8 Ideal Scheme for the Development of Human Resources Related to Intellectual Property

Efforts have been made hitherto to promote the development of human resources related to intellectual property. In order to achieve the goal of making Japan a nation built on intellectual property, it is absolutely necessary to understand the paradigm shift taking place in society and increase the quality and quantity of IP experts. With visions for the near future, we should construct a plan for human resource development based on clear concepts, formulate a comprehensive strategy to promote the plan, develop specific policies and measures, and achieve progress in implementing them.

In this study, we aim to grasp the current status of the development of IP experts in various sectors as well as the latest theories of human resource development and e-learning, and point out core concepts for the human resource development plan, such as formulation of a new model for IP experts, qualitative change and quantitative expansion, as well as the spread of an IP culture. Based on this discussion, we make recommendations for IP experts in different categories. Our recommendations include promotion of advancement, expansion, and generalization of people in charge of protecting intellectual property and obtaining rights therefor, and encouragement of interaction among IP experts. We also propose a comprehensive human resource development policy, which covers: establishing human resource development bases, considering of related licenses, qualifications, and certifications, implementing measures to establish education on IP management, and extending of IP education to local areas.

Ⅰ Introduction

With the goal to make Japan a nation built on intellectual property (IP), we should increase the necessary human resources to activate the intellectual creation cycle that consists of creation, protection, and utilization of intellectual property, thereby realizing an environment where the public will be able to enjoy the affluent benefits from intellectual property, which will in turn encourage them to create new intellectual property.

In February 2006, the Intellectual Property Policy Headquarters released a report entitled "Comprehensive Strategy for the Development of Human Resources Related to Intellectual Property," which points out the following: "As intellectual property has become increasingly important in recent years, operations related to intellectual property have been increasing in both quality and quantity. Not only the departments in charge of the management of intellectual property, but also departments that have been less frequently involved in IP-related operations so far, currently require human resources equipped with knowledge and skills relating to IP operations."

Amid such strategic efforts being made nationwide for the development of human resources related to intellectual property or IP experts, this study committee was established for the purpose of sufficiently grasping the current status of and societal needs for IP experts and making useful recommendations to plan and formulate future measures and discuss an ideal scheme for the development of IP experts.

We hope that this study report will encourage the implementation of comprehensive measures to develop IP experts in the quest to achieve the goal to make Japan an IP-based nation, and can also help contribute to future discussions on the development of IP experts in the sectors concerned.

Ⅱ Background and Current Status of the Development of Human Resources Related to Intellectual Property

1 Changes in the times regarding intellectual property

(1) Paradigm shift and intellectual property

The concepts of "materials," "energy," and "information" were born in the 18th, 19th, and 20th centuries respectively, and these concepts shaped the methods of perception and thinking in the following centuries. The 21st century can be termed the "century of information and knowledge," and the ultimate form of information is "intellectual property," including "technology" and "brands." Under these conditions, the business management model in this information-

and knowledge-oriented society is shifting from one of "management based on tangible assets" to that of "management based on intangible assets." In other words, the current trend of placing emphasis on intellectual property is not a mere boom but the natural outcome of such a paradigm shift.

(2) From productivity to innovation

The "defective metabolism" of business may be pointed out as a problem in the Japanese economy and industry. Technology will help to continually create new businesses. However, before companies can successfully contribute to society with their new technologies through commercialization, they will face many obstacles such as the "Valley of Death," "Darwinian Sea," and "chasm," and in order to overcome these obstacles, they need to strengthen their business/industrial competitiveness by proceeding with both management of technology and management of intellectual property. To this end, more employees are required to be capable of performing both management duties.

(3) Innovation as a source of industrial competitiveness

Based on the above-mentioned awareness, we should change the core concept of business/industrial competitiveness from "productivity" to "innovation." That is to say, we should shift the emphasis from increasing efficiency in existing values to creating new values. In order to stimulate such innovation, IP experts must be well versed in not only "science and technology" and "IP-related legal affairs" but also "management and commercial affairs." It is also important to make people specializing in business management well-versed in "IP-related legal affairs" and "science and technology," while making scientists and researchers well-versed in "IP-related legal affairs" and "management and commercial affairs."

2 Current status of policy and training for the development of human resources related to intellectual property

The Basic Law on Intellectual Property provides that the State shall take the necessary measures to secure and develop experts that have technical knowledge on intellectual property and improve their quality.

The Intellectual Property Strategic Program, which the Intellectual Property Policy Headquarters formulates annually, stresses the importance of the development of human resources related to intellectual property and presents specific measures for this purpose. Through such efforts, progress has been made in developing and increasing the number of IP experts in various areas such as education, business, the legal profession (especially patent attorneys), and government.

In the "Intellectual Property Strategic Program 2005," it is stated that the GOJ will aim to double the number of IP experts from about 60,000 to 120,000 during the ten-year period from FY2005, fostering people who specialize in multiple fields, have international perspectives, and have a good business sense, and make active use of such people.

With the objective to formulate a concrete plan for developing human resources related to intellectual property in the next ten years, we should formulate a new picture for the role of IP experts beyond the conventional framework of human resource development.

3 Current status and problems of human resource development in each sector

(1) Business sector

(i) Small-and medium-sized enterprises, and venture companies

(a) Small-and medium-sized enterprises (SMEs)

Development of personnel specializing in IP operations is implemented through on-the-job training. While working with external advisers and retired employees with plenty of experience in handling intellectual property, IP personnel are required to acquire the necessary knowledge and skills for not only carrying out technology development and patent filing procedures but also making judgments regarding business management. R&D personnel are also required to deepen their awareness of the importance of intellectual property and increase their skills to prepare patent specifications through on-the-job training. SMEs often use external support for training. Since on-the-job training is a method that depends on people, it poses challenges in terms of continuity.

(b) Venture companies

IP personnel are required to be capable of investigating existing products that utilize patented inventions and providing their superiors with their draft reports on whether or not to file patent applications with respect to the company's inventions, while outsourcing operations that

require technical knowledge on patents to external patent attorneys. Research personnel are required to be capable of analyzing the relationship between their patents and related businesses and others' patents, while grasping the company's business direction as the top management do, and conceiving ideas of papers, useful patents, and actual uses of patents based on their research activities. Development of IP personnel and research personnel is implemented through on-the-job training, with external seminars also being used as off-the-job training. Human resource development aims to ensure that each employee will play more than a single role.

(ii) Large companies

(a) Large Company A

The company has established the Institute of IT Education for the purpose of carrying out R&D on IT-based educational programs and creating educational services with the use of IT. The institute provides practical education with a three-stage goal, which consists of the development of the ability to discover problems, the development of the ability to solve problems, and continued education based on learning evaluation. The ability to discover problems is needed to determine when to consult with experts in the course of solving particular problems. The lack of knowledge of contracts on the part of sales representatives sometimes prevents legal experts from exerting their expertise satisfactorily. However, it is difficult to train sales representatives to have the same level of legal knowledge and ability to make judgments as legal experts. For this reason, the institute trains sales representatives to discover contractual problems and cooperate with legal experts in solving problems. The institute adopts a hybrid training system in which trainees study specific cases through e-learning up to a certain level, and then participate in group training. This hybrid system utilizes characteristics of both e-learning and group training and generates synergy effects.

(b) Large Company B

The development of IP experts targets various requirements such as the ability to make recommendations, communication skills, expertise in intellectual property, and expertise in technology. Since, in addition to these common requirements, personnel in individual classes (leaders, specialists, general staff) require different abilities and skills, human resource development is generally implemented based on conditions regarding the individual class. At the same time, training is also provided on a cross-sectional basis in order to develop top-level experts for individual functions. For external training, the company uses training programs provided by the Japan Intellectual Property Association (JIPA) and its committees of experts. The JIPA's training course for the development of IP innovation leaders is useful as an educational program particularly aimed at developing personnel who will become leaders in IP activities. IP personnel must share ideas with research personnel for creating intellectual property. IP personnel are required to be capable of making recommendations to the business department, while personnel in other departments are required to be capable of grasping IP risk and possessing the knowledge and sense related to utilization of intellectual property. It is also important but the most challenging to extend IP education to the top management.

(2) Patent attorneys

(i) Japan Patent Attorneys Association

The Japan Patent Attorneys Association (JPPA) provides various training programs such as training for new recruits through e-learning, training for JPPA members, training personnel to acquire the ability to cope with specific infringement cases, and training on science and technology. One reason that patent attorneys are unwilling to venture into IP business management is the low income derived from services other than those for filing patent applications. Patent attorneys are expected to act as IP departments of companies and give advice on IP management, but they have no chance to acquire the necessary skills to provide such services. They need to study about IP-based business strategy, IP management, business start-ups, and marketing. In this respect, it is also necessary to develop human resources that can teach such subject matter to patent attorneys.

(ii) Development of human resources related to intellectual property from the viewpoint of patent attorneys

Through observation of various inventors, we can say, "it is too late to develop the ability to create inventions once people reach university." In order to foster people who can see things in their own way and create original ideas, educational reforms should be carried out at earlier stages of education such as elementary, junior high, and high schools, and the current style of learning as well as university examinations focused on rote memory should also be reformed. To achieve this, concrete

cooperative steps between the Ministry of Education, Culture, Sports, Science and Technology and the Ministry of Economy, Trade and Industry are indispensable. The true role of patent attorneys and IP personnel at companies is to collect, analyze, examine, and organize information, and find and clarify truly valuable inventions based on information that they have successfully acquired. Recognizing the importance of such roles, they should interact with JPO officials and people in various industries so that cooperation across the IP field is promoted. Management executives should acquire the ability to use intellectual property as a business resource and regard it as a business tool.

(3) National Center for Industrial Property Information and Training

Under the basic principle of minimizing the role of the public sector by outsourcing to the private sector what can be done by the private sector, the National Center for Industrial Property Information and Training (NCIPI) considers that the public sector should undertake the following roles:

- Develop an environment to promote human resource development in the private sector;
- Provide knowledge and know how accumulated at the JPO;
- Publicize and raise awareness of policy measures.

In order to perform these functions, the NCIPI implements training programs for JPO examiners and appeal examiners as well as searchers, and provides JPO's knowledge and know-how to the public through cooperation with other organizations. With the aim to carry out the national IP policy, the NCIPI provides training for IP personnel at the national and local government level. It also provides search training for university personnel and technical researchers.

Effective measures to solve existing problems in the development of IP experts may include establishing an IP teacher bank and promoting information and personnel exchange between human resource development agencies, and in this context, curricula and material on IP education should be developed systematically. The NCIPI intends to provide a study forum on IP policy for people engaging in policy study, IP operations, and study on developing countries, so that measures to develop academic personnel at home and abroad, study IP policy, and help developing countries will be implemented all in one go. By establishing a joint training center, it will be possible to provide the opportunity for information exchange between organizations and between teachers and trainees as well as for the exchange of educational material.

(4) Students

(i) Elementary schools and junior high schools

The substance of IP education has bearings on the core of education. IP education that forms the foundation to the goal of making Japan an IP-based nation must target every individual. To this end, it is necessary to provide education on creativity in general courses, IP education in cross-curriculum courses, and systematic and phased IP education depending on grades. By increasing teachers' IP awareness through systematic IP education, it will be possible to proceed with IP education for students without the help of IP personnel. In order to establish a systematic and phased scheme for IP education, the term "intellectual property" should be mentioned in curriculum guidelines, thereby increasing teachers' IP awareness.

For ensuring effective IP education at school, it is necessary to include articles on intellectual property in textbooks, with samples of teaching instructions attached thereto.

(ii) High schools

IP education from the pre-school level to the elementary school level should be extended to junior high schools and high schools, with the aim to raise IP awareness among students during the period up to high school as well. In this context, the term "intellectual property" should be mentioned in curriculum guidelines for high schools. At professional high schools, IP education is carried out systematically through programs designed to develop intellectual creativity, promote manufacturing activities, raise interest in science, foster entrepreneurship, and provide the opportunity to experience IP administration. At technical high schools, it is necessary to implement curricula that enable students to acquire the skill of exchanging ideas and the knowledge on industrial property that will contribute to industry and society. Collaboration between science and technology education, creativity education, and entrepreneurial education is required.

We should create an environment where people have a chance to become IP specialists at any stage of their school life, and professional high schools, professional training colleges, and

universities should provide practical programs for students in this regard. In particular, in technical high schools, progress has been made in the development of curricula, textbooks, and educational materials, and instruction manuals have also been developed to a satisfactory level. These achievements should be extended to ordinary high schools as well as elementary and junior high schools.

(5) Universities and research institutes

(i) Tokyo University of Science, Special Graduate School

The Special Graduate School of the Tokyo University of Science provides practical education to develop human resources capable of strategically dealing with IP issues that are becoming more diverse. The school's educational concept is to educate students mainly on intellectual property and also on legal affairs, business management, technology, policy issues, and international issues in an integrated manner. It also aims to develop the ability to not only discover but also predict problems.

The school teaches how to integrate IP issues into business strategy.

IP specialists cannot be developed without practical study. Based on this awareness, while placing emphasis on strategic management, the school aims to develop human resources capable of handling intellectual property comprehensively in related areas such as technology, legal affairs, and business management.

The development of IP experts should be directed to nurture experts not only specializing in individual IP areas but also covering all related areas, depending on the characteristics of each class.

(ii) Osaka Institute of Technology, Faculty of Intellectual Property, Graduate School of Intellectual Property

The goal of the Faculty of Intellectual Property of the Osaka Institute of Technology is to develop a number of individuals equipped with knowledge on intellectual property, who will serve as IP specialists such as IP personnel at companies and paralegals at patent and law firms. Granting faculty graduates a national license that is equivalent to the paralegal license in the United States would be an incentive. The Graduate School of Intellectual Property, which aims to develop high-level IP specialists such as IP managers at companies as well as patent attorneys, provides optimal curricula for individual students while taking into consideration their current occupations and future career advancement. IP specialists with advanced practical capabilities will be developed through competition among diverse types of people. For industry-academia-government collaboration in education, a personnel exchange scheme for inviting IP practitioners as university teachers is desired.

(6) IP-related associations

(i) Institute of Intellectual Property

The Institute of Intellectual Property (IIP) has four different types of researchers. Transferred researchers study IP conditions in Japan and overseas while exchanging opinions with people engaged in IP operations in various fields. Invited researchers are foreign lawyers and professors engaged in comparative study of IP conditions in Japan and overseas. Overseas dispatched researchers are Japanese university teachers and practitioners dispatched to study overseas. Research fellows are researchers in the latter term of their doctoral program who are engaged in research activities at the IIP. In order to develop IP experts for future generations, the IIP holds educational courses for IP practitioners from industrial, academic, and government sectors as well as the legal community, with university professors and lawyers serving as teachers. The IIP has advanced functions for the development of IP experts and also acts as a hub for people engaged in IP-related operations. While involving researchers and practitioners in a wider range of areas (business management, education, and science and technology), the IIP should expand its library function, with the aim to build an IP library through collaboration with libraries of related organizations.

(ii) Japan Institute of Invention and Innovation

In order to achieve the goal of making Japan an IP-based nation, it is absolutely necessary to operate the intellectual property cycle smoothly, and to this end, the Japan Institute of Invention and Innovation (JIII) is developing various types of human resources for the creation, protection, and utilization of intellectual property nationwide. In particular, the JIII aims to foster creative people by increasing incentives to create inventions and promoting science and technology through awards and exhibition projects. The JIII dispatches instructors to Invention Clubs for Schoolchildren to teach how to create and respect intellectual property through hands-on experience of research activities. The development of creative talent is an endless task, and there is no limit to

its targets. IP awareness should be established by providing IP education and creativity education for child at early ages.

(7) Development of human resources related to intellectual property in local areas

In order to make management executives of local companies aware of the importance of intellectual property and encourage them to integrate IP strategy into business strategy, it is necessary, first of all, to educate policymakers in local government, personnel at chambers of commerce, and SME consultants, who support local companies. Continuous efforts should be made to allocate and develop such human resources.

(8) Journalists

In light of the influence of the press on the public, IP education for journalists such as newspaper and magazine reporters is also important. Nurturing journalists that are equipped with the correct basic knowledge on intellectual property is necessary to achieve the goal of making Japan an IP-based nation.

4 Latest theory for human resource development and the current status of e-learning

(1) Latest theory for human resource development

The essence of practical education is to question "whether practitioners can improve their performance on the work front by increasing their knowledge and skills." In other words, the emphasis should be placed on "learning" rather than "teaching."

Typical approaches for human resource development include transfer of learning, experiential learning, and critical learning. In relation to these approaches, there are learning models such as "transmission of knowledge," "supported learning," and "mutual learning." It is necessary for us to organize actual training programs by employing these approaches and models from a practical perspective.

What is important in this context is to design IP-related training programs based on a correct understanding of these approaches and models. Educational debates that are only slightly above the amateur level are not welcome. We should endeavor to develop human resources on a professional level based on basic knowledge of learning methods.

(2) E-learning

E-learning has recently become a popular tool for the development of IP experts. However, if it is used only as an alternative to the face-to-face training method, it cannot bring about satisfactory results, or even worse, it might not be as effective as face-to-face training. In order to employ e-learning effectively and efficiently, it is vital to sufficiently consider, at the stage of discussing its introduction, "who" is to receive the e-learning and to study "what", for "what reason" and "how," and then design learning programs in order to make them more effective, efficient, and attractive. We should not introduce e-learning while blindly accepting the outdated e-learning model of "learn anywhere at any time," simply in order to compensate for the unavailability of group training. E-learning must be utilized based on the understanding of its essential function.

Ⅲ Discussion and Direction of the Development of Human Resources Related to Intellectual Property

1 Discussion and direction of the development of human resources related to intellectual property

Introducing external support would be an effective means for local SMEs and venture companies to develop IP experts. To make this possible, it is necessary to foster patent attorneys capable of providing business support as well as SME consultants capable of integrating IP strategy into business strategy. Since it is difficult for human resource development companies and organizations in the private sector to undertake this initiative, government support from a policy perspective is desired.

Large companies implement human resource development programs to increase expertise of personnel in IP departments. However, most such programs focus on simply the transmission of knowledge, and practical education aimed at developing the ability to make judgments has not yet been fully developed. Education in business management will be indispensable in the future so that IP personnel will not concentrate only on their own fields but contribute to company management. It is an urgent task to develop the necessary curricula and implement them

proactively.

Meanwhile, for personnel other than those at IP departments, basic education should be given to provide awareness of the importance of intellectual property in business management and the risk arising from disrespect for intellectual property.

Patent attorneys are required to not only have "advanced" expertise on the core services for protecting intellectual property and obtaining rights therefor, but also to have a "broad" expertise covering business management as well. Using such expertise, they are expected to help companies integrate their IP strategy into their business strategy.

Furthermore, "core IP experts," such as JPO examiners and appeal examiners, IP personnel at companies, and patent attorneys, are expected to play a leading role or act as teachers to raise IP awareness among the public (from young children to students, from business persons to ordinary citizens). In other words, measures to develop human resources to be in charge of human resource development should be implemented on a large scale.

With regard to the children who will lead future generations, it is important to encourage these children to engage in creative activities and teach them the importance of IP protection in ordinary lessons based on their stage of educational development. Efforts should also be made to establish a system to train teachers as IP experts and to nurture invention clubs, thereby increasing the body of IP experts.

At universities and graduate schools, IP education should be included in curricula not only of faculties and schools in the fields of science and technology but also of those in all fields. In order to enhance faculties and professional graduate schools specializing in intellectual property, developing IP teachers is also a major issue.

IP research institutes should strive to raise the sophistication of IP leaders so as to further enhance their research activities, while encouraging personnel exchanges with foreign researchers as well as with researchers and scholars in other fields.

2 Paradigm shift in human resource development

Along with the rapid progress in the paradigm shift to an information- and knowledge-oriented society, there is a pressing need to develop human resources capable of promoting "innovation" rather than "productivity" and carrying out "management based on intangible assets" rather than "management based on tangible assets." A new type of talent that can respond to such trends is desired. It is impossible to proceed with human resource development for the next ten years without having visions on this issue.

A paradigm shift leads to the reform of business models. In the IP field, models for human resources and development thereof should be reformed. It is necessary for us to develop a new type of IP personnel who are equipped with knowledge of and skills in management of technology and management of intellectual property, and in this context, a new framework and methodology for human resource development will be needed.

3 Core concepts for the development of human resources related to intellectual property

The plan to double the number of IP experts does not mean to merely increase the number from 60,000 to 120,000. It is necessary for us to expand and reorganize the existing human base of 60,000 experts to create a significant base of 120,000 experts in the near future. In other words, the plan should not be implemented through qualitative enhancement that is intended to merely advance the existing human resource model or quantitative expansion of the existing model, but rather through quantitative expansion following the qualitative change to a new human resource model.

Ⅳ Recommendations for the Development of Human Resources Related to Intellectual Property

1 Basic framework

IP experts can be divided into the following three categories according to their relationship with intellectual property.

The first category is people engaged in protecting intellectual property and obtaining the rights therefor. They should improve their capabilities by interacting with each other. It is an urgent task to develop associated human resources (e.g. IP paralegals, IP translators, and IP searchers) in response to rapidly growing demand.

The second category is people engaged in creating and utilizing intellectual property. It is necessary to increase their awareness of intellectual property and management thereof. In particular, in order to enable companies to integrate IP strategy into business strategy, they should improve the sophistication of IP management throughout the company, from the R&D department to the management department and the sales department.

The third category is the Japanese people as a whole. "Spreading IP culture" or "developing a dignified national culture that respects originality" is a major task. To achieve this, it is desired that all members of the public experience an "IP shower" at least once. An "IP shower" consists of "DO's" (encouraging the respect of originality and making creative efforts) and "DON'Ts" (control of piracy and counterfeiting). Measures to raise awareness of this concept should be implemented quickly.

2 Advancement, expansion, and generalization of human resources in charge of protecting intellectual property and obtaining the rights therefor

In the development of human resources in charge of protecting intellectual property and obtaining the rights therefor in the past, efforts were put into the "advancement of expertise," which aimed to advance technology for protecting and obtaining rights, develop technical knowledge, and respond to internationalization. We should of course continue such efforts.

On the other hand, it is impossible to strengthen business/industrial competitiveness without "expansion" in IP specialists' fields of expertise. In other words, there is demand for patent attorneys and IP personnel equipped with considerable knowledge of business management. Furthermore, generalists who carry out IP management by using these specialists will be needed in the future.

3 Encouragement of interaction between personnel in charge of protecting intellectual property and obtaining the rights therefore

It is also necessary to encourage interaction and mobilization among such personnel. For instance, JPO's fixed-term examiners are expected to play a part in the private sector by making use of their examination experience and knowledge on IP policy after they have served their term of office. That is to say, people in the IP field can choose from multiple employment options, such as being patent attorneys, IP personnel at companies, and JPO examiners, and the IP field as a whole will be recognized as a field of specialists. This will make the IP field more appealing and invite talented people to enter the field.

In the category of IP experts, techno-business producers, who play the same role as music producers in the content industry, should also be fostered.

We face three urgent tasks for the development of IP experts.

Firstly, for the purpose of raising IP awareness among specialists in related fields, we should promote IP education for professional engineers and SME consultants.

Secondly, IP management schools for executives and for directors should be established permanently. Schools for executives are necessary to develop human resources equipped with integrated multiple capabilities that can implement IP management, and schools for directors are indispensable to develop human resources capable of integrating IP strategy into overall business strategy.

Thirdly, it is also necessary to promote double majors in the area of licenses and degrees, while also considering a major-minor system to encourage people to study IP as a minor subject. People who are currently working as specialists do not have sufficient time to study. If they are encouraged to study IP as a second major or even as a minor, this would make great contribution to increasing the number of IP experts.

At the same time, we should promote the inclusion of IP in curricula for elementary, secondary and higher education, with the aim to develop human resources for future generations and spread IP culture among the public. To this end, it is important to clearly mention the term "intellectual property" in curriculum guidelines, and to provide IP education for teachers and instructors employed at all levels of education.

4 Proposals on comprehensive human resource development

Based on the discussion mentioned above, we have the following proposals to make.

(1) Establish a foundation for the development of IP experts

In order to increase the number of IP experts effectively and efficiently, it is critically important to establish an integrated foundation covering areas from the conducting of research on human resource development to the implementation of necessary measures and the promotion of personnel exchanges.

(2) Consider introduction of IP-related licenses, qualifications, and certifications

In order to motivate people to acquire IP knowledge and skills and increase incentives for learning, it is necessary to establish IP-related licenses, qualifications, and certifications.

(3) Implement measures to establish education in IP management

For the purpose of expanding IP specialists' fields of expertise, it is also an urgent task to provide the opportunity and establish a forum for executives and directors to learn IP management.

(4) Extend IP education to local areas

The goal to make Japan an IP-based nation should no longer be taken on only by people living in metropolitan areas. Measures to raise awareness of IP and management thereof should be extended to local areas.

(5) Implement preventive measures for the environmental risk to IP creation and management

The failure to control the environment surrounding IP creation and management will invite problems such as information leakage, difficulty in identifying the inventor, and forgery. To avoid such a situation, we need to immediately study methods to control the environmental risk to IP creation and management focusing on the control of laboratory notebooks, and promote the application of such methods.

Ⅴ Conclusion

In order to achieve the goal to make Japan an IP-based nation, it is absolutely necessary to increase the quality and quantity of related human resources, while taking into consideration the paradigm shift taking place in society, and having visions for the near future.

Firstly, regarding core personnel in the IP field, we should not only advance their expertise but also expand their fields of expertise, with the aim to develop human resources equipped with integrated multiple capabilities.

Secondly, it is necessary to promote enhancement and mobilization of IP experts by establishing IP-related licenses, qualifications, and certifications and implementing other related measures. It is also necessary to make IP specialist occupations more appealing to young people.

Thirdly, spreading IP culture among the public and promoting IP education for all people from children to adults will be effective in increasing Japan's underlying strength and robustness.

The initiative to develop IP experts in response to the paradigm shift has only just begun. We should promote this trend quickly and steadily, and effectively and efficiently. The new types of IP experts thus developed will make a great contribution to revitalizing Japanese business and industrial competitiveness.

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