

UNIVERSITY TECHNOLOGY TRANSFER: FROM THE INVENTION DISCLOSURE TO THE LICENSING AGREEMENT

ABSTRACT This paper is focused on describing the university technology transfer process, from the initial invention disclosure to the licensing agreement. It focuses on the role of technology transfer support organizations in guiding this process. The study begins with an examination of university invention disclosures and emphasizes the importance of formulating an effective protection strategy to safeguard intellectual property rights. Various valorization routes are discussed, including licensing the invention, creating spin-off companies, establishing joint ventures, and forming research and cooperation agreements. Licensing, in particular, is highlighted as a prominent means of technology commercialization. The paper is based on a comprehensive literature review, shedding light on each stage of the technology transfer process, and the testimonial of technology transfer professionals, providing valuable guidance for universities and technology transfer offices in maximizing the potential of their innovations.

INTRODUCTION

University technology transfer is a dynamic process aimed at valuing intellectual property assets. This paper aims to provide valuable insights and guidance for universities and stakeholders to maximize the value of their innovations and inventions throughout technology transfer, from the initial invention disclosure to the final licensing agreement.

The university invention disclosure is the initial technology transfer step, where researchers formally submit their innovations to the technology transfer office.

To safeguard the value of intellectual property assets, universities must devise a robust protection strategy that may involve patenting and other forms of intellectual property protection.

This paper delves into the importance of conducting a thorough assessment of invention disclosures, considering factors such as market demand, potential profitability, and researchers' commitment to further development.

Technology licensing opportunities and types of licensing agreements are explored, offering different options for granting rights to potential licensees while ensuring a fair exchange of value.

Factors affecting the value of licensing agreements are discussed, including the strength of intellectual property rights, technology readiness level, market demand, and potential sales return.

Examining the diverse payment types included in licensing agreements, from upfront payments and royalty-based payments to milestone payments and deferred payments, among others.

The negotiation of a licensing agreement is also discussed, emphasizing the importance of a collaborative and transparent approach to reach a mutually satisfactory agreement.

This paper is descriptive based on a literature review, providing a comprehensive overview of the various

stages and aspects involved in university technology transfer. The implementation of the provided insights can maximize the potential of their intellectual property assets and drive impactful innovation in the market.

METHODOLOGY

In this study, to establish a theoretical foundation, a literature review was conducted, delving into the essential aspects of invention disclosure, intellectual property rights protection, negotiation strategy, and licensing process. Building upon this theoretical knowledge, we engaged in interviews with the heads of staff from eight Portuguese universities' technology transfer offices. Notably, five of these universities consistently secure positions in the world rankings of the top 1000 universities (CWUR, 2022). By tapping into the wealth of experience and expertise from these technology transfer offices, we aimed at gaining valuable insights, for the presentation of this paper. By synthesizing the literature review findings and the experiential knowledge gleaned from the interviews, our approach seeks to present comprehensive information that empowers universities to navigate the intricacies of technology transfer successfully. The goal is to optimize the invention commercialization process, enhance intellectual property management, and strengthen the bond between university and industry in the scope of technology transfer.

TECHNOLOGY TRANSFER SUPPORT ORGANIZATIONS

Technology transfer accelerates innovation by disseminating scientific and technological research outcomes to the broader public and the market. This process fosters the application of knowledge and technical solutions, making them accessible and beneficial to individuals, industries, and society at large (CCTT, 2021).

University technology transfer offices (TTOs) serve as essential intermediaries, facilitating the transfer of research and development outcomes from

academic institutions to businesses. They actively seek to create valuable opportunities for industry engagement and commercial exploitation, fostering collaborations that drive real-world applications of research findings (Fitzgerald, 2016).

The Competence Centre on Technology Transfer (CC TT), established by the Joint Research Centre (JRC) of the European Commission, focuses on promoting technology transfer, innovation, and the professionalization of TTOs in Europe. Through policy-related expertise and support, the CC TT empowers TTOs to excel in three key areas: capacity and operational support, financing instruments, and innovation assistance. The collaboration with the European Technology Transfer Office Circle (TTO Circle) further enhances knowledge exchange and best practices among major Public Research Organizations in Europe (TTO Circle).

The Alliance of Technology Transfer Professionals (ATTP) exemplifies the collaborative spirit within the technology transfer community. This organization brings together various technology transfer support organizations, such as the Association of Science and Technology Professionals (ASTP) and the Association of University Technology Managers (AUTM), to promote standards and recognition for Technology Transfer Professionals (RTTP). By fostering effective partnerships with researchers, industries, and governments, ATTP strengthens the foundation for successful technology transfer endeavors.

INVENTION DISCLOSURE

To facilitate technology transfer effectively, university TTOs actively encourage researchers to disclose their inventions. Through this process, they meticulously assess the novelty, industrial applicability, and potential profitability of research results (USPTO, 2020). Researchers provide essential information through the invention disclosure form, outlining the claims, applications, development stage, and market potential of their inventions. The goal is to enable the identification of potential licensees interested in

adopting these technical solutions (Wirz et al., 2019; Walter et al., 2018). Emphasizing simplicity and ease of participation, TTOs ensure researchers remain engaged and informed throughout the technology transfer process (Young, 2007).

Upon receiving invention disclosures, TTOs initiate a thorough assessment process, considering both hard and soft factors. Hard factors entail analyzing the addressable market scale, evaluating Intellectual Property Rights, and conducting comprehensive patent searches. Simultaneously, soft factors encompass assessing the enthusiasm of the research team, their experience in valorization projects, and their commitment to the technology transfer process. This strategic triage process empowers TTOs to prioritize valuable disclosures, optimize resource allocation, and allocate funds judiciously for patent protection (Hockaday, 2020; Powers & McDougall, 2005).

Strategic prioritization through triage plays a pivotal role in the efficient allocation of limited resources and time within TTOs. TTOs are tasked with managing the university patent budget, a critical aspect of the Intellectual Property Rights (IPR) protection process (Hockaday, 2020; Powers & McDougall, 2005). By determining which disclosures merit higher attention, TTOs can optimize their efforts in pursuing patent protection and directing financial investments appropriately.

The question of selectivity arises concerning patent applications and their profound impact on TTOs' performance (Powers & McDougall, 2005). The size of a patent portfolio can be both a boon and a burden. While a large portfolio signifies diverse opportunities, it also demands substantial resources. Thus, a careful evaluation is necessary to concentrate commercialization efforts on a select few technologies that exhibit strong market potential and profitability (Gardiner, 1997).

To clarify the selectivity level, a testimonial of a technology transfer professional is presented: We deliberately have a limited number of patents.

Patents, for us, are a means to an end and involve costs. We carefully evaluate the potential of our innovations upfront and then place our bets on the most promising opportunities. This approach allows us to channel our investments, saving the funds we would have otherwise spent on numerous patents. Therefore, intentionally having a smaller number of registered patents is part of our strategy. Other TTOs do not follow the same strategy, since having a large patent portfolio gives visibility to the university's inventiveness, increasing the research units and researchers' recognition, and capacity to attract investments and grant research funds.

The responsibilities of technology transfer professionals extend to meticulously assessing invention disclosures to identify those with the potential to generate greater profits and wealth (Dodds & Somersalo, 2007). This selection process entails ensuring researchers' commitment to collaborate with the TTO in further developments and future disclosures. The number of invention disclosures and the availability of funds for Research and Development (R&D) have a direct influence on the number of licensing agreements (Chapple, et al., 2005).

Moreover, the researchers' share of licensing revenue and non-economic benefits resulting from patent grants, transfer, and diffusion also contribute positively to the overall number of invention disclosures. In turn, this fosters a higher level of dedication from researchers to actively engage in the technology transfer of R&D results (Chang, Chen & Fong, 2015).

As technology transfer professionals undertake the critical task of triage and selectivity, they must be prepared to invest considerable time, effort, and financial resources. An exhaustive and diligent assessment of each invention disclosure ensures that the chosen technologies align with the university's goals and market demands. By focusing on innovations with the highest potential, TTOs can optimize the use of scarce resources and enhance the success rate of their patent applications.

Furthermore, the process of triage necessitates effective communication between researchers and technology transfer professionals. It is essential to collaborate closely with inventors to understand the full potential of their discoveries and ascertain their willingness to pursue further development in partnership with the TTO. Through such collaboration, TTOs can foster an environment conducive to innovation and robust technology transfer.

PROTECTION STRATEGY

A well-crafted strategy for managing intellectual property is of paramount importance to safeguard future investments and unleash the potential of scientific and technological advancements. In the pursuit of valuing such outcomes, three primary options emerge: maintaining the invention as a secret, publishing research results, or seeking patent protection (Hockaday, 2020). However, secrecy is often not a viable choice for research teams as publications significantly impact their academic performance evaluations, unless they contemplate establishing a spin-off company with the support of the university. Moreover, in Europe, publicly disclosing the findings before applying for a patent relinquishes the invention to the public domain (EPO, 2021), while in the US, inventors enjoy a grace period of one year to apply for a patent after disclosure (USPTO, 2020).

Determining the appropriate protection method hinges on various factors, including the strength of the invention's barriers to prevent replication through different technical approaches (Dolfsma, 2011; Nelson, 1998). In certain instances, keeping an invention secret may be a prudent choice, especially when it is perceived that the invention lacks a robust barrier against others achieving similar results. Additionally, rapidly evolving fields or challenging detection of the invention's use by external parties may render the patenting process less advantageous (Nelsen, 1998).

On the other hand, filing a patent application offers

unparalleled protection, granting exclusive rights for technology exploitation and future profit generation (Howell, 2017), and by releasing the invention through technology websites and databases like the Enterprise Europe Network, or through industry exhibitions and technology transfer events, patent holders can attract potential licensees and collaborations.

Emphasizing proactive engagement, technology transfer professionals have a pivotal role in the patenting process. They facilitate the connection between inventors and potential partners or licensees, fostering collaborations that maximize the impact and commercial potential of the protected technology. The role of technology transfer offices extends beyond mere patent application filing; it involves developing strategic plans for technology commercialization, negotiating licensing agreements, and providing valuable support throughout the entire innovation lifecycle.

VALORIZATION ROUTES

Various avenues for valorization exist, offering institutions multiple paths to capitalize on their intellectual property and foster further research and development. These valorization paths encompass licensing, selling Intellectual Property Rights (IPR), creating spin-off companies, establishing joint ventures, and forging research and cooperation agreements (Thalhammer-Reyero, 2008).

Licensing entails granting permission to external parties to use the patented technology or innovation under specified conditions. This approach allows the institution to retain ownership while earning royalties from the licensee's commercial activities. Selling IPR involves transferring the rights to the intellectual property to another entity in exchange for a lump-sum payment or ongoing royalties (Caviggioli et al., 2020; Gervais, 2021). This approach can be particularly beneficial when the institution seeks to focus on other core areas of research and development.

The creation of a spin-off company represents a compelling option for commercializing groundbreaking technologies. By establishing a new venture separate from the parent institution, researchers can leverage the technology's potential, attract investors, and drive innovation with entrepreneurial agility (Pacheco and Franco, 2023). Joint ventures offer a collaborative platform for institutions to join forces with external partners, typically industry players, to pool resources and expertise for a common research or development goal. These ventures can result in mutual benefits, sharing risk and reward between the collaborating parties (Rocha et al. 2023).

Research and cooperation agreements play a vital role in nurturing productive collaborations. CRADAs (Cooperation Research And Development Agreements), MTAs (Material Transfer Agreements), and NDAs (Non-Disclosure Agreements) facilitate the exchange of knowledge, resources, and technology with third parties while maintaining institutional control over intellectual property. NDAs are particularly valuable as they safeguard sensitive information while enabling fruitful collaborations to continue or initiate new R&D projects (Thalhammer-Reyero, 2008).

For advancing knowledge and technology further, collaboration and consortium agreements prove instrumental. Collaboration agreements enable institutions to collaborate with external entities to test and develop proof-of-concept or integrate the technology into innovative products or systems. These agreements often involve non-disclosure clauses and provisions regarding co-ownership of research results, fostering an equitable and productive partnership.

Consortium agreements, on the other hand, bring together diverse parties, including companies, research labs, and universities, to collaborate on a specific project or goal. While they may add complexity to intellectual property rights management, consortium agreements also enhance the technology transfer potential by involving

industrial companies and experienced partners (Hsu, et al., 2015).

Overall, successful technology transfer requires a thorough understanding of the various valorization paths and the strategic selection of the most suitable approach for each specific technology or innovation. Institutions must be proactive in negotiating and managing collaborations and agreements to unlock the full potential of their intellectual property and drive innovation with broader societal impact. By establishing robust partnerships and engaging with external stakeholders, institutions can foster a vibrant ecosystem of knowledge exchange and technology commercialization. This, in turn, empowers them to make significant contributions to global progress and economic growth.

DISCLOSURE ASSESSMENT

The assessment of invention disclosures is a multifaceted process that holds immense significance for TTOs. It involves meticulously considering the protection strategy and various potential valorization paths to make informed decisions regarding intellectual property rights, further development stages, and the pursuit of commercial deals (Hockaday, 2020).

The first step in the assessment process is to understand the invention thoroughly, its market potential, and its profitability. TTOs must conduct patent searches to identify existing patents and related concepts in the invention field. This practice not only helps in avoiding patent infringement issues but also contributes to reducing the time and costs associated with Research and Development (R&D) projects (Smith, 2005). Patent databases provide valuable insights into the existing technology landscape and related inventions, facilitating convergence toward successful outcomes.

To aid in the evaluation process, TTOs frequently employ checklists and pre-defined evaluation models. These tools enable quick assessments to identify potential markets, end-users, and potential

licensees. They also guide TTOs in establishing contacts with experts in relevant industries, potential investors, and companies. One such tool is IPscore, available on the European Patent Office website, which offers a comprehensive assessment of technologies, research projects, and patents. The tool assesses 32 factors grouped into four categories: legal status, technology, market conditions, and finance. The results are presented in a ranking radar graph, offering a clear visualization of the invention's strengths and weaknesses.

While cash flow projections are not commonly performed during the initial assessment of invention disclosure, among the Portuguese universities under study, they become relevant in certain scenarios. For instance, when there is a manifestation of interest from an investor, cash flow projections provide a baseline for agreement negotiations. Similarly, when considering the creation of a spin-off company, cash flow projections help in gauging the financial viability and potential returns.

However, it is important to recognize that successful technology transfer does not solely depend on having a patent or innovative technology. Many solutions are licensed because they have been demonstrated and are ready for use (Rocha & Romero, 2011). Thus, reaching the proof-of-concept stage and demonstrating the functionality of the invention are vital steps that significantly reduce the perceived risk for potential licensees, making the technology more valuable (Speser, 2006) and improving the odds of successful licensing.

Furthermore, technology solutions that are tailored to meet specific firm needs or developed with active participation from relevant firms often lead to more successful technology transfer processes (Harmon et al., 1997). Such tailor-made solutions align with the industry's requirements, making them more attractive for potential commercialization and partnership opportunities.

The assessment of invention disclosures guides Technology Transfer Offices in making strategic

decisions regarding intellectual property protection, further development stages, and potential valorization paths. By conducting thorough patent searches, utilizing evaluation tools, and emphasizing the importance of reaching the proof-of-concept stage, TTOs can optimize the technology transfer process. Additionally, collaborating with relevant firms and customizing solutions to meet industry needs enhance the chances of successful technology commercialization. An effective assessment process empowers TTOs to capitalize on their intellectual property assets, foster innovation, and drive economic growth through impactful technology transfer endeavors.

To further elaborate on the importance of technology readiness level and the relevance of partnerships, a testimonial of a technology transfer professional is presented: Funding plays a vital role in identifying firms interested in our technology and determining the extent of patent protection across different geographical regions. We have cultivated a diverse range of partners to construct a comprehensive innovation ecosystem that spans various stages of the pipeline, starting from research and innovation to the establishment and expansion of companies. These partners collaboratively facilitate the smooth progression of ideas and developments. Within this ecosystem, we have an array of stakeholders, including financial institutions, business angels, and venture capitalists, among others. This broad network of support extends beyond mere advice, it actively seeks to capitalize on the results of research and development, transforming them into fully-funded projects geared towards producing marketable products and services. These relationships and informal networks significantly contribute to the successful translation of R&D outcomes into viable commercial ventures.

TECHNOLOGY LICENSING OPPORTUNITIES

Technology licensing offers a diverse array of scenarios for organizations to capitalize on their technological assets and expand their market presence. These licensing situations can be broadly

categorized as follows (Razgaities, 2003).

Opportunity Licensing: In this scenario, an organization possesses valuable technology and other assets or skills that would be beneficial to another party. Through opportunity licensing, the organization can leverage its technological strengths to create mutually beneficial partnerships and collaborations.

Opportunistic Licensing: Here, a third party actively seeks technology to secure rights and valuable assets while strategically developing a patent strategy to protect and enforce its position in the market. Opportunistic licensing provides an opportunity for companies to enhance their technological capabilities and gain a competitive edge.

Partnering Licensing: Technology holders often seek business partners to gain access to essential resources, assets, and skills. These may include complementary technologies, skilled personnel, state-of-the-art equipment, manufacturing capabilities, market access, and financial investment. Partnering licensing enables joint efforts in further Research and Development (R&D) stages, product deployment, manufacturing, and sales. Through such partnerships, organizations can achieve greater synergies and accelerate the commercialization of their technologies.

Startup Licensing: This type of licensing involves the technology owner licensing their inventions to a new business entity established specifically to exploit innovative achievements. An excellent example of startup licensing is when a university research unit creates a spin-off company to capitalize on its R&D results. This approach allows the research unit to focus on its core activities while enabling the new venture to commercialize the technology effectively.

Sublicensing: Sublicensing refers to the rights granted to the primary licensee to further develop or apply the technology. This provision enables the primary licensee to grant licenses to third parties for the use of the technology in different applications or contexts. Sublicensing expands the technology's

reach and potential impact, benefiting both the primary licensee and the sublicensees.

Enforcement Licensing: In situations where a licensor identifies unauthorized use or deviations from the agreed scope by the licensee, enforcement licensing comes into play. The licensor can take action to uphold their rights over the technology's applications or uses. Enforcement licensing is crucial for safeguarding intellectual property and ensuring compliance with the terms of the license agreement. The technology owner has the flexibility to grant licenses with varying levels of exclusivity and territorial coverage, impacting the overall value of the license agreement (Thalhammer-Reyero, 2008, WIPO, 2015, and WIPO, 2015). Exclusive licenses confer sole rights to use the technology for specific purposes and applications within defined geographical regions. On the other hand, non-exclusive licenses allow multiple parties to use the technology without limitations on scope or territory. Additionally, the technology owner may choose to retain the right to exploit the technical solution independently, as long as this option is stipulated in the licensing agreement.

The effective management of technology licensing demands a clear understanding of the organization's strategic goals, technological assets, and market opportunities. Licensing arrangements must align with the organization's overall business strategy and objectives. A well-crafted licensing strategy can enhance the organization's competitive advantage, fuel innovation, and foster mutually beneficial collaborations.

An ideal licensee or technology partner is someone who can enhance our existing resources and capabilities to ensure the success of the invention. Above all, credibility is essential – „we take into account the firm's capabilities and market niches, but what matters most is their proven track record“ according to a testimonial from one Technology Transfer professional.

Technology licensing presents a spectrum of

opportunities for organizations to leverage their technological prowess, expand their market reach, and forge strategic alliances. Whether through opportunity, opportunistic, partnering, startup, sublicensing, or enforcement licensing, organizations can harness the potential of their intellectual property for sustainable growth and innovation. A thoughtful and well-executed licensing strategy empowers organizations to thrive in dynamic markets and drive transformative changes in the technological landscape. By capitalizing on licensing opportunities, businesses can establish themselves as industry leaders and play a pivotal role in shaping the future of technology and innovation.

FACTORS AFFECTING THE VALUE OF THE LICENSING AGREEMENT

Factors affecting the value of a licensing agreement encompass a range of considerations that can significantly impact the attractiveness and potential profitability of a technology transfer deal. One key factor that enhances the value of the license is the intellectual property rights' contribution in reducing the time and cost required to bring a new product to the market. By possessing protected and high-value assets, the licensor gains the ability to exclude competition and tap into a broader market demand (Thalhammer-Reyero, 2008).

The scope and geographical coverage of patent applications, for instance, can greatly influence the potential market reach and exclusivity. Moreover, the technology readiness level, the required capabilities and skills to utilize it effectively, its robustness in diverse environments, manufacturability, and scalability are all critical aspects that impact the technology's overall value. If the technology relies on other complementary technologies or if it offers a comprehensive commercial solution, these aspects also contribute to its valuation. Compatibility with existing systems is another essential factor, as it can facilitate seamless integration into the market (Rocha et al., 2017).

Additionally, uncertainty associated with market

factors and potential sales returns must be factored into the valuation. Understanding the market demand and forecasting expected demand is vital in estimating the technology's economic value. By performing market value assessments, links between the technology, its potential applications, and the market can be established, leading to more accurate valuation results. On the other hand, economic value assessments, which involve deriving financial metrics from cash-flow projections, offer a comprehensive view of the technology's economic viability and potential return on investment (Razgaities, 2003). Various methods are used for technology valuation, with each offering unique insights into the technology's worth. These methods include real-options analysis and Monte Carlo Simulation, which consider different scenarios and potential outcomes in a dynamic environment. Technology transfer offices at universities frequently utilize predefined models and matrices to conduct initial quick assessments of the technology's market potential before delving into more in-depth market and economic evaluations (Rocha et al., 2023).

To further elaborate on factors affecting the licensing agreement, a testimonial of a TTO professional is presented: To license the patent, we made numerous international contacts involving the researcher, department personnel, myself, and others. However, we faced zero success in our endeavors. The reason was, the technology represented only a component that needed integration into a product, and potential partners demanded solid assurances of its functionality. To provide these guarantees, I had to indisputably demonstrate their practicality. As I approached companies, they acknowledged the technology's potential, but their primary concern was reducing risk and immediate availability. They preferred solutions that were already developed and tested. From their perspective, it was a market analysis that drove their decision-making process. Ultimately, the successful licensing didn't solely rely on the existence of the patent, but rather on the realization that the technology presented a low-risk opportunity that required minimal effort, as it was nearly market-ready.

PAYMENTS INCLUDED IN LICENSING AGREEMENTS

Pricing is a crucial step in the technology transfer process, where the valuation results are reviewed, and a specific price is determined for the tangible and intangible assets being transferred. The pricing process must consider the strategic value of the technology, the potential for future revenue generation, and the impact on the licensee's competitive advantage.

In conclusion, the value of a licensing agreement is influenced by a multitude of factors. From the strength of intellectual property rights and patent protection to the technology's readiness level, scalability, and market compatibility, each aspect contributes to the overall worth of the technology. An accurate valuation is essential for conducting successful negotiations with potential licensees and determining fair and equitable pricing for the technology transfer. By carefully assessing and understanding these factors, technology transfer offices and licensors can maximize the value of their intellectual property assets and forge fruitful partnerships in the competitive landscape of technology commercialization.

Technology licensing agreements encompass various types of payments that are negotiated between the licensor and the licensee. These payment structures are designed to reflect the value of the technology being transferred and ensure a fair and mutually beneficial arrangement for both parties (Razgaities, 2003 Rocha et al., 2017).

Lump-sum Payments: Lump-sum payments involve a one-time upfront payment made by the licensee to the licensor. This payment is typically a fixed amount and is made at the beginning of the licensing agreement.

Royalty-based Payments: Royalty-based payments are a common form of payment in technology licensing agreements. The licensee pays a percentage of their sales or revenue generated from using the

licensed technology as royalties to the licensor. This payment structure enables the licensor to benefit from the technology's success in the market.

Upfront Cash Payments: Upfront cash payments are an advance payment made by the licensee to the licensor before the technology is fully utilized or commercialized. This payment provides the licensor with immediate financial benefits.

Annual License Maintenance Fees and Minimum Payments: Annual license maintenance fees are recurring payments made by the licensee to maintain the validity of the license. Minimum payments are set amounts that the licensee agrees to pay annually, regardless of the level of technology utilization.

Milestone Payments: Milestone payments are payments made by the licensee to the licensor upon achieving specific milestones or targets, such as reaching a certain sales volume or completing a critical stage of technology development.

Patent Management Fees: Patent management fees cover the costs associated with managing and maintaining the patent portfolio related to the licensed technology.

Option Payments: Option payments are payments made by the licensee for the right to obtain an exclusive license for additional technologies or improvements that may be developed by the licensor in the future.

Payment Adjustments: Payment adjustments may be included in the agreement to account for changes in market demand, pricing, or other external factors that may affect the technology's value.

Deferred Payments: Deferred payments allow the licensee to delay some of the payments until certain conditions or events are met, providing flexibility and financial support during technology implementation.

Support or Service Payments: Support or service payments may be included to cover the cost of training, technical support, or any other services

provided by the licensor to ensure successful technology adoption.

Termination Fees: Termination fees are applicable if either party decides to terminate the agreement prematurely. This fee compensates the licensor for potential losses due to the termination.

Ultimately, the payment structure in a technology licensing agreement is the result of a thorough negotiation process between the licensor and the licensee. The chosen payment types should align with the technology's value, the level of exclusivity granted, and the financial interests of both parties. By carefully considering these factors and adopting a fair and well-defined payment structure, technology licensing agreements can foster successful and sustainable collaborations between licensors and licensees.

NEGOTIATION OF A LICENSING AGREEMENT

Negotiating licensing agreements is a complex process that requires careful consideration of each party's interests and perspectives. The ultimate goal is to reach a win-win transaction that benefits both the licensor and the potential licensee. However, achieving this equilibrium can be challenging due to the divergent viewpoints of the parties involved.

Typically, the licensor assumes an optimistic role, providing positive insights into the technology's future success, while the potential licensee tends to be more cautious, highlighting potential risks and uncertainties. These differing perspectives stem from the licensor's desire to maximize the value of the deal and the potential licensee's aim to secure a favorable agreement at a reasonable price.

To initiate successful negotiations, both parties must conduct a preliminary analysis of their business goals. Understanding where their perspectives differ or align concerning the assets being transferred is crucial. It is essential for negotiating teams to be supported by technical, market, financial, and legal experts to gain a comprehensive understanding of the situation. This approach helps avoid contradictory positions

between team members during the negotiation process.

Before delving into the details of the licensing agreement, both parties should prepare a „term sheet“ or a „head of agreement“ outlining the main subjects that need to be covered. This document serves as a foundation for the negotiation process, streamlining discussions and expediting the path to a proposed agreement.

Moreover, during the negotiation process, both parties are typically bound by a non-disclosure agreement to safeguard confidential information. This ensures that sensitive details do not fall into the wrong hands and maintains trust between the parties.

To facilitate negotiations, several practices can be employed, as recommended by the World Intellectual Property Organization (WIPO) in their manual *Exchanging Value - Negotiating Technology Licensing Agreements*:

Attitude: Adopting a cooperative and open approach to understanding the other party's interests and perspectives.

Reconcile Interests: Striving to find an equilibrium of interests that satisfies both parties' desires to maximize their benefits from the agreement.

Identification: Effectively communicating and recognizing the issues under discussion.

First Statements: Presenting each party's viewpoints in a non-argumentative manner, fostering a win-win atmosphere.

Facts and Information: Utilizing facts and information comprehensively, acknowledging both sides' perspectives, and using them to persuade the other party.

Identifying All Issues: Ensuring that all subjects to be discussed are presented upfront, potentially through the „term sheet“ or „head of agreement.“

Starting with Minor Issues: Addressing minor issues first, as they are generally quicker to agree upon, establishing a positive momentum for the negotiation.

Listening and Asking Questions: Staying well-informed and engaging in active listening, as well as

seeking clarification through thoughtful questions.

Precision and Accuracy: Providing precise and accurate information regarding the technology, process specifications, and other relevant details.

Conflict Resolution: Addressing disagreements constructively and finding solutions to keep the negotiation progressing smoothly.

Employing Objective Criteria: Utilizing commonly accepted clauses, conditions, or practices to facilitate agreement on certain subjects.

Time Management: Being mindful of time constraints and deadlines and using them to one's advantage while working towards achieving results.

Successful negotiations lead to mutually satisfactory licensing contracts, wherein both parties emerge as winners. The agreement reflects a fair and balanced transaction that recognizes and respects each party's interests and contributions.

Negotiating licensing agreements requires skillful navigation through differing perspectives and interests. It demands collaboration, transparency, and open communication between the licensor and the potential licensee. By adhering to established best practices and employing a thoughtful approach, both parties can achieve a positive outcome that fosters innovation and benefits all involved parties.

CONCLUSION

The university technology transfer process involves various stages, starting from the invention disclosure to the ultimate licensing agreement. Technology transfer support organizations play a crucial role in guiding universities and researchers through this process. The invention disclosure is the initial step where researchers formally submit their innovations to the technology transfer office for evaluation and potential commercialization.

To ensure the protection of intellectual property rights, universities must devise a robust protection strategy that includes patenting and other forms of IP protection. This strategy is essential in safeguarding the technology's value and exclusivity, thereby attracting potential licensees and commercial partners.

The valorization routes available for technology transfer offer a range of options for universities to explore. Licensing the invention is one of the most common approaches, allowing licensees to use the technology while providing royalties or other payments to the university. Other routes include creating spin-off companies, establishing joint ventures, and forming research and cooperation agreements.

The assessment of invention disclosures enables technology transfer offices to select the most promising innovations with the potential for commercial success. A diligent assessment involves considering market demand, potential profitability, and researchers' commitment to further development.

Once a promising technology is identified, licensing opportunities arise. Different types of licensing agreements can be tailored to meet the needs of both parties, including exclusive and non-exclusive licenses, sublicensing options, and enforcement licensing. These agreements are essential in defining the scope of rights granted to the licensee and ensuring a fair exchange of value between the parties. Various factors influence the value of a licensing agreement, such as the strength of intellectual property rights, the technology's readiness level, market demand, and potential sales return. Evaluating these factors accurately is critical for setting a fair and equitable pricing structure.

The payment types included in licensing agreements are diverse, and they can be tailored to suit the specific needs and preferences of both parties. These may include upfront payments, royalty-based payments, milestone payments, and deferred payments, among others. A well-structured payment model can provide incentives for both parties to maximize the technology's potential and foster a win-win scenario. The negotiation of a licensing agreement requires a collaborative and transparent approach. Both parties must understand each other's interests and perspectives to reach a mutually satisfactory agreement. By employing objective criteria,

reconciling interests, and maintaining open communication, universities, and potential licensees can establish a strong foundation for successful technology transfer negotiations.

A well-executed technology transfer process holds the promise of transforming groundbreaking research into real-world innovations that benefit society and foster economic growth. This descriptive paper based on a literature review and technology transfer professional's testimonials, provides valuable insights and guidance for universities and stakeholders to maximize the value of their intellectual property assets.

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