Promotion of Patent Licensing in Japan

Japan Patent Office
Asia-Pacific Industrial Property Center, JIII

CONTENTS

1. Introduction

The history of mankind is a history of the evolution of civilizations that rise and decline in accordance with their use of innovative technologies. These technologies, in fields such as metal refining, agriculture, mechanics, energy, electricity, electronics, information and so on, have put power into the hands of different groups at different times and resulted in the rise of civilizations that gradually spread to surrounding areas, changing the way people lived. It can safely be said that the history of our species is the story of the repetition of this cycle. Given, however, that innovative technologies tend to be lucrative for those who control them, there has been an ongoing battle since the dawn of mankind between those who would monopolize technologies and those who would share.

During the Edo Era in Japan, disclosing unique and secret technologies owned by other clans was a punishable offence. As these examples show, human beings all over the world have sought to maintain exclusive control over lucrative technologies and have been willing to mete out harsh punishments to anyone who threatened their monopoly.

This situation only changed with the introduction of two systems known as the patent registration system and the patent licensing system. With these two systems, the transfer of a technology from its owner to those who would use it has been transformed from a win-lose situation, wherein the party who acquired the technology enjoyed a great benefit while the owner suffered a loss, to a win-win arrangement under which both parties benefit.

These two systems already existed in Great Britain when James Watt invented the steam engine. It is said that Watt received patent royalty payments equivalent to approximately one-third of the savings that resulted from use of his engine, according to its wattage rating. This demonstrates that the cycle of creation, protection and application of technologies was already functioning at that time. The extension of this cycle helped bring about the Industrial Revolution. However, it did not necessarily continue to provide lubrication for the engine that drove the United Kingdom and other countries after this time.

Shortly after the Industrial Revolution ended, the United Kingdom moved back to a monopolistic position in order to maintain the technological lead it had established, lest technical information and engineers slip through its borders.

It wasn't until the 20th century that the United Kingdom became the focus of global attention when it committed itself to the two systems of patent registration and patent licensing. This was at least partially the result of the United Kingdom having to pay the United States large amounts in royalties to produce penicillin: even though Alexander Fleming had discovered the drug in the United Kingdom, he did not apply for a patent on the discovery. In 1948, the United Kingdom established the Development of Inventions Act and announced a policy under which patent licensing would receive more attention by way of the new National Research and Development Corporation established the following year. (The NRDC was later privatized. Under the name BTG International, it is now the world's leading patent licensing

company.)

Toward the end of the 20th century, a new trend emerged in the United States whereby industry was promoted by concerted efforts involving the private, public and university sectors to vitalize of the cycle of intellectual creativity. This trend later spread to Japan and Western Europe, including the United Kingdom.

At the enterprise level, the product cycle became shorter every year as global competition increased and product development periods were also under pressure. This meant companies could no longer rely on conventional commercialization practices involving basic in-house research, applied research and market research, and came to employ a style that draws heavily on technology transfer. Now that corporations, governments and community-based organizations from the world's leading industrialized countries are promoting cooperation on regional, national and international levels, new challenges in revitalizing the cycle of intellectual creativity to meet grass-roots needs must be addressed.

2. Changes in the Patent Licensing Framework in Europe and the United States

1) Changes in the Patent Licensing Framework in the United States [1)]

This section will examine the background behind the adoption of pro-patent policy by the United States, i.e. the revitalization policy employed by the U.S. to strengthen the cycle of intellectual creativity and its results.

In late 1960s, the competitiveness of the U.S. economy, which had been a consistent driver of the global economy during the post-World War II era, came under a cloud, partly because Japan and Europe were both threatening to catch up, but also due to the impact of the Vietnam War. In the 1970s, the bottom continued to fall out, owing to two oil crises and the phenomenon known as stagflation. The Young Report speculated that the deterioration of competitiveness could be accounted for by the fact that high levels of technology owned by U.S. companies were not reflected in the development and competitiveness of trade goods and that intellectual property rights were not appropriately protected in the United States.

The Bayh-Dole Act of 1980, which clearly articulated the United State's patent policy, played an extraordinary role in changing the situation. Under the law, patent rights to an invention developed under government-subsidized research and development projects became vested not in the nation as a whole but in the university or company that created the invention. In addition, any patent obtained based on that right could be licensed. The enactment of this law made nearly half of the country's research expenditure (including national defense expenditure) available to support the creation of useful intellectual properties in a range of fields such as information technology, biotechnology and so on. Technology transfer organizations (TTOs, similar to the Japanese Technology Licensing Organizations, or TLOs) were set up at many universities and venture companies were launched. Industry-university-government cooperation was advanced and the U.S. economy reaped the benefits. In addition, the United States conducted structural improvements to boost the creation, protection and utilization of knowledge, which constitutes the cycle of intellectual creativity.

More specifically, for the purpose of promoting knowledge creation, the U.S. Congress established the Small Business Innovation Development Act in 1982, which provided financial support for feasibility studies and R&D projects for ideas proposed by small and medium-sized enterprises. It also created the Advanced Technologies Program in 1988, a program led by the private sector to promote technological innovation by providing seed money to cover fund shortages involved in the commercialization of new technologies. These two acts further enhanced the competitiveness of U.S. corporations. Congress then instituted the Cooperative Research and Development Agreement (CRADA), a joint development program to promote joint public-private sector research projects undertaken by national laboratories and private companies.

In 1980, the United States went on to establish the Stevenson-Wydler Technology Innovation Act, which required the transfer of the fruits of federal research projects to the private sector, and, in 1992, the

Small Business Technology Transfer Act to promote the transfer of technology. The latter in particular is thought by many to have been instrumental to the launch of venture companies at university campuses such as Sun Microsystems and Dell Computer.

2) Changes in the Patent Licensing Framework in Europe[2)]

In the United Kingdom, the creation of the Development of Inventions Act in 1948 and National Research and Development Corporation in the following year established a scheme that strengthened support for the development of inventions and encouraged the pursuit of patents rights and licensing. The scheme was maintained until 1985, when the NRDC was renamed the British Technology Group. Under the new scheme, however, the organization continued its role of facilitating the transfer and commercialization of research products from university and publicly funded research laboratories.

Following the 1985 changes, TTOs began to be established at universities. By 2003, 80% of all universities in the United Kingdom had a TTO in place marking the first step toward nationwide industry-university-government cooperation.

The U.K. government also undertook the task of revitalizing the cycle of intellectual creativity on a national level by formulating a research/technology/innovation policy focused on industry and by supporting technology transfer at universities to promote the creation and protection of knowledge.

In Germany, public institutions such as Max-Planck-Institut and Fraunhofer-Gesellschaft have undertaken the dual tasks of R&D and technology licensing since 1970s. The Scientific Project was created in the early 1980s to promote technology transfer. In the 1990s, measures to promote industry-university cooperation and nurture venture companies were taken following reunification.

Individual German provinces currently develop their own projects, and many having a TTO in place. Since the amendment of the Employees' Invention Act in 2002, all provinces have established a patent evaluation and technology licensing organization at each university within their borders.

In France, a national policy for government-led scientific and technological development has been adopted. As in the case of Japan, French public institutions receive resources to be used in the promotion of industry-government cooperation.

Although industry-government cooperation in France was considered to be less advanced than in other European countries, with only a few examples of successful commercialization of research products, the Innovation Act of 1999 bringing with it the inauguration of a nationwide business planning competition, formation of incubators, and financial support packages- has intensified industry-government cooperation and the number of new start-ups is on the increase.

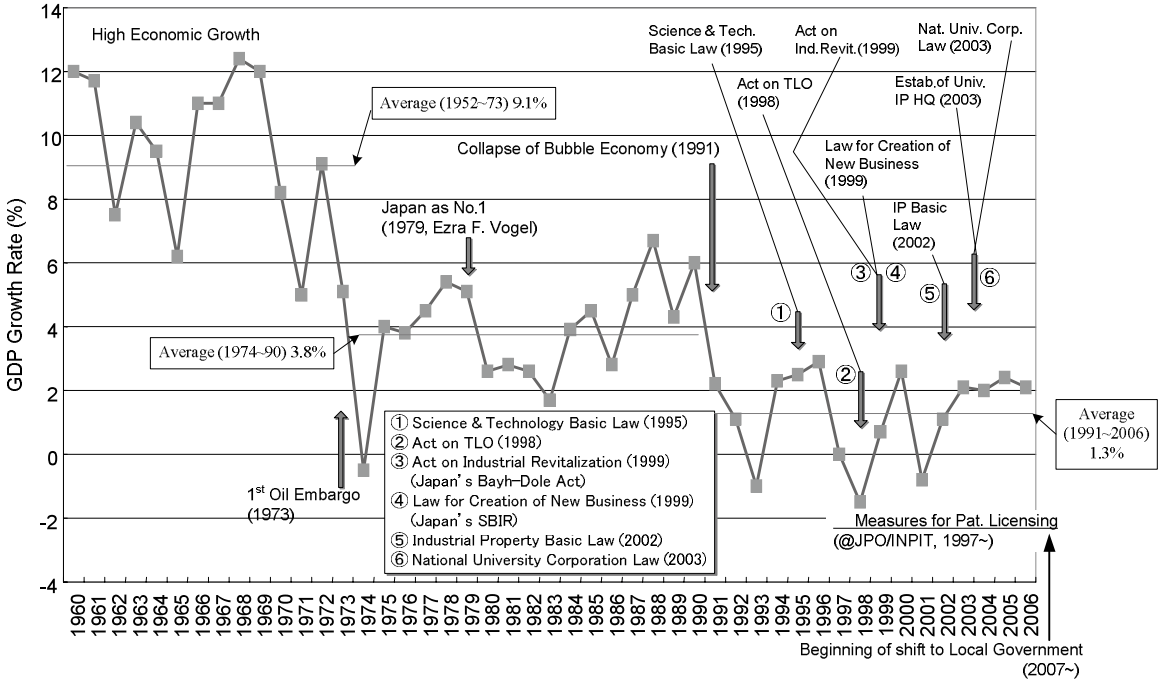
At the regional level, local innovation and technology licensing centers are in place to speed up technology transfer to small and medium-sized enterprises.

Most French research institutions are now statutory bodies affiliated with an organization to promote the licensing of technology and its practical realization.

3. Legal Framework for Patent Licensing in Japan

This section will look into the background and development of Japan's change of direction from an industry-driven economy to one powered by intellectual property, with reference to Fig. 3-1.

Fig. 3-1 Legal Framework for Patent Licensing in Japan



In 1973, Japan's economy was upset by the world oil shock. The country had just emerged from a high production phase, following the long stretch of economic growth (with the GDP growing at an average of 9.1%) during the postwar recovery years and was about to move into a new phase. The oil shock, however, brought the economic growth back down to a medium level (with the GDP growing at an average of 3.8%). At the same time, wild price spiraling and trade conflicts also took a toll on the economy and the country was forced into unchartered waters. In 1991, the economy was stricken by the bursting of the economic bubble and has since seen only low growth (average GDP growth of 1.3%) as the country struggles with the after-effects of the collapse and worsening deflation associated with globalization.

Deciding that a radical new approach is needed to revitalize industry and the economy at this time of unprecedented gravity, Japan has adopted a policy aimed at strengthening the cycle of intellectual creativity, taking as its model the successful restructuring undertaken by the United States in the 1980s.

1) Formulation of the Basic Policies for Promoting Science and Technology and Intellectual Property

The Japanese government began by establishing the Basic Law on Science and Technology in 1995. Recognizing that the country had already caught up and was now an international frontrunner, the government positioned scientific and technological innovation as one of its key policy issues and set out

principles for applying research results for society at large. As a specific target for technological innovation, it defined four top priority fields (life sciences, information and communications, environment, nanotechnology and material science) and four second-tier priority fields (energy, manufacturing techniques, infrastructure, frontier).

In 2002, the Basic Law on Intellectual Property came into operation. Closely connected with the Basic Law on Science and Technology, this law formed the backbone of Japan's efforts to bring science and technology to the fore.

The law set out the responsibilities of the state, local authorities, universities and the private sector concerning the creation, protection and utilization of intellectual property, in other words, the revitalization of the cycle of intellectual creativity. Specifically, local authorities, along with the national government, would be called upon to develop and implement measures aimed at creating, protecting and utilizing intellectual property. Universities, in addition to their traditional roles in education and research, would ensure the products of research found their way into society. The private sector, meanwhile, would be expected to actively utilize and properly manage intellectual property. Furthermore, the law provided measures to strengthen industry-government-university cooperation, protect intellectual property and promote technology transfer.

2) Regulatory Environment in the University Sector

The Law for Promoting University-Industry Technology Transfer as put into operation in 1998 sets out principles for the transfer of research products from universities and national research institutions via Technology Licensing Organizations (TLOs). Under the law, a large number of TLOs (51 as of July 1, 2008) were established and a wide range of facilities became available. The law also includes provisions relating to government subsidies, reductions or exemptions for annual patent fees, free use of college facilities, and made it possible for an instructor at a national university to simultaneously hold the position of director at a TLO, thus paving the way for the transfer to the private sector of worthy inventions developed on campus.

The University Intellectual Property Headquaters Development Project, launched in fiscal 2003, advanced the development of basic rules concerning intellectual property created and owned by universities, and included regulations regarding ownership of inventions (such as by stipulating that ownership of intellectual property, such as a patent, be attributed to the institution employing the inventor) and policies regarding industry-university-government cooperation, management of intellectual property, conflict of interest, invention security, collaborative research and funded research.

The transformation of national universities into independent administrative institutions, which occurred in April 2004, put pressure on universities to undertake research with practical real-world applications and gave them more leeway to invest in projects that utilized such research.

The reclassification of university office-holders from public to private employees released them from the restrictions placed on civil servants that had prevented them from simultaneously holding private sector positions, thereby facilitating implementation of technology transfer and industry-university cooperation.

3) Regulations Aimed at Industrial Revitalization

Article 30 of the Act on Special Measure for Industrial Revitalization, a Japanese version of the Bayh-Dole Act, provides that intellectual property rights resulting from government-funded research undertaken by the university and private sectors are attributable in whole to the research organization. Until this law, such rights had been, in principle, fully attributed to the state.

In real terms this meant that public funding, which, as of 1999, accounted for 21.9% of Japan's total research expenditure, became available for the development of innovative technologies to support business.

Similarly, under the Small Business Innovation Research Program, a Japanese version of SBIR launched in 1999, various government ministries and agencies provide integrated support in the form of subsidies for small and medium-sized enterprises in both the R&D (including for feasibility studies and market development) and commercialization phases.

4) Patent Licensing

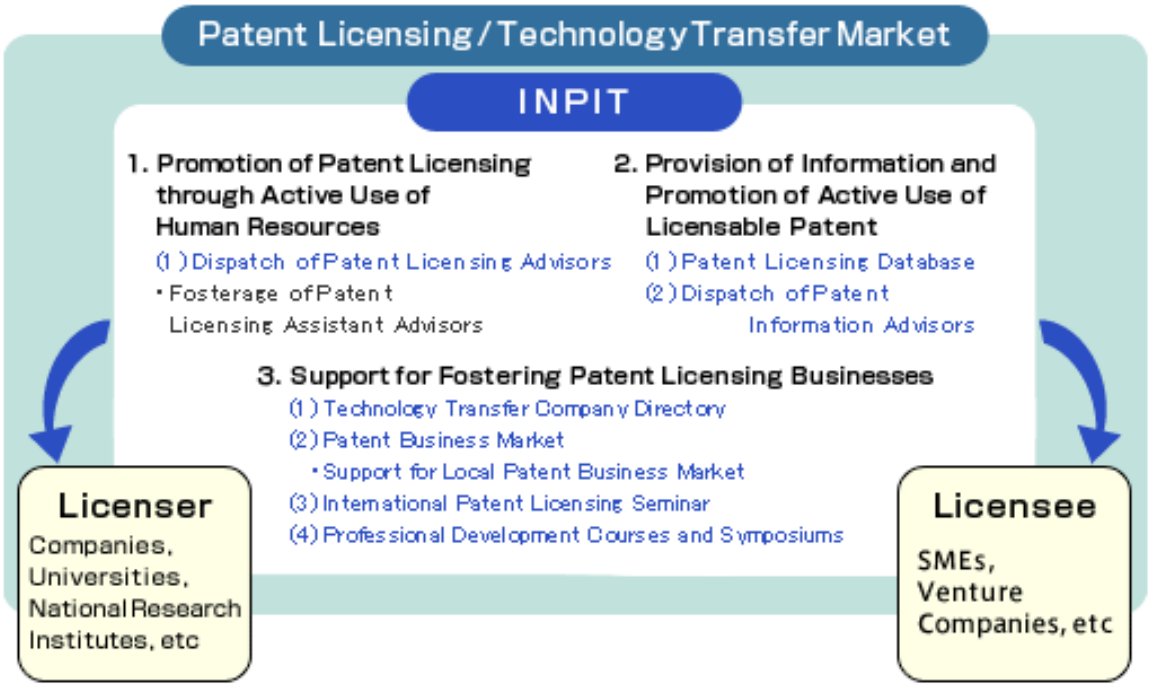
In 1985, the then Ministry of International Trade and Industry established the Japan Technomart Foundation, with the Japan Industrial Location Center as its base. Japan Technomart assembled and operated a database of technology seeds for transfer between member companies. As it was unable to increase the number of member companies, however, its activities and transfers were limited.

Against this backdrop, the Japan Patent Office began a patent licensing promotion project in 1997. The central aim of this project was to create a corps of patent licensing advisors (ADs) who would be dispatched to local authorities (and TLOs, in the following years) to help local businesses acquire or license patents owned by other private companies or universities, thereby creating new business opportunities and enabling new product development by SMEs and venture companies. The project produced good results, brokering more than 10,000 agreements, and is still in operation now. The following section will describe the details of this project.

4. Measures Encouraging Patent Licensing

The Measures Encouraging Patent Licensing is run by the National Center for Industrial Property Information and Training (INPIT). It focuses on the three areas shown in Fig. 4-1: supplying human resources to support patent licensing; providing information on issued patents; and supporting intellectual property trade in the private sector.

Fig. 4-1 Measures Encouraging Patent Licensing [3)]



1) Supplying Human Resources to Support Patent Licensing [3)]

Patent licensing relies on negotiations based on trust and the ability to examine potential deals for successful outcomes. Therefore, human factors have a decisive influence on the end figures. Starting with 14 ADs in 1997, the project now has approximately 110 in place, about 70 of which work with regional Bureaus of Economy, Trade and Industry and local authorities. Their work mainly consists of matching entrepreneurs possessing technology needs with technology seeds developed by the private and university sectors; providing support for the conclusion of agreements; and providing training and support to personnel engaged in patent licensing; and to patent licensing assistant advisors who will go on to be directly employed by local authorities.

2) Providing Information on Issued Patents[3)]

The Industrial Property Digital Library (IPDL) is a national patent database reported to contain approximately one million pieces of patent-related data. Although the database can be accessed by private companies at no cost, many SMEs lack familiarity with the processes involved in accessing and utilizing patent information. To counter this, specialist consultants assigned to local authorities (54 in number, as of fiscal 2008) provide local SMEs with advice on a wide variety of matters, including instructions on how to use the IPDL, what they need to know in order to retrieve patent information and how they can use the information once retrieved.

Another resource available is the Patent Licensing Database, which contains around 58,000 pieces of data and is designed to be updated on a sequential basis.

3) Supporting Intellectual Property Trading[3)]

Revitalizing the cycle of intellectual creativity at the grassroots level in Japan depends not only on the creation and protection of intellectual property but also on ensuring that private-sector trade in of intellectual property rights in various fields is properly supported, a need that is yet widely recognized.

A database of private-sector traders engaged in patent licensing and intellectual property rights trading was created and placed on the Internet for public access to help meet this need.

Among its other activities, INPIT provides professional development training courses and seminars for patent traders covering issues related to both domestic and international patent trading, inviting international guests working in the field of international property rights trading to speak at the latter. These events are also designed to promote the development of professional networks and a greater exchange of information between participants. In addition, INPIT provides opportunities for private companies to present their business plans to help companies that need specific technologies find other companies who have them. It also supports patent-related trade fairs held in various regions in Japan to support network-building.

The following subsections give an overview of the outcomes of the project, based on the section of INPIT's website titled, "Measures for encouraging patent licensing."

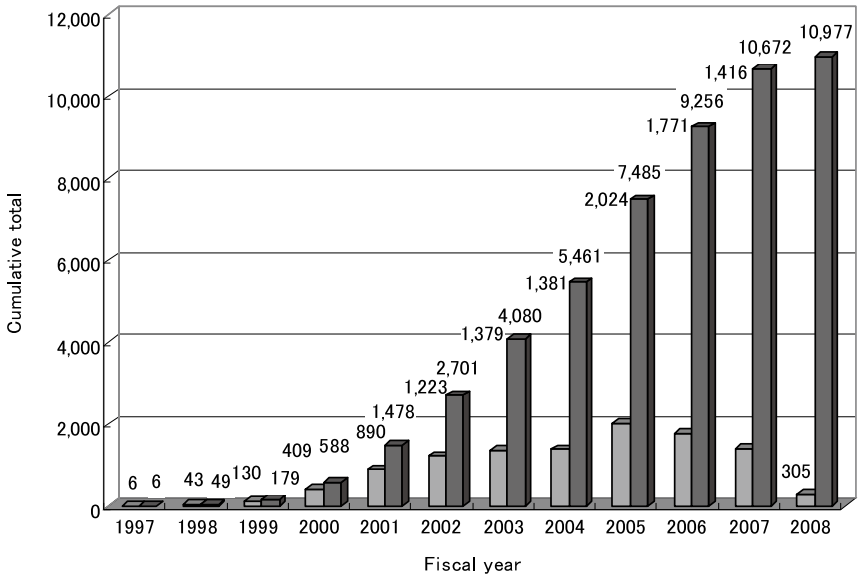
4) Agreements Concluded under the Measures Encouraging Patent Licensing[4)]

Fig. 4-2 shows the numbers of agreements signed (on both single-year and cumulative bases) under the Measures Encouraging Patent Licensing and the number of ADs. The project started in fiscal 1997 with 14 ADs and brokered six deals in the first year. While the number of ADs peaked at approximately 110, the number of agreements concluded continued to increase each year, breaking the

10,000 mark in fiscal 2007, when it reached a cumulative total of 10,672.

The number of deals made per year peaked at 2,024 in fiscal 2005 and began to take a downward fall thereafter. This may reflect the shift in emphasis from quantity to quality (with a higher priority put on contracts with more meaningful outcomes, such as license agreements) that occurred as the project completed its initial awareness-raising phase and entered the diffusion phase.

Fig. 4-2 The Number of Agreements Concluded under the Measures Encouraging Patent Licensing[4)]



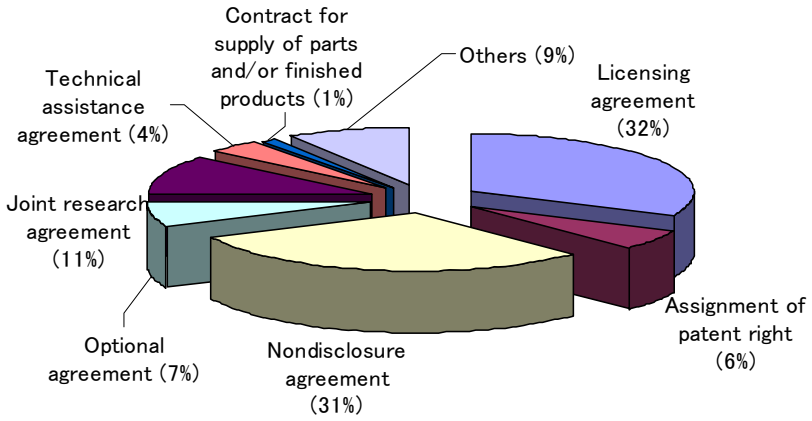
5) Breakdown of Agreements Concluded under the Measures Encouraging Patent Licensing Type of Contract[4)]

Fig. 4-3 shows a breakdown of deals successfully brokered under the project by type of contract. Licensing agreements, the main target of the project, combined with patent rights assignment contracts, account for the largest share at 38%. Basic nondisclosure agreements come in at 31%, with the remaining 31% made up of various other types of agreements.

The conclusion of a nondisclosure agreement serves as the starting point for negotiations that may result in the execution of a joint research agreement, license agreement or assignment agreement by allowing one party access to the confidential information of the other party for review.

Under an optional agreement, the parties agree on a specific fixed period of time in which to conduct testing and experiments, research and development, trial manufacture, and feasibility studies to identify the commercial potential of the subject technology. At the time of expiry of the term under the agreement, the parties enter into new negotiations to determine the next steps in the process of introducing the technology.

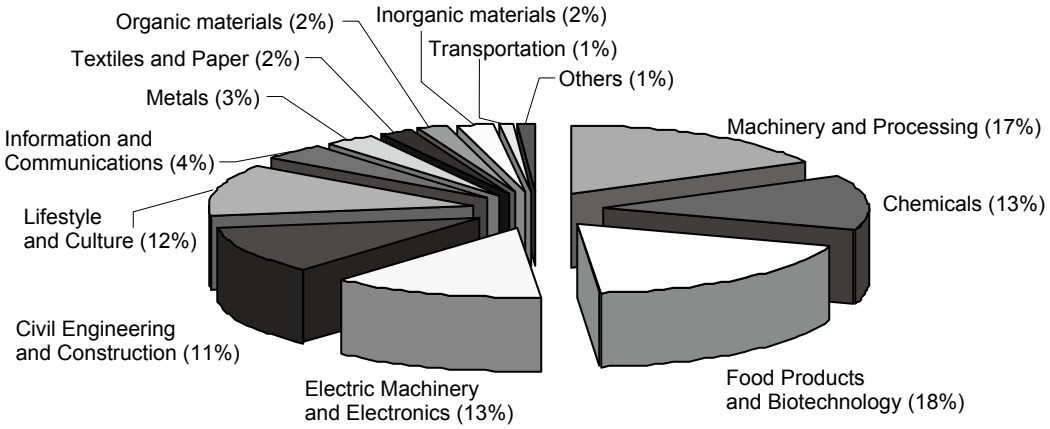
Fig. 4-3 Breakdown of Agreements Concluded under the Measures Encouraging Patent Licensing by Type of Contract[4)]



6) Technical Fields of Concluded Agreements[4)]

Fig. 4-4 gives a breakdown of the different technical fields of the agreements made under the project. The six fields that account for relatively large shares are food products and biotechnology (18%), machinery and processing (17%), chemicals (13%), electric machinery and electronics (13%), lifestyle and culture (12%) and civil engineering and construction (11%.) This suggests that there is greater demand in these fields and thus more business opportunities. Contrary to the popular prediction that information and communications, inclusive of IT, would account for the lion's share of successful deals, the actual figure was 4%.

Fig. 4-4 Technical Fields of Concluded Agreements[4)]



7) Flow of Patents Distributed under Concluded Agreements

Table 4-1 gives an overview of the flow of patents distributed under signed agreements in terms of their quantity and six classifications of licensor and licensee, namely, large company, SME, national or prefectural laboratory, TLO, guild or association, and individual (in the capacity of chief executive). (Figures in the table were derived from a survey of 6,927 deals made in the eight years from the project's start in 1997 to the end of 2005. These included nondisclosure and higher-tier agreements.)

The greatest number of patent transfers (1,879) was between SMEs as both licensor and licensee, which reflects the particular focus of patent licensing advisors on SMEs. The emphasis placed by the Measures Encouraging Patent Licensing on SMEs can be explained by the fact that large corporations typically have an in-house organization staffed by dedicated personnel for the management of intellectual property and therefore have less need for support. The second and the third largest number of patent licensings, involving 1,813 and 1,221 deals, respectively, was from TLOs to SMEs and TLOs to large companies, respectively.

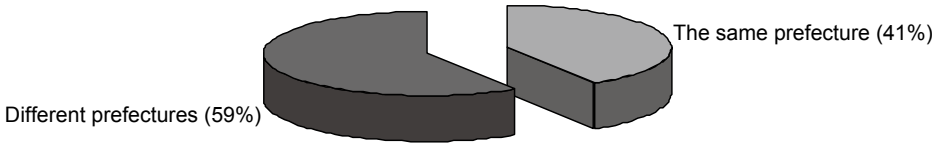
Table 4-1 Flow of Patents Distributed under Concluded Agreements

	Large Company	SME	National and Prefectural Lab.	TLO	Guild and association	Personal	total
Large Company	31	283	94	1,221	8	52	1,689
SME	215	1,879	396	1,813	30	580	4,913
National and Prefectural Lab.	2	33	5	26	1	6	73
TLO	5	7	2	1	0	2	17
Guild and association	2	45	15	18	0	11	91
Personal	7	63	8	21	1	44	144
total	262	2,310	520	3,100	40	695	6,927

8) Geographical Relationship of Licensor and Licensee[4)]

Fig. 4-5 shows the geographical relationships between licensors and licensees who concluded agreements. Specifically it shows the proportion of deals in which the parties were located in the same or different prefectures. As can be seen from the chart, the proportion of deals in which the parties were based in different prefectures (60%) was one and a half times that of deals in which the parties were located in the same prefecture (40%). This implies that needed technologies can be more easily located by national rather than local searches, indicating the importance of conducting them.

Fig. 4-5 Geographical Relationships of Licensor and Licensee[4)]



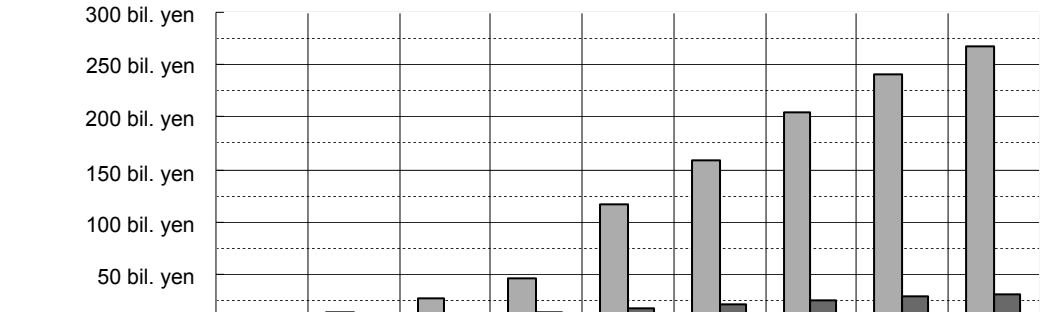
9) Economic Impact of the Measures Encouraging Patent Licensing[4)]

Fig. 4-6 shows economic impact of the 10,297 deals made under the Measures Encouraging Patent Licensing from 1997, the year in which it was started, until the end of 2007 and changes in costs incurred by the project, both on a cumulative basis.

The impact of the project in economic terms totaled 267.4 billion yen for the period, which amounts to a return of about eight and a half times the project's cost (31.5 billion yen) for the same period.

"Economic impact" here refers to the amount of money transferred as a result of AD activities, not including project costs. Specifically, it includes sales of products manufactured using transferred technologies, capital expenditure for the production of these products, license fee revenues and recruiting costs. (Source: "Economic impacts and working expenses of measures for encouraging patent licensing" on INPIT's website)

Fig. 4-6 Economic Impact and Costs of the Project[4)]



	1997–1999	1997–2000	1997–2001	1997–2002	1997–2003	1997–2004	1997–2005	1997–2006	1997–2007
Economic impact (in bil. yen)	1.5	14.2	25.8	46.2	117.5	157.8	204.5	267.4	267.4
Costs of the project (in bil. yen)	3.3	5.8	9.6	13.4	17.3	21.4	25.4	28.6	31.5

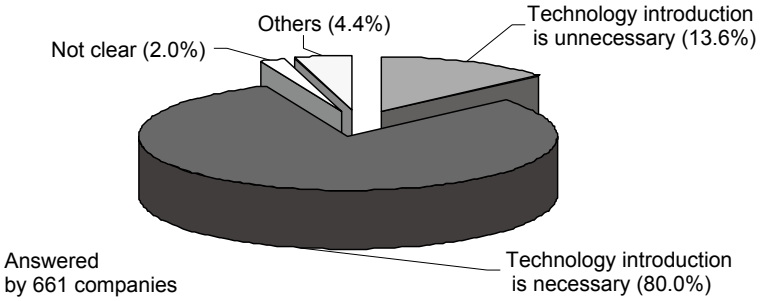
5. Current Status of Small and Medium-sized Enterprises in the Context of Patent Licensing

This section will examine the current status of SMEs as leading players in patent licensing based on survey results.

1) SMEs' Technology Needs

Fig. 5-1 shows the results of a survey of SMEs asking for their own assessment of technology needs (that is, the need for patent rights). The survey revealed that an overwhelming majority of 80% think "technology introduction is necessary" while only 13.6% think "technology introduction is unnecessary".

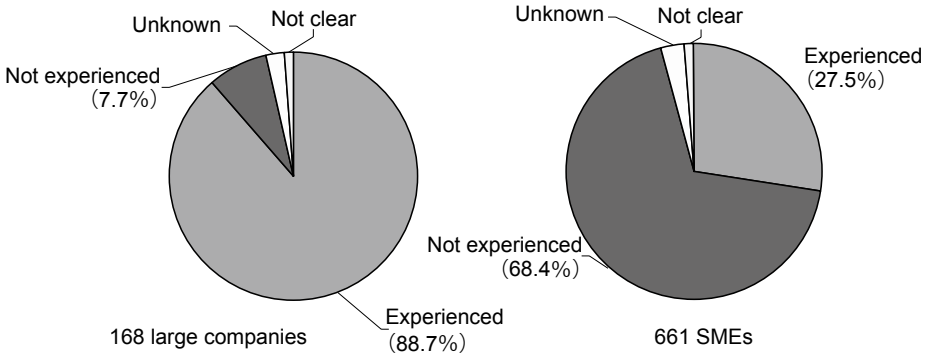
Fig. 5-1 SMEs' Technology Needs[5)]



2) Private Sector Experience in Technology Transfer

Fig. 5-2 shows the results of a survey on the experience private sector enterprises have in patent licensing (technology transfer). It reveals a broad difference in between large companies and SMEs, with 88.7% of large companies reporting they had experience, while 68.4% of SMEs reporting no experience. This means that although 80% of SMEs say they need new technologies, as shown in Fig. 5-1, only 27.5% have actually engaged in technology transfer. Reasons for this will be discussed in the following subsection, "Challenges faced by SMEs in Patent Licensing."

Fig. 5-2 Private Sector Experience in Technology Transfer[5)]

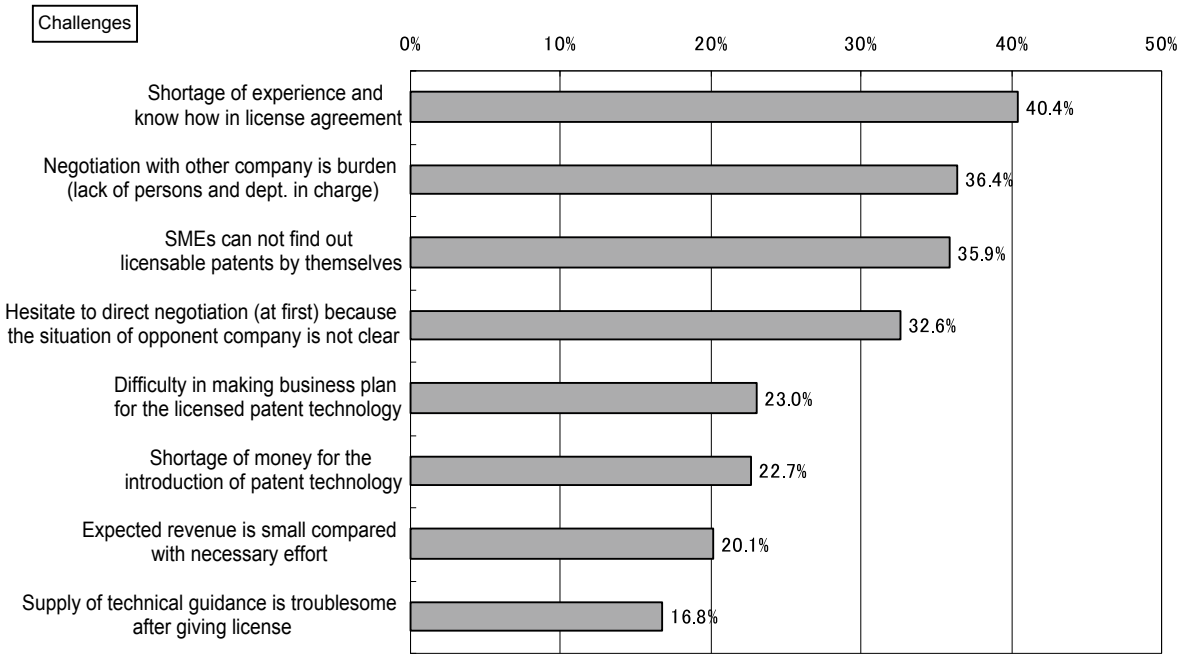


3) Challenges faced by SMEs in Patent Licensing

Fig. 5-3 shows the results of a survey on challenges faced by SMEs in carrying out activities related to patent licensing.

Most frequently cited challenges include: little experience and know-how for concluding licensing agreements for patented technology (40.4%); limited in-house organizational units and personnel to conduct negotiations (36.4%); and the inability to locate appropriate technology and potential trading partners on their own (35.9%). This suggests that arrangements to cover these shortfalls in the areas of experience, know-how and human resources would promote greater patent licensing among SMEs.

Fig. 5-3 Challenges faced by SMEs in Patent Licensing[6)]



(Source: "Survey and Analysis on Conclusion of Contract of Encouraging Patent Licensing Service," INPIT, Sept. 1, 2006)

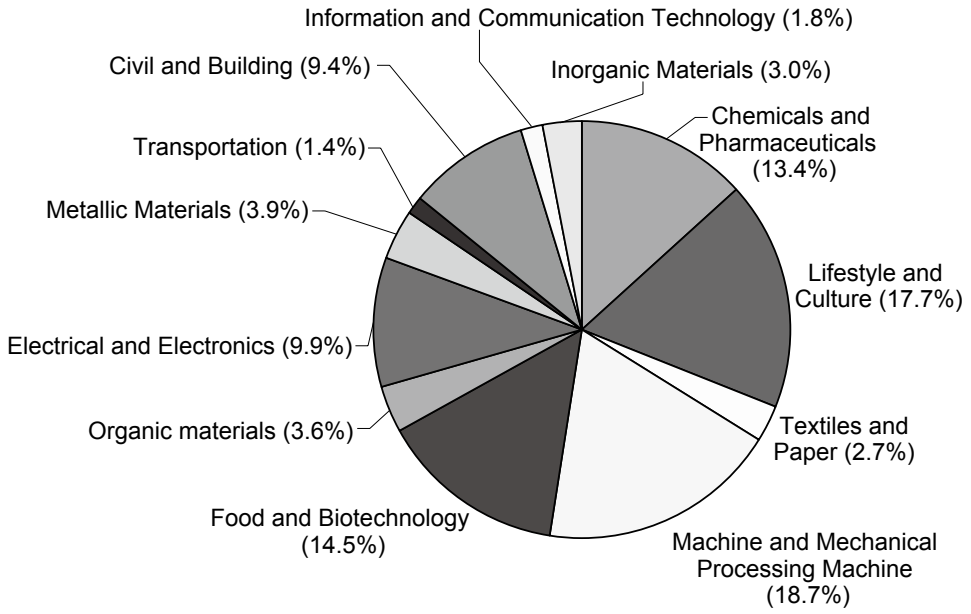
4) Technical Fields in which SMEs have Technological Needs

Fig. 5-4 shows a breakdown of SMEs needs for technologies in various technical fields, as identified by interviews conducted by ADs. The data shown is from 2006. Some SMEs had needs in multiple fields.

The chart shows that are significant needs among SMEs for technologies in the fields of machinery and processing (18.7%), lifestyle and culture (17.7%), food products and biotechnology (14.5%),

chemicals (13.4%), electrical machinery and electronics (9.9%), and civil engineering and construction (9.4%). Although these results generally correspond to the component percentages of technical fields in which agreements were concluded under the Patent Licensing Project, there are noteworthy differences in lifestyle and culture, which includes the subcategory of nursing care, as well as electrical machinery and electronics, and food products and biotechnology. Needs for lifestyle and culture technologies, at 17.7%, accounted for a greater proportion of the total than did agreements concluded in this area, which came to 6%. Electrical machinery and electronics, and food products and biotechnology, on the other hand, accounted for a larger proportion of deals made (17%, 21%, respectively) than needs (9.9%, 14.5%, respectively).

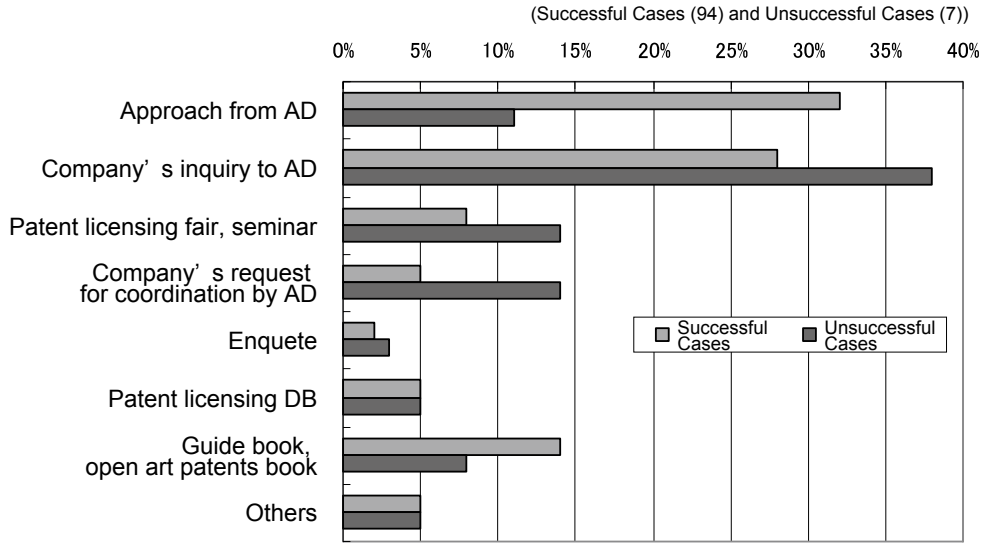
Fig. 5-4 Technical Fields in Which SMEs Have Technological Needs



5) Factors that Prompted SMEs to become Involved in Patent Licensing

Fig. 5-5 shows the survey results concerning factors that prompted SMEs to become involved in patent licensing. The survey revealed that one of the predominant factors was a personal connection, including "an approach by an AD" and "consulting with an AD," while another was exposure to activities or publications promoting patent licensing such as fairs, briefing sessions, guidebooks, questionnaires and so on. This suggests that further personal connections made by ADs visiting companies, and more fairs and briefing sessions publicizing patent licensing will encourage additional SMEs to seek patent licensing agreements.

Fig. 5-5 Factors that Prompted SMEs to Become Involved in Patent Licensing[5)]



6) Factors Preventing the Conclusion of Agreements

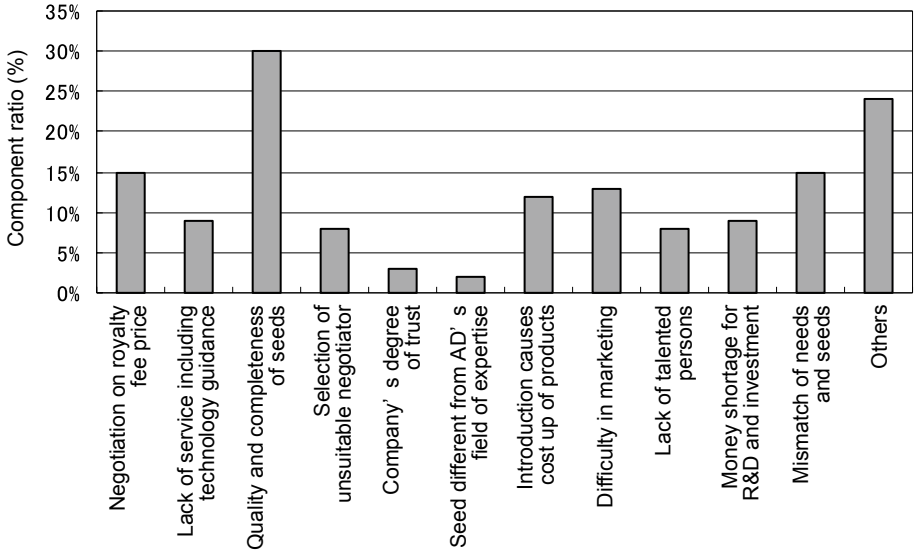
A survey on factors that prevented negotiations from resulting in conclusive agreements was carried out to identify potential pitfalls for negotiating parties.

As shown in Fig. 5-6, the most frequently cited cause of deals failing was a "lack of high-quality, complete technology seeds." This implies that SMEs lack the capacity to undertake their own development and incubation and therefore seek high-quality technologies ready for immediate application. The second most frequently cited cause was "difficulties in negotiating financial terms such as licensing fees," indicating that many SMEs do have ready cash to spare and highlighting the need to a find a win-win solution with regard to the financial aspects of contracts.

The third most frequently cited cause was "mismatch of needs and proposed technologies," which needs no further investigation to why negotiations would fail to proceed.

The fourth most frequently cited cause was "difficulties in cultivating a market," a problem that can be solved with the help of experts in market development and inter-regional cooperation between SMEs.

Fig. 5-6 Factors Preventing the Conclusion of Agreements[5)]



7) Specific Support Needs of SMEs regarding Patent Licensing

A survey on the particulars of actual support provided by ADs to SMEs was carried out to identify future needs of SMEs with regard to patent licensing. See Fig. 5-7 for the results of the survey.

(i) The form of support most needed was "advice on completion of deals (contract coverage and procedure for execution of an agreement)" at 50.3%. This clearly indicates a lack of experience on the part of SMEs in terms of negotiating these kinds of agreements and a limited ability to hire professional consultants.

(ii) The second most needed form of support was related to the potential technologies and included "presentation of other companies' patented technologies that can provide solutions to the SME's technological issues" (33.3%) and "presentation of technical information, excluding patent information, and advice for the purpose of solving problems" (27.7%). These tasks often tested the ability of the ADs, many of whom have an engineering background.

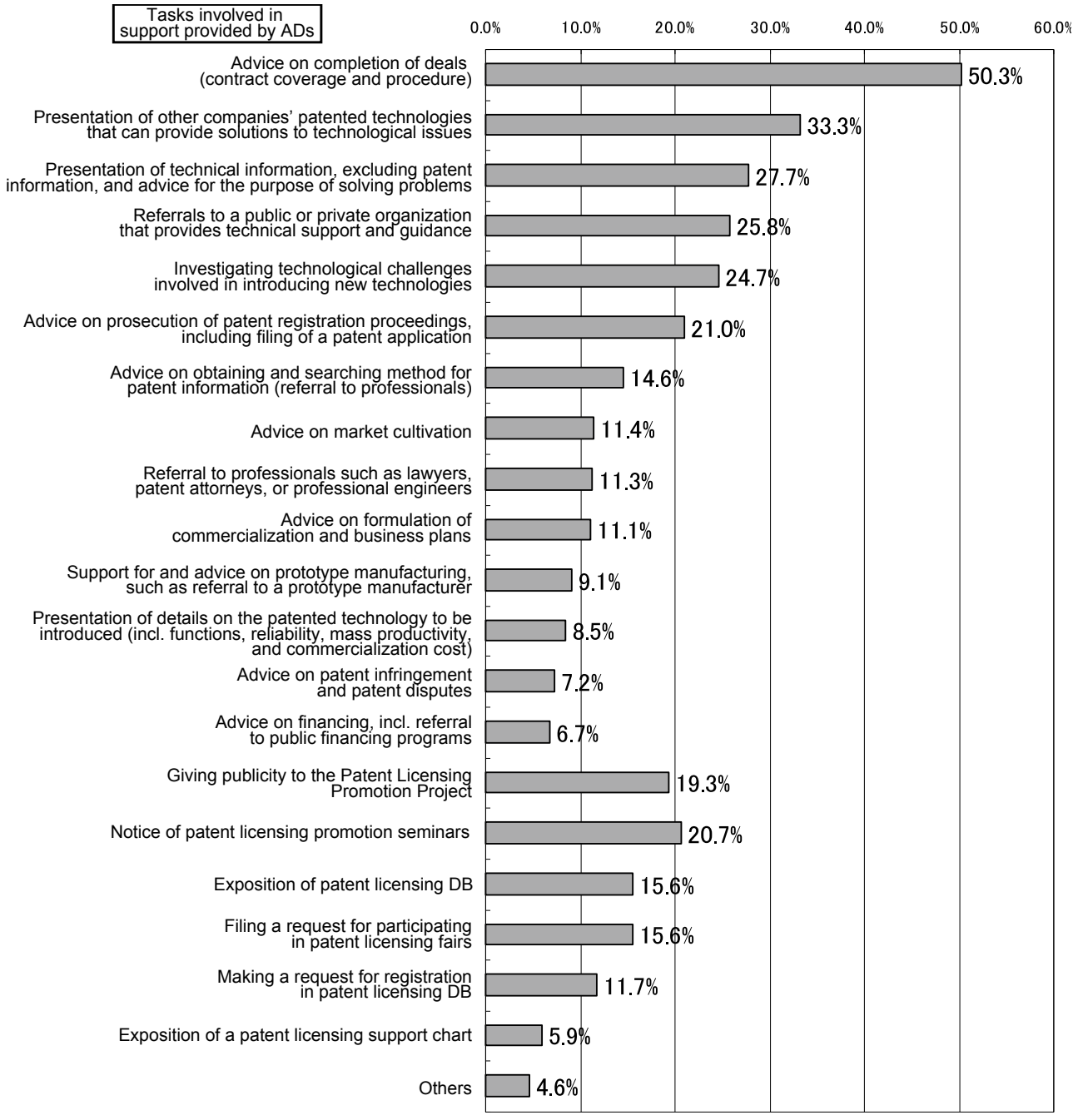
(iii) Many SMEs also reported needing "referrals to a public or private organization that provides technical support and guidance" (25.8%), "referrals to professionals such as lawyers, patent attorneys or professional engineers" (11.3%) or (9.1%). These requests often tested ADs in terms of personal connections with other ADs and regional networks of technology transfer organizations.

(iv) Given that "investigating technological challenges involved in introducing new technologies" (24.7%) concerns the "corporate needs" of SMEs, the ability of ADs to build relationships based on trust is a key skill in this context.

(v) Other forms of support needed included "advice on patent registration proceedings including the

filing of patent applications" (14.6%) and "advice on the formulation of commercial and business plans" (11.1%), both of which require an understanding of intellectual property and general business skills.

Fig. 5-7 Specific Support Provided by ADs[6)]



(Source: "Survey and Analysis on the Conclusion of Contracts on Encouraging Patent Licensing Service," INPIT, Sept. 1, 2006)

6. Current Status of Regional Support Available for Patent Licensing

This section will provide an overview of the various arrangements that regional authorities currently have in place to promote patent licensing, with reference to "Prefectural and Regional Conditions: An Overview of the AD's Cooperation Framework," INPIT, May 18, 2006.[7)]

1) Supporting Patent Licensing Advisors by Providing Access to Corporate Information[7)]

Although private enterprise is the biggest player in patent licensing, municipal authorities are one of the largest repositories of information relating to the local business environment. This information is collected during the implementation of various subsidy programs, committee meetings, study group meetings, seminars, social gatherings, surveys, hearings, on-site visits and so forth.

Many municipal governments have in place various schemes to support ADs and assistant ADs. Similarly, regional business associations and chambers of commerce and industry have a wealth of data on local corporations, including information on patents.

2) Municipal Government Referral Service connecting Companies with Patent Licensing Advisors[7)]

Many municipal authorities will refer companies that approach them for advice to an AD or an assistant AD. Such approaches are made at forums, fairs, technical consultation meetings and exhibitions organized by the authority or at corporate technical consultations held under the auspices of the local authority. Other channels include organizations that provide support for SMEs and public research laboratories.

3) Publicizing Patent Licensing Activities by Municipal Governments[7)]

Local governments often provide information about their patent licensing activities, promotional activities, the activities of ADs and assistant ADs, and examples of successful patent deals via a variety of media including newspapers, TV, newsletters, the Internet and publications produced by public research laboratories and SME support organizations.

4) Support for Patent Licensing through Local Authorities' Briefing Sessions and E-Mail Newsletters and Expert Advice[7)]

Support for patent licensing is available in a variety of forms and provided in accordance with the specific characteristics or situation of the region. This can include information sessions targeting the local business community, briefing sessions, seminars, study sessions and social gatherings. In addition, information and updates are provided via e-mail newsletters while expert advice from professionals engaged in intellectual property and patent trading is also made available.

5) Patent Information Provision at the Regional Level[7)]

In most prefectures and regions, information on patents issued on promising technologies with relevance to specific regions is periodically made available in the form of publications, databases, the Internet and mail-outs. Such information covers patents owned by public research laboratories and other research institutions such as universities.

This information is also provided at trade, technology and business fairs and exhibitions organized by or with the cooperation of prefectural governments. In some prefectures, coordinators from pubic research laboratories visit corporations and make on-site presentations on promising technologies.

6) Cooperation between Municipal Governments and Patent Licensing Advisors[7)]

(i) In order that they may do their jobs properly, it is important for ADs to maintain good relations with local governments. ADs generally meet with representatives of the local municipal government on a monthly or regular basis to exchange information and keep the lines of communication open.

(ii) In many cases, ADs also take part in conferences known as "cooperation meetings" attended by other organizations involved in patent licensing in the local area. The term "cooperation meeting" refers to a meeting with organizations working to promote industry-government cooperation or a meeting with organizations supporting SMEs. This type of meeting may also be referred to as a technology transfer liaison conference, new business support conference, intellectual property strategy conference, platform operation conference or a conference of prefectural coordinators.

(iii) Regional bodies have well-trained staff in place to support patent licensing. These staff members can provide valuable assistance to ADs and assistant ADs in terms of securing support for the commercialization of promising technologies.

For example, many municipal government headquarters have housed in the same building: advisors to support the utilization of patent information, ADs, technology transfer coordinators, coordinators from public research laboratories and an office of an organization that provides support for SMEs. This allows for a one-stop service covering the whole process of patent licensing from the provision of information on issued patents to commercialization. Local governments with a less well-developed framework of cooperation nonetheless place their personnel engaged in patent licensing in the same building to facilitate communication.

Local government staff engaged in patent licensing may include support staff for matched trading, new technology agents, marketing managers, incubation managers, business producers, support coordinators and so on.

(iv) Downstream support for after a patent has been acquired includes help in raising funds and developing markets, and technical and management support. ADs and assistant ADs are required to

cooperate with specialist local government staff to act as a kind of bridge. Organizations that specialize in downstream cooperation are called by various names, including industry support centers, business revitalization centers, regional platforms, venture support centers, new business support centers and so on.

(v) To support patent licensing, most local governments provide aid in the form of subsidized patent application fees, database search costs and PCT application fees. Free consultations with patent attorneys and others are also provided.

(vi) Some local authorities will also subsidize the commercialization of transferred technologies as well as undertake feasibility studies and provide consulting and coaching for the formulation of business plans.

Other local governments provide loans for R&D and commercialization projects based on an acquired patent, subsidize commercialization costs, offer AD support for the commercialization process and support companies post-commercialization by making them preferred vendors.

(vii) Some local authorities develop and implement their own projects to support patent licensing and the creation and utilization of intellectual property. Quite a few local authorities have formulated an intellectual property strategy and implement support projects based on this strategy.

7. Measures Encouraging Patent Licensing in Regions

1) Activities of Patent Licensing Advisors

AD activities involve two distinct approaches: a "needs-driven" approach and a "technology seeds-driven" approach. The first approach begins with an understanding of the enterprise's needs, which enables the AD to refer potential technologies that match those needs to the enterprise. The second approach is based on knowing which technologies are available and then finding an enterprise that is likely to have a need for that technology. Along the way, these approaches merge to become a complete process.

A "needs-driven" approach starts with the AD acquiring information on local enterprises from local authorities, SME support organizations, referrals from others, fairs, business associations and chambers of commerce and industry. The AD will then decide which companies to meet with, make the necessary preparations, and then pay them a visit.

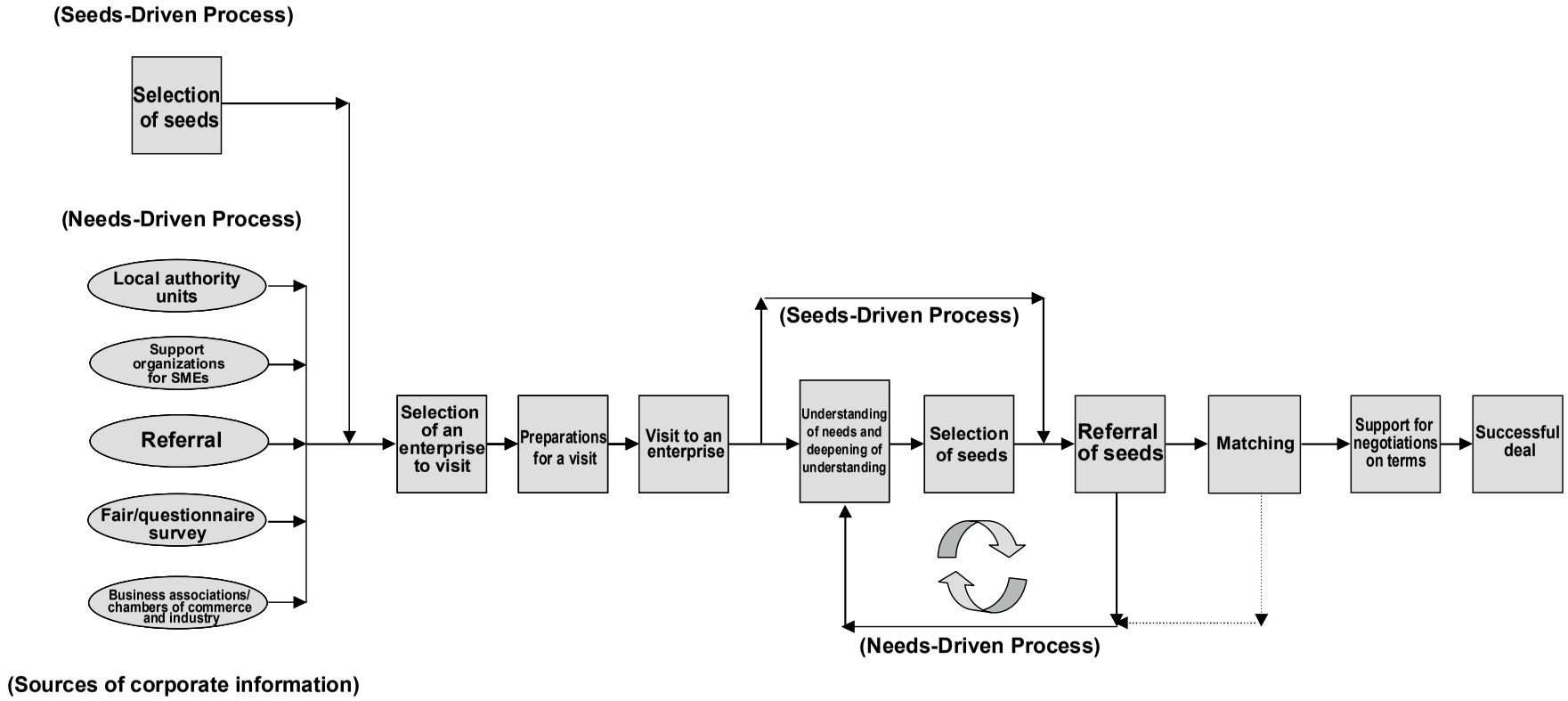
When an AD visits a company, the most important task is to accurately identify that company's technological needs in regard to product development and/or commercialization. If this can be done successfully, the AD will then refer various technologies to the company until a match is found. The deal can then be brought to a successful conclusion, with the AD continuing to provide support to both parties throughout the negotiation process.

Following the "technology seeds-driven" model, the AD identifies technologies with potentially

wide applications and searches for companies with matching needs. Using similar avenues to those listed above, the AD gathers information on various companies, arranges meetings with those companies to examine the potential for an agreement and eventually brings the deal to a successful conclusion, again providing support during the negotiating stage.

As shown in Fig. 7-1, both approaches begin with an AD identifying needs and going through a cycle of referring potential technologies, achieving a match, and returning to identifying needs. The process repeats, leading to either a successful or unsuccessful conclusion.

Fig. 7-1 Activities of ADs (Needs-Driven Approach/Technology Seeds-Driven Approach)



- **Needs-Driven Process: Understanding of needs comes first, followed by referral of the seeds that would match the needs.**

  Seeds-Driven Process: Selection of seeds comes first, followed by a search for an enterprise that is likely to have needs that would match the seeds.

  (In practice, however, processes falling somewhere in between are often employed.)

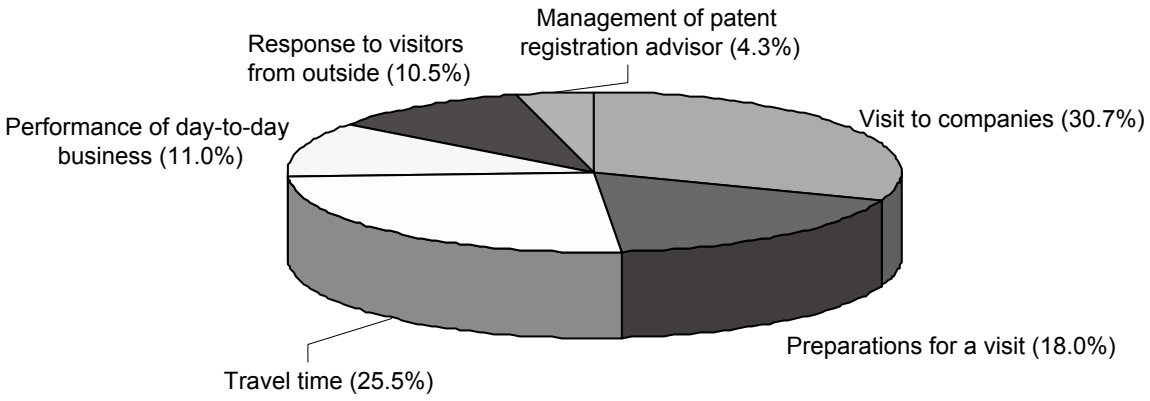
2) A Day in the Life of a Patent Licensing Advisor

Fig. 7-2 shows the amount of time an AD spends on various tasks in an average working day. The primary task of visiting companies (30.7%), combined with preparations for those visits (18.0%), accounts for about half (48.7%) of an average day, not including travel time (25.5%), which accounts for another quarter. Three-quarters (74.2%) of the average day are therefore spent on tasks associated with meeting with companies, and the remaining quarter (25.8%) devoted to office-based work including responding to visitor inquiries, day-to-day tasks such as weekly reports and managing patent registration advisors (known at the time of writing as "patent licensing associates").

Breaking tasks down between office work (including preparations for visits, day-to-day tasks, responding to visitor inquiries and managing patent registration advisors) and field work (visiting companies, including travel time) is split roughly fifty-fifty, with the former accounting for 43.8% of the day and the latter for the remaining 56.2%.

Among others, the fact that travel to/from an enterprise takes approx. a quarter of a day clearly shows features of an AD's activities that uphold enterprise visits. On average, it takes one hour to go to an enterprise and about one hour to get back from the enterprise.

Fig. 7-2 A Day in the Life of an AD



3) Sources of Information on Companies

Fig. 7-3 shows the results of a survey on sources of information used by ADs to identify candidate companies.

Industrial technology centers and municipal governments have vast stores of information about local companies that have been obtained over long years of providing technical and other support to regional SMEs. These institutions serve as a major source of information, with the former employing numerous advisors and the latter acting as the main driver in the promotion of patent licensing.

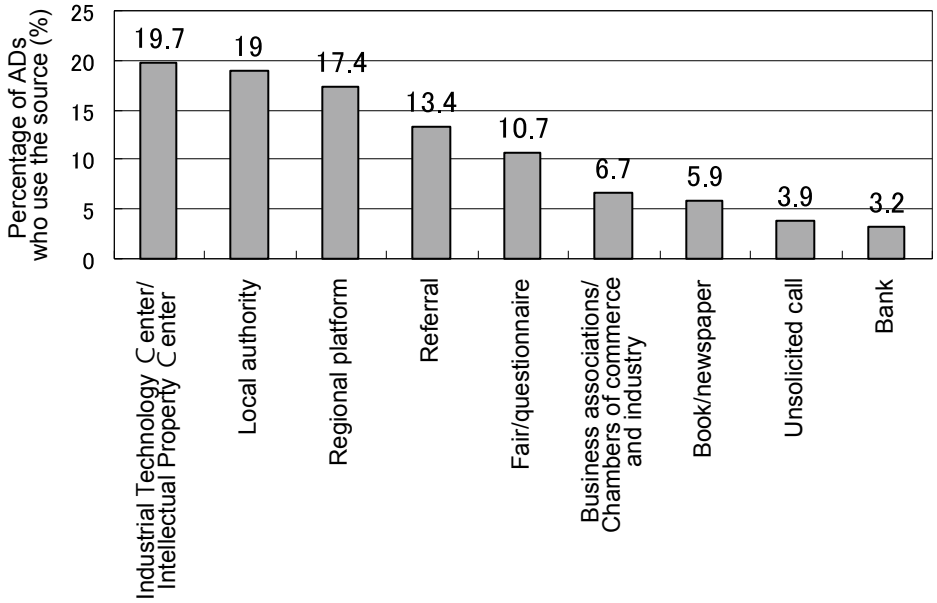
Given that much of SME support is organized at the regional level, this is also a good source of

important information for ADs. The fourth most important means by which ADs acquire information about companies is via personal introductions from members of the AD's business networks. A personal introduction from a mutual acquaintance often makes it easier for the AD to win the trust and confidence of the company and thus facilitates the patent licensing process.

Patent fairs also provide a useful setting for ADs to gain referrals for potential technologies and prospective licensors and licensees, as well as being a place where companies needing technologies and patent owners come together. Corporate information obtained from these fairs is very valuable.

Business associations and chambers of commerce and industry also have a wealth of information on enterprises in their local region. In particular, study groups and cross-industrial associations formed under the auspices of these organizations attract large numbers of prospective licensors and licensees.

Fig. 7-3 Sources of Information on Companies



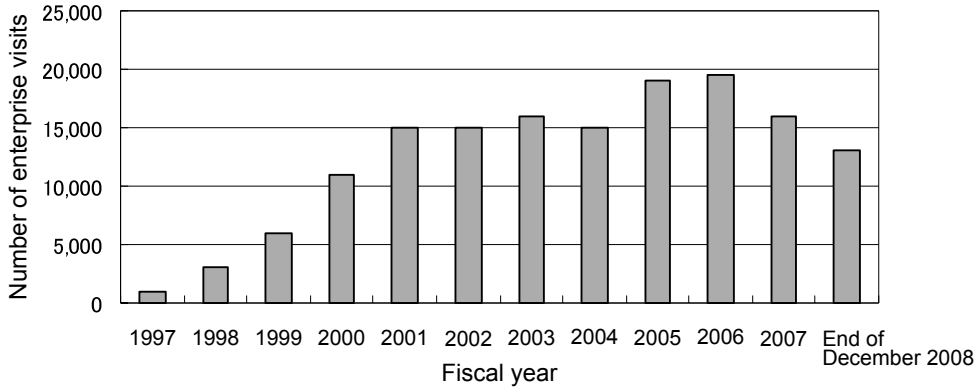
4) Company Visits

(i) Company visits made by ADs

The activities of an AD revolve around making visits to companies. Fig. 7.4 shows changes in the number of company visits made by ADs. From fiscal 1997, for which only six months worth of data is available, the number of visits made by ADs increased every year, peaking in fiscal 2006, after which it decreased slightly. The total number of visits as of the end of December 2008 exceeded 150,000.

The decrease may be accounted for by the shift in emphasis from quantity to quality, with contracts such as licensing agreements and assignments being sought more, and by a reduction in the number of ADs.

Fig. 7-4 Changes in the Number of Company Visits Made by ADs



(ii) Interviewees

Given that ADs put most of their energy into developing relationships with SMEs, most of the people interviewed were at the CEO and executive vice president level. Interviews were conducted to a lesser extent with executive officers (16%), department managers (12%) and general supervisors (5%).

In order for the AD to make an accurate assessment of an SME's technological needs, it is important that they meet directly with executives with decision-making power, such as the company CEO or executive vice president. Taking directly talk with these executives enable the AD to understand the enterprise's true needs so that the AD can refer seeds of technology transfer and help finalize contract terms that consider the true needs. It also speeds up the decision-making process involved in the deal.

(iii) Length of time put into interviews

A survey on the length of time put into interviews on an AD's visits to an enterprise revealed that many interviews took 1.0 to 1.5 or 1.5 to 2.0 hours, averaging close to 1.5 hours. This represents a compromise between the time constraints on busy executives at an SME and their need to take their time in talking with the AD.

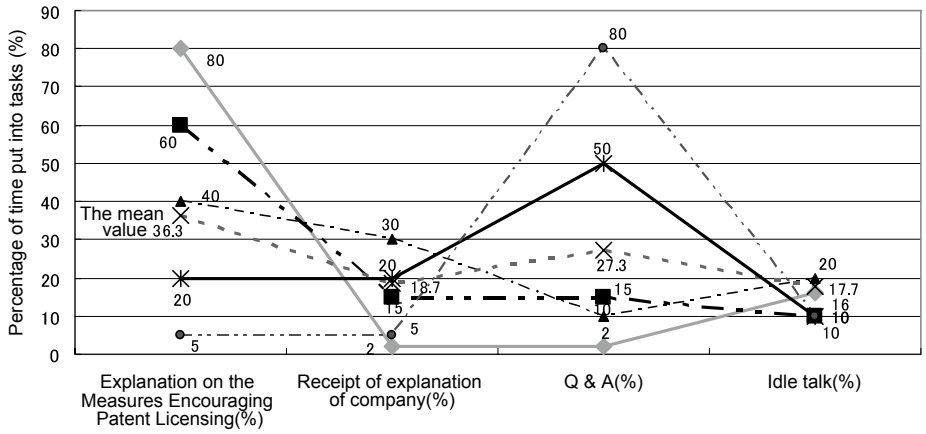
(iv) Tasks performed by an AD on an enterprise visit

Fig. 7-5 shows the results of a survey on the time an AD allocated to tasks during an enterprise visit according to four task categories including: "Explaining on the organization for and patent licensing projects;" "Listening to the company profile and enterprise products", "Q & A;" and "Idle talk." A distinctive trend is seen in the figure in which the respective percentage of time put into "Q & A" conversely decreases from 80% to 50%, 10% and 5% as the percentage of time put into "explaining on the organization and patent licensing projects" increases from 5% to 20%, 40% and 80%. The "Q & A" session provides an important opportunity for the AD to talk with the enterprise on equal

footing, which is essential for establishing a relationship of mutual trust. Any reduction in the length of this session would preclude the creation of such a relationship and, thus, the promotion of patent licensing.

ADs shown to put 80% of their time into "explaining the organization and patent licensing projects" had only one full year of experience and allocated little time for "listening to the company profile and enterprise products" and "Q & A." They therefore had difficulty in understanding the enterprise's needs and thus in yielding results. In contrast, ADs who put 5% of their time into "explaining the organization and patent licensing projects" were an experienced, and put 80% of their time into "Q & A" to hear from the executives of the enterprise. This enabled the creation of a relationship of mutual trust and smooth progress in the deal. Such ADs yield top-class results.

【Fig. 7-5】 Tasks Performed by an AD on an Enterprise Visit

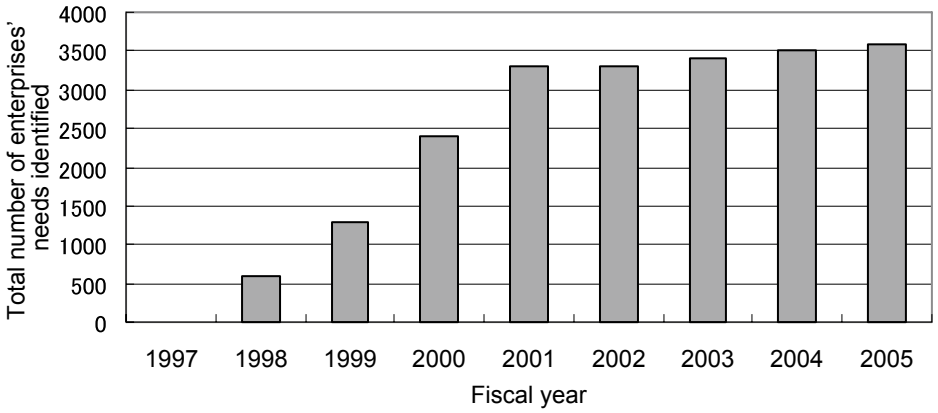


5) Understanding and Deepening of Needs

(i) Changes in the Number of Enterprises' Needs Identified

INPIT has a system in place in which an AD who made an enterprise visit is required to prepare and submit a report on the enterprises' identified needs on a weekly basis. Fig. 7-6 shows changes in the total number of enterprises' needs identified. Although, since the beginning of the Project, the total number of enterprises' needs identified has been increasing steadily owing to an increase in the number of ADs and improved skills in understanding enterprises' needs, it appears to be nearing a saturated state since the fifth year of operation (2001) or thereabout. This may reflect the fact that the number of ADs has leveled off and their activities have reached the stage of maturity in terms of the number of enterprise visits made and their skills in understanding enterprises' needs. Data for fiscal 2006 and thereafter were omitted because the data became irrelevant due to a switch in goals relating to AD activities.

【Fig. 7-6】 Changes in the Number of Enterprises' Needs Identified



As of 2003, the Needs Database has become available. Use of the database has transformed the matching of needs and seeds from activities performed by individual ADs to a systematic activity involving all ADs, thus contributing to better results.

(ii) The Knack for eliciting enterprises' needs

Given that understanding enterprises' needs is a critical aspect of patent licensing activities, ADs have been using their wits to learn skills for performing tasks based on their experience. Fig. 7-7 shows the results of a survey on knacks developed by ADs.

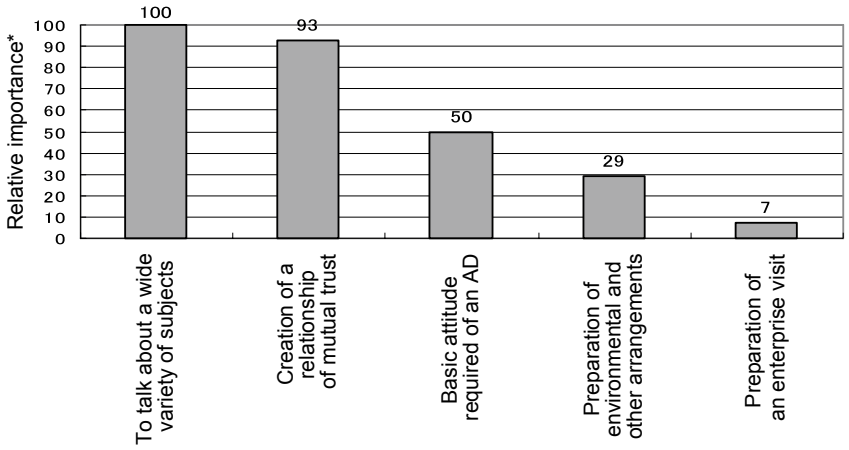
As shown in the figure, the most frequently cited knack was "talking about a wide variety of subjects" while on an enterprise visit. Talking about a wide variety of subjects would create intimacy and thus a relationship of mutual trust, making it easier to elicit enterprises' needs.

As used herein, the term "talking about a wide variety of subjects" involves presentation of successful patent licensing deal case examples, explanation of potential benefits of patent licensing for enterprises, and presentation and discussion of specific seeds of technology transfer rather than talk driven by the subject of patent licensing. Another important knack in eliciting enterprises' needs was to have common subjects of conversation arranged by examining corporate information as part of the process of preparing for an enterprise visit.

"Creation of a relationship of mutual trust" is the most fundamental aspect of patent licensing activities, which, among others, involves repeat calls, visits on referral and quick responses.

"The basic attitude required of an AD" is to become a good listener and be proficient in making small talk with interviewees so that she/he may have a good understanding of executive' thoughts. It is also effective to have the interviewee informed of his/her interest in knowing of any problems the enterprise may have or any technology it may want to acquire beforehand at the time that she/he makes an appointment for the interview.

【Fig. 7-7】 Knacks of Eliciting Enterprises' Needs



*Relative importance" represents a relative proportion of the frequency at which the item was cited by respondent ADs, as calculated with the highest frequency among all items assumed as 100, wherein multiple answers were included in the count. The highest frequency was 14.

6) Selection of Seeds

(i) Information sources used by ADs for Referral of Seeds

Given that the selection of seeds for referral was one of the most important steps toward successful conclusion of a patent licensing deal, this subsection will examine results for a survey on information sources used by Ads to select seeds for referral.

The survey revealed that the most frequently cited source was meetings of ADs (32%), some of which led to a successful conclusion.

The second most frequently cited source was oneself (i.e. seeds that an AD found by visiting companies) (20%), followed by the prefectural patent publications available in many regions (15%).

The results shown above are applicable to cases where ADs employ seeds-driven approaches in which they select high-quality finished seeds for referral to enterprises. In the case where an AD employs a needs-driven approach in which a referral of seeds to an enterprise is made based on the enterprise's identified needs, IPDL and the Patent Licensing Database are used as a major information source.

In either case, before an AD makes a referral of seeds, it is important to perform a search for prior art and similar patents, as well as an investigation on the existence of proprietary interests in the technology under the referral so that the information for the prospective licensor and licensee may be as accurate as possible.

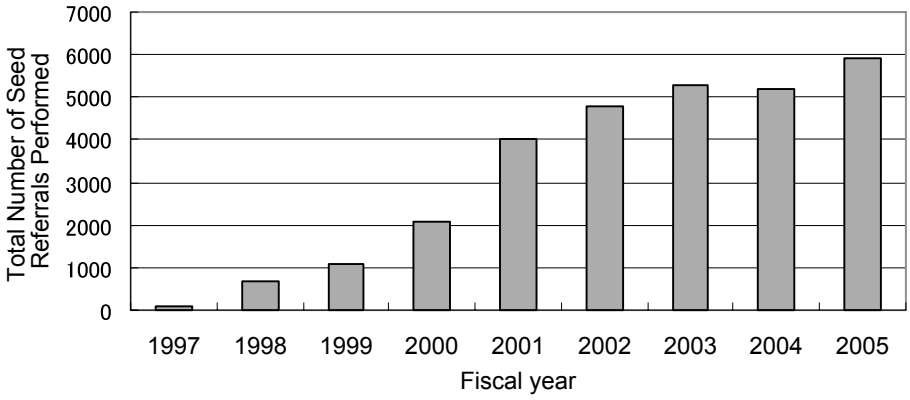
7) Referral of Seeds

Fig. 7-8 shows changes in the total number of referrals made from 1997, in which the project started, to 2005. Data for fiscal 2006 and thereafter were omitted because they became irrelevant due to a switch in

goals relating to AD activities. The total number of referrals made appears to have reached a point of saturation from 2003 or thereabout and leveled off at a little more than 5,000 per year, which is equivalent to a little more than 70 per capita.

Upon receiving a seeds referral, an enterprise will start considering whether the seeds in the referral would match its needs. Consequently, seeds in a referral do not always gain ground. In some cases, a detailed study of the seeds in a referral evolves into understanding and/or a deepening of different new needs. Locating and offering seeds that have the potential to match new needs would provide a short list of seeds that match an enterprise's needs.

【Fig. 7-8】 Changes in the Total Number of Performed Referrals of Seeds



8) Matching

Once an AD is able to clearly locate seeds that would match an enterprise's needs, his/her activities move on to the next stage, i.e. matching needs and seeds between licensor and licensee, towards the conclusion of a license agreement. In that stage, the parties of the deal see each other and negotiate to finalize the terms of the deal. An AD supports the parties as a neutral intermediary so that the deal may create a win-win relationship between the two. An AD usually has multiple pending at the same time. A survey on the reality of the situation with AD workloads revealed that, on average, an AD has 12 deals progressing simultaneously. In the opinion of ADs at TLOs, the largest number of deals an AD can handle at the same time would be 10 or so. The workload limit may lie around here.

Another survey was conducted to discover how many times an AD performs matching before the deal comes to a successful conclusion. It revealed that an AD performed matching 4.4 times on average.

Another survey on the intervals at which matching took place revealed an average interval of 2.4 weeks, equivalent to a frequency of twice a month. The rationale for this was that an interval of once a week might be too big a hassle to the enterprise and an interval of one month might be too long to ensure that

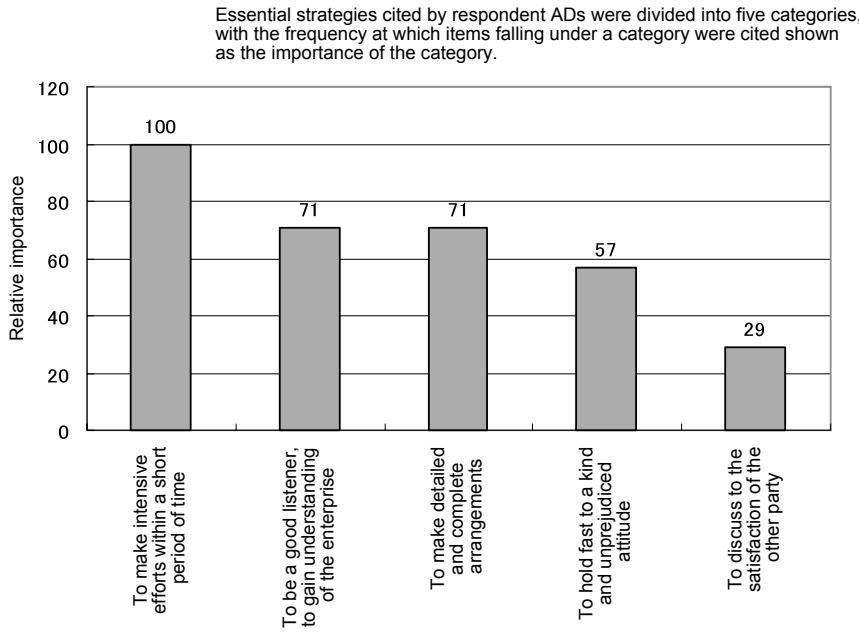
the matter is fresh in the memory of people at the enterprise.

Fig. 7-9 shows the results of a survey on essential strategies developed by ADs to successfully perform the task of matching.

It revealed that the most frequently cited strategy was "to make intensive efforts to finalize terms of the deal in a short period of time," in which both parties of the deal are supposed to remain keenly interested in conclusion of the deal or, as the proverb says, "strike while the iron is hot." The second most frequently cited strategy was "to be a good listener to gain understanding of the enterprise's thoughts." The third most frequently cited strategy was "to make detailed and complete arrangements." Given that enterprises' thoughts vary from time to time, it is necessary to address issues involved in matching, including financial ones, with constant attention to the right matching of enterprises' needs for technology introduction and seeds of technology transfer.

The fourth most frequently cited strategy was "to hold fast to a kind and unprejudiced attitude," which requires an AD to make good-faith efforts to find a "win-win" solution.

【Fig. 7-9】 Essential Strategies Developed by ADs to Successfully Perform the Task of Matching



*Relative importance" represents a relative proportion of the frequency at which the item was cited by respondent ADs, as calculated with the highest frequency among all items assumed as 100, wherein multiple answers were included in the count. The highest frequency was 7.

9) Support for Contract Negotiation

In contract negotiation, both parties give themselves away and therefore, an AD in a neutral position, with a mission to mediate differences between parties, faces a crucial test.

(i) Potentially explosive questions in contract negotiation

A survey on potentially explosive questions in contract negotiation revealed that "royalty" was a clear winner (60%). Considering that executives at an SME face difficult business judgments concerning financial matters, this may be a natural result.

Second only next to "royalty" was "type of contract" (12%), a question of which type of contract should be employed for the deal, license agreement, assignment contract or optional agreement, followed by "sales territory" (11%), as an essential question in business operation, and "guarantee/warranty" of performance and quality (10%).

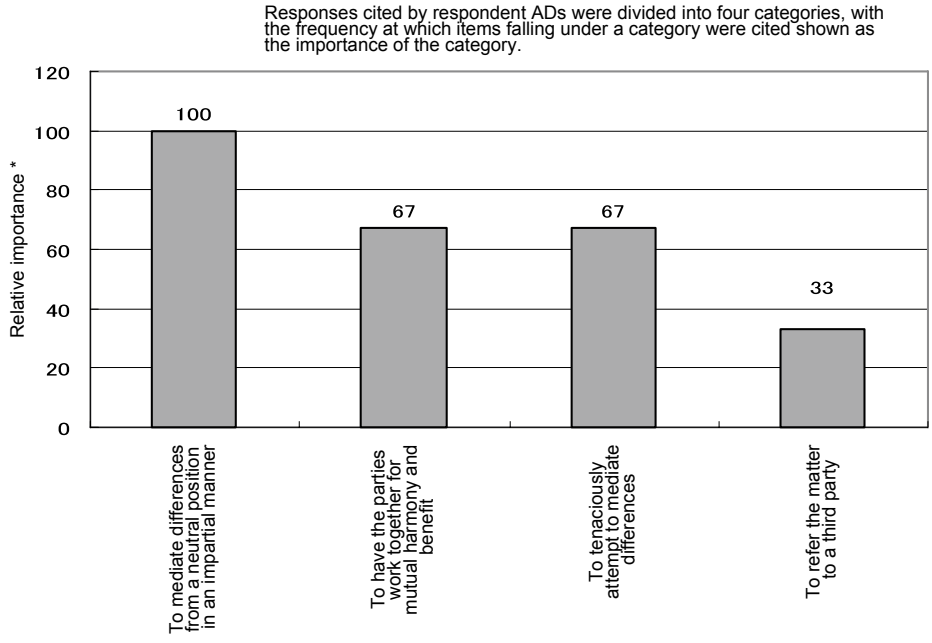
(ii) AD response to any differences between the parties at the stage of contract execution

Contract negotiation does not always smooth its own way. Fig. 7-10 shows the results of a survey on AD responses to complex problems in contract negotiation.

The most frequently cited response was "to mediating differences between the parties from a neutral position in an impartial manner." More specifically, an AD presents case examples of solutions that could serve as an objective standard (for royalty, etc.) and mediates differences so that the parties may come to a compromise. The second most frequent response was "having the parties work together for mutual harmony and benefit." This involves finding the middle ground within the compass of sustainability of the licensee's business lest either party enjoy an overwhelming advantage in the deal.

It is also important for an AD to refer an enterprise to a specialized lawyer as the need arises.

【Fig. 7-10】 AD Responses to Differences between the Parties at the Stage of Contract Execution



*Relative importance" represents a relative proportion of the frequency at which the item was cited by respondent ADs, as calculated with the highest frequency among all items assumed as 100, wherein multiple answers were included in the count. The highest frequency was 9.

8. Encouraging Patent Licensing Supports for TLOs

1) Patent Licensing Advisor (AD) Supports for TLOs

The number of TLOs in Japan totals 51, including approved TLOs and authorized TLOs (as of July 1, 2008). In Japan, TLOs may be largely classified into two groups: dependent (affiliated) TLOs, which handle intellectual properties of a university based on tie-ups with the university or independent of it; and independent (regional) TLOs, which handle those of more than one university in individual regions nationwide.

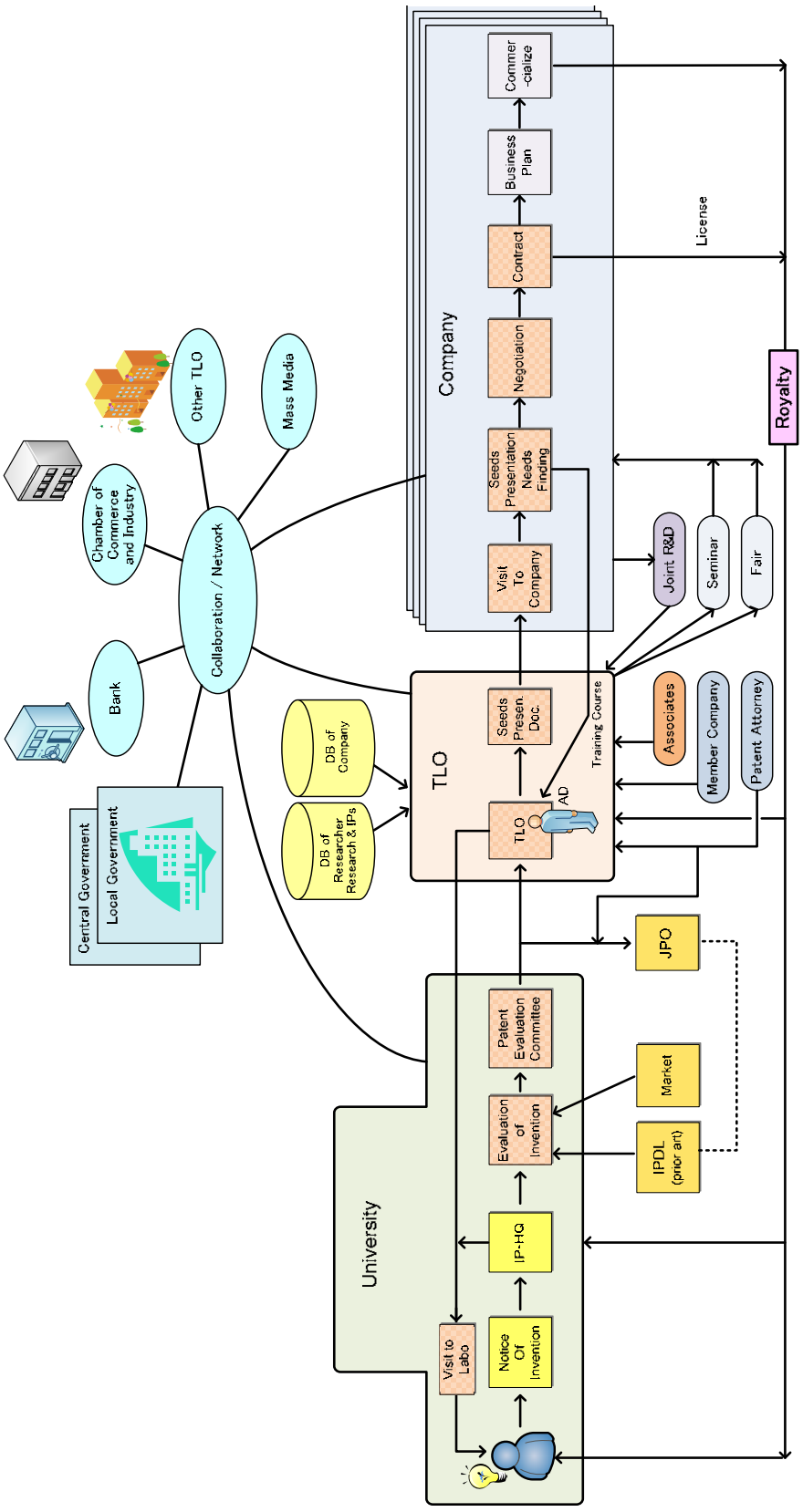
The Encouraging Patent Licensing Service has dispatched 44 patent licensing ADs (hereafter, ADs) to 37 TLOs (as of 2008) to provide them with patent licensing support services from a variety of aspects in line with the current conditions of individual TLOs.

The typical role of an AD supporting a TLO is described below.

When the notification of a produced invention is submitted to the head office of the intellectual property department of a university, the AD visits the inventor(s) and colleagues concerned at their research laboratories, accompanied by the staff of the head office, to conduct a hearing on the invention. The AD conducts a prior-art search and reviews the technological advantages and marketability/commercialization of the invention to prepare the materials for evaluation of the invention. Upon receiving it, a patent evaluation committee discusses whether the patent application is to be filed or not based on the materials. In some cases, the AD is a member of the committee. Once filing of the patent application has been decided and the application procedure has been accomplished, the AD prepares the explanatory materials and visits an appropriate company(s) to introduce the patent. If the patent meets the company's needs, the AD begins to negotiate patent licensing with the company. If the negotiation succeeds, both parties enter into licensing agreements as shown in Figure 8-1.

A difference between the TLO-based AD activity and region-based AD activity lies in that, for the latter, seeking a licensor, licensee, and seeds, as well as taking a neutral stand, are important, while the former focuses on a series of licenser support activities from the discovery of a new invention and seeking licensees, to the conclusion of a contract because the AD is part of a patent licensing party's staff and seeds have been known.

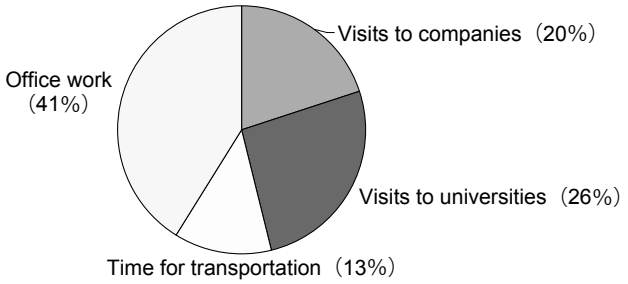
[Fig. 8-1] AD supports for TLOs



As shown in Fig. 8-2, among the daily routine works assigned to the TLO-based AD, outside work such as "visits to companies"(20%) and "visits to universities" (26%), which are the most important tasks, account for about 60% (59%) when including "travel time" with them (13%), while inside work, or "office work" is about 40%.

Office work consists of: duties related to granting a patent (40%), include a "prior-art search" (14%) and "discussing patent applications"(26%); duties related to licensing (36%) include "discussing the measures for encouraging patent licensing" (21%) and "preparations for visit" (15%); and "responding to visitors" (16%).

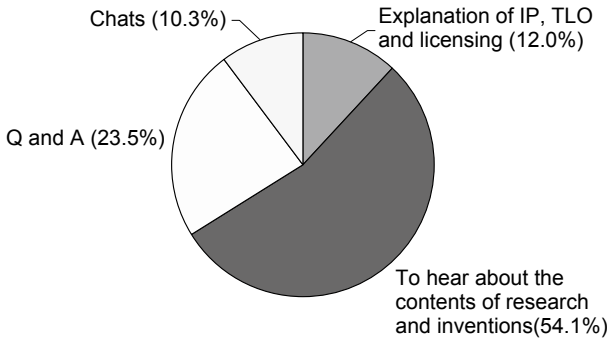
[Fig. 8-2] Daily Routine Works Assigned to a TLO-based AD



2) Visit to Laboratories

Fig. 8-3 shows the results of a survey on work done by ADs first visiting a laboratory. "Visits to a laboratory", where the AD focuses on the discovery of a new invention, consists of activities (77.6%) such as "listening to information on research and invented technology" (54.1%) and "related Q&A" (23.5%). Besides that, the AD is responsible for "explaining intellectual properties/ encouraging patent licensing service/ TLOs," and others (12%).

[Fig. 8-3] Activities during Visits to the Laboratory



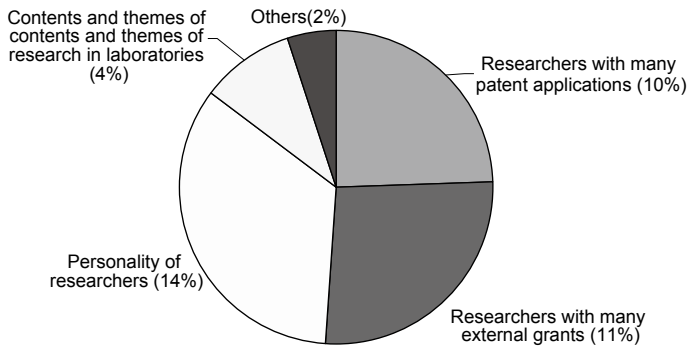
ADs visit laboratories to interview specialists in a variety of fields. A survey on persons visited by ADs (depending on the intentions) was conducted. "Professors" accounted for 41.2%, "associate professors" for 27.7%, "assistant professors" for 15.3%, and "researchers" for 15.8% in descending order, as shown in the above figure. The reason ADs want to interview professors is that they teach ADs the fruitful results of research achieved in the laboratory based on long years of experience, as well as the background, positioning, and evaluation results for the research of interest.

The time required for the AD to interview research staff during a visit to a laboratory was 1 to 1.5 hours (averaging 1.1 hours) in most cases.

The result of a survey on the "the most important AD activity during a visit to a laboratory" showed that the AD should intensively interview the researchers to collect information on research content, the new invention, use of the invention, prospective industry, prospective companies, persons in charge, and others, as a first-class listener; collected information was consolidated and refined into a solid database. The second most important activity, from the standpoint of patents being further strengthened and made easier to put into practical use, was "to support researchers," and the third one was "to contribute to the establishment of a relationship of trust between the parties concerned".

Another important activity associated with "visits to the laboratory" is seeking inventors eligible for patent licensing. This factor may be indispensable for successful patent licensing in TLOs. Accordingly, a survey on the methods by which TLO-based ADs seek a researcher eligible for patent licensing was conducted. The result of the survey is summarized as shown in Fig. 8-4. Figures in parentheses indicate the number of responses.

[Fig. 8-4] Focused Factors for Seeking Researchers Eligible for Patent Licensing



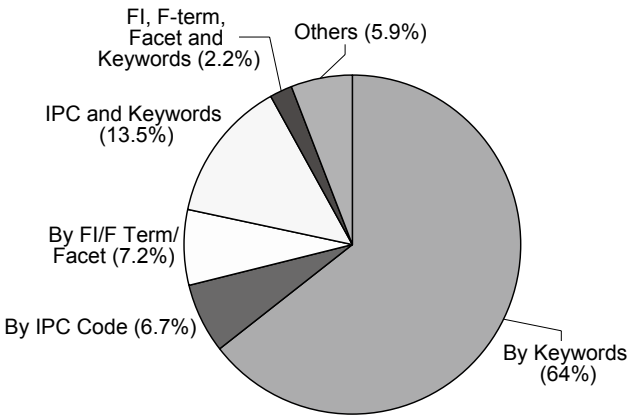
The first-ranked factor, "researcher's personality," means that an active and cooperative researcher, with general and business-specific intelligence and cost knowledge, as well as the capacity to teach ADs the use of inventions from an objective standpoint, is eligible.

The second-ranked factor, "researcher with many external research funds granted", indicates that most of research, joint research, and funded research conducted under governmental and cooperate subsidies may satisfy social and business needs; accordingly, the results of research conducted by these researchers are expected to be eligible for patent licensing. Since the "researcher who has filed a large number of patent applications" tends to conduct research while considering the intellectual property rights associated with them, the results of these researches are greatly expected to be eligible for patent licensing. The "grades of laboratory and research" factor means that laboratories and researchers specializing in IT, nanotech, and biological technologies and expected to be eligible for patent licensing are sought.

3) Search for Patents

The search for patents is important in recognizing the advantages and disadvantages of inventions with respect to patent grants and differences from contending technologies in order to make plans for patent licensing. A survey on the actual state of patent searches by ADs was conducted. The result is summarized in Fig. 8-5. As known from the figure, ADs search for patents by using "keywords" and "IPC (International Patent Classification)," as well as detailed searches using "FI/F Term," which is a patent classification originally developed in Japan, as well as searches using an appropriate combination of them, depending on their intent. "Keyword search" (64.6%), which is most frequently used by ADs, has an advantage of being relatively easier in conducting a search. "IPC+keyword," (13.5%) combining both keyword and IPC searches is the second most frequently used. The latter search method is assumed to succeed in discovering target patents at a higher probability than that of the former method.

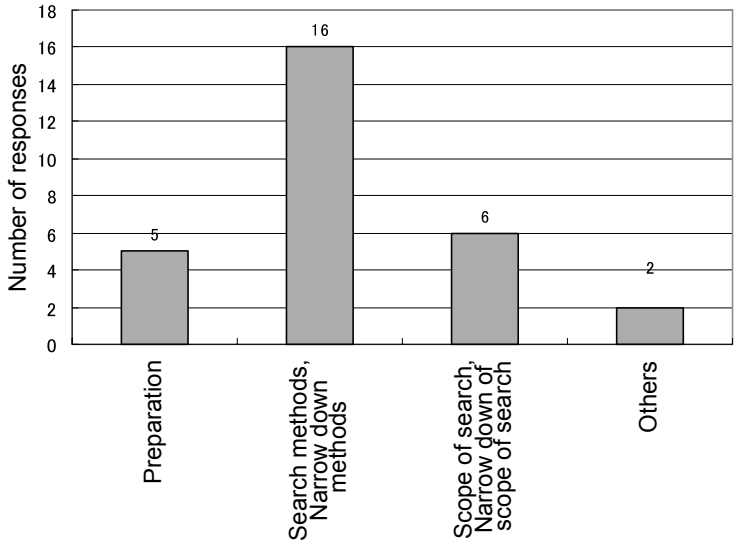
[Fig.8-5] Methods for Conducting a Prior-art Search



The result of a survey on the key to success in patent searches by ADs is shown in Fig. 8-6.
As known from the figure, the first-ranked key, "limiting and searching methods," indicates that results are converged by observing them with varied keywords to brush up, or that prior-arts are searched by using a keyword, and then the search is continued by using a combination of the IPC and the keyword.

"Limiting range and searching range" means that the search is conducted from a wide variety of aspects considering used technologies, their applications and other factors (because a patent may be granted to the invention of interest in different fields) while being conducted based on papers, internet information, and the actual conditions of peripheral technologies. "Preparation" means that a survey is conducted on interdisciplinary knowledge or an AD goes to the inventor's hearing with a searcher to select an appropriate keyword.

[Fig. 8-6] Key to Success in a Patent Search



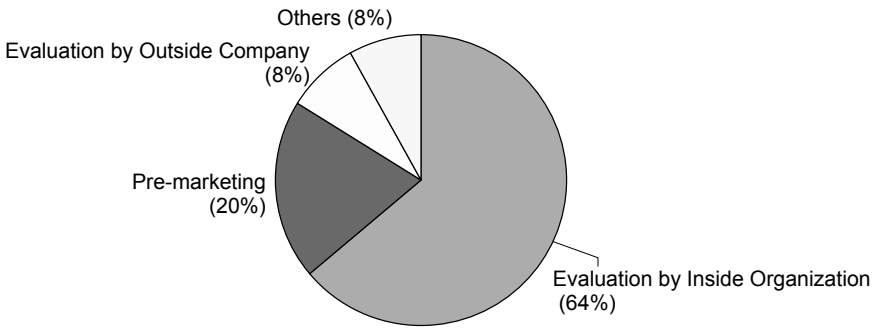
4) Evaluation of Inventions

Any body, such as an invention evaluation committee, that is authorized by a university or TLO can decide whether an invention is eligible for a patent application after detailed examination. The members of the invention evaluation committee usually number from 5 to 20, depending on the university or TLO, with the average number being 9. The committee consists of representatives from a university (about 30%), the head office of the intellectual property department (about 20%), a TLO (about 35 to 40%), the private sector (15 to 20%), and others. The most critical key to success in patent searches is how many private sector representatives, i.e. persons are capable of appropriately evaluating the eligibility of new inventions for patent licensing, are participating in the committee.

The evaluation items include patentability (novelty and non-obviousness), prior arts, contending technologies, adaptability, superiority, and commercialization. Among them, the most difficult challenge is to evaluate prospective commercialization (to evaluate from the aspect of business).

The result of a survey on the evaluation of inventions by TLO-based ADs from the aspect of business is shown in Fig. 8-7.

[Fig. 8-7] Evaluation of Inventions from the Aspect of Business in Discussing Patent Application



Among methods for evaluating inventions, the most frequently used method is "internal evaluation" (64%), indicating that the TLO staff, including a TLO-based AD, decide whether inventions are eligible for patent application based on their own cumulative experiences. This method has inevitable disadvantage of limited accuracy. "Pre-marketing" involves the step of providing specialized companies in the field related to an invention with information on the content of an invention to get their opinions. Pre-marketing may improve the accuracy of evaluation of inventions from the aspect of business, but it is difficult to apply to various technologies of interest because it takes too much time. "Outsourcing" means that evaluation of inventions is outsourced to specialized subcontractors. This method is expected to achieve higher evaluation accuracy but is costly, inevitably leading to a limited number of inventions to be outsourced.

5) Preparing Seed Introductory Materials

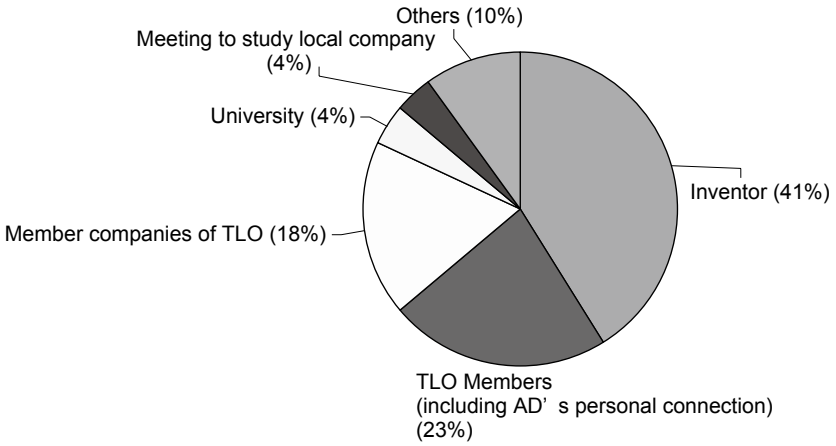
Once it has been decided that the patent application of an invention is to be filed and the application procedure has been made, seed introductory materials are prepared to explain the invention to companies. A survey was conducted to examine who prepares these materials at a TLO. The result showed that the ADs and associates accounted for 53%, far more than inventors (23%) and TLO staff (20%). Generally, most TLOs prepare the materials in Japanese, but some prepare them both in Japanese (on the right side) and in English (on the reverse side) from the standpoint of internationalization. When seeds are introduced to foreign companies, this consideration is needed, because these companies are likely to accept only the materials prepared by the inventor on faith.

It is vital that any invention be visually explained using, for example, samples and diagrams, and additional information on application fields and the path toward commercialization is very useful from the standpoint of patent licensing.

6) Visit to Companies

Once the seed introductory materials have been prepared, the AD visits companies. Since success in patent licensing depends on how to discover companies to visit, a survey was conducted on the manner in which they were identified. The result is shown in Fig. 8-8. As known from this figure, the information sources are largely different from those of region-based ADs (Fig. 7-3). This is because, in some TLOs, an inventor is acquainted with the companies in specialized application fields and their staff.

[Fig. 8-8] Sources of Information on Companies to Visit



As known from the figure, the responses of "inventor" as the information source accounts to 41%; however, in the U.S. and Europe, it is assumed to reach about 80%. For this reason, relevant information should be elicited during the hearing of an invention.

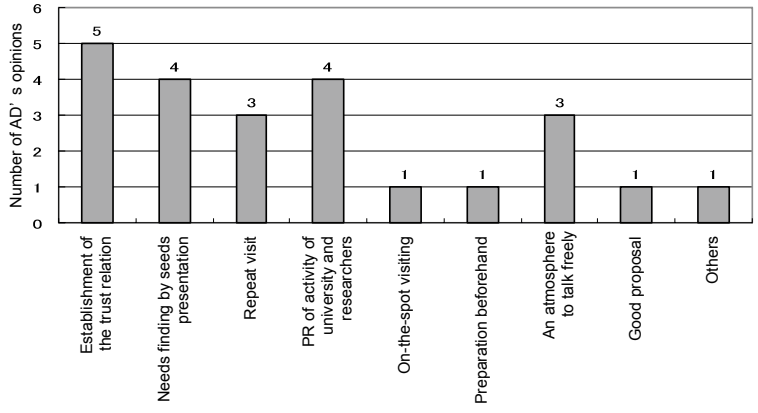
It goes without saying that a TLO (including the AD's personal connection), the members of the TLO, and others serve as information sources.

Most responders answered that the time required for a TLO-based AD to visit a company was 1 to 1.5 hours, the average time being 1.4 hours. The AD takes an average time of 1.2 hours for previous arrangements; learning about seeds to be provided (45%), survey on the outline of a company, for example, via Internet (29%), a survey on the patent granted to the company (12%), and a survey on topics that may provide subjects of conversation (14%).

7) Introduction of Seeds and Understanding of Needs

The result of the survey showed that when an AD introduced seeds to companies, most of them exhibited interest and considered patent licensing. This is because companies show interest in novel technologies developed by university, and local companies place their trust in universities and the researchers in university laboratories. To introduce seeds, it is important for the AD to discover if the introduced seeds are compatible with company's needs, as well as gain deep insight into their real needs. A survey on the points ADs focus on in understanding a company's needs was conducted. The result is shown in Fig. 8-9. The first-ranked point is "creation of a relationship of trust" which is also ranked second in "Knacks of Eliciting Enterprises' Needs" as shown in Fig. 7-7. The second-ranked one, "recommendation of researchers from university laboratories and of the university itself," is specific to TLOs, which involves the process of making the benefits of exploiting a wide spectrum of knowledge and expertise cultivated by researchers over many years and the existing facilities of the university appealing. The remaining points "elicitation of local company's needs through introduction of seeds," "creating atmosphere for free conversation" and "repeat visit" are common to region-based ADs, who make the effort to understand company's needs"

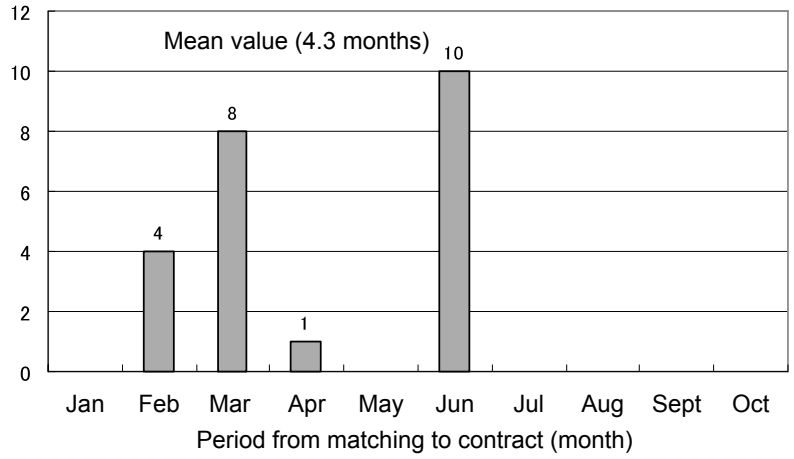
[Fig. 8-9] Points ADs Focus on in Understanding Company's Needs



8) Support of Contract Negotiation

Once it has been confirmed that the university or TLO seeds satisfy the company's needs, contract negotiation-the last step of the "exploitation of patent licensing" process- is commenced. Generally, the ADs handle more than one license case of interest at the same time. Accordingly, a survey was conducted on the number of license cases successfully brought to the stage of contract negotiation by individual ADs. The largest number of these license cases is 10, the average value being 6.8. Most responders answered that the number of license cases that ADs can handle at once is limited to at least 10 and it is difficult to handle more than 10 license cases. The company and the TLO tend to hold meetings several times until a contract is concluded. A survey was conducted on the number of meetings required to conclude a contract. Most of the responders answered 3 to 5, with the average value being 3.7. A survey conducted on the period from the first visit to the company until the conclusion of a contract showed that an average of about 4.3 months were required, as shown in Fig. 8-10.

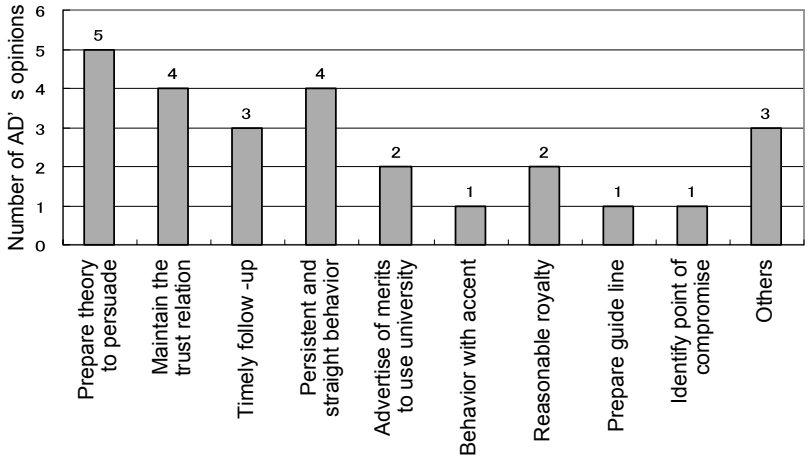
[Fig. 8-10] Period from Seeds-needs Matching until the Conclusion of a Contract



Many activities encouraging the exploitation of TLO's patented technologies take place in foreign countries. According to survey responses, about 60% of TLO seeds have been introduced to foreign companies.

The result of a survey on the most important issues in concluding of a contract showed that most responders pointed out that patent royalty was too high. ADs were surveyed on keys to successful conclusion of a contract, including how to address this issue. The result is shown in Fig. 8-11.

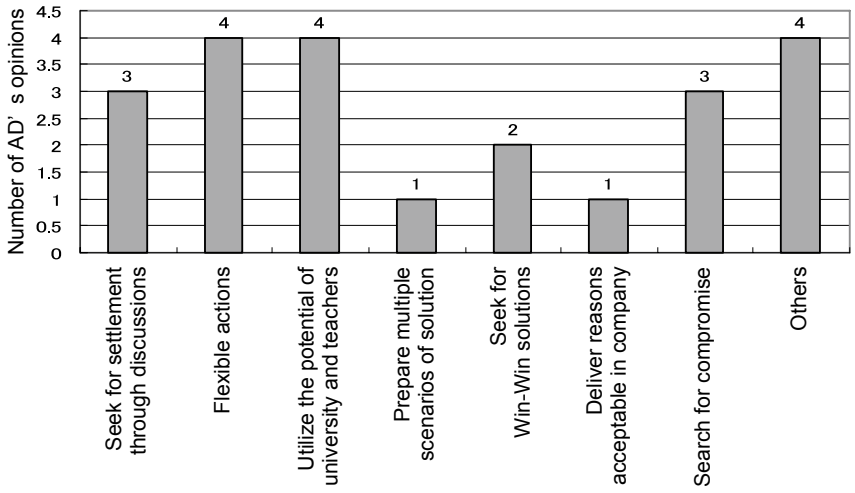
[Fig. 8-11] Keys to the Successful Conclusion of a Contract



The first-ranked key is the "build-up of a scheme to persuade." This means that multiple answer scenarios are prepared to identify both compromising and uncompromising points. The second-ranked key is "maintenance of a trust relationship," which means that the exploitation of a patented technology of interest is recommended in good faith while efforts are made to maintain the relationship of trust between (the TLO, researcher of the university laboratory, university) and company from the standpoint of the company. "Patient and faithful efforts to serve" means listening to the company's requests and informing the company of the AD's requests to try to reach a compromise without being impatient. "Timely follow-up" means that ADs push negotiations forward when the company is hot on the contract. "Campaign to publicize the advantages of the use of a university" means that the benefits gained by exploiting the accumulated knowledge and expertise of the researchers and facilities in university laboratories are advertised.

A survey on actions taken if there is any difference in opinion during negotiation of a contract between the parties concerned was conducted as with region-based ADs. The result is shown in Fig. 8-12.
The first-ranked action, "utilization of researchers at university laboratories and universities," means that the objective views of universities and researchers at university laboratories are explained and the benefits gained by utilizing the university are advertised. "Flexible response" means that a compromise is flexibly made on the cost, such as patent royalty, and the conditions of a contract, if possible, meaning that a compromise considered reasonable by the company is reached from the standpoint of their business plan is also important in a "search for a win-win compromise ground."
"Compromise talk" means that a close discourse takes place between both parties and a rational direction is discussed on equal footing to discover a satisfactory compromise.

[Fig. 8-12] AD Responses when there is a Difference of Opinion between both Parties

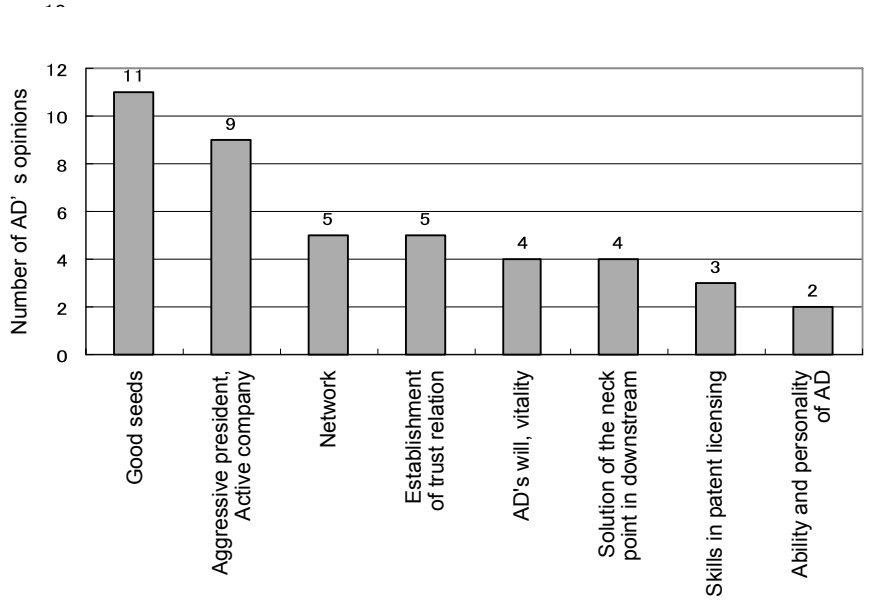


9. Best Practices for Exploiting Patent Licensing

1) Best Practices for Exploiting Patent Licensing by Region-based ADs

Fig. 9-1 summarizes factors considered to be most important by region-based ADs for succeeding in exploiting patent licensing. These factors are collectively called "best practices." Among the best practice factors for exploiting patent licensing, the most important one is "superior seeds." The remaining factors include "can-do president and motivated company," "personal network," "build-up of the trust relationship," "motivated and positive AD attitude," "overcoming problems in downstream operations," "familiarized exploitation of patent licensing," and "ADs rich in abilities and humanity." Responses from ADs are described below.

[Fig. 9-1] Best Practices for Exploiting Patent Licensing by Region-based ADs



The "superior seeds" factor empirically selected by ADs are of high quality with no need for further research. It is more desirable to select seeds proven to be fruitful in the industry. Moreover, products manufactured using the seeds need to be clearly visualized, enabling the market, whichever market can accept them, to be easily identified. Furthermore, seeds should be compatible with any introducing company in terms of technologies and facilities and be easer to put on their market via their distribution channels. The shorter time-to-market seeds are likely to be accepted by small and medium-sized enterprises (SMEs).

The "can-do president" factor of "can-do president and motivated company" means a president having such qualities and abilities as: being aggressive and rich in a spirit of challenge, playing active roles in new businesses, having a broader viewpoint of the world, being sufficiently flexible inexpressing respect for technologies developed by others, and being willing to promote the exploitation of patent licensing.

The "motivated company" factor refers to a company led by the above-mentioned president, who makes highly self-reliant efforts from the standpoint of an established vision while being technology-oriented. This type of company may be appropriate for both the licenser and licensee.

The "personal network" factor is indispensable for exploiting patent licensing. The cooperation with and personal network among other persons concerned, organizations and various fields of companies may enable ADs to seek licensers and licensees in a wide range of fields, bringing a patent licensing contract to conclusion. "Build-up of the trust relationship" is essential for the exploitation of patent licensing, because the relationship of trust must have been established between the parties before the exploitation of patent licensing can be achieved.

The top four of the best practice factors for exploiting patent licensing include: "superior seeds," "can-do president and motivated company," "personal network," and "build-up of the trust relationship".

It is because the parties which have "superior seeds," the parties with which a "personal network" is to be established, and the parties with which the trust relationship is to be established are all companies in good standing. The leading role is played by companies in exploiting patent licensing. Therefore, opportunities for making contacts with companies in good standing may lead to successfully-discovered needs and seeds and identified compatibility between them.

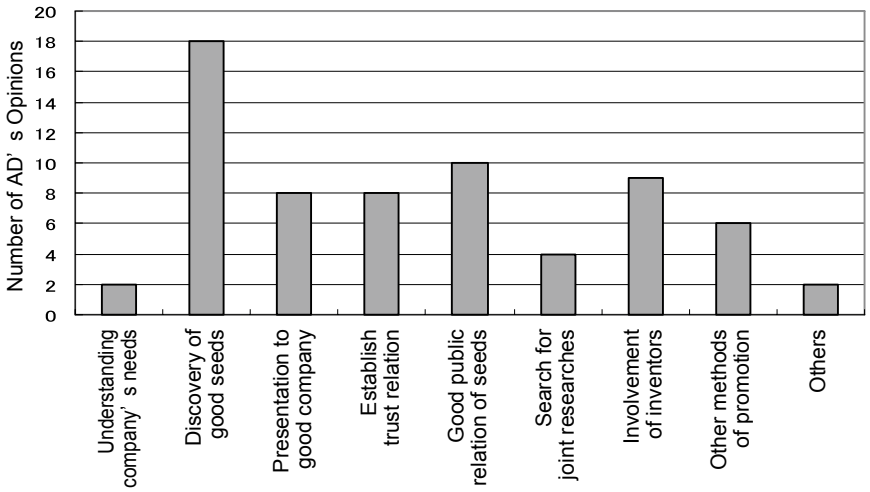
What action can ADs take to make contact with companies in good standing?

According to the responses by the ADs, target companies in good standing include those participating in a venture group, those taking part in pan-industry social events, those attending study groups and social gatherings held by local commercial and industrial associations, banks, and public research laboratories, those giving presentations in local events and "exploiting patent licensing" fairs, those receiving a variety of local public funding, subsidies, and support measures, and those attracting the attention of media including TV and newspapers.

2) Best Practices for the Exploitation of Patent Licensing by TLO-based ADs

A survey on key points for the TLO-based ADs to successfully exploit patent licensing was conducted. The result is shown in Fig. 9-2.

[Fig. 9-2] Best Practices for Exploiting Patent Licensing by TLO-based ADs



As with region-based ADs, the first-ranked factor is "discovery of superior seeds," accounting for a very high proportion. The remaining factors include "sophisticated PR methods" and "participation of inventor," both being specific to TLO-based ADs, and "introduction to companies in good standing" and "build-up of the trust relationship," both accounting for the same percentages and being cited as those of region-based ADs. The responses by the ADs to the individual questions are described below.

In terms of "superior seeds," the responses by the ADs include such seeds as high-quality, novel, marketable, and unique ones.

The "sophisticated PR methods" factor includes easy-to-understand explanatory materials, as well as visual materials (manufactured samples or visual samples) and media coverage.

The "participation of inventor" factor is specific to universities/TLOs. In some cases, an inventor has knowledge of the applications of his invention, companies concerned, and persons in charge; moreover a wide range of cooperation by universities and inventors is highly valued in society and the utilization of a university's facilities are very useful in commercializing the patented technology.

The "introduction to companies in good standing" and "build-up of the trust relationship" factors are common to the region-based and TLO-based ADs.

The "introduction to companies in good standing" factor is more appropriate for TLO-based ADs than for region-based ADs because inventors are likely to have information on companies in good standing and a "win-win" relationship has been basically established, rather than competing as rivals.

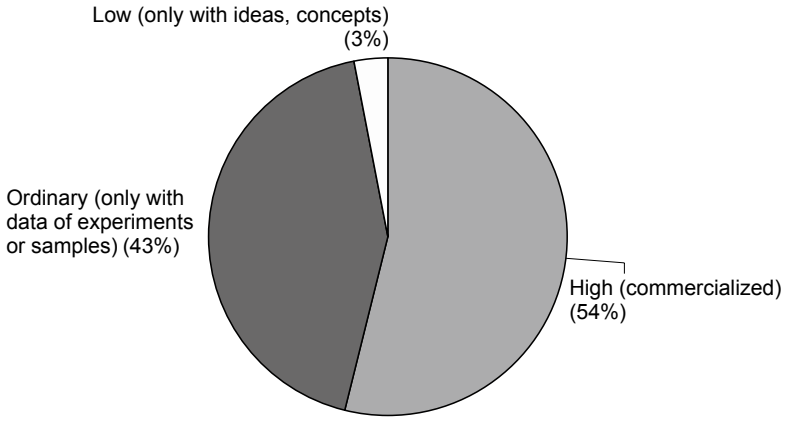
If region-based ADs and TLO-based ADs cannot build the relationship of trust, both of them may not encourage exploiting patent licensing. Accordingly, they need to give quickly faithful responses to any request.

10. Analysis of the Result of Exploiting Patent Licensing Service

1) Percentage of Seeds Completion

Fig. 10-1 shows the result of a survey on the percentage of seeds completion at a point where their patent licensing is exploited. The seeds with high percentage of completion, for example, commercialized ones, total 54%, nearly half of all the seeds, while about 43% are moderate-quality seeds for which only prototype data or experimental data are available. The remaining 3% are seeds with a low percentage of completion, for which only the idea or scheme has been planned, far less than those of the seeds with high and moderate percentages of completion. This suggests that companies tend to actively attempt to pursue a profit by taking a risk in the fields where they have technical capabilities. Assuming that any risk may be mitigated by themselves, the companies selected seeds with a low percentage of completion (3%), for which only ideas or schemes had been planned out, and seeds which do not always have a high percentage of completion (43%). One of the aspects of exploiting patent licensing is "seeds may be exploited even with risk if satisfying companies' needs and technical potentials".

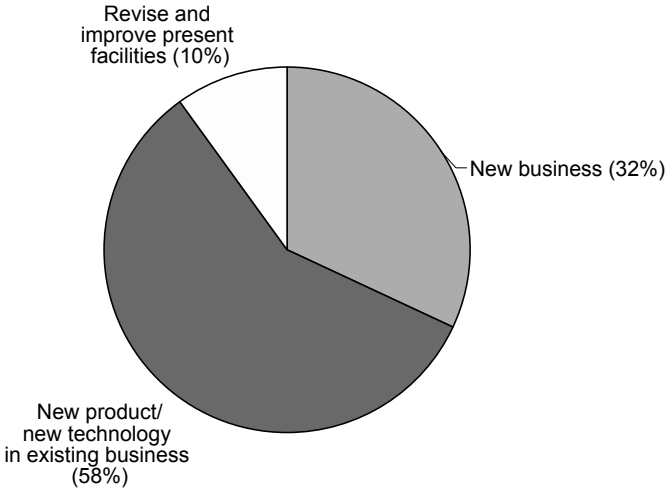
[Fig. 10-1] Percentage of Exploited Seeds Completion



2) Business Fields in which Contracted Seeds have been Applied

Fig. 10-2 shows the business fields where seeds have been applied. In most cases, seeds for exploiting patent licensing have been applied as new products or new technologies in the company's existing businesses, accounting for 58%. On the other hand, 32% of responders answered "new business," being ranked second. It is suggested that small and medium-sized enterprises tend to exploit patent licensing to strengthen their existing businesses rather than for new businesses with high risk involved.

[Fig. 10-2] Business Fields in which Contracted Seeds have been Applied

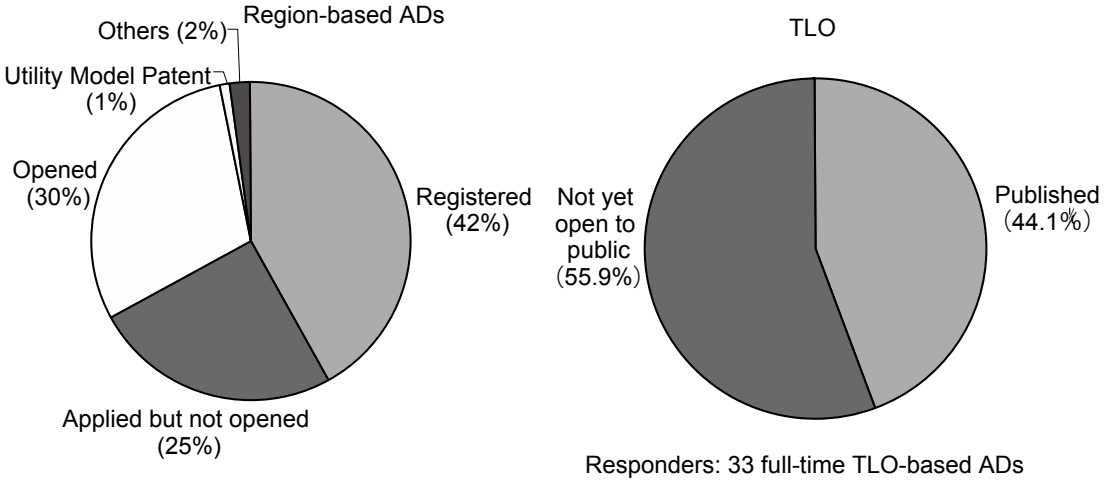


3) Actual State of Granting Rights to Exploited Seeds

Fig. 10-3 shows the actual state of granting rights to seeds at the point of exploitation. As shown in the figure, 42% of the region-based ADs answered registered patents, 30% being patents laid open to public inspection, and 25% being patents filed. Generally, seeds tend to be treated as a package consisting of a basic patent, more than one peripheral patent, and applied patents and the patents in the package include any combination of registered, laid open to public inspection, and filed patents..

On the other hand, the patents laid open to public inspection account for approximately half of the responses by TLO-based ADs, and the patents not yet open to public account for the remaining half because filed patents are exploited before being laid open to public inspection and registration.

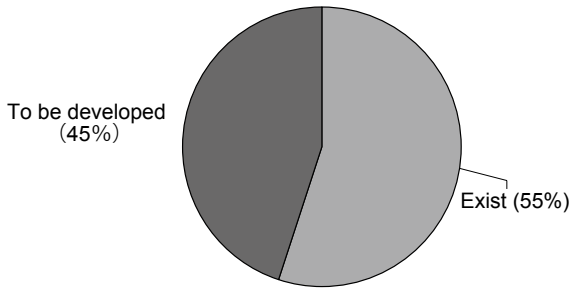
[Fig. 10-3] Patent Examination Stages at the Conclusion of a Contract



4) Acquisition of Distribution Channels at the Conclusion of a Contract

Fig. 10-4 shows the percentage of acquired distribution channels at the conclusion of a contract. The responses to the "acquired" distribution channels factor account for approximately half (55%), and the responses to "not acquired" distribution channels are the remaining approximate half (45%). Acquisition of distribution channels is indispensable for exploiting patent licensing. If no distribution channel has been previously acquired, the business will fail in the worst case. For this reason, human resources such as a "distribution channel advisor" and "marketing advisor," who may provide support for the acquisition of distribution channels, should be utilized if they have been assigned in local offices.

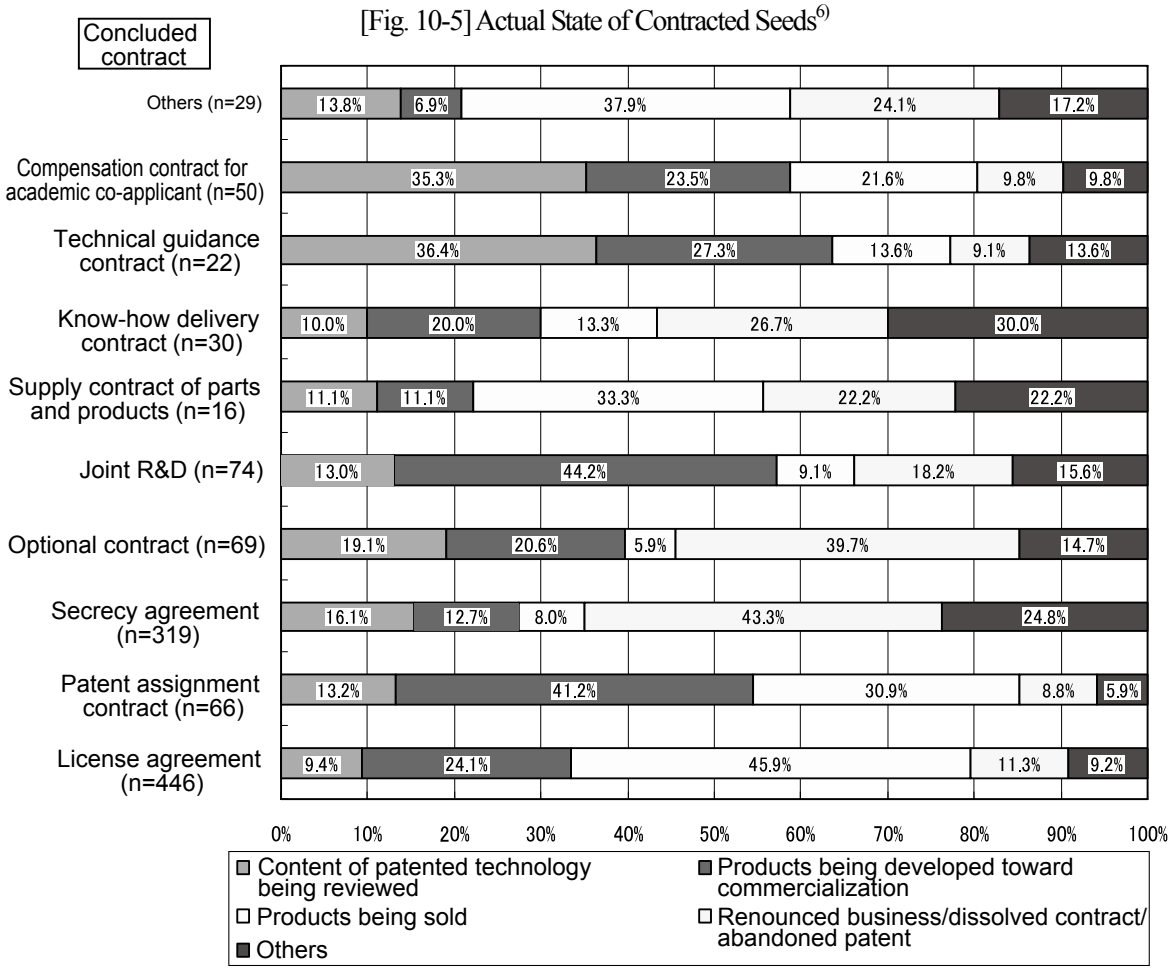
[Fig. 10-4] Distribution Channels for Contracted Seeds at the Conclusion of a Contract



5) Actual State of Contracted Seeds

"Actual state of contracted seeds" is part of the result of an analysis of about 6,000 contracted seeds (in 2005). As shown in Fig.10-5, the actual state of contracted seeds depends on the type of contract. In terms of a typical "patent licensing" contract, the factor commercialized "products being sold" accounted for 45.9%, ranked first, and "products being developed toward commercialization" equaled 24.1% and ranked second. As known from the figure, "the content of patent technology being reviewed" accounted for 9.4% and "renounced business/dissolved contract/abandoned patent" equaled 11.3%. In terms of "nondisclosure agreement," although an advance to patent licensing contract was expected, the "products being sold" factor accounts for 3.0%, while "renounced business/dissolved contract/abandoned patent" equals 43.3%, being far more than that of "products being sold," indicating that fewer seeds have been commercialized. In terms of "option contract," which determines whether a patent licensing contract is to be concluded after a given period, the result of a survey showed that the "products being sold" factor accounts for 5.9%, while "renounced business/dissolved contract/abandoned patent" equals 39.7%, being far more than that of "products being sold," indicating that the contracts were almost not successfully terminated.

[Fig. 10-5] Actual State of Contracted Seeds[6)]



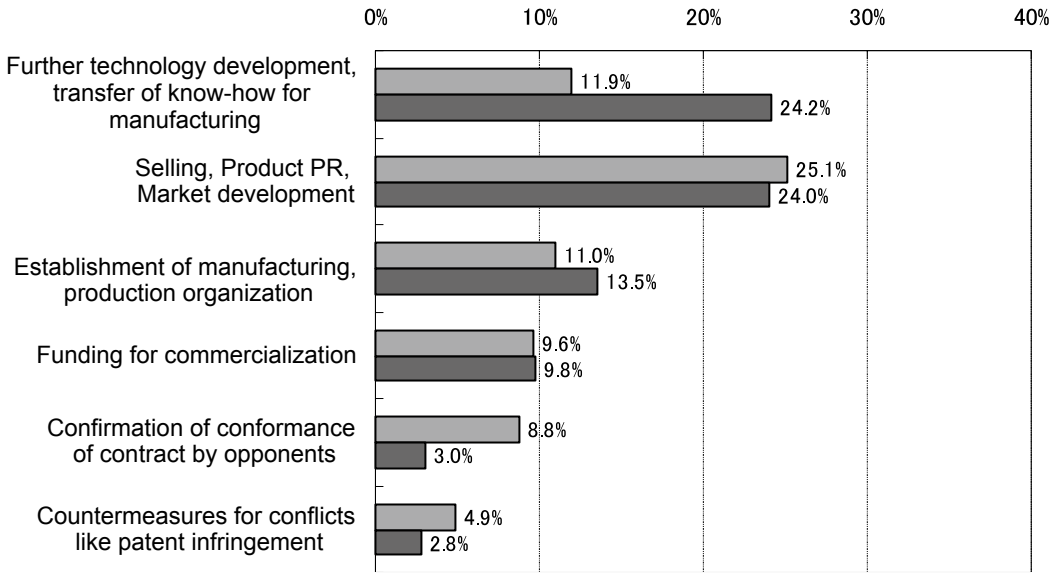
("Survey and Analysis on Conclusion of Contract for Encouraging Patent Licensing Services," The National Center for Industrial property Information and training, (Sep. 01, 2006)

6) Issues after the Conclusion of a Contract

Fig. 10-6 shows issues arising after the conclusion of a contract.

As known from the figure, among "issues arising after the conclusion of a contract," "application development toward commercialization and expertise transfer" (24.2%) is ranked first. This reflects the fact that even after patent licensing has been exploited, the seeds need to be developed toward commercialization. The "sales/product PR/cultivation of market" issues are ranked second with almost the same percentages (24.0-25%). Further issues include "build-up of manufacturing/production system" (13.5%) indispensable for commercialization and "funding for commercialization" (9.8%). Thus, the result suggests that support needs to be provided to address these issues after patent licensing has been exploited.

[Fig. 10-6] Issues after the Conclusion of a Contract[6)]



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Japan Patent Office

Collaborator: **Hidekatsu KASHIWARA**
SENIOR CONSULTANT,
TECHNOLOGY RESEARCH DEPARTMENT,
Chiyoda U-Tech Co., Ltd.