IPKey

Comparison on Employee Invention Laws and Regulations – Germany vs. China

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1. Introduction

With the ongoing revision of remuneration laws and regulations in the area of service inventions in China, there have been many questions raised in which way the new law will develop. On July 17, 2015 IP Key held a workshop on this important topic with participants from the patent office, Chinese and multinational research-based companies and academia. This report was used as preparatory material for the workshop. The workshop discussed the expected influence on innovation by such laws.

The general concept of paying remunerations to inventors is historically driven from European practice which presents such concepts for many years, especially Germany starting in 1957. Therefore, it has been considered to be useful to compare these practices and their observed historical changes and recent developments with the current law reform in China.

Accordingly, this report focuses on an analysis of the German and Chinese laws related to awards and remuneration for service inventions. By comparative analysis, the current laws and the proposed amendments to them are reviewed with inclusion of the historical changes in both legal systems. Additionally, other European practices are described for reference to similar or deviating developments.

The author adds on experiences gained in the two legal practices in handling remuneration matters.

2. Statutory laws and regulations

In principle, laws for inventor remuneration and awards can be found in the IP laws, the labor laws or special laws of a country.

2.1 Germany's laws

In Germany, it was chosen to establish a special law already in 1957 (*Act on Employee's Inventions*, "AEI")[1]. Inventions which have been made by employees in private and public sectors and which can be patented in the form of regular patent applications or utility model applications as well as qualified technical improvement proposals are all in the scope of the law. The law makers have chosen to establish a detailed statute with 49 articles in addition to the patent law. However, the law keeps links to the patent law. It also creates a special arbitration chamber in the German Patent and Trademark Office ("GPTMO") (Art. 29 AEI) for dispute resolution. Furthermore, it determines the courts dealing with patent matters to handle disputes which are not finally settled by arbitration in the patent office. Knowledge of the law is mandatory for German Patent Attorneys in their qualification examination. It is therefore more closely related to the patent law than to the labor laws.

[1] Promulgated July 25, 1957 last changed with an effective date of October 1, 2009 by Art. 7 of *the Act to Simplify and Modernize the Patent Act* of 28 May 2009 as published in the Federal Law Gazette [Bundesgesetzblatt], 2009, I, at 2521.

It is important to state that no article in the AEI determines in detail how to calculate a remuneration amount. Art. 9 (1) AEI states that a "reasonable remuneration" is to be paid. However, the law (Art. 11 AEI) empowers the Ministry of Law to issue guidelines for determination of remuneration amounts in consultation with the social partners (employer representatives and unions). In fact, shortly after the law of 1957, *the Guidelines for Remuneration for Employees' Inventions in Private Practice* ("GL") have been issued[2]. It is important to note that the GL isnot a mandatory law as it should provide general guidance only. However, the GL has become the undisputed basis for decision making in the Arbitration Chamber of the GPTMO and the patent litigation courts. The decisions of the Arbitration Chamber of the GPTMO have also clarified many terms of the GL over many years (although previous cases are not binding for later cases). The GL has 43 sections and is very detailed to various kinds of remuneration situations. It is the basis for all considerations on remuneration of service inventions in Germany.

2.2 China's laws

In China, the patent law is the main source for statutory laws related to remuneration. The Chinese patent law ("CPL")[3] itself is relatively young and in its concepts very closely related to the German law as many articles are mirroring corresponding articles of the German patent law. This law closeness is also shown by Art.16 of the CPL which requires the payment of "reasonable compensation" in case of exploitation of an employee invention, similar to Art. 9 (1) AEI mentioned above. However, until the third amendment of the CPL in 2008, this was the sole provision found in the law. In the absence of guidance on the "reasonable" compensation, companies widely neglected to pay remuneration to their employees on employee inventions. A major change was made in the law reform of the 3rd amendment for the patent law where more rules (Rules 76 to 78 IR) related to to Art. 16 CPL have been added to *the Implementation Regulations of the Patent Law of the* PRC ("IR")[4]. With these rules mandatory statutory standards have been set for companies. Further law reforms, such as *the Draft Service Inventions Regulation* ("SIR")[5] which has been already published for public consultation in March 2014, are currently envisioned. The SIR in a further revised version of April 2015 is on review by the State Council Legal Affairs Office. Some elements of this regulation share in part high similarity in concepts with German statutes and this study will in detail discuss especially the recent SIR (version of April 2015) in respect to German provisions as the version of the regulation appears to be close to promulgation.

The study will analyse how these statutory laws and regulations are applied in the two jurisdictions and which alternatives have been discussed over the years. This may give good opportunities to share the view of the author on the matter that who deals with remuneration for a company and external clients in both jurisdictions.

3. Scope of the laws and regulations

3.1 Employee claims and the relation to the employer

The AEI as well as the SIR deal with inventions or service inventions of employees.

Germany:

In Art. 1 AEI, it is defined to include both private and public sectors in the definition of eligible employees. In the private sector the employees will be considered according to the

2 Promulgated July 20, 1959 revised 1983 (translation in English published e.g. in Michael Trimborn, Employees' Inventions in Germany, Wolters Kluwer, ISBN 978-90-411-2826-3)

3 Promulgated March 12, 1984 and last amended on December 27, 2008

4 Promulgated June 15, 2001 and last amended January 9, 2010

5 In the following SIR refers to the draft for review at the State Council Legal Affairs Office of April 2015

German employment laws. The basic principle is that the remuneration requirement is derived from the employment and is governed by the relationship between the employee and the employer.

This basic principle cannot be overruled by any actions of the employer, e.g. transferring the rights to the invention to a third party. This is important in the area of contract or service R&D where the employer remains the obligated person to attend to remuneration payments, even if the rights to the invention are transferred to a third party according to the R&D agreement ab initio. Further, according to the statutory requirements, the remuneration in Germany is always calculated according to the benefits of the employer. If an invention is transferred to a third party by the employer free of any consideration, the remuneration can be equal to zero. However, this should be a rare case as such R&D services are always subject to a service fee which will define the benefit of the employer from whom remuneration is to be paid. Evidently this leads to lower payments of remuneration of employed scientists in service R&D entities or universities providing such service R&D.

For universities, 30% of the obtained benefit of the university is foreseen to be paid to the inventors according to Article (Art.42 (4) AEI). This is however a special condition, because it considers that university staff need special support by the law as their environment is different.

The private service R&D is clearly governed by the principle to remunerate from the employers benefits only in line with the provisions of the GL. Scientists in private service R&D companies are aware of limited remuneration expectations due to their different types of employment. However, it has to be said that remuneration can be freely negotiated, especially if it is above the statutory requirements. Some R&D commissioning companies make use of this by offering to treat the service R&D employees of the partner comapnay in the same way as their own employees with regard to the overall amount of remuneration. This can be an incentive in selected cases. It reflects the flexibility for companies in providing additional incentives to partners without any obligation by law to do so.

Service inventions (Art. 4 AEI (2)) in the German system are those that are: (a) made during the period of employment, (b) either resulted from duties of the employee in the company or (c) substantially based on experience or activities of the company. All other inventions are free inventions and do not require remuneration as being owned by the employee.

The public sector (state employees, officials and soldiers) enjoy selected special rights[6] according to Art. 42 AEI which include as most important: (a) a right to not publish their work ("negative publication right") and keep it secret for follow-up work; (b) an increased standard of remuneration of 30% (see above). The changes were introduced to reform the German system providing the universities with ownership rights to patents which were owned by professors before the reform. University professors can enjoy special rights for compensation, but now (analogous to Bayh-Dole Act in the United States) have to transfer their rights in inventions to the university as the employer.

However, there remain problems to negotiate R&D agreements between private entities and universities due to different interests centered about publication, confidentiality and remuneration. Model contracts have been designed by a group of experts to overcome these issues and foster technology transfer with the private sector which were published by the Ministry of Economy and Technology[7]. Interestingly the model contracts often require the university employees to waive their negative publication rights which show that a practical compromise clearly circumvents parts of Art. 42 AEI. There are many cases in the German remuneration laws where the general practice avoids otherwise mandatory law by entering into allowable, deviating agreements.

6 Introduced with the AEI law revision of 2002

7 *Mustervereinbarungen für Forschungs- und Entwicklungskooperationen*, 2nd edition, 2010, available on: http://www.bmwi.de by the Ministry of Economy and Technology [accessed: Date Month YEAR]

China:

In China, Art. 16 CPL requires "the party that is granted a patent right" [8] to pay remuneration. This has created some uncertainties as to who the obligated party is with regard to remuneration claims of the inventors. In many cases (see e.g. service research discussed above), the patent applicant is not identical with the employer, because the right to file a patent may have been transferred to another party in an agreement for R&D services or collaboration. However, the inventor has no relation to such contract partner of the employer, because the employee only has an employment relation with its employer. It appears unreasonable to create a fictional contractual relationship between the inventor and a non-related party because that would create numerous issues (e.g. cross-border jurisdiction, if the partner is overseas). In common practice, it is therefore assumed by the courts so far that only the employer is liable for remuneration under Art. 16 CPL. The party that commissions the R&D and is the later patentee is not directly liable. This understanding has been further confirmed in a study paper of judges from the Shanghai High Court[9] after several expert hearings clarifying that the commissioning party in service R&D should not be liable for remuneration in such commissioned research relationship. The Shanghai High court further concludes that the employer may not be liable for remuneration in commissioned research either, if the patent is granted to another party. This would mean that the employed inventor does not have a right to remuneration in this case. Howver, this may be only justified, if the there is no significant quantifiable benefit for the employer at all. Further clarification in the area is needed. The new SIR could contribute in this regard by clarifying the "obligated party" and its "benefits".

It is noted that a recent decision[10] of the Shanghai High Court has confirmed that the direct employer is solely responsible to pay remuneration within a company group and, in the absence of an employment relationship, no other affiliate is liable. This liability is accordingly not created by being the party that commercially uses the invention. In this decision, however, the remuneration was then determined based on the commercial benefits of the commercially using entity and not the benefit of the employer. Obviously, it has been considered that in this case the companies are not unrelated, because they belong to one company group. Dealings in a company group were treated as directly related to the benefit of the employer regardless of the real benefit. It may be interesting to see how such a case would be decided, if the service R&D unit as the employer is unrelated to the party who commercially uses the invention. According to the general principle, the remuneration may then be limited to the benefit enjoyed by the service R&D entity.

Service inventions are similarly defined in China as in Germany reflecting the closeness of the laws. A service invention in China made by an employee (a) in the course of performing his own duty, (b) in execution of any task other than his own duty, which was entrusted to the employee by the entity to which he belongs, but also one that is made within one year from retirement, resignation or termination from its employment or personal relationship with the previous employer where the invention-creation relates to his own duty or the other task entrusted to him by the previous employer (Rule 12 IR) is in the scope of the law. Service inventions also include inventions mainly made by using the material and technical means of the employer. The last point is further clarified by the draft SIR. The SIR further states that ownership may be with the employee, if inventions are made by made by using the material and technical means of the employer. This would require that there is any form of agreement on returning funding or fees for the usage of the material or technical means to the employer. Another condition could be that the material or technical means of the employer are only used for verification and testing of an otherwise free invention. This last wording in the regulation may cause confusion in the companies, because it creates uncertainty whether an employed scientist can use company resources freely. Many important research-based companies in China have concerns about this part of the regulation. If it is not removed from the draft SIR, the author believes that companies will clarify that inventors cannot use materials or experiences of the employer without written

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8 *Guidelines for Patent Examination*, 2010, official non-binding translation

9 *Guidance on Hearing Rewards or Remunerations Disputes of Service Invention Made by an Employee-Inventor or Designer*,2013, promulgated by IP tribunal of Shanghai High People's Court in June, 2013

10 Shanghai High People's Court, 2nd instance civil judgement of Zhang Weifeng vs 3M, April 23 2014

approval and are not allowed to do testing or verification. Therefore, proposed Art. 7 (4) SIR may probably be circumvented as not meeting the practical needs in most companies.

Remuneration in the public sector in China is in its majority not governed by national rules, but often by specific local regulations and the own rules of the public institutions. Like in Germany, ownership is generally made available to the university as employer, but various remuneration schemes are applicable. For instance, local rules can foresee that at least 50 % of the revenue of transfers or licenses is forwarded to the employee in the university[11]. In view of the numerous regulations at different levels, there are a lot of uncertainties both for professors as well as industry in R&D collaborations between industry and public institutions in China. This uncertainty is further engraved by the fact that some professors often are not willing to accept that their inventions are service invention meeting the criteria of Rule 12 IR but consider them to be non-service inventions.

In this regard, it may be mentioned that numerous additional local regulations in general cause confusion to practitioners because they create a thicket of legislation which the practitioners cannot oversee. For instance, the Shanghai Measures[11] and their statutes on remuneration have been neglected by many local and foreign companies in the past. They appear to be a non-enforced overregulation which may rather hinder management decisions of industry on investing in R&D in Shanghai.

3.2 Definition of Invention/ Scope of the law

Significant differences between the German and Chinese system exist with regard to the invented or created matters that are subject to the laws and regulations.

Both systems include inventions that are eligible to be protected by regular patents and utility model patents (Germany: Art. 2 AEI; China: Art. 16 CPL, also Art. 4 SIR). Outside this core area the systems deviate significantly from another.

3.2.1 Germany - "Qualified technical improvement proposals" as an additional type of remuneration

In the German system remuneration also needs to be paid for "qualified technical improvement proposals" (Art. 3 AEI). Such proposals include technical innovations that do not meet the criteria for being protected as patents or utility models, but assure the employer of a similar benefit as a patent or utility model (they are "qualified" in contrast to "simple" improvements). In practice this is often a concept which is difficult to evaluate and is practiced differently in various companies and industries. Furthermore, the GL is not applicable to the remuneration of the "qualified technical improvement proposals" which are usually governed by company regulations and agreements of employers with the respective unions in a different regulatory system. Remuneration amounts of this type are generally much lower. Typically they are based on measurable benefit for the company, on estimations or on a license analogy. In almost all cases those "qualified technical improvement proposals" are made by non-scientific staff and often have no measurable benefit (a study by Morsey in 1995 found that 98% of the "qualified" improvement proposals in Porsche AG have no benefit[12]).

11 *Shanghai Implementing Measures on the Ownership of and Remuneration for Employee Inventions*, promulgated 2007 with Decree 30 of the Shanghai Intellectual Property Administration

12 Morsey, Philip ,1995: *The Economic Evaluation of the Proposal System at the Example the Porsche AG* (German language), Frankfurt/Main

While the proposal system[13] is useful to utilize additional potential of employees for contributing, they rarely lead to major innovations. Therefore, they can be seen as an add-on in the complex German system that intends to also cover the lower end of innovations by employees. It only works in practice to some degree because companies have long-term experience in keeping the two systems separate. If not separated clearly, it would probably lead to misuse and an overflow of reports. It may be additionally mentioned that in a law reform of 2001 a new draft law proposed to delete the "qualified technical improvement proposals" from the law by deleting Art. 3 AEI and all references thereto. This was much appreciated by the German employers, but the law draft was rejected for other reasons (see section 3.2).

3.2.2 Scope of covered subject matter in China

In this regard, from employer's perspective, it has been widely appreciated that the Chinese law system (which is in the initial steps of the establishment of incentive system for fostering innovations) currently does not establish a similar lower end coverage of know how. The definition of remunerable subject matter in Art. 4 SIR in its recent version does not include any "know how" anymore. Therefore, only matters eligible for protection by intellectual property rights are covered. This avoids the dilution of the new system with trivial improvements that employees report to benefit from small awards. It helps focusing on the major innovation fostering effect. In fact, R&D managers in Shanghai have expressed in personal talks with the author on various occasions that the overflow of reports and unjustified claims for remuneration for minor improvements could be a big threat to their organization and a hindrance for further growing their R&D teams in China. The risk to be exposed to unjustified claims seems to currently outweigh the risk of missing unidentified smaller innovations. This concern may be partly resolved after the establishment of new effective IP management and utilization schemes in companies which the draft regulation being encourages (see Article 6 SIR).

On the other hand, Art. 4 of the SIR further includes broader subject matter into the remuneration system. Additionally, creations that can be protected by design patents as well as plant variety protection rights and exclusive rights for circuit layouts are included. Such broader approach appears to achieve better coverage in all industries and sectors. However, it is noted that valuation of innovations in these fields are more difficult. There are no remuneration precedents in other countries outside the patent rewarding systems. It will be the duty of the law makers and courts to establish a suitable evaluation practice for these innovations with regard to remuneration. Certainly the level of a designer to create a product with an aesthetic effect on an observer provides much less economic benefit to an employer. It has to be seen whether the statutory remuneration conditions of the SIR in Art. 21 will be practical. It may happen that such broad coverage is putting Chinese research-based companies in an unfavourable competitive position dealing with these types of remunerations which are not relevant in other countries. Similar to the "qualified technical improvement proposal" system in Germany, the broad definition of Art. 4 reaches out to achieve higher completeness at the low value end, but may be a huge burden to the companies dealing with the regulation.

3.2.3 Overlap with other laws in China

[13] Details in Bechmann, Reinhard ,2013: *Award System for Improvement Proposals with Measurable Benefit* (German language), Hans-Böckler-Stiftung , Frankfurt/Main

In this regard, it shall be mentioned that other laws in China also create potential remuneration requirements for employee creations and work results. *The Law of the People's Republic of China on Promoting the Transformation of Scientific and Technological Achievements* ("*Transformation Law*", "TL") is also currently in a drafting stage[14]. It is completely unrelated from the SIR in the law making process, but also creates remuneration obligations. Statutory payment amounts are even following the same amounts stated in the SIR, although the two laws stand separated and deal with different types or overlapping types of remunerable subject matter. According to the available draft, remuneration is to be also paid to employees who made contributions in transforming scientific and technological achievements. This clearly extends remuneration from inventors and creators to persons who contributed to development of inventions, creations and know how. Whilst this law may spur innovations into commercialization that have otherwise been neglected, it appears doubtful to the author whether this justifies such broadening of the remuneration concepts to fields outside of inventions or creations. Developments of scientific and technological achievements into commercial products are mostly routine tasks for whole employee groups in companies without involving creative contributions. This law would potentially make all this routine work subject to remuneration claims which may not be the intention of the law makers. Only cases where outstanding contributions to transformation, without the support of the company, were successfully made appear to be reasonably eligible for a reward or other recognition. But those cases are very rare. This special law provision may increase the number of disputes. The risk that routine activities may potentially require attention in remuneration administration systems is rather a threat to research investments in China than support for developers. It raises significant concerns in industry how much remuneration needs to be paid and which staff will handle the background administration. Again, a maximum of innovation fostering to remuneration systems may create risks of overloading research-based companies with such tasks. For this reason, some countries, such as the UK (see below), only provide remuneration in very exceptional patent cases and no other remuneration at all.

Due to placement of the additional remuneration requirements in this special Transformation Law, it is further overlooked by many IP practitioners. It has gained insufficient attention. The likely consequence is that there may be instances of non-compliance. Combined remuneration regulations in the SIR may be preferred by users, if such activities are desired to be covered at all in view of the concerns.

3.3 Claiming ownership in service inventions/obligation to reward and remunerate

This study deals with service inventions, which are to be remunerated by the employer. However, the procedure in distinction of service and non-service inventions is critical as this can relate to disputes with an employee about the ownership of an employee invention. The criteria on how to determine a service invention in both systems have been discussed above.

Germany:

However, in Germany there have been many issues related with the respective procedure in the old law, which required the employer to timely claim its rights into a reported

[14] Draft for consultation of January 2014

invention within 4 months after reporting (Art. 6, AEI, old version). Otherwise ownership for the employer would have been lost. This has in fact led to losses of IP ownership by many inexperienced employers not attending to this due date. This was further engraved when the Federal Court ("BGH") [15] decided that a filing of a patent application by the employer triggers the deadline for claiming rights into the invention even without receiving a separate written invention report from the inventor. This meant that several small and medium sized companies (SMEs) did potentially lose ownership in the employee inventions filed on their own, because they did not have an advanced IP department and management and were unaware of the legal requirement to file a written notice to the inventor to claim ownership.

No clarity of ownership for the employer (who has usually all the financial means and business contacts to commercialize the invention rather than the inventor and additionally a moral right to the invention having paid of the research) has led to missed opportunities and was therefore addressed in the law reforms. In fact, it became the subject of the main change of the Act to simplify and modernize *the Patent Act* of 28 May 2009[16] in Germany. Now a legal fiction has been established that an invention will "be deemed to be claimed by the employer for ownership" four months after it has been fully and completely reported by the inventor (Art. 6 (2) AEI).

In this regard it needs to be mentioned that after the expiry of the 4 months deadline, the employer has a duty to file a patent application in Germany in due course (Art. 13 (1) AEI). The only way to overcome this is to declare the existence of a "company secret" which will be kept undisclosed (Art 17 AEI). If this declaration is made, the employer is still required to pay remuneration, as if a patent has been granted, but only in case that the invention meets the patentability standards. Therefore keeping of company secrets has become an area of legal difficulty for many German companies because not filing of a patent application from a reported invention leads to an automatic remuneration requirement as company secret. For improvement inventions to be kept as company secret, patentability has then to be checked. In order to avoid unjustified remuneration payments in all reported cases, often the following needs to be done: A patent application is filed just to get a patent opinion from the German Patent and Trademark Office. After receipt of the opinion, the application is then withdrawn before publication to ensure keeping the company secret. This procedure is cumbersome and expensive. But it is necessary for companies to reduce the risk in potential disputes with employee inventors. In order to avoid the problem of disputes on "company secrets", almost all reported inventions are filed in the form of patent applications in Germany. Only very few inventions are kept as company secret when the technical know-how is extremely valuable, but patents do not provide sufficient protection (e.g. process improvements of which infringements can hardly be proven).

China:

In China, Art. 13 SIR in its current draft version seems to avoid this problem because the company is only required to inform the inventor-creator in a written notice within six months (unless otherwise agreed) whether they wish to file a patent application, protect the invention as know-how, or publish it. However, two clarifications would be required in this regulation draft: (a) what are the consequences on remuneration once this six months deadline is missed without notification? and (b) if the company decides not to file a patent application on the protectable service invention, will remuneration be payable and of which amount? Revised Art 13 SIR is not clear on this.

From the author's view point, (a) and (b) would need to be clarified in the draft SIR. It is desirable to state that the non-attendance to the deadline has no effect on ownership of the invention and it remains with the employer, unless the conditions of a non-service invention are met. Otherwise Chinese employers with less advanced IP management would face the

15 BGH, Judgement in X ZR 155/03 ("Haftetikett"), GRUR 2006, 754 ff.

16 Dr. Anja Petersen-Padberg, Dr. Markus Georg Müller , 2009, *Reform-of-the-German-Act-on-Employees-Inventions* , English language summary, Hoffmann & Eitle Newsletter 5/2009 http://www.hoffmanneitle.com/information/publication/UPDATE---Hoffmann--Eitle-Newsletter-52009---Reform-of-the-German-Act-on-Employees-Inventions-as-of-1-October-2009/63/

same issues as SMEs in Germany under the old German law. These German SME's missed deadlines for responding to inventors and lost their rights in the invention.

As stated in earlier drafts of the SIR, in the absence of a notification of the employer, the invention may be considered as a company secret. This could be a clarification. But some opinions of experts have assumed that companies might then try to keep inventions as trade secrets and escape remuneration. In the author's opinion, it is, however, more prudent to assume that all employers have a general interest to file IPRs as early as possible, because the first party to file will be granted the patent or other IP rights. Employers usually wish to enjoy the monopolistic value of the IPRs. Furthermore, the enforcement against a theft of a company secret is difficult, which gives an additional preference to file patent applications. This clearly gives less preference to retain all inventions as trade secrets to escape remuneration.

If no patent application or other IPR application is filed, remuneration may be only paid for invention-creations which meet the standards for patentability. If a reported invention-creation does not meet the respective IPR protection standards, it will be freely usable without any obligation to pay awards or remuneration. If on the other hand an invention has been reported which is patentable, Art. 13 SIR should not constitute a means for employers to evade remuneration. It could be advisable that in case of publication or keeping the invention-creation as a company secret, a lump sum is paid (e.g. of the same amount as the payment paid at patent grant). It could further be proposed that such payments be limited to a reasonably low amount because the employer has either willingly decided to publish the invention-creation (as having no monopolistic value for the employer when protected by a patent/IPR) or to keep it as a company secret (hinting at limited monopolistic value due to weak protection in the form of patents/IPRs). Such lump sums may also lead companies to reconsider whether they rather file a patent application first (and avoid the lump sum) or whether it is really useful to keep the invention creation as company secret or publish it. This would help to incentivize companies into filing patent applications, rather than keeping company secrets.

In the author's view, another need for clarification is originating from the Chinese laws and regulations of the draft SIR. The IP management of inventions and decision making can be only made, if a full report on the inventionthat states all details of the invention and allows the employer to make a decision for filing IPRs is available. However, Art. 10 and 11 of the SIR are not clearly indicating that a complete report is mandatory. In practice, reports obtained are often lacking in this regard. In the same way as in Art. 5 (2) AEI in Germany, it could be preferable to require the inventor to give a full description of the invention-creation including all features that render it patentable/protectable. If this is not provided by the inventors, the employer shall be allowed to ask for further clarifications. No deadline of any article in the regulation should be started until the receipt of a complete meaningful report. Such an additional complaint right for getting an improved report is for instance established by Art. 5 (2) AEI for employers in Germany. Furthermore, it may also be advisable to ask for the share of the inventors to be documented in the invention report. Practical experience in Germany confirmed that an early statement is useful to avoid later discussions on the issue of each inventors share.

3.4 Special inventor rights

Besides the right to receive remuneration and awards, inventors in the German system and in the Chinese system enjoy additional special rights. The rights intend to ensure that for a case that the employer loses interest in an invention it can still be utilized and developed for commercialization.

Germany:

Art. 16 AEI gives the inventor the right to obtain ownership of those patent rights that the employer wishes to abandon. The right is reaching far as it includes the right for the inventor to file patent application in the countries where the employer does not want to seek patent protection himself. All cost has to be borne by the inventor in exercising its right. In order

to avoid that the employer has to maintain patents for a long time before the inventor makes a decision, there is a three months limitation in the law for making such decision. During these three months the employer must maintain the rights by paying maintenance fees or taking other actions.

If not completely neglected (as often the case for SME's), Art. 16 AEI caused a lot of issues for German companies who complied with the law. A special administration was necessary, deadlines surveyed and discussions with inventors held. The latter happened rarely because mostly inventors do not have the financial means to enter into sincere discussions about obtaining the rights to the inventions.

Filing of foreign patents by the inventor himself, where the employer has no interest, almost never happened, because the fees for translation and foreign agents are too high for individuals. Even very few inventors were interested to discuss to maintain patents themselves which the employer was willing to abandon. The reason is: The employer usually has the best knowledge of the market and respective decisions are generally based on detailed economic evaluation of a team (e.g. Patent or Business Committee) in a company. In fact, the law mainly resulted in the reversal of some foreign filing program decisions. Sometimes an abandonment decision was reversed after the inventor expressed an interest and the employer reconsidered the case. Innovation-creating self-development of the invention by an inventor as individual was almost never observed and the practical relevance of this article is very low. It was just not cancelled in recent law reforms, because unions were not willing to support its cancelleation.

Moreover, the company practice found its own solution to fully circumvent Art. 16 AEI. It became evident[17] that it is possible to buy-out the right for offering abandoned patents by individual agreement with the inventor. Therefore most of the companies established a standardized system where the inventor received incentive payments at the time of reporting an invention or within the first year (e.g. EUR 500 or more). This was reported as suggested best practice[18] for all employers on IP conferences.

It can further be mentioned that in Germany the practice of some companies has developed into buying a waiver to the rights to the abandoned or not filed cases, but at the same time the inventors are still informed on the abandonments without any obligation to do so. This has rarely led to inventors negotiating to obtain rights (which could be discussed at that stage), but has rather reduced the risk of the company that the abandonment decision overlooked some opportunities for commercialization, which the inventor is aware of. Some inventors object and decisions are reconsidered. Such information obligation is upon the discretion of the employer only and used by advanced industries that want to hear the opinion of the inventor. This way is a suitable industry practice, because employers are not burdened with obligations (and related liabilities) regarding mandatory patent offerings to their employees.

China:

Art. 15 SIR in China foresees a similar right as Art. 16 AEI. It can be envisioned that the practice will therefore develop similar as in Germany. Small companies may neglect the regulation (as is the case in Germany) and bigger companies will try to circumvent it as being impracticable. Any technology transfer and commercialization of abandoned technologies in this way will likely not happen, because the means of inventors for own developments and commercialization are very limited.

The author is already aware that innovative Chinese and multinational companies in China, which are knowledgeable of the German practice, will also try to establish buy-out policies in China in order to reduce administrative burden and avoid the payment of unnecessary maintenance fees during negotiations with inventors. However, there is a concern among

17 cf. Blatt für Patent-, Muster- und Zeichenwesen (BlPMZ), 1989, 289

18 Dr. E. Loeser, Dr. M. Victor , Presentation ,2014 ,Optimal collaboration between R&D and IP-Management (German language), "Patente 2014" Conference, Muenchen

innovative companies whether such practical approach will be allowed by the courts in China as being in conflict of "eliminating inventor's rights" (Art. 18 SIR). If the court practice would require negotiations with inventors on all abandoned cases, the old German law situation would be given in China. In Germany this situation was widely considered as a hindrance of efficient IP management of the companies. Especially in China's environment, the inventors may not be aware of the difficulty of commercialisation of IP and the related financial funding needed. Therefore, it can be expected that many negotiations would be initiated by employees first without much merit. Then companies would have to deal with them under the obligations of Art 15 SIR. At least a deadline for the maximum time of such negotiations is probably needed in order to prevent unnecessary maintenance fee payments and tedious discussions during long unsuccessful negotiation.

Professors may be the exception to the above mentioned. Universities in China may apply this principle of offering more successfully through own specific guidelines and statutes. In the university setting the individual professor may have a better knowledge and commercialization support than the institution as employer.

In China employee inventors rights are found more laws.

In this regard Art. 326 of *the Contract Law*[19] ("CL") is an example. This article states that creators of technology results should participate on the proceeds from licensing or transferring a service-related technology result to a third party. For patents and other IPRs this could be aligned with the SIR, but this provision is much broader in scope. It includes non-patentable subject matter (such as know how related to small improvements) which may include routine work results

Article 326 CL raises even more concerns for employers due to the fact that it further states that an inventor has a "first right of refusal" under equal conditions to obtain the ownership to all his service related results, if the employer transfers them to a third party. This obligation is currently considered to be highly non-practicable, because it creates issues in technology transfer and service R&D. It renders ownership unclear by making it subject to option rights of the inventors or creators. No technology transfer partner or service R&D requester desires to enter into an agreement on technology results for which a valid transfer of rights cannot be guaranteed due to special inventor rights. In a standard technology transfer it is a barrier for concluding an agreement, if the inventor/creator needs to be heard before transfer of the technology can be affected.

Additionally in contract R&D a lot of legal practitioners have concerns whether the first right of refusal would apply to the commissioned contract R&D results. It may be argued that this is not the case, because the contract was effective before the research result came into existence and therefore may supersede the inventors' rights. However, the uncertainty sometimes prevails and this has led to companies decisions to be cautious for not running high value (and therewith highly innovate) research in China as service R&D. Giving these type of special rights for potential commercialization to inventors leads probably to reduced spending into contract R&D and it minimizes the growth of Chinese contract research organizations (CROs). These could otherwise be talent creators and create spin overs into self-financed projects of the Chinese new industry.

In this regard it may be mentioned that a similar provision has been deleted from the SIR and can now be only found in the CL. Again, practitioners would prefer to have all special employee inventors' rights in one law to facilitate the legal compliance for companies and to avoid contradicting laws and regulations.

In the recent draft "*Law of Promoting the Transformation of Scientific and Technological Achievements*"[20] Article 47 TL further grants remuneration rights to persons who made scientific and technological achievements or who made contribution in transforming the scientific and technological achievements. This provision with special inventor rights has been already discussed in section 2.2 above. It is another example for a special right with practical problems.

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19 *Contract Law of the PRC,* promulgated March 15, 1999

20 *Law of Promoting the Transformation of Scientific and Technological Achievements,* as circulated for comments in draft form in early 2014

4. Awards and Remuneration

The awards and remuneration to be paid constitute the core of the laws and regulations and are of most interest to the parties involved. Awards are paid irrespective of commercial use acknowledging the creative contribution, while remuneration intends to let the inventor-creator to participate in commercial success.

4.1 Awards

Germany:

In Germany the awards system has been vastly shaped by the employers and their needs and not by the laws. Companies[21] often have their own award systems for two reasons:

- Opportunity to buy-out rights from unpractical remuneration laws (as allowable)
- Opportunity to incentivize inventors to report inventions timely and regularly.

For the first point unpractical provisions or potential dispute areas are avoided by linking the awards (which are no mandatory payments) to certain waivers of rights by the inventors. For instance, the rights to be offered the abandoned or non-filed foreign patent rights and the rights to negotiate on the share factor as stated in a company policy (see below in 4.2) are routinely waived. It has to be emphasized that such dealings require the consent of the inventor and are offered for each case as an individual agreement for the respective invention. Nevertheless 98 %[22] of the inventors do accept such agreement for every case showing that they have little interest in these rights given by the AEI or the GL which are waived. Usually amounts are paid after reporting (optional 1st payment) and in some companies additionally before deciding on filings outside Germany within the convention priority year (optional 2nd payment). The overall amount paid is usually EUR 1,000 to 2,000 – 4,000[23,24].

These payments are also used to incentivize inventors to report inventions at an early stage. They are paid to every inventor, usually only at an amount reduced to the inventors' share in the invention. They are seen as being a key element to positively influence inventors' collaboration with the employer[25].

The German law further requires other payments which relate to non-exploited inventions covered by the employers' patents. The function of these payments is mostly related to the fact that patents for non-exploited inventions can still have a value. This is a feature of the German law which strives for completeness of the system also trying to capture all ends of potential remuneration situations. Those non-exploited, but remunerable patents are "defensive patents" (Section 18 GL, preventing competitors to enter with equivalent products) or "storage patents" (Section 22 GL, patents withheld for future developments.). In practice defensive patents are almost never remunerated, because very few patents would meet the criteria of a "defensive patent" in Section 18 GL. In practice companies pay awards for patents which are maintained, but not exploited meeting the criteria of "storage patents". Payments amount typically to EUR 640 per patent and year[26]. If this award is shared by many inventors and payments (many years after filing) are low, then they are

21 see Dr. E. Loeser, Dr. M. Victor , Presentation ,2014 ,Optimal collaboration between R&D and IP-Management (German language), "Patente 2014" Conference, Muenchen

22 cf. E. Franke, *VPP Official Letter* (German language), No. 2/2004

23 Mr. Hohagen, quoted in Frankfurter Allgemeine Zeitung, *The Reward for Innovation* (German language), Spezial Ingenieure, 04.04.2013

24 See footnote 18

25 See footnote 21

26 Michael Trimborn, YEAR, *Employees' Inventions in Germany*, Wolters Kluwer, ISBN 978-90-411-2826-3, page 50.

often not much valued by inventors ("dinner fee award"). Again, defensive patents (not given in practice) and storage patents (low payments in a few cases) are features of the German system that strive for completeness of the regulatory system. In the view of the author and many German industry practitioners, it could be envisioned and supported by employers and employees to waive these late payments and use the budget to increase the incentive awards at the beginning of the patent process.

China:

In China, awards are mandatory by law (Rule 77 IR) at the time of patent grant. A minimum amount is stated in the law which is RMB 3,000 for an invention patent and RMB 1,000 for a utility model or design patent. However, the current draft of the SIR states a minimum amount of 200 % of the average monthly wage for invention patents and plant variety protection certificates and 100 % of the average monthly wage[27] of the entity's employees for all other IPRs. This amount is mandatory, unless a company policy or individual agreements with inventors deviate from this. If 200 % of the average is assumed to be around 12,000 RMB for invention patents it represents a significant increase over the amount stated in the current law (Rule 77 IR). It is unclear which amount is then to be paid, because the IR and SIR would have different standards for the same kind of IPRs. IP managers who establish company remuneration schemes are currently confused about the relevance of the different standards which may coexist in the future.

In practice innovative companies of a certain size that have an R&D center have mostly set up internal remuneration policies or contract the awards by individual agreements with their employees. The amounts stated therein often get guidance from the IR and are usually RMB 3,000 or above. It appears that changes of all policies or standard agreements may be considered, if the draft SIR would be passed in its current form. A payment of about RMB 12,000 in an industry sector that produces invention patents in high number (e.g. telecom, electronics) is, however, not commercially viable. This raises major concerns in Chinese companies in these sectors in how close the SIR standard must be followed or whether deviations by company policies are possible.

Chinese employers further experience a threat from Art 18 SIR which can render a company agreement or policy invalid, if "eliminating rights of the inventor" that the inventor is entitled to according to the SIR. This wording is regarded by many as an improvement over an earlier draft regulation which proposed invalidity upon „eliminating or diminishing rights of the inventor", because it appears to allow an industry-sector standard below the statutory level as needed in high quantity patent filing sectors[28]. However, the invalidity threat is still of concern. It appears to prevent useful industry sector adaptions of award payments in fear of this threat.

It can further be expected that awards will be made subject to inventors agreeing to waivers of their rights as the Chinese system will create a complexity of special inventors' rights which experienced companies will likely want to manage the way of obtaining waivers. Smaller companies that may not be aware of the various laws due to inexperience are missing out on such opportunities and have to pay awards and remuneration according to statutory terms regardless in which industry sector they are working in. This may put them in a less competitive position.

4.2 Remuneration

Germany:

27 According the China Labour Bulletin of June 10, 2013 the average monthly wage in a scientific research entity was RMB 6,000 in 2013

28 Mr. Chuang??? Full name, General Counsel and VP from SMIC in Workshops on the Inventor's Remuneration organized by IP Tribunal of Shanghai High People's Court, and co-organized by Intellectual Property Research Institute of East China University of Political Science and Law (ECUPL) and QBPC on June 8, 2011 in Shanghai.

The German system is widely seen as the most complex system for dealing with inventor remuneration based on patents which cover commercially exploited inventions. Fact is that the GL has more than 40 sections dealing with remuneration. It governs various different situations and specific problems in remuneration calculation and is as such very comprehensive. In its core it provides the following formula for calculation for a claim of an inventor to remuneration:

V = E x A with V as the remuneration claim, E as the invention value and A as the share factor (in %)

The share factor A (mostly in the range of 10 to 15 %, although theoretically between 2 and 100%) is dependent on several factors relating to the inventor and its work environment. A high share factor represents a highly unexpected contribution of the inventor. This report will not to go into the details of the determination of A, but rather look at the industry practice. All experienced employers have pre-determined A-factors for certain staff in the hierarchy of their R&D organization (e.g. a lab scientist has always the same A value). Interestingly, although the determination of A should be a clearly determinable factor, companies vary in their evaluation. As mentioned above, several companies buy-out the right of their inventors to pre-determine the share factor A on job level scales. The share rate A is often determined by company policy and varies among industry sectors. It is rarely challenged in disputes, because it has been often pre-agreed. It is the German industry approach to gain a little flexibility from the otherwise restrictive law by applying own standards.

The E factor is typically calculated from a technology dependent license rate factor L and the reference value B (usually net sales value) by the equation E = B x L. The E factor may be challengeable by employees and therefore efforts have been made to obtain lists of license rate factors L which have been published[23]. These L-factor lists give a good overview of typical royalty rates in Germany. At a listed license rate factor L of 3 % and a share factor A of 15 % the inventors would receive in total 0, 45 % of the net sale value as their remuneration.

The B factor corresponds to the license rate, but in order to avoid extremely high remuneration amounts can be scaled down at higher sales volumes by reducing the L-factor (Section 11 GL). Extreme remuneration claims are thereby excluded by this reduction method, referred to also as “down scaling”. L-factors relating to sales of more than 100 million EUR would be reduced below 0, 05 %.

The German law does not only use this formula to calculate E. It can alternatively consider various other factors that can create value which is not reflected in sales numbers. Savings or other valuable benefits for the company realized by using the patented invention are another method to evaluate the E factor. An estimation of the cost of obtaining similar technologies from other sources that would replace the invention is yet another method. This could be of importance in cross-licensing cases where the licensed-in technology represents the value of the licensed-out technologies.

Finally, there are cases relating to royalties or asset sales after transferring technologies, including the patented invention, to third parties. The determination of E in such case of licensing to third parties or the sale of the patents is performed by multiplying the monetary revenue with a conversion factor which according the Arbitration Chamber can be estimated to about 30% in licensing cases and 40% in patent sale cases. It is, however, noted that many deductions are allowable in the calculation before applying these general factors. For instance, the cost for obtaining the patents and the related know how in the technology transfer trade can be deducted. In the latter case this is important as know how deduction can be in the magnitude of 50 % or even 70 % in life science technology trade.

A typical calculation is shown in the following box:

CALUCLATION REMUNERATION FOR A LICENSING CASE

Licensing revenue (R): 1 million EUR

Patenting cost (P): 0,1 mio EUR

Know-how factor (K): 70 %

Conversion rate (C): 30 %

Share rate (lab scientists): 12 %

Remuneration = E x A = [(R – P) x (1-K) x C] x A = 9,720 EUR (for all inventors to be shared)
(corresponds to less than 1 % of the licensing revenue)

The guideline is very detailed. Use of it combined with the knowledge of cases that have been handled in the Arbitration Chamber allows that most situations can be calculated with such guidance.

However, the system presented issues to the German companies. First, all remunerations have to be individually calculated after starting commercial exploitation of an invention. Evaluations have to be made to determine or estimate the various factors in the calculation formulas, including the share of each invention as the invention's contribution to a marketed product. Inventors and product managers need to be interviewed for fair evaluation of the value of each used invention. Then a remuneration offer is made and has to gain acceptance by the inventors. If the amount at issue is high or the inventors have been retired or resigned from the company, disputes are not rare. Big companies have therefore established whole departments for remuneration matters including fully trained patent attorneys. Smaller companies have to procure external expert advice (patent attorney) and hire an internal caretaker (usually IP manager). It has been considered in the industry that this is not supportive to creating innovations as those resources for remuneration determination, handling and litigation could have better been used otherwise. Therefore, the law has a long history of industry efforts that have been made to change it. It was the aim to simplify the methods and still incentivise the employed inventors.

In 1998 the German industry made a significant effort to communicate on the issues of the AEI in a study of August 25, 1998 by the two major industry and employer associations (BDI/BDA)[29]. The main criticism of the existing law was linked to the administrative effort (which exceeded the remuneration paid out in value) and to the information rights of the inventors in the determination process of the remuneration claim which was believed to put the German industry in a disadvantage to all other European industries not having a comparable burden to bear.

The complaints resulted in a major law revision discussion under the guidance of the Ministry of Justice with several expert hearings with representatives from employers, unions, employee associations, academic and patent attorneys. A new law was drafted which was relying on lump sums and many simplifications. It was highly appraised as a breakthrough to abandon unnecessary administration.

But, finally it did not proceed to the parliament for law making due to a discussion on a single lump sum to be paid at the time the invention is reported[21]. An initial compromise to pay EUR 750 at this early stage was suddenly opposed by the union representatives. In the following, the Ministry of Justice proposed to pursue the law with a higher lump sum of EUR 1200. This raised too many concerns in industry sectors with high patent filing numbers such as the automotive industry. Furthermore these industries were additionally concerned of a potential misuse by the employees to report the same invention several times in slightly amended form or report non-patentable inventions as the law draft did not foresee a mandatory patentability check. After the initial compromise was lost, the experts in the meetings further disputed on other elements of the law draft and it never proceeded as such to law making.

Nevertheless it was clear that the first, initially approved draft[30] had much appreciated compromising terms, such as

- Incentive payments at the early stages of the patenting process (although the EUR 750 was disputed)
- One lump sum of EUR 2,000 in case of commercial use
- Further lump sum payments (without calculation) for cases where sales with the patented product are significant (the exact schedule is shown in Table 1).

29 cf. K. Dänner, VPP Official Letter (German language), No. 2/1999

30 Referentenentwurf eines Gesetzes zur Änderung des Gesetzes über Arbeitnehmererfindungen (draft amendment by the authority) of 25. Oktober 2001

Sales amount/ revenue from the invention [EUR]	Lump sum remuneration [EUR]
> 5 mio / > 125,000	5,000
> 10 mio / > 250,000	10,000
> 20 mio / > 500,000	15,000
> 50 mio / > 1,25 mio	20,000
> 100 mio / > 2,5 mio	25,000
> 200 mio / > 5 mio	30,000
> 500 mio / > 12,5 mio	60,000

Table 1: The German law draft of 2001 relating to lump sums according commercial use

The discussion and final rejection of the 1998 law draft also showed what was lacking to achieve the desired compromise:

- An industry-sector adaption of the lump sums, and
- A limitation to only patentable inventions to avoid misuse.

With no change in law, research-based companies in Germany continue to improve their competitiveness in Europe and globally by managing the laws and regulations in a way that many rights are bought back from inventors and payments are standardized by company policies wherever allowable. However, the cost of the buy-out is seen as a disadvantage for German companies by the industry itself[31,32].

It has to be further seen that relatively high remuneration amounts in Germany for individual cases (compared to other European countries) are based on the historically grown laws providing significant assets to employed inventors. Although a need for change was discussed among all stakeholders, influence of the employee union representatives prevented a law reform in the early 2000s. This is a surprising result, because very few employed inventors are organized in unions, but the remuneration topic became a social discussion point within the society. This situation is completely different from North America, where such systems never existed and "hiring to invent" as well as fast career tracks for science talents are an established praxis without any demands for additional incentives.

China:

In China, a similar struggle is observable in the law making with regard to remuneration for inventions that are commercially exploited. Starting from the initial principle of Art 16 PL to pay a "reasonable remuneration", more and more statutory provisions were added in the laws or are now included in the draft SIR.

Art 16 CPL is almost identical to Art 9 (1) AEI in the German law with regard to the vague wording of "reasonable remuneration". However, while Art 9(1) AIE was supported with the GL in the German law practice and further supported by case decisions of the Arbitration Chamber and courts, the requirement of Art. 16 CPL in China remained uncertain.

31 See footnote 22
32 See footnote 29

As a consequence of such guidance the law was mainly disregarded by local Chinese companies and foreign companies having R&D activities in China. To the authors knowledge some German companies having discussed the resemblance of the paragraph 16 CPL with the German law started to establish award and remuneration policies in China around 2007. They relied on a lump sum system similar to that which they have discussed in the law reform discussions in Germany in 2001. It includes incentive payments at the reporting of an invention and at patent grant as well as lump sums based an assumed average invention value during commercial exploitation. Many other companies before 2008 did not consider remuneration matters at all and waited for the law development.

Later more clarity was provided by the Chinese laws as Rule 78 was added in the Chinese law making process during the 3rd amendment of the patent law. A statutory amount of not less than 2 % of the profits was established as the general standard for invention patents (0.2 % for other patent types). This standard has raised concerns in the research-based industries in China for two reasons:

(1) the amount does not reflect the value of patents in different industries and is detrimental in case of high patent filing and exploitation industries (e.g. the telecommunications industry)
(2) companies have a duty to disclose a profit calculation on their commercial products to the inventors or the courts in a dispute which may include inventors that have resigned and retired. This core information can become public.

It was appreciated that the law gave employers an opportunity to opt out from the statutory terms by entering into an individual agreement with the inventor or by legally establishing a company policy on this. This solution was well received as a necessary alternative to the statutory terms for many industry sectors. The German industry model of 2007 (see above) was then a still suitable method, if the lump sum system finds acceptance with inventors by individual agreements or after a consultation process during the setting of company reward and remuneration policies with employee representatives.

In an expert hearing with the IP Tribunal of the Shanghai High court the German 2007 model has been discussed in the form of the generalized elements for a model remuneration system in China[33]. It led to the following statement about an acceptable remuneration scheme in company polices in the working paper of the High Court: "Where the agreed method of remuneration is money, then the amount can either be more or less than the statutory standard. Each employer can make specific standards considering the characteristics of its industry, the status of production and development, and the needs for its intellectual property development. During the actual implementation of reward or remuneration for the service invention, some enterprises set up patent application awards, licensing awards, or remuneration upon exploitation of the patent; *while some enterprises use a one-time reward or remuneration system, and the amount of remuneration can be determined by the average invention value in the field, where the enterprise can avoid complex accounting procedure and save the costs thereof. The said methods should be approved.*". The industry-sector adjustable remuneration scheme was much supported by the industry experts in that hearing including Mr. Liu Yan from Huawei Technologies Co. Ltd, Dr. Xu Yang, Chief Patent Counsel of Simcere Pharmaceuticals, and Mr. Tony Chuang from SMIC.

Nevertheless, this Guideline of the Shanghai High Court was only a preliminary opinion of the participating judges included in this special project. Uncertainty on the acceptable content of company agreements and policies remains in China. The first sentence of the quotation of the Shanghai High Court is crucial. Companies will only adapt policies for remuneration as part of their IP management, if the monetary awards can also be other than the statutory ones.

In this regard, many companies have discussed with the author that it is not a matter of the overall amount only, but a matter of incentivizing people more efficiently. The majority of company representatives that the author talked to on conferences (after having presented

[33] Dr. Oliver Lutze, (Head of IPR, Bayer (China)), Workshop on the Inventor's Remuneration organized by IP Tribunal of Shanghai High People's Court, and co-organized by Intellectual Property Research Institute of East China University of Political Science and Law (ECUPL) and QBPC on June 8, 2011 in Shanghai

the German 2007 remuneration model), confirmed that they do not want to save money when following an alternative company model. They want to a certain degree limit remuneration claims for the commercially exploited cases via lump sums to a ceiling. The saved "budget" can then be used for incentivizing the reporting of inventions. Furthermore, many agreed to look into individual agreements for exceptional cases of high commercial value. They are also concerned about being suit by former employees over remuneration amounts referring to the statutory terms with overstated values of the inventions at dispute.

These concerns have recently gained much gravity, when the U.S. company 3M was ordered to pay a higher remuneration amount to a resigned employee inventor than calculated by their company policy which was considered "unreasonable" by the first instance court. The decision of the Shanghai Intermediate Court was confirmed by the Shanghai High Court[34] without judgement on "reasonableness" of the 3 M policy.

The situation may become even more of a concern area in view of the rising statutory terms of suggested Art. 21 SIR. Statutory standards will rise to not less than 5 % of the profits or 0.5 % from the sales revenue for invention patents and plant variety protection rights. 3 % of the profits or 0.3 % of the sales revenue will have to be paid on statutory terms related to all other IP rights. The raised standards are not aligned for patentable inventions with the existing Implementation Regulation to the Patent Law and appear to require further law reforms for harmonisation. In the case of licensing or assigning rights to a third party a remuneration amounting to 20 % form the net income is due as minimum amount (doubling the current 10 % standard of Rule 79 IR). No inventor share reduction factors (like in the German system) are applicable and it is unclear whether know how parts can be deducted from the income. In the example of the German law mentioned above (see box) payment of EUR 200.000 (20 %) instead of EUR 9,720 (1 %) could be the claimed as minimum statutory amount in such case depending on the practice of the SIR by the courts. While German remuneration claims have been considered as a very high standard globally, this remuneration would be by a 20 fold higher. This would be a very high amount, especially when considering that even the German companies believe that their law is a relevant disadvantage in international competition[35].

The same raised standard also found entry into the law draft of the Transformation Law for persons making contributions in transforming scientific and technological achievements into commercially exploited innovations. Here the standard appears even more of concern as payments may be due for development efforts of employees.

Without any doubt such payments achieve a maximum motivation for inventors to take an interest into inventions not utilized fully by their company and to spur the company to commercialize them otherwise through third parties. But, this must be balanced with the effect it may have on investments in R&D. Such high remuneration amounts would make innovation from a Chinese R&D facility in general highly unattractive. The increased amounts would be (as already are those of the current standard) a real competition disadvantage for technology creation in Chinese research.

The balance of (1) the motivation of inventors as individuals to invent and transform their inventions into innovations on the one hand and (2) the motivation to create an environment for companies to invest in R&D on the other hand is a difficult one. In discussion with Chinese experts the author has gained an understanding that in many local companies creativity of inventors is not fostered as much as possible. This appears to be especially the case for SME's in China. Recognition within the company combined with promotions and salary increases are tools which are sometimes not used effectively in SME's. In such environment the idea to incentivize the inventors with higher remuneration claim awards appears to be appealing. But the effect of R&D investment decisions of employers is also relevant, because those are potentially influenced negatively. The negative effect will especially be felt in mature research-based companies that must follow the law and create high value innovations.

34 See footnote 9
35 See footnote 29

5. Motivation of inventors through remuneration

In this section the author wishes to include some basic findings and its own observations of working as an IP counsel in Germany and China having numerous contacts to scientists on a collegial level and sharing the views with them. The scientists were active in highly innovative areas potentially creating major innovations within the company.

Germany:

In general, in Germany the remuneration amounts can be significant, although only in few special cases. A representative poll[36] among the German automotive industry inventors (manufacturers and suppliers) revealed that more than 20 % of named inventors did not receive any remuneration (indicating that companies neglect the law), 40 % received only incentive payments of 0 to 500 Euro per patent. The rest received higher remunerations potentially related to commercial exploitation, but only about 12 % received more than 10,000 Euro on a single patent. From life science cases it is known that remuneration can reach more than the annual salary, but this is extremely rare case. Also Harhoff[37] confirmed that most inventors receive no or very small payments for their inventions, while few inventors can add substantial sums to their gross salary. Harhoff also concludes that the German system creates substantial monetary rewards for productive inventors. However, his study is based on surveys with inventors. Naturally, inventors support the system and ask for even higher payments. Harhoff also links remuneration amounts to patent value. Like many other studies there ishowver no proof that higher payments lead to better or more creativity.

In the author's experience the monetary benefits in Germany do not lead to a higher motivation to innovate, but rather to an increased interest in patent matters when the company regularly pays remuneration. Such increased awareness results in a higher diligence in professional invention report drafting, interest in prior art filings of the company's competitors, an interest in foreign filing scope etc. They, however, also have anti-innovative effects as decision makers are reluctant to abandon older basic technologies upon which they receive remuneration in favor of newer innovations. This anti-innovative issue is especially pronounced in areas where very significant remuneration claims are at stake.

German inventors further have experienced that some "lucky" inventors can receive high remuneration while the "unlucky" ones receive less or nothing, because science is not predictable. More effort does not automatically result in more success.

In practice there are therefore tendencies in benefit sharing by naming as many inventors on patents, as possibly allowable by law, for their contribution, in order to share the option on a high remuneration award and thereby distributing it more evenly. IP departments of companies try to scrutinize this behaviour by challenging contributions of all inventors, but it still is an observable practice.

Regardless of remuneration, the majority flow of innovations in Germany is however determined by the investment of the employers in R&D projects and probably not at all the motivation of individuals through remuneration. The monetary benefits rather ensure better IP protection as the inventors show more interest in the safeguarding the IPRs of their inventions.

China:

In China this effect of higher IP awareness is not determinable yet. The remuneration practice (if established at all) does not influence behaviour, because it has not been experienced by employees over many years. Mostly no significant payments have been made so far reflecting the early state of the remuneration system or the lack of commercialization of high value R&D results from China R&D covered by patents.

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36 Katja Rost,2006, *Social Structure and Innovation* (German language), PhD thesis, ,Technische Universität Berlin

37 D. Harhoff and K. Hoisl, 2006, *Institutionalized Incentives for Ingenuity – Patent Value and the German Employee's Invention Act*, Discussion Paper , University of Muenchen

However, in view of the high R&D investments in China and the research pipeline the latter is expected to change in the upcoming years.

Incentive award payments in line with Rule 77 IR have been more often made to employees recently and are generally appreciated as additional recognition, if paid close to the time an invention was reported or a patent right granted. It will have to be observed whether higher payments over longer periods of time also create a positive attitude change for increased IP awareness. At the same time it is to be avoided that disputes lead to unreasonably high claims that would be a discouragement to innovation investments which are still the major source of innovation creation (see chapter "Disputes and their resolution"). In China companies currently prefer to use policies[38] that rather limit extremely high remuneration claims, but distribute remuneration more evenly among the employees. This way of IP management is currently assumed to achieve to a broader effect of incentivation. It avoids at the same time anti-innovative effects of public disputes about extremely high monetary claims.

Some smaller companies use other types of awards (such as stock options, special bonuses etc.). Especially stock options which are used for incentivation in some companies in emerging technologies appear to have a positive effect[39].

However, also the stock option programs may be challengeable by employee inventors as not being fully in line with the SIR, if payments are not very high. In the same way as the lump sum payments it is unclear in which way they need to fulfil a similar standard than the statutory terms.

6. Disputes and their resolution

Germany:

In Germany, a special Arbitration Chamber affiliated to the GPTMO has been established to handle disputes between employees and employers (Art. 29 AEI). Besides this arbitration, actions can be brought in the courts that deal with patent matters (Art 39 AEI), but for current employees it is mandatory (with very few exceptions) to use arbitration of the GPTMO in a dispute with their employer. The Arbitration Chamber became a competence center where most of the cases are handled and which has found acceptance to set precedents for future cases. The Arbitration Chamber is hosted in the GPTMO, but is to be considered an independent authority. It is not related to the courts handling patent matters. Decisions of the Arbitration Chamber can be appealed to the courts, but it was envisioned that most disputes are settled in the Arbitration Chamber. Proceedings at the Arbitration Chamber are cheaper than court actions. The success of the Arbitration Chamber is based on the fact that all knowledge is collected in one body. This is useful, because the number of cases every year is limited and a special knowledge may be necessary.

China:

In China the courts dealing with patent matters or the local branch offices of SIPO are responsible in the case of unsettled disputes (Art 40 SIR). There have been very few cases handled so far and no general guidance on the court practice is given. The Shanghai High Court took an initiative to clarify open questions with regard to the current remuneration law in 2013 and published their guidance (see footnote 9 on page 6) . Although such opinion did not represent a general guidance for all courts or even at least thr Shanghai High Court, it has been appreciated by many local IP practitioners in the industry as giving potential clarity on important unclear points.

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38 Discussions in R&D Working Group of the European Chamber of Commerce in China, YEAR?

39 Xin Chang, Kangkang Fu, Angie Low, Wenrui Zhang, 2014, *Non-Executive Employee Stock Options and Corporate Innovation*, Journal of Financial Economics, online publication date: 1-Sep-2014. AVAIABLE ON : HTTP…

Based on this experience it can be seen that it would be appreciated by many, if there is a similar general guidance on issues from a national court or the SIR. Predictability of the outcome on decisions in remuneration matters is important for many running R&D activities in China. Furthermore both Chinese as well as foreign invested R&D centers and contract research organizations are currently in the process of revising their IP management processes (as encouraged by Art. 6 SIR) and drafting their industry specific internal policies for remuneration of service inventions. Guidance to clarify the open questions is currently awaited and could be included in the SIR or additionally from a judicial interpretation by the Supreme Court. Giving responsibility to decide remuneration matters in one or a few authorities (at least in the final instance) that shape the practice could be positively envisioned. Having one experienced central court making the final decision could further prevent that a surprising decision, such as e.g. the "blue diode" decision in Japan awarding $ 180 million as reasonable compensation[40] to an inventor. Such decision was even discussed as rendering a whole remuneration law of a country under suspicion that its system is impeding innovations with consequences on R&D investments[41].

One (or all) of the new IP courts may be suitable bodies to handle disputes in an efficient way in a specialized panel safeguarding a unified judicial practice on the matter, assuming the number of disputes will be manageable. However, such centralization is not established in the current system. Future decisions of the various courts are therefore watched carefully by the companies and R&D community for their relevance. Decisions on company agreements and remuneration policies, such as the recent 3M case in Shanghai, will get high attention and are analysed in detail to revise the own company policies to achieve best compliance with the laws, while at the same time following a suitable industry sector model.

7. Other European countries

The instant comparison has been made with a view on the German system, because it is very detailed and has been in use for more than 50 years. It is a more fully established system, because it has a very rich case foundation and was modernized in recent years. As discussed, some reform initiatives have failed and while others proceeded. However, Germany is not the only country which has a remuneration system for service inventions in Europe. This report takes a look to those countries too, although the laws are not routinely applied. In many of the countries disputes and court decisions are rare, because companies handle the remuneration self-independently without many challenges from employees. Remuneration requirements are therefore often unclear and rather left for the parties to negotiate. For instance, in Sweden the labor courts have dealt with only two cases in the 1980s which hardly give guidance. Typically the mediation bodies in Sweden have no more than 5 cases per year to deal with[42].

In the following the status will be summarized of selected European countries that either have statutory remuneration laws as such or have specific clauses in the patent law governing remuneration for service inventions. It is to be noted, that some countries do not have statutory laws and regulations requiring payments for service inventions at all (e.g. Belgium).

Denmark

40 Nakamura v. Nichia Corp., Tokyo District Court, January, 2004.

41 David J. Kappos, Kenichi Nagasawa, 2014, *Japan's Article 35: Are Employee-Inventor Monetary Award Laws Impeding Japanese Innovation?*, AIPPA Journal, March 2014

42 Sanna Wolk 10/2009, IP/Notiz, http://www.ip-notiz.de date, month, year?

Denmark has a specific law[43]. It requires paying a "reasonable compensation". In practice there have been very few cases where the value of the invention does exceed what the employee could reasonably be expected to deliver during the course of his regular work. It is a burden for an employee to argue this to obtain remuneration. Disputes are rare. The city courts and high court decide on disputes. Typically the high court checks whether the employee was hired to come up with new ideas and solutions. There are very limited cases where the employee was considered to be entitled to compensation for inventions made during the employment. Furthermore, if a dispute appears to be justified due to the value of the invention for the employer, the Supreme Court held in its decision on December 17, 2010 that for such cases a compensation level of DKK 100,000 (EUR 1300) may be sufficient in a general case.

Finland

Also Finland has inventors' rights codified in a special law[44] which requires the payment of a "reasonable compensation". This right cannot be waived in an employment agreement. In the local environment companies have established remuneration practices by company policy. There are not many disputes known. With regard to the compensation level a paper of recommendation for the biotechnical industry with a draft remuneration policy for company use has been made publicly available[45]. The draft policy foresees payments per invention of about 840 Euro upon acceptance of the invention by the company for a patent filing, about between 1,175 EUR to 5,040 EUR upon patent grant and a "user fee" according to a formula calculation in case of commercial use (in a calculation example: 16.8 mio sales resulted in 12,500 EUR remuneration of which the previously paid lump sum remuneration is deducted). This appears to be the upper end standard for company policies in an industry with high value on individual patents (life sciences). Company policies can be industry sector dependent. It is the company's own responsibility to draft a policy in line with their area of research. Finland has an arbitration Chamber, similar to Germany, which is available for mediation ("Employee Invention Committee") established by a statute of the Council of State. The Committee gives non-binding opinions on compensation matters within short proceedings at lower cost than the courts.

Sweden

Sweden is another country with a special law[46] which is even older than the AEI in Germany. It provides for the right to obtain a "reasonable remuneration". The amount is to be determined by the parties involved. It appears that usually lump sums are paid at patent grant and companies offer additional lump sum payments for the whole commercial use term at a later stage. Royalty based remuneration has also been offered. The value of the invention, the type and terms of employment and the relation of the employment to the invention should determine the amount of remuneration. A close relation to the tasks and duties during employment leads to lower remuneration. As mentioned above, disputes on a suitable amount have been rare and were mostly not decided by labor courts in recent years.

The reason for this finding is that mediation plays an important role. The Swedish Board for Employee's Inventions is a mediation body established for obtaining non-binding

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43 *Consolidate Employees' Inventions* Act (2012), Section 8(1): "If the employer […] acquires the right to an invention made by the employee, the employee shall, even if something else might be agreed, be entitled to a reasonable compensation, unless the value of the invention does not exceed what the employee, in view of his working conditions as a whole, may reasonably be assumed to produce."

44 Act on *the Right in Employee Inventions* 1967 (last amended 2000), "Where an employer acquires the right in an invention made by an employee by virtue of section 4 or on other grounds, the employee is entitled to reasonable compensation from the employer even if it was agreed otherwise before the invention was made. When determining the amount of the compensation, particular attention shall be paid to the value of the invention, the scope of the right which the employer acquires, as well as to the terms and conditions of the employment contract of the employee and the contribution which other circumstances connected with the employment had to the conception of the invention."

45 *A Guide for Bioindustry Start-up and Growth Companies on how to draft a Code of Practice for employee Inventions*, Finnish Bioindustries FIB (March 2011),

46 *Act on the Right to Employee's Inventions* (1949), "If the employer in accordance with this act or otherwise, appears in whole or in part as assignee of the employee with respect to an invention made by the latter, the employee shall have the right to a reasonable remuneration and what has just been stated shall apply even though something else may have been agreed upon before the coming into existence of the invention."

opinions on remuneration with regard to the special remuneration law. It includes two judges, another independent member and four members proposed by the parties. The permanent staff has gained significant experience in remuneration matters. It rendered a set of basic decisions (especially from the years before 1990) which are generally followed. The few cases that have been decided by the Board in more recent years appear to often generate a claim in the magnitude of SEK 200,000 (approx. EUR 20,000) as a lump sum for the whole commercial use term which appears to indicate a typical claim with regard to a commercially used invention on dispute.

However, collective bargaining where employers and a group of employees aim at reaching agreements also plays an important role in Sweden. If this negotiation between the employer and the employee representatives is not successful, the case can be tried before the Industrial Inventions Board, an arbitral tribunal which determines arbitration awards with binding effect on the parties. More cases have been tried before the Industrial inventions Board than the Swedish Board for Employee's Inventions, stressing the importance of collective bargaining in the remuneration process in Sweden. In 2002 remuneration of SEK 5 mio (approx. 500,000 EUR) has been paid on an invention that achieved SEK 800 mio (approx. 80 mio EUR) in savings for the employer and where the inventor has receive only incentive payments at the acceptance and grant of the case before. It is a rather high award being published.

All decisions leave the determination of the term "reasonable remuneration" unclear and do not involve any calculations. Linkage to the employee's tasks and duties and job responsibilities appear to be main criteria in the evaluation.

Austria

A remuneration provision is found in the patent law [47]. It provides a "reasonable remuneration" for inventions that have been transferred to the employer. In this regard it has to be mentioned that Austria (similar to Germany before 2009) requires a written contract and specific acceptance of the invention as a service invention by the employer for such transfer of rights. If such written acceptance is not given within the four months deadline, the employer will not be the owner of the invention. Thus, in Austria smaller companies still have numerous problems, because they have not exercised their rights in line with the law. The practice requires that the "reasonable remuneration" is based on the benefit that the employer enjoys from the use of the invention. The benefit is usually determined by the same three methods as in Germany: (a) License analogy (b) Evaluation of the company benefit or (c) estimation. The Supreme Court gives preference to method (a). Austrian courts also follow the case decisions of the Arbitration Chamber in Germany and often follow the principles determined in those cases. However, Austria has an additional requirement in Section 8 (2) of the patent law (see footnote) which allows companies to limit the claims of scientists which are "hired to invent".

France

Remuneration is provided by a statute in the IP law[48]. Service inventions are to be found in two categories (a) inventions under mission and (b) inventions beyond mission assignable to the employer. The category (a) inventions require an employment contract comprising an inventive mission ("hired to invent") in line with actual job function or a framework of studies or research expressly entrusted to the inventor by the employer. Inventions in

[47] *Patent Law* (2013), "8(1) An employee shall be entitled to special and fair remuneration where his invention becomes the property of his employer or subject to the employer's right of use. (2) Where, however, the employee has been appointed expressly to create inventions in the employer's enterprise and where this was in fact his principal activity and where such activity has led to an invention, the employee shall be entitled to special remuneration only to the extent that the higher pay received under the employment contract in view of his inventive activity does not constitute adequate remuneration."

[48] *Intellectual property code* (2014) Art. L. 611-7, "[…] Inventions made by a salaried person in the execution of a work contract comprising an inventive mission corresponding to his effective functions or of studies and research which have been explicitly entrusted to him, shall belong to the employer. The conditions under which the salaried person who is the author of such an invention *shall* enjoy additional remuneration shall be determined by the collective agreements, company agreements and individual employment contracts. […]"

category (b) are those made during the execution of his/her functions (without express entrustment) in the field of activity of the company, by reason of knowledge or use of technologies/specific means of the company or of data acquired by the company.

Normally French companies try to argue for the presence of invention under mission, because the other service inventions have to be acquired from the inventor by paying a "fair price". Inventions under mission are initially owned by the company and require without exception to pay additional remuneration after salary (see marking of "shall" in the footnote which is a change from 1990). The additional remuneration can be paid according to collective bargaining agreements or company agreements. It is however noted that the statutory law requirements supersede all other agreements including the bargaining agreements. It became therefore mandatory to pay remuneration for all inventions, although the bargaining agreements of certain industry sectors did only foresee payment for special inventions of high benefit to the company. There is therefore currently a trend to pay remuneration according to company policies or individual agreements and to avoid the collective bargaining agreements as being potentially invalid in view of 1990 change in the patent act.

Small and medium size companies often overlook the requirement to pay remuneration while the company policies of bigger entities usually require as additional remuneration (a) a fixed bonus awarded for every patent filed and (b) another bonus award depending on the value of the invention for the employer. A sophisticated bonus award for (b) can be calculated as being between 0.4 and 12 times the monthly salary of the employee according to a detailed evaluation system according to several criteria in the local practice[49]. Some companies with high filing numbers and valuable patent assets have established a remuneration system based on a percentage of the turnover from sales of the patented product, usually capped at higher amounts.

In case of disputes cases can be brought at seven first instance courts or a mediation center (CNIS Joint Conciliation Board). Even if cases are filed in the courts, any party can request mediation in the CNIS. CNIS will issue an opinion which can be challenged in the court system.

Neither the statutory provisions, nor the collective bargaining agreements provide a method for the calculation of the additional remuneration or the "fair price". After 1997 the courts have started to award previously unknown high amounts of "additional remuneration" which were confirmed by the Supreme Court in 2000 in a specific case[50]. While this case has presented special circumstances (pharmaceutical case with high value), higher payments for "additional remuneration" are nowadays awarded than in the past. This spurred many companies into action to draft new company guidelines for their industry sector. Nevertheless suitable remuneration amounts are still not fully clear and payments usually below the 1997 case.

Italy

The Italian system is similar to the French system and provisions are found in the IP laws[51]. Inventions are categorized into three types with different remuneration requirements: (a) inventions that have been made in accordance with the employment agreement ("hire to

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49 Thomas Bouvet, 2006,*Employee-inventor Rights in France*, publication for Loyola Law School IP Special Focus Conference, August 2006

50 Raynaud v. Roussel Uclaf (Court of Appeal of Paris, 4th chamber B, December 19, 1997; Cour de Cassation, November 21, 2000), award 610,000 EUR

51 *Industrial Property Code* (2012), Art. 64, "(1) When an industrial invention is made in performance or in execution of a contract or of an employment relationship, whereby the inventive activity is provided for as the object of the contract or of the relationship and for such purpose an employee receives compensation, the rights deriving from such invention are the employer's, subject to the inventor's right to be recognized as the author thereof. (2)If no compensation for the inventive activity is provided for and established, and the invention was made in the execution or fulfilment of a contract or of an employment relationship, the rights deriving from the invention are the employers', but the inventor, in addition to his right to be recognised as the author thereof, is entitled, if the employer obtains a patent, to be granted a fair reward, the amount of which shall be quantified taking into consideration the importance of the protection afforded by the patent to the invention, the tasks carried out and the compensation received by the inventor, as well as of the contribution that the latter has received from the employer's organization.[…]

invent") wherein the employment agreement foresees an additional remuneration or bonus and therefore require no further payments (b) other inventions which also belong to a field within the job description of the employee, but have not been subject to an agreed additional remuneration or bonus, are owned by the employer, but require the payment of an "equitable reward" to the employee and (c) inventions which are not of type (a) or (b), but are within the employer's broader field of activity, are owned by the employee with an option right of the employer to acquire the invention for a "fair price".

Disputes with inventors are finally decided by the courts, but for a dispute on the amount of remuneration an inter-parties arbitration (two arbitrators of the parties and an independent chair) is mandatory once a court assesses the existence of a claim. Only if the decision of the arbitration is clearly unreasonable or erroneous, a judge will finally decide the amount. This means that negotiation between the parties is common and awards are determined following various different principles. For instance, with regard to the determination of an "equitable reward" the criteria very generally relate to the importance of the invention, the tasks and duties of the inventor and the contribution that the inventor has received from the employer's organization. All these criteria are vague and have not let to consistent decision making of courts on this requirement. A decision of the Venice court of 23rd of April 2010 applied the "German formula" (see the German system as explained above) with a quoted preference for the royalty analogy based calculation method for determination of the invention value. The recent publication of this decision appears to indicate that this may be followed by other courts. This application of the "German formula" relates however only to those inventions which are not covered by core provisions in the employment contract (category (a) above) or are settled by arbitration.

Netherlands

The Netherlands have been very restrictive in establishing significant remuneration duties for their employers. The basic provision that deals with such requirements is to be found in the patent law[52]. In practice all advanced research-based companies have employment agreements in place that require the employees to transfer the inventions based on their work results to the company. In many cases no or only small awards or bonuses have been included by companies in the employment contracts. Clearly for the majority of the R&D personnel it is expected that all payments for the transfer of the patent rights are included in the salary and no further compensation will be paid. The Netherlands' system is therefore rather a "hire to invent" system (like the U.S. and Canada). The Supreme Court has established vague general principles for determination of an "equitable remuneration" in line with Art 12 (6) (see footnote) for the case that no compensation is agreed in the employment contract and nothing has been paid. However, those principles have no major relevance, because only very exceptional cases are not covered by general salaries according to the employment agreements. For the same reason there are no schemes, methods or formulas applied in such consideration of an "equitable remuneration". In this environment disputes are rare, because there is often no basis for a claim by an inventor.

UK

52 *Patents Act of the Kingdom* (2004), Art 12: "(1) Where the invention for which a patent application has been filed has been made by a person employed in the service of another person, the employee shall be entitled to the patent unless the nature of the service entails the use of the employee's special knowledge for the purposes of making inventions of the same kind as that to which the patent application relates. Should the latter be the case, the employer shall be entitled to the patent. […] (.) Where the inventor cannot be deemed to have been compensated, in the salary he earns or the pecuniary allowance he receives or in any extra remuneration he receives, for not having been granted a patent, the person who is entitled to the patent on the basis of paragraphs (1) […] shall be obliged to award him equitable remuneration related to the pecuniary importance of the invention and the circumstances under which it was made. […] "

A remuneration requirement can be found in the patent law[53]. However, in the past practice of the companies in the UK no remuneration was paid. Section 40 requires an "outstanding benefit" as basis for an additional remuneration. Employees were not successful in arguing the presence of such outstanding benefit in the courts. Disputes were not initiated. This was especially the case as the previous version of the law required an outstanding benefit for the employer from the patent (and not the invention). Employees would have to prove the value of the patent in the market. After the amendment of the patent law to clarify that the outstanding benefit can be from the patent, the invention or both, there are now more opportunities for employees to utilize the amendment of the wording to claim remuneration. But still the wording "outstanding" sets a high threshold as it has been defined by the courts[54] as something "out of the ordinary" which would not be met in a normal case. The cited case has been the first case where the courts or the patent office (which both can decide on such remuneration) has made a positive decision. Due to the high value of the pharmaceutical invention involved the award to the employees exceeded 2 mio EUR.

Despite of this decision and a few others, the UK system is limited to exceptional cases while the majority of invention may be still covered by the "hired to invent" principle which does not foresee additional payments to the salary.

Summary of the European national laws: The key factors of all the systems are summarized in the attached Table 2.

While the German remuneration system has a long history and detailed methodology, the other national laws in Europe are more flexible and appear to struggle to find a definition of a "reasonable remuneration". Exceptional cases have let to high remuneration awards, but the remuneration to be paid for a routine case is often undefined. There is no difference whether the provisions come from the patent law or a special law. Detailed guidance on remuneration is regularly missing and learnings from decisions are limited. This is also relating to the few cases that have been tried in courts and arbitration chambers.

All systems are spread from preference of a "hired to invent" principle with remuneration only under exceptional circumstances (e.g. UK, Netherlands and Belgium) to preference of a methodology to routinely provide remuneration from all patents relating to commercially used inventions (Germany). Details are often left to the companies (Finland) or additionally to collective bargaining (Sweden). Only Germany has detailed government guidance on the remuneration which however creates administrative burdens and other issues in its practice. It is not much appreciated by the local research-based companies. Small companies neglect it and sizable companies have opposed it as a competitive disadvantage for innovative companies. This resulted almost in a proposed abolishment of the methodology in favour of a lump sum system in the early 2000s law reform discussions. A large number of companies further circumvent many law provisions by using allowable individual agreements.

The effect of remuneration systems on innovation strength in all the countries is very difficult to evaluate. In the author's opinion, after studying all the various systems, there is no convincing and significant evidence that such effect exists.

Moreover, a review of the 2014 Innovation Index study by the institutions Cornell University, INSEAD and WIPO[55] mentions nowhere that individual financial incentives in the form of remuneration influence the innovation capabilities neither in developing nor in developed countries, even though human factors were the main focus of this study. Therefore, some countries with long established remuneration systems rank high [Sweden

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53 *UK Patent Act* (2014), 40 (1) "Where it appears to the court or the comptroller on an application made by an employee within the prescribed period that -(a) the employee has made an invention belonging to the employer for which a patent has been granted,(b) having regard among other things to the size and nature of the employer's undertaking, the invention or the patent for it (*or the combination of both*) is of *outstanding benefit* to the employer, and (c) by reason of those facts it is just that the employee should be awarded compensation to be paid by the employer, the court or the comptroller may award him such compensation of an amount determined under section 41 below.

54 James Duncan Kelly and Kwok Wai Chiu v GE Healthcare Limited [2009] EWHC 181 (Pat)

55 *Global Innovation Index* 2014 (GII), 7th edition, co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO)

(3), Finland (4), Germany (13)], but "hire to invent" countries are not lacking behind [UK (2), Netherland (5), US (6)] and countries on a "middle path" are also found at the top [Denmark (8)]. The study even states that "leading researchers and entrepreneurs are more likely to pursue their careers in the USA or the UK" which are the typical "hire to invent"-countries. Therefore the human factor is in its vast majority highly influenced by other elements such as salary and career opportunities.

	Law	Mandatory remuneration	Dispute resolution	Typical company practice	Typical award known from disputes	University staff covered	Remuneration for commercial use
Austria	patent law	yes	court	Calculated by company	partly follows German practice	yes	invention exceeds work duties
Belgium	none	n/a	court	none	none	n/a	invention with outstanding benefit
Denmark	special law	yes	court	negotiation with employee/company policy	Lump sum (typically low amount)	no	invention exceeds work duties
Finland	Special law	yes	arbitration chamber/court	company policy	lump sum + company policy formula	no	every invention
France	patent law	yes	court/mediation board	collective agreements, company policy	lump sum or company formula	yes	every invention
Germany	special, detailed	yes	arbitration chamber/ court	calculated according to official guideline, waivers in company policy	lump sum + formula by official guideline (but scaled down at higher amounts)	yes	every invention
Italy	patent law	yes	court/ arbitration	employment contract/company calculated	collective agreements, company set	yes	every invention (partly covered in employment contract)
Netherlands	patent law	No, can be part of employment contract	court	employment contract (salary inclusion possible)	clauses in employment contract	yes	qualified inventions only
Sweden	special	yes	mediation board/ arbitration board	negotiation with employee/collective bargaining	individual evaluation (over 0,5 mio EUR only in exceptional cases)	no	every invention
UK	Patent Law	yes	patent office/ court	only special cases	special award	yes	invention with outstanding benefit

Table 2: Overview on remuneration requirements in selected European countries

In the personal experience of the author the remuneration system has however an effect on employed researchers as opined in section 4. It increases the IP awareness of employed scientists. They are incentivized to report and support patent filings. However, this may not be a decisive effect in the innovation process and should be balanced with the competitive disadvantage that employers have in calculating remuneration and litigating disputes.

A need for simple systems is therefore still given. A simple system could provide industry sector specific awards and lump sums based on the value of the invention. The German law draft of 2001 could be a good model as it was an initial compromise of all stakeholders.

8. Conclusion

The instant report is a practice oriented, comparative analysis of the remuneration system in Germany (also considering other European approaches) and China from the perspective of an in-house patent counsel having worked in Germany and China who still counsels companies establishing remuneration policies for China. The analysis has focused on practical issues and potential solutions developed by companies in the two jurisdictions rather than macro-economic effects. The following results have been drawn by the author:

Firstly, there is a need for simple remuneration schemes with reduced administrative burden for research-based companies. A simple remuneration scheme could include lump sums without calculation which are partly tailor-made for a specific industry sector. Such a type of model was proposed in the German law reforms around the year 2000 and could be a reference for China. A similar approach is already current practice of some companies in China. Companies in the Chinese system require clarity and flexibility in handling awards and remuneration while still being in compliance with the regulations and its mandatory requirements.

Furthermore disputes between inventors and employers need to have predictable outcomes in order to create an innovation fostering environment. To increase clarity for companies and to avoid R&D investment deterring decisions by the courts, it appears useful to involve one specialized body for dispute resolution in the legal system.

More clarifications are still needed on major concepts in the new Chinese regulation drafts. Any unpredictability may lead to negative effects on innovation creating investments. A not fully shaped system which is established quickly may therefore even hurt innovation, if it is established for all companies, but lacks in parts necessary clarity, balance between all stakeholders and their acceptance.

Appendix:

Recommendations for the Draft Service Invention Regulation in China

Section 2.1

Section 2.1 of the report relates to the definition of employee and employer as well as their relationship. In the current system certain needs for clarification and potential inconsistencies in laws of different levels in China have been observed.

Recommendations:

Clarify that the remuneration is a matter of employment relation between the employer and employee only ("entity" in Art. 16 of the *Patent Law* is the employer) and that the remuneration is paid according to the benefits that the employer has enjoyed. If the patent is transferred from the employer to a third party then the benefit from this transfer should be considered (exception: the employer provides R&D services under non arm-length-conditions for an affiliate that commercially uses the patent as patentee).

Harmonize remuneration laws and regulations for university professors and university employees on a national level both with regard to ownership (which is proposed to be solely with the university) as well as remuneration amount (clarification of national standard and basis for remuneration which could be added to the *Service Invention Regulation*)

Remove all local remuneration laws and regulations in favor of the *Service Invention Regulation* which is suggested to be the comprehensive regulation on all remuneration matters

Delete the conditions from Art. 7(4) from the draft *Service Invention Regulation* that state that employees can claim a non-service invention, although they have used company resources. If companies want to allow employees to use the company's resources in any way to support non-service inventions, such allowance can still be provided by individual written agreement as an exception.

Section 2.2

Section 2.2 of the report relates to the subject matter for which remuneration is paid. It has been observed that the scope of such subject matter in China is very broad. It may be strongly reconsidered whether this opens up routine tasks (development work, creation of non-patentable know-how) to remuneration claims of employees. If such routine works are not intended to be remunerated, it is suggested to exclude them clearly from the corresponding laws. Furthermore the remuneration for design patents, plant variety protection rights and circuit layout designs is not common practice in any other jurisdiction analysed. The IPRs appear to involve less creative efforts and have less commercial value. Coverage of these IPRs leads to potential concerns of overregulation and unnecessary administrative burden for employers.

Recommendations:

Confirm the exclusion know-how which does not meet the criteria for patent or other IPR protection from the definition of invention-creations that create a remuneration obligation in Art. 4 of the *Service Invention Regulation*.

Reconsider the practical relevance and value of adding other IPRs than invention patent and utility models to the scope of the SIR in Art. 4 of the *Service Invention Regulation*.

All remuneration requirements for employee remuneration are better combined in one instead of several laws. Corresponding provisions from the *Contract law* and the *Law on Promoting the Transformation of Scientific and Technological Achievements* are better harmonized with the *Service Invention Regulation*. In this regard it is also important to clarify that routine works of development activities and trivial technical know-how creation do not lead to remuneration claims.

Section 2.3

Section 2.3 deals with the relation of employee inventor and employer to govern ownership after reporting of an invention and the creation of the remuneration claims. Certain improvements and/or clarifications in view of practical experiences in Germany and China could be envisioned.

Recommendations:

Clarify that no or a not timely action by the employer after receipt of an invention report cannot lead to any potential loss of rights in the service-invention in any case. Especially any omission of the company to inform the inventor on the decision to file an IPR, keeping the invention as company secret or publishing it according to Article 13 of the *Service Invention Regulation* shall not have any effect on the status of the invention as service-invention.

Include a *limited* lump sum award of low amount (e.g. comparable to the award for patent grant) for *patentable* subject matter that is kept as company secret or made subject of a publication (different lump sums for the different types) (Article 13 *Service Invention Regulation*)

Include a right to require more information on an incomplete invention report from the employee in the *Service Invention Regulation* (Article 10 *Service Invention Regulation*)

Section 2.4

Section 2.4 deals with special rights of employee inventors. Some of the special rights do not appear to create any benefit according to the analysis.

Inventors have usually no ability to transform patented inventions into commercial applications. An obligation to inform inventors on non-filed cases and abandoned patents will only increase administrative burden and liability risks for research-based companies. It is rather recommended to encourage companies to proactively work with their employed inventors in modern IP management systems.

The right-of-first-refusal according to Article 326 *Contract Law* also conflicts with the lack of ability of inventors to commercialize their own inventions. This special right is rather a barrier for technology transfer as shown in the analysis, because technologies cannot be freely transferred in absence of hearing the inventor.

Recommendations:

Delete Art. 15 of the *Service Invention Regulation* and the related obligations to inform the inventor on abandoned or non-filed cases and the obligation to negotiate and support a transfer of such rights.

Art. 326 of the *Contract Law* contains special rights of inventors which may be better dealt with in the *Service Invention Regulation*. The right-of-first-refusal of the inventor in case of technology transfer to third parties has no practical relevance and could be deleted.

Section 3.1

Section 3.1 deals with awards as part of the award and remuneration scheme. The German law reform discussions as well as recent discussions in China indicate that industry-sector adapted award systems may be required as well as a flexibility of companies to incentivize already at the time of reporting and accepting an invention.

Recommendation:

Clarify that industry-sector specific awards created by company policies can provide for lower lump sums than stated in the statutory requirements without risking to be invalid according to Art. 18 of *the Service Invention Regulation*, especially if the overall policy system provides other incentives (e.g. at the time of invention reporting and acceptance) or the industry sector requires reduced amounts (high filing volumes).

Section 3.2

Section 3.2 deals with remuneration after commercial exploitation as part of the award and remuneration scheme. The study shows that the currently suggested fixed percentage rates are not suitable in all industry sectors which may have different technology royalty rates and that the non-capped, theoretical very high calculation amounts may lead to anti-innovative effects (sticking to old technologies to support remuneration claims) or may lead to the occurrence of more disputes with employees.

Recommendation:

Introduce a lump sum system for different average invention values as has been discussed for instance in the law reform of Germany in 2001 (see study report) replacing the fixed percentage rates in the current statutory requirements. The lump sums would preferably be scaled down for higher invention values to avoid excessive, unreasonable awards.

If the first recommendation is not acceptable, at least clarify that company policies can define lump sums for remuneration in case of commercial exploitation without risking to be invalid according to Art. 18 of the *Service Invention Regulation* even though they are lower than the statutory levels, especially if the industry sector requires different pay-out factors or if the company remuneration system intends to distribute remuneration more evenly thereby avoiding extraordinary high claims.

An average invention value in the industry sector may be used by the companies to justify their lump sum system.

Section 5

Section 5 deals with disputes and their resolution. The study shows that very high remuneration claims decided by courts (e.g. in Japan), which may be considered as excessive or relating to misuse of the system by resigned or retired employees, may have a detrimental effect on R&D investment decisions. Furthermore a unified case decision practice by an experienced body may be preferable to the users (see e.g. the Arbitration Chamber in Germany) to establish a suitable and finally decided case precedents in short time and efficiently. In view of limited numbers of cases and basic questions to be clarified, it may be advisable to have only one body for final decision making on a national level.

Recommendation:

Harmonize the judicial practice on remuneration by issuing guidance on open issues from national level (e.g. Judicial Interpretation of Supreme Court)

Refer the final decision on remuneration matters to a few, *preferably one*, experienced patent court (e.g. IP Court in Beijing, Shanghai or Guangzhou)

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