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# RESEARCH ON INNOVATIVE MECHANISMS FOR THE CULTIVATION OF HIGH-LEVEL INTELLECTUAL PROPERTY TALENT UNDER THE INTEGRATION OF INDUSTRY, EDUCATION, AND RESEARCH

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**Abstract**

With the continuous development of intellectual property, China has gradually forged a path to intellectual property development with Chinese characteristics. Significant achievements have been made in the cultivation of intellectual property talent; however, there remain prominent issues related to talent structure, quality, and attrition. The main reason for these challenges lies in the current training model for intellectual property talent, which is often vague and one-dimensional, with rigid and singular training entities. Therefore, it is essential to clarify the scope of high-level intellectual property talent, seize the opportunity for integrating industry, education, and research, collaboratively reshape training concepts, refine training methods, and explore innovations and transformations in the training mechanism for intellectual property talent.

**Keywords:** Industry-Education-Research Integration; High-Level Intellectual Property Talent; Training Concepts; Interdisciplinary Approaches.

## INTRODUCTION

The "14th Five-Year Plan for Intellectual Property Talent" has introduced new requirements for the cultivation of IP talent in China.

The fundamental principle of "talent-led development" provides theoretical support for building a high-level IP talent team in the new era, emphasizing the need to prioritize talent resource development and elevate the importance of IP talent to a strategic height.

However, there remain many challenges to establishing a talent system that meets the diverse needs across various domains, stages, and levels of IP. The integration of industry, education, and research is a crucial avenue for cultivating high-level IP professionals.

Under the guidance of the new liberal arts initiative, it is imperative to actively explore the incorporation of this integration into IP discipline development and talent training, establishing a collaborative mechanism that fosters a mutually beneficial cycle to support high-quality talent development and industrial progress in the field of intellectual property.

The Seybold Report
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## 1. Analysis of the Dilemmas and Causes of Intellectual Property Talent

As China's IP sector continues to grow, the national IP talent pool has expanded rapidly, achieving significant progress. However, there are evident shortcomings and issues that indicate the need for further improvement in the talent training system.

### 1.1 Dilemmas of Intellectual Property Talent

#### 1.1.1 Talent Structure Issues

The primary concern regarding IP talent cultivation is not the quantity but rather the structure. According to the "2022 China Intellectual Property Development Status Evaluation Report," by the end of 2021, there were 104 universities offering undergraduate programs in IP, with 50 offering secondary or interdisciplinary IP disciplines. The total number of IP undergraduate graduates reached 3,105, while the overall talent pool exceeded 700,000.

However, there are notable structural imbalances: first, the talent types are predominantly focused on IP protection, application, review, and agency without adequate emphasis on transforming IP into productive forces or providing comprehensive services like management and operation. Second, the distribution of talent across industries is uneven, with most concentrated in IP-intensive sectors like manufacturing, communications, and software, while sectors such as agriculture and services are lacking in IP professionals.

Third, regional distribution is also skewed, heavily favoring developed areas such as Beijing, Shanghai, and Guangzhou, resulting in widening gaps in IP development levels across regions.

#### 1.1.2 Competency Issues

The issue of intellectual property talent qualifications is primarily reflected in two aspects. First, there is a significant shortfall in professional competence. Intellectual property is a highly interdisciplinary field, which necessitates that intellectual property professionals possess a knowledge structure that integrates multiple disciplines. However, many current professionals exhibit clear deficiencies in their specialized qualifications, with their strengths often limited to legal expertise in intellectual property law. There is a notable lack of proficiency in areas such as science and engineering, management, technology, and operations.

Second, there is a lack of practical operational skills. A qualified high-level intellectual property professional must not only excel in theoretical knowledge but also meet the dual requirements of theory and practice. However, most practitioners in the field lack practical experience in stages such as application, examination, and agency, resulting in inadequate skills in intellectual property search, analysis, and strategy development. Consequently, they struggle to handle various real-world issues effectively and do not place sufficient emphasis on the norms of practical operations.

#### 1.1.3 Talent Retention Issues

The "14th Five-Year Plan for Intellectual Property Talent" points out that there is currently a shortage of high-level intellectual property professionals. This issue stems from two main factors: talent supply and talent loss. The pathways for intellectual property talent loss primarily

The Seybold Report
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include two categories: migration to other industries and relocation abroad. The root causes of this issue are multifaceted. Firstly, the current compensation system within the industry is underdeveloped, and the salary levels do not align with the contributions of intellectual property professionals.

This misalignment fails to provide effective incentives, leading to a decreased recognition of the industry among talent and consequently resulting in talent loss. Secondly, there are significant bottlenecks in the career development opportunities for intellectual property professionals. Issues such as an inadequate career planning system, narrow promotion channels, and limited professional training opportunities contribute to the risk of talent attrition.

Lastly, public awareness of intellectual property rights is relatively weak, and instances of infringement are quite serious. The existing protection mechanisms still have shortcomings, which damages the industry's image, reduces trust in the sector, and undermines recognition of the profession. As a result, professionals in this field may be more inclined to leave their positions.

### 1.2. Causes of the Dilemmas

#### 1.2.1 Vague and Unidimensional Training Models

Currently, there are two main models for undergraduate education in intellectual property. The first is the unified model, which involves a four-year undergraduate program in intellectual property admitted through the national college entrance examination. The second is the interdisciplinary model, where students study intellectual property after establishing a foundation in their primary major.

This model can be further divided into two subcategories: one where students minor in intellectual property as a second major, and another where students are selected to enter the intellectual property program in their sophomore or junior years.

Both of these models have significant drawbacks. In the case of the first model, there is no clear distinction from traditional law undergraduate education; the curriculum and training paths do not reflect the unique characteristics of the intellectual property field. As a result, graduates often find themselves limited to roles focused on intellectual property protection, lacking relevant skills in management and operation.

Regarding the second model, while students may have some background in science, engineering, or management, the shorter study duration leads to an unstable foundation. This often fails to meet the demands for interdisciplinary training, potentially resulting in insufficient expertise in both their primary and secondary majors.

Furthermore, the Ministry of Education has introduced a master's degree category in intellectual property in the "Directory of Graduate Education Disciplines and Majors (2022)." Many institutions are also enrolling doctoral students in "Intellectual Property Law" and "Intellectual Property Management," establishing specialized educational pathways for high-level intellectual property talent in China. However, the current training models face several issues.

The Seybold Report
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First, considering the diverse academic backgrounds of students, there is significant overlap in course content with undergraduate programs, primarily focusing on foundational theoretical knowledge. Second, there is no clear separation from legal master's programs, with limited emphasis on management, economics, and technical disciplines. Finally, the training lacks a focus on developing practical skills, failing to adopt an education orientation centered on practical application and aligned with career needs.

### 1.2.2 Rigid and Singular Training Entities

The primary force in the cultivation of intellectual property talent lies within higher education institutions. However, due to limitations in training environments and faculty resources, solely relying on universities to meet the diverse social demands across various fields, links, and levels of intellectual property is no longer sufficient. Currently, there is a lack of long-term collaborative awareness among the key stakeholders in intellectual property talent cultivation.

Typically, collaboration between universities and enterprises is limited to the graduation phase, where universities complete their training responsibilities and companies provide job opportunities, resulting in a superficial talent transfer without a deep understanding of each other's needs and strengths. Furthermore, effective collaborative mechanisms are lacking; joint development of training plans, coordination of teaching resources, and collaborative teaching are rarely implemented.

Most cooperation is limited to occasional guest lectures or industry internships recommended by mentors, which significantly constrains both the scale and impact of training. Additionally, government policies guiding university-enterprise cooperation are weak, leading to an asymmetry of resources and information between institutions and enterprises. There is also a lack of reasonable rewards and recognition for positive examples of such cooperation, failing to establish a genuine operational mechanism that encourages collaboration.

### 1.2.3. Ambiguous and Disconnected Training Objectives

On one hand, the training objectives lack clear positioning. Currently, the goals for cultivating intellectual property talent are often vague and not specifically categorized. When setting up intellectual property programs and courses, universities and training institutions typically define their aim as producing "comprehensive intellectual property professionals" without developing targeted training plans for various career paths (such as patent agents, IP managers, lawyers, technology transfer managers, etc.).

This broad goal leads to insufficiently detailed course designs, making it difficult for students to develop clear professional identities and skill sets, resulting in challenges in adapting to actual job requirements after graduation. On the other hand, there is a serious disconnection between theory and practice. Intellectual property education primarily focuses on the impartation of laws and theoretical knowledge, while the cultivation of practical skills is relatively weak.

Students often lack practical opportunities with enterprises, patent firms, and other institutions during their studies, leading to unfamiliarity with core skills such as patent application writing,

The Seybold Report
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IP assessment, and litigation practices. This significant gap between theory and practice results in graduates requiring a lengthy adjustment period when entering the workforce, which affects their employment competitiveness and career development.

## 2. Defining High-Level Intellectual Property Talent

Currently, there is no official definition for "high-level intellectual property talent," and its positioning remains somewhat vague. However, clarifying its conceptual connotations, attributes, and required skills is essential to establish clear objectives and a foundational framework for the cultivation of high-level intellectual property talent.

High-level talent typically refers to individuals who possess exceptional abilities, extensive experience, and specialized knowledge in their field, having achieved notable accomplishments and wielding significant influence within their industry. In the context of the "14th Five-Year Plan for Intellectual Property Talent Development," the concept of "high-level intellectual property talent" can be understood as individuals who demonstrate outstanding professional capabilities and contributions, possess a spirit of innovation, are well-versed in intellectual property law and management, and are familiar with international rules and practices related to intellectual property, enabling them to play a prominent leadership role in their industry.

### 2.1 Attribute Characteristics

The attributes of "high-level intellectual property talent" can be characterized as follows: First, they possess a multidisciplinary background in science, engineering, management, and law, adhering to a talent development strategy that emphasizes "law as the foundation, principles as the core, collaboration as the key, and practical experience as the basis."

They can effectively integrate their abilities in intellectual property creation, protection, management, information, service, and application. Second, they are capable of promoting the efficient utilization of intellectual property for capitalization and industrialization, advancing the development of IP application capabilities and fostering collaborative innovation within industries, thereby building a favorable innovation and industrial ecosystem that facilitates deep integration between intellectual property and various sectors.

Third, they have an international perspective, possess strategic planning capabilities for international intellectual property, and have experience in international communication and handling global affairs, as well as a solid understanding of international IP rules and dispute resolution mechanisms, complemented by strong cross-cultural and cross-jurisdictional communication skills.

### 2.2 Competencies and Skills

The competencies and skills of "high-level intellectual property talent" primarily encompass two aspects. On one hand, there is political quality. This includes a firm political stance and belief, a correct political direction and ideological perspective, clear political awareness, and judgment capabilities. Such individuals can accurately grasp the direction and requirements of national intellectual property policies as well as the trends in international IP protection and trade relations, demonstrating good political performance in IP practice.

The Seybold Report
ISSN 1533-9211
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On the other hand, there are professional capabilities. This is exemplified by: first, legal competence, with a deep understanding and mastery of intellectual property laws and regulations, enabling accurate assessment and response to various IP issues. Second, technical competence, involving familiarity with fundamental technologies relevant to the industry, especially those that significantly impact the sector through alternative or competitive technologies.

Third, management competence, characterized by systematic thinking and risk awareness, along with proficient abilities in business control and cost-benefit analysis, allowing for the seamless integration of IP operations into industry management processes and participation in "full-process" control. Fourth, commercialization competence, which entails the ability to effectively utilize legal, communication, promotion, and public relations strategies to achieve the commercialization of intellectual property.

## 3. Innovative Strategies for Cultivating High-Level Intellectual Property Talent through Industry-Education-Research Integration

The overall goal of the "14th Five-Year Plan for Intellectual Property Talent Development" is to comprehensively integrate resources for intellectual property talent work, enhance the collaborative development mechanism for talent across all areas of intellectual property, and promote the construction of a talent team throughout the entire intellectual property value chain.

To achieve this, a strategic cooperation model that integrates industry, education, and research can be fully utilized to foster close collaboration and synergy between the industrial sector, higher education institutions, and research organizations. This approach aims to leverage each party's strengths, accelerating the innovative reform of high-level intellectual property talent cultivation mechanisms.

### 3.1 Breaking Barriers: Collaborative Training Entities

In the collaborative innovation system involving industry, education, and research, universities, enterprises, and research institutions are the three core entities. The cultivation of high-level intellectual property talent requires resource sharing and complementary advantages among multiple stakeholders. By aggregating various innovative outcomes and elements, barriers to innovation can be broken down, forming a mutually supportive and symbiotic innovation community. Specifically:

First, a scientific and stable cooperation mechanism for the cultivation of intellectual property talent should be established among universities, enterprises, and research institutions, clearly defining cooperation goals and mutual rights and responsibilities.

This includes setting collaboration details such as regular meetings, developing cooperative plans, and negotiating solutions to issues that arise, as well as improving feedback mechanisms to assess cooperation outcomes and adjust plans as needed.

The Seybold Report
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Second, resources should be integrated among multiple stakeholders, including shared and optimized intellectual property teaching facilities, research equipment, and technical talent. For instance, joint investments could establish resources like virtual courtrooms and digital exhibition halls to promote the industrial application of educational outcomes.

Third, under government leadership, the construction of collaborative training bases for intellectual property talent should be explored, strengthening the cultivation and popularization of intellectual property education. This could involve conducting training programs, research projects, and course development, as well as organizing teaching research, academic seminars, and faculty development, ultimately achieving a comprehensive base that integrates high-level research, quality education, efficient incubation, and high-standard services.

Fourth, international cooperation in intellectual property talent cultivation should be deepened by providing multilingual IP courses and learning resources, allowing students to more easily understand foreign intellectual property systems. Additionally, enriching international exchange programs, such as summer camps organized by international IP organizations and student exchange or visiting scholar programs, should be encouraged.

### 3.2 Adapting to Change: Reshaping Training Philosophies

Under the guiding principle of the new liberal arts concept, humanities education needs to transform creatively, and the cultivation of high-level intellectual property talent should actively recognize and seek change. In the process of talent development, it is essential to focus on the key aspects of interdisciplinarity, innovation, and internationalization, emphasizing the cultivation of comprehensive quality, practical skills, and innovative spirit.

First, establish a concept of interdisciplinary integration. Intellectual property is an interdisciplinary field that requires elements of law, technology, economics, and management. The cultivation of high-level intellectual property talent should build a new training system based on its interdisciplinary nature, integrating strengths from law, economics, management, and science and engineering, with the goal of developing composite talents.

Second, adopt an innovative process-oriented approach. General Secretary Xi Jinping has emphasized the need to "enhance innovation awareness, cultivate innovative thinking, and demonstrate the courage to innovate and the vitality to strive for excellence." The spirit of full-process innovation should be implemented in intellectual property talent cultivation, aligning with the development of the times, focusing on enhancing students' abilities to identify and solve problems, and fully stimulating their theoretical and practical innovation potential.

Third, enhance the concept of internationalization in training. Since China joined the World Intellectual Property Organization, it has successively joined more than ten international conventions, treaties, agreements, and protocols, including the Paris Convention for the Protection of Industrial Property and the Berne Convention. International cooperation in intellectual property continues to strengthen, and China is playing an increasingly important role in global IP governance.

The Seybold Report
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Therefore, the cultivation of high-level intellectual property talent should broaden international perspectives, elevate levels of internationalization, emphasize training in international IP rules and foreign knowledge, and expand channels for talent exchange and visits.

### 3.3 Comprehensive Approaches: Enhancing Training Methods

First, promote the establishment of a first-level discipline. The interdisciplinary nature of intellectual property, along with the demand for specialized practices, has led to its gradual development into a unique disciplinary system. Therefore, it is essential to explore the establishment of intellectual property as a first-level discipline, clarifying its modes of thinking, fundamental concepts, and knowledge system.

This would help form a unified research paradigm, a comprehensive theoretical framework, and specialized training directions, thereby constructing a scientific higher education system for bachelor's, master's, and doctoral degrees in intellectual property. This approach would also delineate course planning and training focuses at different levels, enabling differentiated and distinctive cultivation of high-level intellectual property talent.

Second, strengthen practical teaching components. By introducing hybrid teaching models such as "flipped classrooms," practical teaching can be enhanced through activities like mock trials, trademark design competitions, patent application writing, and industry internships. These initiatives will help students better understand and apply intellectual property knowledge, fostering innovative thinking and improving practical abilities in IP protection, application, and management.

Third, reinforce faculty development. This can be achieved by attracting outstanding intellectual property professionals, organizing teacher training and academic exchange activities, and hiring external mentors and industry experts to enhance teachers' professional quality and teaching relevance. Additionally, encouraging university faculty to take on positions in courts, intellectual property administrative agencies, and enterprises for practical experience can further elevate the quality of practical teaching.

Fourth, broaden avenues for technological empowerment. Given the characteristics of intellectual property courses, immersive interactive teaching environments can be created using virtual reality technologies. These might include digital legal clinics, immersive mock trial scenarios, VR exhibition halls, and virtual filing and case review setups. Exploring innovative teaching methods through immersive interactive technology in areas such as content design, practical teaching, and evaluation will enhance the educational experience.

## CONCLUSION

In the context of the strategy to build a strong intellectual property nation, it is essential to seize the opportunity for the integration of industry, education, and research. We must explore reforms and innovations in the cultivation mechanism for intellectual property talent, focusing on multiple stakeholders, broad channels, and new methods.

The Seybold Report
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Emphasizing innovative thinking, international perspectives, and practical skills, we aim to comprehensively enhance the training, evaluation, and growth systems for intellectual property talent, cultivating high-level professionals who are versatile, practical, and innovative for society.

1. The integration of diverse educational resources and practical platforms is key to innovating talent cultivation mechanisms. Higher education institutions should strengthen collaboration with enterprises and research institutions to establish a shared educational resource pool. This resource integration not only provides students with broader internship and practical opportunities but also ensures that educational content aligns closely with industry needs. For instance, jointly organizing seminars, case studies, and internship programs related to intellectual property can effectively enhance students' practical abilities and market adaptability.
2. Curriculum design should place greater emphasis on interdisciplinary integration and innovation. Intellectual property is inherently an intersection of law, economics, and technology; therefore, the cultivation mechanism should encourage students to explore freely across disciplines such as law, management, and engineering. By offering interdisciplinary elective courses and projects, students can draw from a diverse knowledge base, fostering their comprehensive qualities and innovative capabilities. This approach not only enhances students' learning interests but also strengthens their problem-solving abilities in complex environments.
3. Innovating talent cultivation mechanisms must also focus on developing an international perspective. As global intellectual property protection becomes increasingly stringent, mastering international rules and trends has become an essential quality for high-level intellectual property professionals. Consequently, educational institutions should actively introduce multilingual courses, international exchange programs, and overseas internship opportunities to help students understand intellectual property laws and practices worldwide. This internationalized training approach will significantly enrich students' perspectives and enhance their competitiveness on the global stage.
4. The innovation of the educational assessment system is equally crucial. Traditional examination and evaluation methods often fail to comprehensively reflect students' actual abilities. Therefore, establishing a project- and practice-based assessment system can more effectively evaluate students' overall competence and innovative potential in the field of intellectual property. Through this dynamic assessment, educators can promptly adjust teaching strategies, ensuring that the cultivation mechanism remains current and effective.

In conclusion, the innovation of high-level talent cultivation mechanisms under the integration of intellectual property education and research requires comprehensive reforms in resource integration, curriculum design, international perspective, and assessment systems. Only through these efforts can we cultivate intellectual property professionals who possess both specialized knowledge and practical skills, thereby promoting sustained development and innovation in the field of intellectual property for the nation.

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