



Navigating the Uncharted Waters of Deep Tech Valuation: Addressing Challenges and Capturing True Value

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Deep tech startups are revolutionizing industries with breakthrough innovations that have the potential to transform our world.

However, evaluating these companies' technology and intellectual property (IP), particularly patents and know-how, presents a unique set of challenges such as: the complexity of deep technology inventions, the immaturity of deep technology markets, and the difficulty of predicting the future impact of these technologies. **Traditional evaluation methods are no longer applicable.**

The most promising areas of transformative deep technology include artificial intelligence (AI), quantum computing (QC), synthetic biology (SB), brain-computer interface (BCI), robotics, advanced materials, advanced manufacturing, energy technology, and agricultural technology.

| Understanding the valuation challenge

The complexity of deep tech innovations, often rooted in cutting-edge science and technology, makes them difficult to assess and value. Traditional patent valuers may lack the technical and business expertise to fully grasp the intricacies of these technologies, leading to undervaluation or overvaluation.

Additionally, deep tech markets are often in the early stages of development, which makes it difficult to predict the future potential demand and profitability of deep tech products or services. This uncertainty can have a significant effect on the valuation of patent rights, the potential market size and revenue sources are still unknown.

Additionally, deep tech innovations often have long development cycles that require significant investment and time before generating revenue. This extended period of return on investment has the effect of making it difficult to estimate the monetary value of the technology and its associated patents.

Establishing a direct connection between a deep tech patent and the commercial success of a product or service can also be complicated. Deep tech innovations are often composed of multiple connected components, which makes it difficult to determine the contribution of the patented technology.

| Overcoming the Valuation Hurdles: Strategies to Success

Despite these obstacles, deep tech startups have the ability to employ effective strategies to surmount the obstacles associated with valuing their intellectual property and receiving the real value of their innovations.

Early and Continuous IP Protection: A priority of early and continuous IP protection, including the protection of patents and secrets, increases the company's standing in negotiations and provides a foundation for future estimates.

Demonstrating Commercial Viability: Focusing on the practicality of their innovations via proof-of-concept studies, prototype development, and having customers that are pilot can have a significant impact on the value of the company's patent portfolio.

Engaging Tech/IP Experts: Working with experienced technology/IP experts who specialize in evaluating deep technology innovations provides a deep understanding of the technology's complexity, addressable market size and commercial potential.

Seeking Strategic Partnerships: partnering with companies that are already established in related fields can facilitate the access of market knowledge, resources, and validation, which will strengthen the company's value by demonstrating the marketability of its technology.

Exploring Alternative Valuation Methods: traditional valuation methods may not be fully applicable to deep tech innovations. Startups should explore alternative approaches that consider the unique characteristics of deep tech, such as the potential for future market dominance or the impact on society.

The following are the valuation challenges and complexities in some deep tech segments and cases of the strategic-economic role of IP.

| Robotics: Navigating the Valuation Labyrinth

The robotics industry is evolving rapidly, with advances in artificial intelligence, machine learning, and sensor technology driving the development of increasingly complex robots. Evaluating patents in this dynamic field requires careful consideration of the following factors:

- **Technological Advancements:** Patents in robotics often cover groundbreaking technologies, such as robotic arms with enhanced dexterity, autonomous navigation systems, and human-robot collaboration interfaces. Assessing the novelty and impact of these technologies is crucial for accurate valuation.
- **Market Potential:** The robotics market is expected to reach \$250 billion by 2026, driven by demand from various industries, including manufacturing, healthcare, and logistics. Understanding the potential market size and the competitive landscape is essential for determining the value of robotic patents.
- **Commercial Viability:** Demonstrating the commercial viability of robotic innovations is critical for enhancing patent valuation. This includes developing prototypes, securing pilot customers, and showcasing real-world applications.

Case Study: Ekso Bionics



Ekso Bionics, a leading developer of exoskeleton technology, provides a prime example of how effectively valuing patents can drive innovation and market success. The company's Ekso GT exoskeleton, designed to assist individuals with lower-body paralysis, has been clinically proven to improve mobility and independence. **Ekso Bionics' strong patent portfolio has played a significant role in attracting investors and establishing the company as a leader in the exoskeleton market.**

Source Ekso Bionics Ekso NR

| Biotech: Unraveling the Valuation Enigma

The biotechnology industry is at the forefront of medical advancements, with groundbreaking innovations in areas such as gene therapy, personalized medicine, and drug discovery. Valuing patents in this sector requires a deep understanding of the biological and medical complexities involved.

- **Scientific Rigor:** Biotech patents often cover complex biological processes, molecular interactions, and therapeutic mechanisms. Assessing the scientific validity and potential impact of these innovations is paramount for accurate valuation.
- **Clinical Efficacy:** Demonstrating the clinical efficacy of biotech inventions is critical for enhancing patent valuation. This includes conducting rigorous clinical trials, providing evidence of safety and efficacy, and securing regulatory approvals.
- **Market Adoption:** Understanding the potential market adoption of biotech products is essential for determining patent value. This involves assessing the prevalence of the target disease, the competitive landscape, and the reimbursement landscape.

Case Study: Vertex Pharmaceuticals



Vertex Pharmaceuticals, a pioneer in cystic fibrosis (CF) drug development, provides a compelling illustration of how strong patent protection can drive innovation and market dominance. The company's groundbreaking CFTR modulator drugs, such as Kalydeco and Trikafta, have revolutionized the treatment of CF. **Vertex's comprehensive patent portfolio has been instrumental in securing market exclusivity and generating substantial revenue.**

Vertex Pharmaceuticals Kalydeco and Trikafta

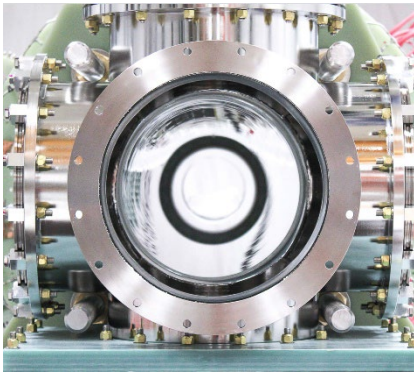
| Fusion Technology: Valuing the Promise of Clean Energy

Fusion technology holds immense promise as a clean and sustainable energy source, offering the potential to generate limitless energy from seawater. Valuing patents in this nascent field requires consideration of both technological feasibility and long-term market potential.

- **Technological Maturity:** Fusion technology is still in its early stages of development, and there are significant technical challenges to overcome before commercialization. Assessing the progress made and the potential for near-term breakthroughs is crucial for valuation.
- **Market Potential:** The global fusion energy market is projected to reach \$1 trillion by 2050, driven by the growing demand for clean energy sources. Understanding the potential market size and the competitive landscape is essential for determining patent value.
- **Government Support:** Government funding and support for fusion research play a significant role in the development and commercialization of fusion technologies.

Assessing the level of government commitment and potential funding opportunities is important for valuation.

Case Study: Helion Energy



Helion Energy, a leading developer of magnetic confinement fusion technology, exemplifies the importance of strong patent protection in the fusion energy sector. The company's innovative approach to fusion has attracted significant investment and research collaborations.

Helion's comprehensive patent portfolio plays a crucial role in protecting its intellectual property and positioning it as a leader in the field.

Source: Helion Energy Polaris fusion technology

| Valuing Oncology Patents: Navigating the Challenges and Unlocking Hidden Value

The oncology industry is constantly evolving, with groundbreaking innovations emerging at a rapid pace. To protect their intellectual property (IP), pharmaceutical companies and biotechnology startups alike invest heavily in securing patents. However, **valuing oncology patents can be a complex and challenging task, as it involves addressing unique factors specific to the oncology field.**

Key Challenges in Oncology Patent Valuation:

- **Scientific Complexity:** Oncology patents often cover complex scientific concepts, intricate biological processes, and cutting-edge drug discovery methodologies. Evaluating the novelty, significance, and potential impact of these inventions requires a deep understanding of medical science and oncology research.
- **Immense Impact on Human Health:** Oncology patents have the potential to significantly impact human health by improving cancer diagnosis, treatment, and

survival rates. This societal impact can influence patent valuation, as it reflects the potential for the innovation to save lives and improve patient outcomes.

- **Regulatory Approvals and Market Dynamics:** The oncology industry is highly regulated, with stringent approval processes for new drugs and therapies. Navigating these regulatory hurdles can delay commercialization and impact patent valuation. Additionally, the competitive landscape in oncology can be dynamic, with new players entering the market and existing players expanding their portfolios.
- **Long Commercialization Cycles:** Unlike in other industries, oncology drugs often have long commercialization cycles, taking years or even decades from initial discovery to market availability. This delayed revenue generation can make it difficult to assess the financial value of oncology patents.
- **Lack of Comparable Data:** Oncology patents often represent novel and groundbreaking technologies, making it challenging to find comparable patents for valuation purposes. This scarcity of comparable data can make it difficult to establish benchmarks and determine fair market value.

Case: GRAIL- A Pioneer in Early Cancer Detection



GRAIL is a biotechnology company that is developing a revolutionary blood test for early cancer detection. The company's technology, called Galleri, can detect cancer cells that are too small to be detected by traditional methods, such as traditional biopsies. This non-invasive and accurate test has the potential to save countless lives by enabling earlier diagnosis and treatment. The Galleri test can detect a signal shared by over 50 types of cancer with 99.5% specificity and

predict the cancer signal origin with high accuracy to help guide next steps. Grail has a comprehensive patent portfolio.

The global market for early cancer detection is estimated to be worth \$80 billion by 2025. GRAIL is well-positioned to capture a significant share of this market, as Galleri is the only non-invasive blood test that can detect a wide range of cancers with high accuracy. If GRAIL can successfully overcome these challenges, it has the potential to become a major player in the oncology industry and revolutionize early cancer detection.

| Conclusion: Unveiling the True Value of Deep Tech Innovation

Effectively valuing deep tech patents necessitates a multi-faceted approach that delves into the technical intricacies of innovation, potential market size, and the commercial viability of a technology. By taking into consideration these factors and employing effective valuation methods, deep tech startups can gain the recognition and funding necessary to bring their cutting-edge technologies to the market.

ICM Advisors, having a long history of experience in the deep tech field valuation and practice research, have developed valuation methods that are specific to the unique properties of each technology and its intended applications. These methods, when combined with recognized financial principles, produce highly accurate estimates that appeal to investors.

In conclusion, valuing deep tech patents is not just about assessing the potential financial returns; it's about recognizing the transformative power of these innovations and the potential they hold to shape the future. By employing a comprehensive valuation approach, deep tech startups can secure the support they need to bring their groundbreaking ideas to life, paving the way for a brighter, more technologically advanced tomorrow.

ABOUT THE AUTHOR



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