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**WIPO SURVEY OF INTELLECTUAL PROPERTY SERVICES OF
EUROPEAN TECHNOLOGY INCUBATORS**

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ABSTRACT

1. The paper includes the results of a questionnaire-based pilot survey of intellectual property (IP) services to tenant firms in a subset of high-tech European incubators. It provides an overview of (a) the importance of IP for innovation management, (b) reasons why small and medium-sized enterprises (SMEs) and business start-ups make inadequate use of the IP system, making a case for providing IP services to the tenants of incubators, (c) the extent to which IP services are provided in or by a subset of surveyed European incubators (d) range, type and modality of IP services provided to firms within incubators.

INNOVATION MANAGEMENT AND INTELLECTUAL PROPERTY RIGHTS FOR SMES AND BUSINESS START-UPS

2. Innovation management relates to the way in which a firm or an institution exploits its innovative potential. A crucial factor determining a company's decision to invest in innovation is the extent to which it will be able to recoup its investments and make profits once its research and development effort results in an innovative product or process. If the R&D expenditure is unlikely to result in higher profits for the firm, then there will be a strong disincentive to invest in innovation in the first place.

3. The problem of "appropriability" of innovation is one of the main reasons why companies may be unable to obtain sufficient profit from innovation and be, therefore, discouraged to invest in innovation. The problem of "appropriability" relates to the difficulties a firm will have in maintaining exclusivity over the use of an innovation. If it does not succeed in appropriating it, then other (rival) companies that have not made similar investments in developing the innovation will be able to copy the innovation and sell the innovative product at a lower price, driving the innovator out of business.

4. The problem is accentuated for technology-based start-ups. Technology-based start-ups are new firms established for the purposes of commercializing a new technology or of providing an innovative service on the basis of new technology. Such enterprises generally have limited capital and assets and largely depend on their innovative capacity and human capital to succeed in the marketplace. The innovative idea is usually the main asset of the company during its start-up phase and the basis on which it will seek investors to take the product or service to market. For technology-based start-ups it is critical to find ways of appropriating their innovation in order to survive in the marketplace and obtain a competitive edge over competitors.

5. IP rights emerge as a useful tool to resolve the "appropriability" problem, providing firms a fair degree of exclusivity over the exploitation of their innovation(s), thus creating an incentive to innovate as well as a means to exploit product and process innovations. The ownership of IP rights also enables companies to enter into licensing negotiations with other firms in order to take a new product to market. It may, on occasions, also be important for obtaining funds from investors, particularly business angels and venture capitalists. The main types of IP rights are: (1) patents and utility models (for inventions), (2) trademarks,

(3) industrial designs, (4) valuable undisclosed information or trade secrets, (5) copyright and related rights, (6) new varieties of plants, and (7) geographical indications.

6. For technology start-ups, or companies seeking to enter a new market, it will also be important to make sure that they are not infringing the IP rights of other firms and that they have an authorization or license to use any IP that is owned by others. In order to do so, as well as to obtain valuable technological information, the use of patent information can be an important tool.

7. Therefore, innovation management is closely connected with intellectual property management. The management of IP assets is a complex area where few entrepreneurs or SME managers are able to develop expertise as it generally requires a combination of legal, technical and business knowledge. A proper IP management strategy implies, amongst other things, (a) a strategy for identification and acquisition of IP rights, (b) a strategy for the exploitation of IP rights (including licensing and technology transfer), and (c) a strategy for the enforcement of IP rights. In addition, smart companies rely on patent databases to (i) obtain technological information to guide their innovation activities, (ii) gather competitive intelligence on competitors, and (iii) monitor the latest technological developments in their given field.

8. Surveys from across Europe reveal that SMEs generally underuse the IP system. This is often the result of their limited knowledge of the ins and outs of the IP system, lack of clarity about its relevance to their business strategy and competitiveness, and of their finding the system too complex and expensive to use. Available studies/research on the use of the IP system by SMEs are largely limited to the use of patents. This empirical evidence paints a picture in which the propensity to apply for patents is highly related to the size of the company. Moreover, in a survey done by the Institute of Roland Berger Forschungs for the European Patent Office on the use of the patent system by the production industries (excluding micro-enterprises and enterprises in the handicraft sector), it was reported that one out of every three companies are potential patent applicants as they engage in R&D activities, but only one in six actually do apply for patents (EPO, 1994). According to the survey, SMEs that do not apply for patents stated that the main reasons for not doing so are the costs and time needed for filing applications, while some SMEs also mentioned the ineffectiveness of the patent system. The survey also concluded that there is a major information deficit among SMEs on the patent system, which leads to a low level of filing of patent applications by potential applicants.

9. A Derwent study, surveying the use of the IP system by SMEs in the European Union, concludes that a minority of European SMEs file patent applications (Derwent, 2000). According to the survey, the most widespread reasons for not patenting are that: (1) patents are not considered relevant to the line of business of the company, and (2) the patent system is too costly and complex.

10. A recent study commissioned by WIPO on SMEs and the IP system in Norway, draws attention to the fact that small companies apply on average 20 times less often for patents than large enterprises and their success rate (in terms of being granted the patent) is significantly lower, illustrating that SMEs often do not have adequate access to legal or technical support in preparing patent applications and are, therefore, less likely to be granted a patent (Iversen, forthcoming).¹

11. Similarly, a UK study concludes that small business owners place more emphasis on informal methods of appropriating their intellectual property (i.e. lead-time, relationships based on trust, limited information sharing, etc.) rather than on formal registrable IP rights (Kitching et al, 1999). In such cases, companies may rely on legislation on trade secret and unfair competition for the protection of their confidential business information. However, it is difficult to determine whether the low levels of application for “formal” IP rights is counterbalanced by an adequate implementation of protective measures for companies’ confidential business information. In fact, very little is known on how SMEs protect their trade secrets and to what extent they are aware of the protection offered by IP laws and laws on unfair competition concerning trade secrets. On the whole, there is a general perception that SMEs use trade secret protection by default, i.e. as a way of avoiding the expenditure involved in patent protection, without adequately knowing the type of measures that need to be in place for confidential information to be considered a protectable trade secret. In fact, according to most national IP laws, for a trade secret to be protected, there is a need to prove that (1) the information is secret (i.e. it is not generally known among, or readily accessible to, circles that normally deal with the kind of information in question), (2) it has commercial value because it is secret, and (3) the rightful holder of the information has taken reasonable steps to keep it secret (e.g., through confidentiality agreements, non-disclosure agreements, etc.).

The Case for IP Services for Tenants of Business Incubators

12. Based on available data and the above analysis we may draw some of the following conclusions:

- IP rights (including trade secrets) are a useful tool for managing innovation,
- IP rights are generally even more important for technology-based start-ups, for which they (along with human capital) may be even the most valuable assets they possess,
- SMEs and business start-ups generally make low use of the intellectual property system, largely as a result of a limited knowledge of the system, a perception that the system is too complex and expensive, and because of no or limited access to expert advice on how to make adequate use of the system.

13. Given the reasons for lack of use of the IP system and its importance as a tool for innovation management, it seems that there is a strong case for providing IP services within business incubators, particularly technology incubators. Facilitating access to legal, technical and financial support for access and use of the IP system by tenants of incubators may be important for assisting start-up firms to adequately manage their innovations, by identifying, protecting, exploiting and enforcing their IP assets. In addition, access to expertise on how to search patent databases may also provide entrepreneurs with a wealth of technological and legal information that could be important for the development of improved or new products and/or services.

14. Some of the areas where incubators may be able to provide valuable assistance on IP to entrepreneurs are the following:

- Integrating IP issues in business strategy and business plans;
- Identification of protectable IP assets (IP audit);

- Financial, legal and/or technical assistance for filing applications for IP rights (including patents, utility models, industrial designs, trademarks and new plant varieties);
- Issues relating to confidentiality and protection of trade secrets;
- Legal and/or technical assistance for negotiating licensing or technology transfer agreements;
- Valuation of IP assets;
- Use of IP assets for obtaining business finance;
- Use of patent information for obtaining legal, business and technological information of value to the enterprise;
- Issues relating to IP ownership created by employees and independent contractors;
- Enforcement of IP rights;
- Freedom-to-operate (IP clearance) assessments.

Overview of Existing Literature on Incubator Business Support Services on IP

15. The literature on incubator management has grown significantly over the past few years. A number of national associations of business incubators undertake regular surveys to obtain information on trends in incubation management. In addition, various reports have sought to establish guidelines or “best practices” for the establishment of business and/or technology incubators and benchmark best practices in business incubation.

16. In most surveys of business incubators, business support services are dealt with as a crucial component of incubation. However, in most surveys the focus has largely been on the extent to which incubators do (or should) subsidize services, on whether services are (or should be) provided within the incubator or through external partners, and on which type of services are most needed by business start-ups. IP services have generally been treated either as a service in their own or bundled together with R&D or with other legal and accounting services. However, very limited data exists on the ways in which such services are delivered and which type of IP services are provided.

17. Surveys conducted by the National Business Incubation Association (NBIA) have shown that approximately 37% of US incubators provide legal and IP assistance to tenants, and the figure rises to 64% when considering technology incubators (NBIA, 1998). In Australia, R&D support and/or IP services are provided by 53% of business incubators (Pricewaterhousecoopers, 1999). The bundling together of IP services with R&D support services does not enable us to get an indication as to the extent to which IP services are actually provided. According to the annual survey conducted by the Association of Science Parks and Business Incubators of Brazil (ANPROTEC), 62% of Brazilian incubators provide IP support services (ANPROTEC, 2002).

18. In Europe, a number of surveys have provided information on incubator business support services to tenants. The *Benchmarking of Business Incubators* report prepared by the Centre for Strategy and Evaluation Services for the European Commission provides a thorough overview of incubator practices and has developed a best practice benchmark on the basis of quantitative and qualitative research. In the report, services on intellectual property are grouped together with “Accounting, legal and other services”. Such services are estimated to be provided by 21% of incubators in-house, whereas 75% of the incubators provide them through external consultants. According to a national survey in the UK, legal services in general are offered by 26% of surveyed incubators (UKBI, 2002).

19. The overview of recent literature and surveys on the topic shows that:

- Information on IP services within incubators has so far been limited, at most, to general statements on the number of incubators providing IP services.
- There appears to be no detailed information on how or which IP services are provided, nor the extent to which any financial support is offered, for example, for applying for IP protection.
- Wherever detailed information is available, it is generally limited to patents, without any analysis of other types of IP rights.
- A number of other issues, such as the extent to which access to or ownership of IP assets is considered important by incubator managers while selecting tenants, remain largely unexplored.

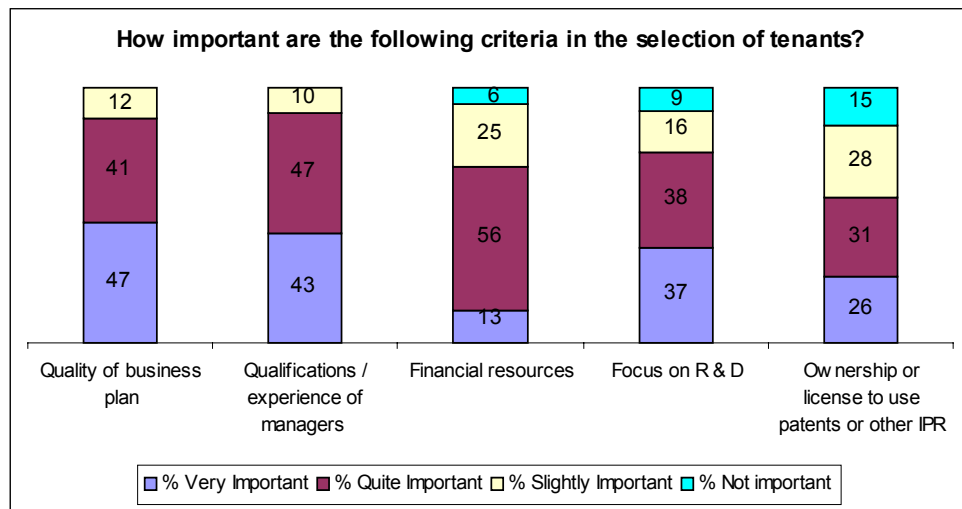
PILOT SURVEY ON INTELLECTUAL PROPERTY SERVICES TO TENANTS OF BUSINESS INCUBATORS

20. A pilot survey was undertaken to obtain a preliminary overview of IP services provided by European incubators. The survey relied on the European Commission's database of incubators in EU member states, member states of the European Economic Area (EEA), Switzerland, Israel and 13 candidate countries. From the database, incubators were selected on the basis of their business sectors: biotechnology and information & communication technologies. These sectors are characterized by high technological opportunities and considered to have high levels of appropriability through IP protection. In addition, incubators that claimed to have a focus on R&D and/or high-tech industries were also included leading to a sample population of 160 incubators to which a questionnaire was sent by e-mail. A total of 68 incubators (i.e. 43%) from 21 countries replied to the questionnaire.

21. The main objective of the pilot survey was to gather information on the types, range and modality of IP services provided by incubators to tenants. A related objective was to better understand the extent to which IP rights are considered important by incubator managers and the extent to which there is a demand for such services.

22. As far as the size of the surveyed incubators is concerned, the sample proved to be very mixed in terms of the number of tenants hosted in the incubator. In fact, 25% of surveyed incubators host less than 10 tenants and 18% host over 30. Nonetheless, when measured in terms of the number of staff in the incubator management team, the vast majority of incubators (i.e. 75%) have between 1 and 5 staff and a total of 96% had less than 10 staff. Limited staff resources are a crucial factor in determining the extent to which an incubator will be able to provide a given service in-house or will rely on external partners.

Selection of tenants



23. The quality of a company’s business plan and the qualifications of entrepreneurs appear to be the most important aspects taken into consideration by incubators in the selection of tenants. Focus on R&D proved to be very important or quite important for 75% of surveyed incubators, while ownership or license to use IP rights was judged very important or quite important by 57% of surveyed incubators.

24. These results are in line with expectations, given that the incubators targeted for the survey were largely focusing on high-tech companies, and companies in the biotechnology or information & communication technology sectors. Among the incubators that selected focus on R&D as being very important (i.e. 37%), only 44 % also considered ownership or license to use IP rights to be very important. This illustrates that only a fraction of incubators that attach great importance to R&D focus when selecting tenants also attach as much importance to IP ownership. It also suggests that a number of incubators that consider IP rights to be important, attach less importance to R&D activities.

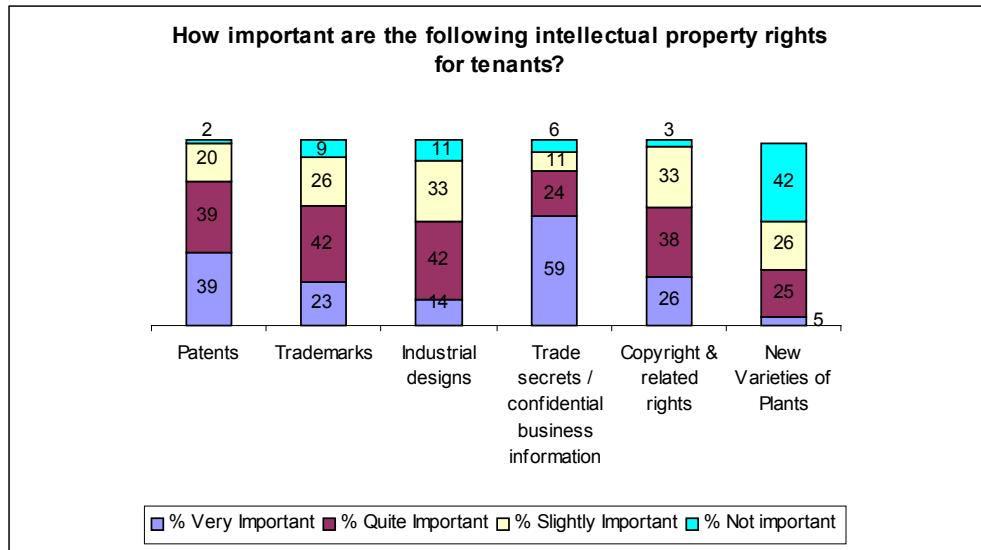
25. Among other criteria, commitment of the entrepreneur and technological sector were also mentioned by several incubators as being very important.

Staff responsible for assisting tenants with intellectual property issues

26. The majority of incubators (i.e. 60%) stated that they have a member of staff in charge of supporting tenants with IP matters. This indicates that the majority of incubators consider IP services to be an area where incubators can provide valuable assistance to its tenants. The comments provided by respondents shed some light on the way IP matters are dealt with by incubators. Several incubators state that they have agreements with external partners – ranging from nearby universities, to law firms and/or government agencies - for the provision of IP services. In a number of cases, incubator staff provides general advice on intellectual property and refers the tenants to external partners for more detailed and specialized assistance. Comments show that there are a wide variety of different arrangements for dealing with the IP needs of tenants. While the majority of incubators have a focal point on IP matters, a number of those that do not have in-house IP expertise have established partnerships with external IP experts to provide this type of assistance.

Importance of different IP rights for tenants

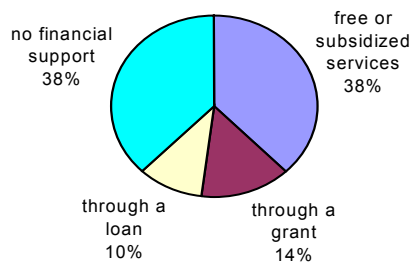
27. The question dealt mainly with the perceptions of incubator managers concerning the



importance of different IP rights for tenant companies. Replies are likely to have mirrored the sector specificity of different incubators. It may be assumed that incubators with a focus on biotechnology firms are likely to have found patents of most importance while incubators with a focus on software and multi-media producers are more likely to have found copyright of greatest interest. On the whole, trade secret protection was considered the most important means of protection for tenants, with as many as 59% considering it very important and a further 24% quite important. Also important are patents, with 78% of incubators rating them as either very important or quite important, followed by copyright and trademarks. Few incubators attached any importance to new plant varieties; this may simply reflect the fact that the surveyed incubators do not have any or enough tenant companies dealing with innovations concerning living plants and seeds.

Financial support to firms for IP protection

28. Financial support to tenants for the protection of IP rights is provided in different ways. Some incubators provide support in-kind - i.e. by providing the actual service free-of-charge or at a subsidized rate -, through a non-reimbursable grant or through a (usually low interest)

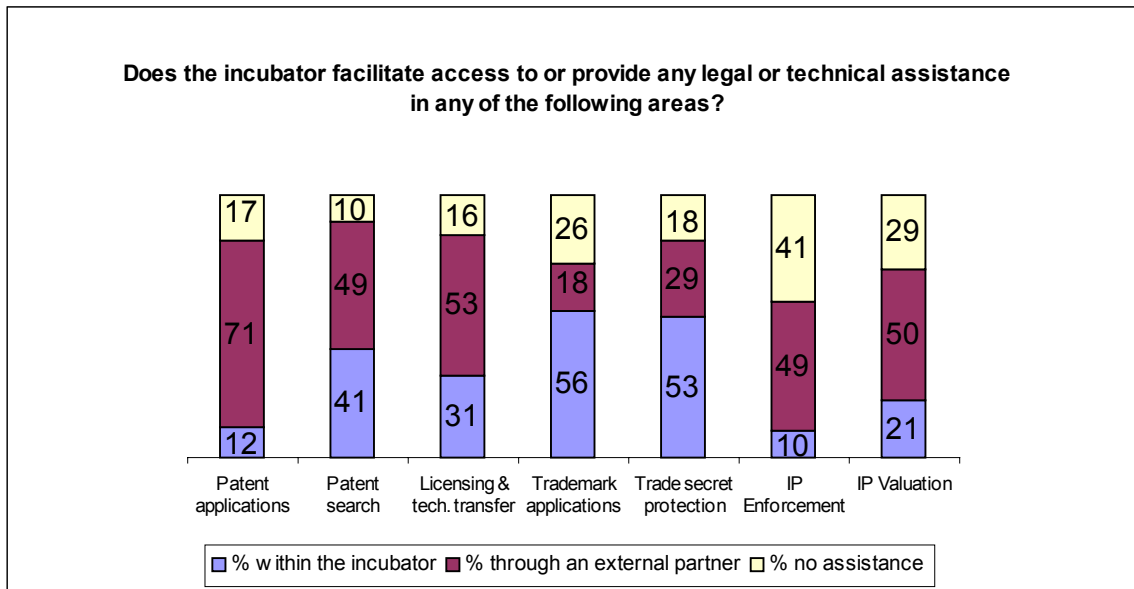


loan. Replies to the questionnaire show that the main way through which incubators provide financial support for IP protection is through support in-kind (38%). 14% and 10%, respectively, provide support through grants and loans. The remaining 38% do not provide any financial support.

Comments also suggest that financial support for IP protection is often provided by other institutions, ranging from seed capital funds to government institutions. Incubator managers sometimes act as link or “brokers” between

tenants and such institutions. In a few cases, incubators have negotiated lower fees with external patent agents for the provision of IP services for their tenants. In such cases, while the fee reduction may not cost the incubator any funds, the result may be considered to be an indirect financial support for tenants.

IP services



29. The types of IP services offered by an incubator are generally determined by a mix of factors, ranging from the existing demand from tenants, the expertise of incubator managers/staff, the judgement of incubator managers/staff on the types of services that are important to tenants, existing links to government agencies, universities or other institutions already providing a given service, and the extent to which a specific IP service market is reasonably developed near the location where the incubator is based. The study on *Benchmarking Business Incubators*, notes that whether a business incubator provides a service in-house or through external partners “best practices suggests that common to both situations will be a strategy to ensure that the operations of an incubator do not “crowd out” private sector provision.”

30. As far as IP services offered by incubators to tenants is concerned, the first conclusions that may be drawn from the survey are (a) that most surveyed incubators (either directly or indirectly) provide some IP services to tenants, and (b) that many incubators rely on both in-house and external experts, depending on the type of IP services needed.

31. Few incubators (i.e. 12%) assist companies directly with the drafting of patent applications. While there seems to be no direct correlation between the size of the incubator and the probability of it providing such a service to tenants, few incubators seem to have the appropriate expertise for drafting patent claims/applications and prefer to rely on outside experts. Thus, a significant number (71%) facilitate access to technical and legal assistance for the drafting of patent applications through external partners. Such results are in line with similar findings in the US, where the drafting of patent applications within universities is generally outsourced to external patent agents.

32. Assistance for enforcing IP rights, for negotiating license agreements and for the valuation of IP assets are also generally done through external partners. All three types of services require specialized expertise in the subject matters and are generally judged to be most effectively delivered through experienced patent lawyers or accountants, as the case may be. In the case of enforcement of IP rights, a large number of incubators do not provide any service, either in-house or through external partners.

33. Patent information services for tenants are provided - either directly or through external experts - by 90% of the surveyed incubators, confirming the importance that is generally attached to patent information as a source of business, technological and legal information. In addition, 41% of surveyed incubators provide patent search services in-house, significantly more than those providing assistance with the drafting of patent applications.

34. Areas where the majority of incubators provide direct assistance to tenants include the preparation of trademark applications and the development of trade secret protection programs. Concerning the latter, it should be noted that 95% of the incubators that stated that trade secret protection is very important for their tenants (see above) provide assistance (either directly, 44%, or indirectly, 51%) on trade secret protection.

CONCLUSION

35. Intellectual property has achieved increasing importance for businesses worldwide, as intangible assets have become the pillars of the knowledge economy. Faced with an increasingly competitive marketplace in liberalized economies, companies investing in innovation to maintain their competitiveness are faced with the need to find ways to manage their innovative results appropriately so as to avoid that their competitive edge is eroded by falling into the hands of the competition without being able to recoup their investments in R&D and making a reasonable profit. Intellectual property rights have emerged as a key tool for obtaining control over a company's intangible assets, appropriating innovative R&D results, facilitating the licensing of innovative technologies to other companies, and marketing of such improved or new products and services, based on innovation and creativity.

36. Against this background, it has been noted that SMEs are generally reluctant to use the IP system often as a result of its perceived complexity and high costs as well as due to a general low awareness of the opportunities it may offer. The information deficit and poor access to technical and legal expertise in the subject matter is an obstacle to a more widespread and effective utilization of the IP system.

37. Business incubators (and, in particular, technology incubators) are ideally placed for assisting start-ups to manage their innovation effectively and to use the IP system to their advantage. It should be noted that intangible assets such as innovative research results or business ideas, which may be protectable using the IP system, are often the most valuable assets business start-ups have and, unless they are adequately protected, start-ups may face significant or insurmountable challenges to maintaining their competitiveness in the marketplace.

38. The results of the pilot survey of European incubators indicate that most IP rights are considered either very important or quite important by the majority of the surveyed incubators. In addition, IP ownership, or having a license to use the IP rights of others, is

often considered an important factor while selecting tenants for incubators. A company that has not protected its innovative technology, has not conducted a patent search to verify whether its inventions are already owned by others or has not requested a license to use a given proprietary technology may face problems in taking a new product or service to market.

39. Trade secret protection proved to be the most important way of protecting intellectual property according to incubator managers, followed by patents, copyright and trademarks. The importance of trade secret protection is also reflected in the number of incubators that provide services for the protection of trade secrets in house.

40. The survey reveals that the majority of surveyed incubators (60%) have staff responsible for IP assistance and consider IP ownership either very important or quite important at the time of selecting tenants for the incubator (57%). While few incubators provide financial support for the application for IP rights, 40% provide assistance in-kind.

41. With respect to the IP services provided by incubators, it may be noted that the majority of incubators either provide services directly or use external partners for these purposes. However, the modality of provision depends significantly on the type of service. In other words, incubators may provide some IP services in-house, others through external partners and may not provide any support for a specific IP service, which they consider to be outside the scope of services that they should provide. For example, while the drafting of patent applications is done through external partners in 71% of surveyed incubators, 56% of incubators assist tenants directly in applying for trademarks and 41% provide no assistance for the enforcement of IP rights.

42. Links between incubators and outside partners, such as universities, government agencies or private firms, are often crucial in determining how a service is provided. An incubator often act as a link or “honest broker” between its tenants and the various government, regional or private institutions (including patent law firms and venture capitalists). The exact nature of the link varies significantly, from close cooperation formalized through an agreement or secondment of an expert to the incubator, to a loose relationship where services are used on exceptional circumstances when a concrete need arises.

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ⁱ E. Iversen, *Norwegian SMEs and the IPR-System: Exploration and Analysis*. The study is a comprehensive analysis of the Norwegian National Innovation System with details on the use of the intellectual property system (particularly patents and trademarks) by SMEs and will soon be available on WIPO's SME web site (www.wipo.int/sme).