHK	German chambers of commerce and industry	Ceased operation during course of project
VVB	Patents and IP from scientific institutions in the German state of Mecklenburg-Pommerania	Mostly included in the TechnologieAllianz offerings.
TechnologieAllianz	United patent marketing and technology transfer agencies (German Universities and non-university research institutions)	Patents from the <u>public sector</u> <u>Licensable</u>
Max Planck society	All IP from the Max-Planck-society research institutions	Patents from the <u>public sector</u> <u>Licensable</u>
Leibniz society	All IP from the Leibniz-society research institutions	Patents from the public sector <u>Licensable</u>
<b>Enterprise Europe Network</b>		
Enterprise Europe Network database	Transnational Technology Transfer Network from more than 50 countries business support organisations offering Partnership Profiles of technology offers and technology demands	Different forms of Intellectual Property: patent, copyright, secret know-how... <u>Public and private sector</u> <u>Licensable</u>

## Annex B Technology demand form

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**Name:**

**Organisation:**

**Telephone Number:**

**Email Address:**

### Questions

1. Which problem are you trying to solve? What are you planning to do, what are you planning to develop? i.e. are you looking for a certain process to accomplish X? Or a machine to do Y? Or a chemical that does Z, to improve our products in the XYZ market?
2. In the idea described above, is the patent protection needed for the complete product / process or only for parts of it? Is it a completely new development or is it a further development of a base technology?
3. Precisely what process, material or technology should be protected by the patent? Are you looking for a general patent, which secures a wide range in the relevant technological field, or should it instead cover specific and narrower principles?
4. Please describe the business case for the idea. For example, are there cost saving potentials? Do you want to penetrate new markets? Do you want to expand your portfolio with a new standalone technology? Please provide figures if you have them.
5. Please describe why the patent is necessary. For example, is it important to secure the technology against other competitors? Would a patent be useful for marketing etc.? Do you want to show technical leadership?
6. Have you already applied for (or had granted) patents relevant to this idea? If so, please provide details.

How long would you like the patent still to be valid for? Remember that a long remaining validity time lessens the chances of there being an available Sleeping Patent, and remember that the maximum lifetime of a patent is 20 years.

7. Which country / countries would you like the patent to be effective in?
8. Should the patent be free of usage restrictions? For example, in certain cases, you may require special qualifications to use a described machine.
9. Should the described technology conform to any regulatory standards, such as ISO, medical standards etc? If so, please provide details.
10. Should there be any government approvals on the technology? i.e. a law requiring certain attributes or technologies other than described in the regulatory standards above. If so, please provide details.

## Exploitation of IP for industrial innovation

11. Which technical specifications should the desired invention adhere to? For example, size, mass, density.
12. Please give relevant keywords that might appear in your desired patent. Include generic and specific keywords where possible, as well as specialised keywords that people in the field may use when describing their invention?
13. In which field or industry would you expect to see the invention?
14. Do you know of any relevant researchers, research organisations, companies etc., which could have invented the invention that meets your demand, or that are active in similar fields?
15. In which patent classes do you expect to find a matching patent?

### **Optional Questions**

1. Do you require that there are additional patents around one invention (patent fence) or along a value chain (patent portfolio)? In order to defend your technology, it might be useful to have additional patents around it (a “patent fence”), which make it difficult for competitors doing similar things. It might also be useful to protect technologies along a value chain, i.e. a manufacturing process or tooling in order to produce the product that you would like.
2. Are you interested in patents that require other patents in order to work? This relates to the types of patents which cannot be used unless permission from the owner of another technology is obtained.
3. Do you require to own the patent (sale) or to licence the patent?
4. Should a researcher or inventor be available to support or implement the invention? In some cases, the patents relate to early stage technologies – the support of the inventor for example, could be useful in further development of the idea.
5. What status should the underlying invention have? i.e. proof of principle, prototype, product? Depending upon the status of the invention, it may require more or less development in order to get it “market ready.”
6. Would additional applications based upon the patent be of interest to you? Early stage priority patent applications allow further applications in other countries.