Rethink IP search with human-centric AI



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IP search in the AI era

AI is shaping scientific IP practice with promises of unprecedented efficiency and retrieval. However, the key to unlocking its potential in the IP search space while mitigating risk lies in high-quality data and expert curation.

Advanced technology has always played an essential role in searching for IP... but it's fair to say that there's been an exciting acceleration of new technologies that are really opening up new possibilities, and I recommend that everybody gets familiar with what is happening in this space."

Kathy Van der Herten, Director of Product Management, CAS

Hear more CAS perspectives in our podcast episode:
IP search in the AI era: Reality vs. Hype

While AI is already transforming the global innovation landscape, its influence on IP practice is just beginning. In the years ahead, AI has the potential to reshape how we discover, protect, and leverage intellectual property.



Market potential

Global intangible assets, including patents, could reach $1 quadrillion by 2050.[1,2]

AI is similarly gaining momentum in the global marketplace and is expected to add $15.7 trillion to the global economy by 2030, with $6.6 trillion from productivity gains alone.[3]

This fast-paced innovation economy demands IP solutions that integrate AI-ready data with expert oversight to address emerging opportunities and challenges head-on.



Near-term opportunities

AI-enhanced search tools can offer measurable improvements in efficiency, allowing IP professionals to manage growing caseloads without sacrificing accuracy.

By adopting AI solutions backed by a foundation of trusted data, IP professionals can:

- Save time and reduce the risk of missed references.
- Increase efficiency and comprehensiveness of prior art searches.
- Gain better predictive insights that inform strategic decisions.
- Achieve scalable workflows with AI-human collaboration.

Core challenges

AI is a tool for amplifying expertise, not a replacement for it.

Without strategic human intervention and oversight, potential challenges include:

- Data quality risks: Models trained on low-quality or stale data may produce inaccurate or incomplete results.
- Misinterpretation of complex scientific content: Scientific literature and patents often contain nuanced or obscured details that require deep domain expertise to interpret correctly, potentially leading to flawed analysis or missed insights.

Looking forward: The future of AI in IP search

As technology evolves, so will its applications in IP search workflows. We expect the next frontier will include deeper integrations of AI into the IP lifecycle, such as on-demand insights from powerful search algorithms, advanced predictive analytics, and enhanced visualization tools that make IP intelligence accessible to a broader audience.



Survey results reflect industry momentum—Is the hype warranted?

As early as 2018 and 2019, nearly all large law firms surveyed by the International Legal Technology Association (ILTA) indicated that they were using, planning, or exploring AI/machine learning.[4,5]

According to more recent reports, legal professionals, including those in IP, now view AI as a positive and inevitable addition to their workflows.[6]

However, as with any trendy tech advancement, it is essential to evaluate the suitability of AI-based tools for specific IP search needs.

Information access	Domain expertise	Data quality
The effectiveness of AI-powered prior art searches relies on access to comprehensive global databases. Incomplete data availability narrows the scope of analysis and can lead to missed results that threaten R&D or commercialization efforts.	Parsing complex data, such as chemical structures or sequences, requires purpose-built solutions backed by human expertise. Generalist AI tools often lack the precision needed for specialized scientific fields, creating incomplete or inaccurate searches.	High-quality, dynamic data forms the foundation of every worthwhile IP search. Accurate, up-to-date, and expertly curated data empowers confident decision-making. In contrast, poor data quality produces unreliable insights that jeopardize the success of IP strategies.

CAS champions a pragmatic approach to AI, leveraging decades of experience curating scientific data and advanced algorithms to support IP professionals conducting complex, high-stakes searches.

Partnering with a proven scientific IP solutions provider ensures that AI-powered searches are built on a solid foundation of comprehensive, high-quality data and domain expertise.



AI-enhanced prior art search could boost efficiency for busy IP professionals

Although AI can be implemented across various points of IP workflows, its ability to address prior art search challenges is a particularly welcome benefit, especially as the IP field faces a shortage of qualified professionals.[7,8]

Prior art search challenges

Volume and complexity

The vast amount of patent and non-patent literature is overwhelming for manual analysis.

Obscure language

Scientific patents often encode information in deliberately vague ways, making key details hard to pinpoint.

High-stakes results

Missing a relevant document can lead to significant legal or financial consequences.

AI's problem-solving potential

Enhanced retrieval

AI models, especially those optimized for semantic understanding, retrieve relevant documents beyond simple keyword matches. For example, AI identifies synonyms, industry-specific terms, and context-based relationships to uncover hidden connections.

Priority ranking

AI can organize results based on relevance, saving professionals time by highlighting the most critical documents.

Comprehensive coverage

By analyzing both structured and unstructured data (e.g., non-patent literature, technical reports), AI ensures a holistic view of the prior art landscape.

CAS search advantage with science-smart AI

Our proprietary ensemble model integrates multiple search models, including text pattern recognition, structure similarity, machine learning, and graph algorithms for more comprehensive and accurate results.

Real-world example: The CAS Patent Similarity Engine

Facing a serious backlog, the Brazilian patent office turned to an AI-enhanced prior art analysis solution developed by CAS. This curated workflow, now known as the CAS Patent Similarity Engine and accessible through CAS IP Solutions, boosted examiner efficiency by 50% and decreased the backlog by 80% without requiring additional hires.[9]



How it works

Similarity search

The engine uses AI to identify patterns and similarities across vast datasets of patent and non-patent literature. It can detect relationships that may not be obvious through traditional methods.

Data curation

Dynamic, scientist-curated content from CAS serves as foundational data, ensuring the information used by AI is accurate, up-to-date, and reliable.

Custom query optimization

Leveraging adaptable yet powerful algorithms for flexible query writing allows the system to refine search intent, leading to more precise outputs.

Benefits for scientific IP searchers

Faster insights

AI reduces the time needed to locate relevant prior art, particularly in domains with complex, scientific patents.

Confidence in results

The integration of human-curated data minimizes errors and ensures comprehensive analysis.

Scalability

IP professionals can handle larger or more complex caseloads without compromising on depth or accuracy.

AI cannot be an inventor, but could it be an IP professional?

Courts in the U.S., UK, Canada, Australia, and Germany have ruled that AI cannot be named as a patent inventor.[10] However, there are no clear restrictions on the use of AI in IP practice, aside from ethical and professional standards already expected of IP professionals.

Even with the growing role of AI in IP practice, human expertise remains essential. The USPTO is clear on its stance that patent attorneys must possess the "requisite legal, scientific, and technical knowledge" to represent their clients, whether they use AI or not.[11]

We agree—human expertise is irreplaceable in IP. AI can streamline searches, identify patterns, and enhance efficiency, but true progress comes from integrating advanced tools with expert-curated solutions that deliver precision, reliability, and confidence in high-stakes IP decisions.





Mitigate risks and maximize opportunities with AI rooted in human expertise

CAS is committed to advancing AI responsibly, ensuring that our solutions support evolving market needs while maintaining strict quality standards.

By focusing on curated content and collaborative innovation between humans and machines, our team is poised to help scientific IP professionals do more with less and confidently navigate the complexities of an AI-driven world.

Discover how CAS can transform your next IP search

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