

New Invention Incentive Programs*

The Second Subcommittee,
The First Intellectual Property Management Committee

(Abstract)

The purpose of this article is to investigate the problems of the invention incentive programs commonly adopted under the present circumstances, and to study and examine the ideal “invention incentive programs in the future” to be pursued from the perspective of the nation, private enterprises, inventors and intellectual property divisions, respectively, by way of clarifying the problems to be solved. The invention incentive measures from each perspective as mentioned above were examined by classifying them into (1) the conception phase of an invention, (2) the prosecution phase (and post registration phase) of an invention and (3) the commercialization and post-commercialization phase of an invention. In conclusion, the “invention incentive programs in the future” should also include, in addition to the incentives for inventors, the incentives for the enterprises and their intellectual property divisions surrounding the inventors as a whole. It should be necessary to revitalize invention-creation activities by adopting and revising the invention incentive programs necessary for the business activities of each enterprise, although the goal or objective of the invention incentive programs are different from industry to industry, and from enterprise to enterprise.

(Contents)

1. Preface
2. Present Circumstances Regarding Invention Incentive Programs
 - 2.1 Objective of Invention Incentives
 - 2.2 Invention Incentive Programs
3. Problems of Invention Incentive Programs
 - 3.1 Social Environment Surrounding Enterprises
 - 3.2 Problems of Invention Incentives from Enterprise’s Perspective
 - 3.3 Problems of Invention Incentive Programs from Inventor’s Perspective
4. Invention Incentive Programs in the Future
 - 4.1 Invention Incentives at Nation Level
 - 4.2 Invention Incentives at Corporate Level
 - 4.3 Invention Incentives for Intellectual Property Divisions
5. Invention Incentive Measures in Each Phase of Technology Development
 - 5.1 Starting-up Phase
 - 5.2 Development Phase
 - 5.3 Maturation phase
 - 5.4 Summary
6. Closing

1. Preface

Amid growing calls for valuing the importance of intellectual properties, the Japanese government compiled the Intellectual Property Policy Outline, which stipulates the national basic strategies pursuing “nation built on intellectual property”, and the Basic Law on Intellectual Property was implemented (as of March 1, 2003) (hereinafter referred to as the “Basic Law”).

One of the features of the Basic Law is that it calls on enterprises and universities to “secure appropriate treatment and benefits” of the inventors or researchers (Articles 7 and 8 of the Basic Law on Intellectual Property). This provision seems to take account of the growing number of lawsuits over the provisions for the service inventions (Article 35 of the Patent Law) these days.

We decided to study and examine such invention incentive programs that may provide incentives for inventors as well as for enterprises or intellectual property divisions surrounding such inventors, in view from the perspective of the nation, enterprises, inventor or intellectual

* “CHIZAI KANRI” (Intellectual Property Management), Vol.53 No.9 2003, pp.1451-1464

property divisions and also by seeking the ideal “invention incentive programs in the future” beyond the framework of the incentives for inventors under said provisions concerning service inventions.

2. Present Circumstances Regarding Invention Incentive Programs

2.1 Objective of Invention Incentives

The objective of invention incentives of a nation is to contribute to the development of national industries, and to exploit the inventions as the resources to reinforce the international competitiveness of Japanese industries.

In the meanwhile, the objective of invention incentives of an enterprise is to create a new intellectual property, namely, an invention within it to support the corporate businesses, and protect its businesses while exploiting the invention for retaining its superiority in competitiveness by obtaining a patent for such invention.

(1) Benefits Brought to Enterprises by “Patents”:

Enterprises may retain its superiority in competitiveness by exploiting the patents owned by it to monopolize the business or by earning profits from the licensing fees. Due to such superiority, the management policies and the business strategies could be realized, the business profits could be secured, and those profits could be reinvested to achieve further development.

Further, enterprises might be able to respond to the customers’ expectation and earn credibility by providing value-added products or services implementing the patented invention, thereby enhancing its corporate image and enhancing value of its corporate brand, including the value of the brand. Then, the enterprises may recruit competent and capable personnel (students and engineers) to create the next invention by attracting the attention of those personnel.

The benefits that the inventions can offer in the course of their creation, prosecution and exploitation are not limited to the benefits for enterprises, but the corporate profits brought by patent rights could be returned to or shared with the employees and the local community. Pat-

ents may sometimes bring joy, provide convenience to the public, relieve people from their pain, or save precious lives.

In this way, the series of said corporate activities could make the people’s lives richer.

(2) Measures to Achieve Intended Objectives:

Enterprises are required to revitalize its activities concerning the “cycle of creation and exploitation of an invention”, a series of activities from the creation of an invention, which is the source of the above benefits, and the prosecution of a patent as well as the exploitation of such patent in order to achieve the above intended objectives.

Each enterprise has not a few talented and capable developers and researchers within its organization. However, inventions could not be generated unless such precious human resources are exploited in an efficient manner.

Even if an invention is created, no patent application would be filed for such invention unless the enterprise acknowledges it as a “valuable invention”.

Moreover, even if such invention is acknowledged as a “valuable invention” and a patent application for such invention is filed, such invention could not be granted a patent right unless the inventor(s), technical division and the intellectual property division cooperate with each other to take appropriate steps in the course of the prosecution.

Finally, even if a patent right is granted for such invention, it is impossible to generate a new value unless such patent is exploited strategically. Cooperation of the technical division and intellectual property division as well as the business planning division, sales division and accounting division is indispensable to exploit said patent.

In this way, acquisition of a patent which is beneficial for an enterprise could not be achieved by the inventor(s) only, but also requires the cooperation of each division of the enterprise.

Therefore, it is indispensable to the willingness of all the personnel involved in or engaged in any relevant activities in order to implement the “cycle of creation and exploitation of an invention”, from the creation of an invention, filing and prosecution of a patent application to the exploitation of the patent, at a higher level.

In order to realize this objective, it would be essential to fix a clear goal and reasonable incentives for all the personnel involved in any part of the whole processes mentioned above.

2.2 Invention Incentives Programs

Invention incentives could be classified into those implemented at the nation level and the programs implemented by each enterprise. Incentives implemented at the nation level are the measures to achieve the purpose of “contributing to the development of the industry” under the patent system. The claim for “reasonable consideration” concerning the service invention as stipulated in Article 35 of the Patent Law could be also regarded as an incentive for inventors.

In this article, we would like to focus only on the invention incentive programs implemented by enterprises.

The characteristics of invention incentive programs implemented by enterprises can be

classified into two features. The one is to reward the inventors who created a valuable invention and encourage them to create the next invention, and the other is to publicize the incentive program, beneficiaries of such program and the noticeable inventions to its employees to encourage the creation of new inventions.

The followings are the examples of major methods of invention incentives:

- ① Remuneration (including compensation)
- ② Privileged or favorable treatment in terms of personnel affairs
- ③ Award
- ④ Development of favorable research environments

We conducted an interview with the member companies of this Subcommittee and some non-member companies concerning the present incentive measures taken by those companies. The result of this interview is summarized according to the type of industries in Table 1 below.

Table 1 Invention Incentive Programs Implemented by Enterprises

Phase		Mechanical	Electric	Chemical	Medicinal
Proposal Filing of Application Registration of Grated Patent		Filing of Application Registration of Grated Patent	Filing of Application Registration of Grated Patent Excellent Invention Award Contribution-to-Prosecution Award	Filing of Application (Registration of Grated Patent)	Filing of Application Registration of Grated Patent
Licensing	For internal use	Upon implementation	Upon implementation Upon delivering of result Award for contribution to patent	Upon implementation Award for contribution	Upon implementation
	For use by other company	Upon licensing	Upon licensing Upon delivering of result Award for contribution to patent	Upon licensing	Upon licensing
Others		Rookie inventor award Award for greatest number of filed applications Award for Most Excellent Division in Patent Activities Meister system	Award for contribution to activities concerning intellectual property	Award for proposals for improvements Remuneration for know-how	Technology award Manager's award

(1) Remuneration: Incentives in terms of money

Remuneration has two aspects of being the "reasonable consideration" under Article 35 of the Patent Law on the one hand and the incentives provided by the enterprises to the inventors on the other side.

The payment methods depend on each company. Some companies make a lump-sum payment of the remuneration and others not. The payments may be made at each phase of the filing of an application, grant of a patent or upon commencement of the internal use or licensing, depending on each company.

The standards for the remuneration also depend on each company. Some companies provide the fixed amount of remuneration at each phase of the cycle, by fixing certain standards or criteria, and others provide the remuneration according to the result achieved or the license income earned, by fixing certain rates.

(2) Privileged or favorable treatment in terms of personnel affairs: Incentives in terms of treatment

There are two methods in dealing with the inventor. The one is to place the inventor at the higher level in the company's employee evaluation system, which affect the decision on the promotion of personnel, and reflect the favorable treatment permanently. The other is to grade up the evaluation of the inventor for the purpose of determining the bonus according to the outcomes of the created invention during the current fiscal year, and provide lump-sum allowance.

Some companies give honorable titles to those inventors in accordance with the level of the achievements made by them.

(3) Award: Incentives in terms of honor

There are a number of forms of award programs, such as the program under which the invention itself is evaluated at an early stage and excellent inventions are awarded, program that awards the contribution to the successful prosecution of a patent, or the program that awards the achievements after the acquisition of a patent like licensing or monopolization of businesses. The award programs have two purposes. The one is to give honor to the inventor who made contribution, and the other is to make a public recognition of such inventor.

Not a few companies include, as the per-

sonnel qualified for receiving such awards, not only the inventors but also the employees who made contribution in the activities concerning intellectual property and others. There are various levels of the person who gives awards to the inventors, from the award by the president, award by the director in charge, award by the manager of the division to which the inventor belongs, award by the chief manager of intellectual property division or award within the workplace, according to each company.

In terms of honor, there are some companies which address valuable patents by referring to the name of the inventor.

Some companies extend their activities concerning award of inventors beyond their internal award activities, actively promoting the inventions created within the company for the awards provided outside the company, such as the Commendation for Invention sponsored by the Japan Institute of Invention and Innovation.

(4) Development of favorable research environments: Incentives in terms of research environment

Apart from the programs or systems for invention incentive, in some cases the companies reward the inventors by developing favorable research environments by, for example, starting up some R&D projects designating the key inventor as its leader, establishing a new laboratory, or allowing special budget for the R&D costs.

(5) Other Incentive Measures:

Some companies support the inventors who desires to commercialize the invention in the commercialization of such invention, by developing internal venture system or supporting the spinning-off of the relevant business. These supports can be regarded as a kind of incentives. Also, favored treatment in the selection of personnel to be dispatched to overseas research institutes or the granting of personnel relocation desired by the inventor(s) would be a kind of incentive measures.

3. Problems of Invention Incentive Programs

Each enterprise has become aware of the necessity to revise its own invention incentive program in order to cope with the substantially

changing social environments. We firstly studied the social environments surrounding the enterprises that closely relate to the invention incentive programs, then reviewed the problems of those programs.

3.1 Social Environment Surrounding Enterprises

(1) Change in Business Structure

The business structure of enterprises has changed from the hardware-oriented to software-oriented structure, and the importance of the intangible assets, especially intellectual properties has become emphasized. Due to the increasingly sophisticated and complicated technologies, enterprises are now required to invest enormous amount of R&D costs for the development of new technologies or new products.

As a result, the strategy to create an alliance of power union among winners in the market exploiting the specialized fields of each such company, thereby diversifying the risks of the R&D costs, has gained recognition. On the other hand, some specialized manufacturers with value-added specialized fields are controlling the overwhelming market share of those fields, generating the winner-takes-all business structure.

(2) Increasing Global Borderlessness

Global borderlessness of corporate activities has been ever increasing these days. Transactions between enterprises are conducted via networks in a borderless manner. Also, in terms of the R&D, manufacture or logistics, global and dynamic businesses are developed by placing its center on the most appropriate geographical location, taking the cost of human resources into account.

(3) Pro-Patent Policy

As the enterprises come to emphasize the importance of the intellectual properties, the amount of the royalty rate has become higher and higher, and the scale and the number of patent lawsuits has been getting larger and larger.

In Japan, "Intellectual Property Policy Outline" was compiled under the joint effort of the public and private sectors, as the measures to strengthen the industrial competitiveness pursuing a "nation built on intellectual property", and the Basic Law on Intellectual Property was implemented based upon the Outline. Under the leadership of the Strategic Council on Intellec-

tual Property headed by Prime Minister Junichiro Koizumi that started in March 2003, further proceeding of the pro-patent policies are expected.

As examples of specific measures, Ministry of Economy, Trade and Industry released the "Guideline of Acquisition and Administration of Intellectual Properties", "Guideline of Maintenance of Trade Secrets" and "Guideline for Measures to Prevent Outflow of Technologies", presenting pro-patent guidelines for enterprises.

(4) Changes in Attitudes of Inventors

The employment environment has changed due to the shift from the seniority-oriented wage system to the merit-based wage system, and the attitudes of engineers and researchers have changed. They are prepared or willing to change jobs or start their own business in order to utilize their own expertise or specialty, causing increasing mobility of employment.

It has become eminent that more and more inventors bring lawsuits against their employers, claiming the deficiency of the "reasonable consideration" under Article 35 of the Patent Law concerning the service invention, after they find their intellectual properties could be highly valued.

(5) Others

It is a challenge for enterprises to gain the cooperation of universities specializing in the basic research and to exploit the results of such basic research. However, when considering the possibility of cooperative study with universities, outsourcing of research to universities or exploitation of the result of the independent study conducted by universities, especially with national universities, enterprises would find more problems than benefits in terms of the inventions created by national universities whose inventions are subject to the National Property Law and other relevant laws and ordinances. Because of the restrictions imposed by those laws and ordinances, enterprises might be obliged to be subject to the provision of compensation for non-implementation payable to the universities. Further, in many cases of TLO, a large gap exists between the universities and the enterprises in perception of the evaluation of the invention.

3.2 Problems of Invention Incentives from Enterprise's Perspective

Enterprises are required to create invention incentive programs that can cope with the change of environments as mentioned above.

In the first place, it is an urgent necessity for its own survival to create new inventions that can support the specializing business fields of the company in terms of intellectual properties, in order to cope with the change of business structures. Since the creation of inventions inevitably depends on the competence and incentive of each individual researcher, it is necessary to consider such system or program as to enhance their unique idea and take full advantage of their talents.

Secondly, it is necessary to consider an universal incentive program taking account of the difference of the legal system of each country in order to respond to the increasing global borderlessness of research and development, and it is also necessary to consider an incentive program corresponding with the usefulness and actual results of the new ideas in order to cope with the pro-patent policies. The enterprises are also required to take account of the rewards to the employees engaged in and contributing to the prosecution or exploitation of patents, as well as the rewards to the inventors.

In this respect, however, there are not a few opinions that the rewards to employees other than the inventors should be balanced with other reward programs because the contribution to the business profit can be made in any and all activities conducted within the company.

Finally, it is necessary to consider an attractive program or system to dissuade excellent researchers from leaving the company and attract human resources from outside of the company, in order to respond to the changing attitudes of inventors toward employment.

3.3 Problems of Invention Incentive Programs from Inventor's Perspective

Reviewing the invention incentive programs presently implemented by enterprises, we found there are 4 types of incentives: Money, treatment in personnel affairs, honor, and research environment. Especially the monetary incentives have become a popular topic these

days, due to the recent trend that enterprises are increasing the amount of monetary incentives to enhance incentives in terms of money, in relation to the provision of service invention under Article 35 of the Patent Law.

In this section, we would like to review those monetary incentives to clarify whether those programs actually work as effective incentives for the researchers who engage in research activities, which is the major invention-generating section of a company.

(1) Problems of Monetary Incentives:

Although we use the term "inventor(s)" to refer to any type of researchers, their attitudes toward inventions are quite different depending on the type of work in which they are engaged or the division to which they belong. Therefore, we would like to discuss the problems of monetary incentives by classifying into those dedicated to the basic researches and to the research and development.

1) For Basic Researches:

The motivation for invention of researchers may vary from the self-realization, contribution to business profit, response to various incentive programs offered, to the expectation for promotion or more favorable treatment in the personnel affairs.

In case of the researchers engaged in the basic researches, their major motivation for invention might be the self-realization, such as the intellectual curiosity toward researches, creative aspiration for finding and creating new ideas, or the sense of mission to use science and technology for the improvement of society.

Therefore, the monetary incentives could not substantially enhance the willingness or eagerness of the researchers engaged in the basic researches, who are subject to various restraints, such as the research proceedings allotting a portion of the whole research works to each team of researchers in order to create a new technology within the framework of complicatedly systematized technologies, the research proceedings in which the researchers are engaged in certain research theme that have been prepared or discussed in advance and presented to them, or the requirement to assess and decide whether to continue certain research in a few years. These researchers are much more attracted to the research system in which they can freely pursue their research themes, and the research environ-

ment in which they can receive sufficient research budget, sophisticated search environment, and opportunity to exchange information at academic associations, rather than the rewards given to them as if winning a lottery.

Further, the expensive monetary incentives are given only after the invention is commercialized and produced profit in most cases. Such monetary incentive is regarded as a mere evaluation of the past research from the perspective of the basic researchers, and therefore such incentive cannot generate any direct effect to enhance the researcher's willingness and eagerness toward current research themes.

Moreover, when the amount of the money is increased for the purpose of enhancing the monetary incentive, the problems are that the calculation of the amount of those incentives are usually based upon the profit earned in relation to the products implementing the invention. Under such calculation system, evaluation of the inventions tends to acknowledge greater value on the inventions relating to technologies that connect the results of basic researches with the actual products by utilizing and applying such technologies, than on the inventions created directly from the basic researches.

Such situation might have a negative effect of fomenting the sense of inequality among the basic researchers, because they might feel "Accumulated properties like inventions that have been compiled in the past and the technologies accumulated in the past are greatly contributing to the inventions qualified for the monetary incentives. However, those inventions or technologies created in the past are underappreciated."

2) For Research and Development:

Since the researchers engaged in R&D are working on the themes that are relatively close to the final products such as applied researches or development of uses, the motivation for invention of those researchers would be mainly the specific goal of developing a new product and the contribution to the business profit of the company.

For these R&D researchers, it would be a great incentive to increase the amount of the remuneration payable according to the results generated by the invention, because their inventions are relatively close to the final products and they can feel the contribution of the inven-

tion to the business profit closer to themselves.

However, these R&D researches are required to deliver the expected results in a relatively short period, and those researchers feel that the products are developed on the basis of the results of the technology development in the past and the effort of a large number of staffs engaged in sales, planning and others. Therefore, many of those researchers feel uncomfortable in receiving the expensive remuneration given to an individual inventor.

(2) Other Problems:

Creative and unique invention cannot be produced only by the passion or eagerness of an inventor, but requires unique sense and perception of an inventor. Such sense or perception is difficult to enhance by the monetary incentives, and therefore, the enterprises are required to recruit researchers with such sense and perception.

In many cases, researchers with unique sense and perception disregard organizational management of a company or have unique ideas, and they sometimes find it difficult to cope with other staffs around them. Therefore, their personnel evaluation tends to be low. If this is the case, their willingness and eagerness toward researches might be diminished by, for example, the frustration over the unreasonable evaluation of researches by the management of the company or the poor environment to foster basic researches.

4. Invention Incentive Programs in the Future

4.1 Invention Incentives at Nation Level

It is still a fresh memory that the news of Nobel Prize winner Koichi Tanaka, an employee-inventor of a private enterprise, encouraged and gave a hope to Japanese people who are losing confidence in the midst of the depression.

It goes without saying that Japan, as a nation with poor resources, has no other way than to pursue the "nation built on intellectual property" by gathering intellects of Japanese people and producing science and technology that can be transmitted to the rest of the world. In order to realize the goal of the "nation built on intellectual property", it would be necessary to facili-

tate and promote invention incentive measures harder than ever before.

(1) Establishment of “Japanese Nobel Prize”:

The first proposal is to establish Japanese version of the Nobel Prize awarding the science and technology created in Japan and limiting the fields of invention to the significant industrial fields of Japan.

This incentive scheme would directly encourage the scientists of Japan and indirectly publicize the excellency of science and technology to the Japanese people in general, and this would lead the people’s attention to the creation of new technologies.

Although there is a nation-wide awarding scheme called “National Commendation for Invention” sponsored by the Japan Institute of Invention and Innovation, but presently this program is not familiar with most people other than those who have interests in the program. Therefore, this program might require reorganization in the course of establishing the Japanese version of the Nobel Prize.

(2) Development of Patent System to Promote Invention Incentives:

Under the current patent system, Article 1 of the Patent Law just stipulates that “The purpose of this Law shall be to encourage inventions...”, but sufficient support for the realization of “encouraging inventions” should be stipulated in the patent system.

For this purpose, it would be necessary designate those technological themes as are deemed significant from the national perspective as “strategic technology” and to provide the following incentive schemes or measures for those inventions created in relation to the strategic technology, separately from other inventions:

- Shorten the length of examination period and preferentially proceed with the prosecution procedure.
- Discount the official fees such as application fee, fee for filing the request for examination, annual maintenance fees and others.
- Provide tax incentives for the costs of the domestic and overseas patent applications.

In order to exploit patents widely in the society, it is necessary to promote the exploitation of patents in the whole society by establishing a kind of “patent system for open exploitation” facilitating the licensing to third parties and treat patents in the same way as the strategic

technology mentioned above.

Further, it would be an urgent necessity to develop and foster the patent distribution market in order to promote further exploitation of patents.

(3) Establishment of Technology Evaluation System:

If the “Japanese version of the Nobel Prize” and/or the patent distribution market are to be established, the development or invention of excellent technologies are not sufficient, but an appropriate evaluation of technologies and inventions is required.

For the purpose of realizing such appropriate evaluation, it would be necessary to establish a neutral organization to conduct evaluation and selection of technologies or inventions, accumulate know-how for those evaluations. It would be also required for the development of the patent distribution market to conduct the asset evaluation of patents and enhance the accuracy of such evaluation.

(4) Other Measures for Enhancing Incentive:

It is proposed that the inventor’s name should be described conspicuously on the official gazette or other publications. It would also be effective to gather momentum in the society for respecting inventors and to enhance the incentive of inventors if the inventor’s name is clarified in the prior art literatures cited in the notice of reasons for rejection.

4.2 Invention Incentives at Corporate Level

Each enterprise is required to encourage the creation of unique technologies (namely, invention) and strengthen its competitiveness supported by those technologies by reviewing the current invention incentive measures in accordance with its soundness (financial ability) and developing environments, on account of the type of industry, scale of the company and the business environments.

The increase of the nationwide momentum toward pro-patent policies was further promoted by the big news of the Nobel Prize winner who is an employee-scientist of a company. This is the perfect moment to implement the measures to enhance willingness and eagerness of the researchers and engineers toward inventive activities. It would be an urgent necessity to revitalize the inventive activities of the com-

pany by introducing new invention incentive programs that can give a great impact for those employees.

(1) Formulation of attractive themes for R&D:

It goes without saying that quality and number of inventions created substantially depend on the quality of the themes for R&D. Therefore, it is important to select and formulate attractive themes that could motivate the researchers and engineers.

The process of selection and formulation of those themes can be roughly classified into two types; the top-down process and the bottom-up process. From the perspective of motivating the researchers, the bottom-up process, in which the researchers themselves propose the research theme and complete the researches at their own responsibility, would quite effective.

When the theme proposed by the researcher matches the management policy of the enterprise, ideal inventive activities can be realized, achieving the co-existence of the "pursuit of corporate profit" and the "self-realization of researchers". If the research themes are assigned to the researchers in a top-down manner, it would be necessary to respect the researcher's own will by, for example, utilizing the method of in-house staff recruitment or opportunity announcement.

It would be also effective for the enterprises to set high goals such as the contribution to the mankind or society in terms of medical care or global environment, as well as mere improvement of its own corporate identity, to greatly motivate the researchers.

(2) Development of Environment:

It is a commonplace that the researchers are buried under the routine businesses and the inventive activities tend to be neglected. If this is the case, it would be necessary to establish a some kind of "day of invention" or "invention hour" during which the researchers may give priority to and concentrate on the inventive activities, in order to enhance the priority of those inventive activities.

In order to develop and foster the environment and attitudes of putting impotence on inventions and inventive activities, the most significant factor is the changes in the consciousness of the people in the management positions. In order to achieve that goal, it is necessary to strongly promote the schemes for achieving such

goal under the top-down direction.

It would be also essential to secure sufficient number of personnel in the intellectual property division and develop a support system in order to find inventions created in the course of said inventive activities and lead them to the prosecution and then exploitation phase.

(3) Enhancement of Reward Programs:

1) Reward programs for researchers:

It is an urgent necessity to speed-up the rewarding processes to enhance the incentive of researchers in terms of money. Many of the enterprises make payment of the remuneration at each phase of the proposal, application, grant of patent and then the commercialization of the invention. The attitudes of putting importance on inventions would be much more enhanced by generously increasing the amount of the remuneration payable at the phase of the proposal and application of the invention.

Moreover, it is quite effective for further enhancing the incentive of researchers to provide preferential treatment other than the remuneration, especially in terms of research resources such as allowing research budget and providing research facilities and supporting staffs.

Although the mobility of excellent researchers and engineers is increasing as ever, each enterprise should consider the treatment in terms of the human affairs, such as the promotion and increase of salary, from the long-term perspective, since many employees feel insecure about their own employment under the depressive economic environment.

Under the reward system, appropriate and fair evaluation is indispensable. It is necessary to clarify the extent of contribution of each inventor, taking account of the whether the research theme was assigned in a top-down manner, the use of the accumulated technologies of the enterprise and corporate facilities, contribution made by other divisions of the company for the prosecution or commercialization phase of the invention, and the brand power and sales power of the company. It would be important to publicize the criteria and standards for evaluation and improve the transparency of the operation of the reward program that can persuade the employees in general as well as the inventors.

- 2) Reward programs for employees other than researchers:

In order to revitalize the cycle of inventive activities, the measures for enhancing the creative activities are not enough. It is also necessary to pay more attention to the prosecution and exploitation phase of the invention. Appropriate incentives are indispensable for those who are engaged in these phases.

For example, if the company rewards the employees for their contribution to the invalidating of a patent of other company that might hamper the grant of the patent for the company's invention or finding and prosecution of a valuable patent within the company at the R&D phase, or contribution to the exploitation of the invention for the final product, promotion of the sales of the product, or finding of an infringement of the company's patent by a third party or the negotiation of licensing agreement with other company, then the prosecution and exploitation of the patent will be proceeded smoothly and the results of those processes will be returned to the company and the inventors in the form of the compensation based upon the achievements. This cycle would contribute to the further revitalization of inventive activities.

- (4) Enhancement of Incentive of Personnel Engaged in Intellectual Property Division:

Staffs belonging to the intellectual property division are responsible for planning and implementing the intellectual property strategy, which is directly connected with the management strategy of the company. Their assigned roles are to find out an invention within the company, prosecute it for the grant of a patent, actively exploit the patent right, and to invalidate patents of other companies. It would be quite important to exploit their roles and activities, and develop an organization and environment in which those staffs can feel self-realization strongly.

The efforts of the staffs of the intellectual property division in their daily services greatly support the activities of the researchers and engineers, and contribute to their invention incentive activities. Therefore, incentives for those staffs of the intellectual property division would substantially contribute to the invention incentive activities of the researchers and engineers.

Therefore, it would be inappropriate to regard the services and activities of those staffs as

a mere extension of their routine works, and it would be necessary to further revitalize the organization dealing with the intellectual property and the staffs working for those activities by establishing an appropriate incentive program.

- (5) Entitlement System:

It would be necessary to introduce an incentive in terms of honor to the achievements of the researchers and engineers who have long been engaged in the inventive activities. It would be much more effective if the acknowledgement of such entitlement or title is reflected in the evaluation of those qualified researchers and engineers in terms of human affairs.

These titles would have more effect if they are widely acknowledged both inside and outside of the company, and therefore, each enterprise should publicize the entitlement system without fail by, for example, printing the newly given title on the name-cards of the recipients of the entitlement.

- (6) Return of Under-used Invention to Inventor:

If the inventions are not used for reasons attributable to the company, the inventors will be discouraged from creating new inventions. Since it is impossible to exploit all the inventions of the company, it is desirable to establish a system to return those inventions to the inventors once the company decided not to use the invention.

It would be more effective if the company establishes a system for supporting the in-house venture company or starting up of their own businesses utilizing the returned inventions.

Some may suspects that such system won't be sufficiently utilized, but the attitudes of giving an opportunity to cast a spotlight on those under-used inventions, or in other words, the attitudes of exploiting all inventions created within the company would operate as an incentive for researchers and engineers.

4.3 Invention Incentives for Intellectual Property Divisions

Measures for invention incentives implemented at the R&D divisions are in some cases planned, promoted and supported by the intellectual property division of the company. The intellectual property division is therefore required to create a supportive environment, in-

cluding the program, arrangement or atmosphere, for encouraging researchers to create inventions.

What is required of the intellectual property division is that the staffs may exercise their expertise in the technologies and legal affairs in their primary businesses, that is, in the filing and prosecution procedures, in order to obtain sound and steady patent right. We would like to mention in the first place that these activities of the intellectual property division bring joy to the inventors and motivate them to challenge the next invention.

The intellectual property division is required to turn their passive attitude of waiting for inventions created by researchers to the positive attitude of creating, fostering and exploiting the inventions to the company's businesses cooperatively with the R&D divisions.

Nowadays, intellectual property division of each company have more opportunity to participate in the business meetings as early as from the planning phase of business strategies of the company, for delivering search results of the technology trend and the information concerning other companies. It is important for them to support the various aspects of corporate activities and business activities from inside of the company in respect of the intellectual property.

For the active development of these activities, efforts of the staffs of the intellectual property division are not enough, but requires the understanding and support of the management of the company.

The followings are the recommendable action plans that might be effective for developing those activities:

(1) Making proposals to the management of the company:

It would be necessary to actively offer recommendations such as the importance to value intellectual property strategies closely combined with the management strategy of the company, the addition of agenda for the intellectual property activities (acquisition and exploitation of patents or avoidance of infringement, etc.) to the mid-term business plans of each business division presented at the management meetings, and proposals of intellectual property strategies, and it would be also necessary to recommend the planning of "idea contest" or holding of symposiums to the management of the company and to propose plans and implement

various events.

(2) Taking the role of conducting liaison operations:

in tandem with the proposals to the management of the company, it is necessary to support the activities concerning the intellectual property conducted in the R&D division. It is indispensable to hold the meetings connected to the product development plans for identifying inventions within the company, participate in those meetings, and to closely cooperate with researchers. It would be also effective to reduce the routine works of the inventors by providing support in respect of the drafting of application documents or response to prosecution procedures. Further, it is necessary to take prompt application procedures, evaluate pending application properly, promote prosecution of patents, and to support commercialization of the granted patent.

(3) Transmitting useful patent-related information:

It is necessary to actively deliver patent-related information to the R&D divisions that are engaged in the strategic businesses or strategic research themes, as useful technical information, in a quick and easy-to-use manner.

(4) Developing the internal environment for creating inventions:

It is important to develop an internal environment where researchers are able to review the technical information like patent documents and academic literatures from their own desk-top, as a means to provide preferable environment and creative atmosphere for inventive activities.

(5) Education and enlightenment activities:

It is important to develop education programs for researchers and engineers systematically in respect of the meaning and the method of obtaining patents, for example, a patent education programs separately conducted according to those who participate in the program such as freshmen, mid-career employees and executives, respectively, or a patent education program focusing on specific objective such as the techniques for generating new ideas, or a patent education program conducted according to each field of technology.

(6) Support from patent offices:

Patent offices or firms, which undertake the filing and prosecution procedures of enterprises, take an important role in the invention

incentive schemes. As the technologies are getting more and more advanced and specialized, if the patent offices offer to contract filing services, consulting services and search services and other services as a legal professional, the scope of activities of the enterprises will be enlarged, and the number of cases contracted to the patent offices would also increase, and then the opportunities for researchers to exercise their ability would increase.

5. Invention Incentive Measures in Each Phase of Technology Development

In this section, we would like to describe a kind of matrix of invention incentive measures by classifying them into each phase of starting-up phase, development phase and maturation phase, since it would be useful for determining the basic principle of the invention incentives of a company to summarize various invention incentive measures according to each phase of the development of a created technology.

5.1 Starting-up Phase

At this phase, it is important to note that future of the corporate management substantially depends on the acquisition of the patent at an early stage and on the acquisition of a strong patent with broad scope of right. Further, it would be effective to implement an invention incentive program which is as active and impressive as possible, considering the possibility of utilizing those patents to raise funds by placing them in trust or by the securitization of those patents.

The most effective incentive measure at this stage would be to “provide or assign attractive research themes”.

At the starting-up stage of a new technology development, it is necessary to conduct researches of various themes from multiple aspects. Therefore, research themes are determined in a top-down manner and also the R&D members may be determined in the same way in many cases.

In order to enhance the incentive of researchers, it is important to offer to the researchers the opportunity to select the research theme

of their own interest by the implementing in-house recruitment or opportunity announcement for the research themes, on a case-by-case basis. It is also indispensable to accept the research themes proposed by researchers themselves for the purpose of “identifying attractive research themes”.

It would be also effective to implement measures like preferential allocation of research budget, research facilities and supporting staffs for those “attractive research themes”. Moreover, each enterprise should actively reflect these schemes on its personnel system.

The second recommendable measure is to foster an environment of placing value on intellectual properties. It is often the case that such environment is difficult to foster due to the insufficiency of the organization of the intellectual property division or lack of experts. In such case, it would be quite effective to utilize the education programs offered by external institutions like the Japan Intellectual Property Association and to positively use the services provided by patent attorneys or external consultants, for the purpose of educating the engineers and researchers in terms of the basic knowledge, skills (how to identify and describe invention), and the attitudes (to value on intellectual property).

The third recommendable measure is to introduce a remuneration program that can give a great impact (by the extremely expensive amount of the remuneration). This program would positively appeal the importance of inventions to the researchers and engineers and enhance their incentive for the creation of new inventions. At the same time, this program would appeal to the researchers and engineers outside the company, and as a result, operate as an effective measure to recruit necessary human resources to compensate for insufficient human resources of the company.

It would also be effective for the commercialization of new businesses to establish a remuneration program for external organizations under which the research institutes or universities outside the company receive preferential treatment in terms of money for their creation of inventions.

5.2 Development Phase

At this stage, it is effective to establish a system to foster the research mind of the engineers and researchers.

In the same way as the starting-up phase discussed above, the most effective measure would be to “provide or assign attractive research themes”. Provision (or assignment) of research themes, acceptance of the research themes proposed by researchers and engineers, case-by-case in-house recruitment of researchers would be effective in the same way as the starting-up phase.

However, it is no doubt that you can expect higher research incentive the researchers by implementing measures in which researchers themselves propose research themes for commercialization and the company provides budget for those researches, than the cases under which research themes are provided or assigned by the company in a top-down manner. Moreover, incentive measures to provide budget for the commercialization and prosecution of the inventions would promote high quality research and development and promote creation of high quality inventions.

If the result of the high quality research and development or high quality inventions are linked to the improvement of research environment or increase of research budget, it is expected that the research incentive of the researchers will further increase and the increase incentive will cause the effect of the spiraling up of the quality of the research and development and the inventions.

The second recommendable measure is to introduce an award program, that is, to reward and award the development teams or to give honor to the personnel concerned.

Commercialization of an invention is based upon the contribution of a number of engineers and staffs other than the inventors in many cases. Therefore, each enterprise should, upon awarding the result of the invention, positively reward and award “a term”, in other word the researchers who invented the technology which constituted the basis of the new invention and those other engineers and staffs as a team contributing to the completion of the invention, separately from the reward given to the individual inventors.

Further, acknowledgement of entitlement or title (e.g. patent meister) and reflection of the performance (creation of valuable invention) to the evaluation in terms of the treatment under the personnel system (e.g. promotion, salary increase, or bonus) would be quite effective, since the motivation or incentive of the engineers and researchers are enhanced by giving honor to them who created an excellent invention or by evaluating and providing appropriate treatment to those who generated good results contributing to the business performance of the company in their intellectual property activities.

The third recommendable measure is to establish a system for the inventors and other engineers to start up their own business based on the inventions which the company has “determined not to implement”, utilizing the system for in-house venture businesses (such as the support of in-house venture businesses, support of starting-up their own businesses or the system of stock option) and to support their own businesses.

It might be proposed that the company takes the responsibility for prosecution if those under-used inventions are excellent technology that can be commercialized, and grant the license for using such patents at an inexpensive royalty rate and lease the facilities and lend the operation fund to the inventors who are interested in starting up their own businesses.

5.3 Maturation phase

At this stage, new activities for creating invention tend to be neglected by researchers because their top priority is place on the quick and cost-reducing development process of the technology under development. Therefore, the most important objective at this stage would be to revitalize the environment of placing value on intellectual properties.

More specifically, it would be effective to set up “invention day” or “invention hours” as measures to support new activities for creating invention. Further, it would be effective for revitalizing the environment of placing value on intellectual properties to implement re-education of basic knowledge, skills and attitudes, or exploit educational programs of external institutions, or to use the services provided by patent attorneys or external consultants.

The second recommendable measure is to shift the emphasis on invention incentives toward the proposition and filing phase of the technology development.

At the maturation phase of the technology development, the number of the improvement inventions would increase while the basic inventions are difficult to create. Therefore, the ideal measures would be to implement quick and responsive incentive programs.

Moreover, reward programs that can generate immediate effect would be required since it is important to file the patent applications at an early stage considering the movement of the competitors. The emphasis on the reward should be placed on the proposing phase or application phase of the technology development. It would also be effective to concentrate the resources of the rewards for applications to the phases of proposal and filing of applications. You can expect that the researchers would be motivated for next invention if their inventions are evaluated and they receive the rewards before long after the report of their invention is submitted.

It would also be effective for early filing of applications to reward the personnel in charge of intellectual property who takes main role in the activities for identifying inventions within the company.

The third recommendable measure is to reward the employees involved in the cycle of inventive activities other than the inventors.

At this phase of the technology development, it is expected that patent infringement issues in relation to the competitors occur most frequently, and therefore, one of the most important objectives for the intellectual property activities at this stage would be to invalidate the competitor's patent as well as to prosecute and maintain its own patents.

With these backgrounds, not only the inventors and researchers or engineers but also the personnel of the intellectual property division are substantially involved in the measures to invalidate or avoid the competitor's patents. Therefore, appropriate reward and award to the personnel of the intellectual property division and the researchers or engineers would be effective for enhancing their incentive to make effort for the early settlement of the infringement issues in relation to the competitors by planning

their own business, invalidating the competitor's patents, obtaining royalty-free license and others.

It would also be an effective measure to honor the engineers or researchers who made an excellent invention, acknowledge an entitlement or title (e.g. patent meister) to inventors or to reflect those achievement to the treatment in terms of personnel affairs (such as promotion, salary or bonus).

5.4 Summary

Presently each enterprise introduces various invention incentive measures. However, in many cases those incentive programs are operated in a uniform manner and most of those systems are inflexible. Not all corporate activities are conducted at the same time or in line with other activities. When you look at each individual technology and business one by one, the starting-up phase, development phase and the maturation phase of each such technology or business exists in a mixed manner. Therefore, we hope each enterprise may consider the introduction and operation of flexible and multiple incentive programs by utilizing the proposals made in the case study of this article.

When such consideration is made, it is advisable to review the following matters, in addition to the responsive measures taken in accordance with each phase of the technology or business development, in relation to the management policy or management strategy of the company:

- How to motivate the basic researchers if the basic research contributing to the whole society is valued as in the pharmaceutical industry;
- From the technological perspective, which policy should be taken, the development of the core technology or the development of use concerning a new product;
- Which division of the company should be revitalized, the R&D division, development division or the sales division.

6. Closing

When we discuss invention incentives, the discussion tends to focus on the consideration of service inventions payable to inventors. The discussion concerning the consideration of ser-

vice inventions has become active due to the increasing number of lawsuits concerning the service invention and the implementation of the Basic Law on Intellectual Property these days, but the themes like “what is the ideal invention incentive or incentive measures” have been hardly discussed.

When the theme “Enjoyment and Incentive of Invention Creation, and Enforcement of Competitiveness”, which is the same as the theme of our committee, was proposed at the symposium held by the Japan Institute of Invention and Innovation in February 2003, active discussions were held and the symposium received high recognition.

This might be because the discussion on invention incentives has been conventionally concentrated only on the theme of the service invention, and that the invention incentives in the original meaning were hardly discussed, and there have been few proposals made in respect of this subject.

This Committee has been studying the invention incentives not as a mere incentive for the inventors, but we discussed what would be the ideal invention incentives in the future from multiple aspects, with enterprises, inventors, intellectual property divisions (including patent attorneys) together. Each industry and enterprise has quite different idea or attitude toward

invention incentives, and it is advisable that each company should utilize this article by making their own choice of the measures mentioned according to their own need. We hope this article will help each enterprise review their invention incentives in the future.

This article was written by the following members of The Second Subcommittee of The First Intellectual Property Management Committee of FY2002: Akira Tsuji (TOPPAN PRINTING CO., LTD.), Masaichi Aoyagi (Hitachi, Ltd.), Norimori Tomita (FUJITSU LIMITED), Itsuo Makino (FURUNO ELECTRIC CO., LTD.), Toshiki Okuyama (DAIO PAPER CORPORATION), Fumio Kusumi (Ricoh Company, Ltd.), Yukihiro Misaka (TOSHIBA CORPORATION), Keiji Souki (TOTO LTD.), Masaji Enotani (Nippon Soda Co., Ltd.), Seiichi Tanaka (KOBELCO CONSTRUCTION MACHINERY CO., LTD.), Fumio Inoue (SYSMEX CORPORATION), Naoto Yamamoto (Murata Machinery, LTD.).

We appreciate Mr. Takafumi Shibata and Mr. Hideaki Yamauchi of Shionogi & Co., Ltd., and Mr. Koichi Kitamura of Fujisawa Pharmaceutical Co., Ltd., who were not the member of this Subcommittee, for their tremendous support and cooperation in the activities of this Subcommittee from outside.

(Date manuscript received: June 17, 2003)