

CONNECTION  
ANALYSIS  
DATA  
SEARCHING  
VERIFICATION  
CODING  
SENDING

Innovation **Q** PLUS  
POWERED BY IEEE AND IP.COM

## INCREASE INTELLIGENCE AROUND IP WITH SEMANTIC SEARCH

Best Practices For IP Professionals Series





**Software-based IP analytics and management solutions have been around for years. Previously, they were created specifically for IP lawyers and patent attorneys.** But with the onward march of innovation, and the explosion of innovation-related data over the past few years, professionals from across R&D, legal and business functions also need new tools with greater capabilities.

Within these organizations, the old silos are crumbling. The traditional boundaries between roles relating to R&D activities and IP protection are blurring. This is occurring as businesses adopt a more asset-based, integrated and automated approach to IP and innovation management.

## Developed for Innovation Professionals

InnovationQ Plus provides a powerful, yet user-friendly lens into essential patent and IEEE literature, making it accessible to any professional at corporations, IP law firms, patent offices, and academic technology transfer offices:

- Intellectual Property Departments
- Patent Attorneys
- Patent Liaisons
- Patent Searchers and Examiners
- Technology Transfer Offices
- Competitive Intelligence Departments
- Strategy Teams
- Engineering and R&D
- Product Management
- Executive Management
- Sales and Marketing

## A New Era Has Begun

**Today, there is a whole range of professionals who now have a need to access, analyze and process patent information.**

To secure their innovation projects against IP-related risks and uncover value creation opportunities, they need to be able to go beyond patents and search the much wider corpus of non-patent literature. The multi-skilled, multi-tasking innovation professionals of today require solutions offering user-friendly and robust tools that not only provide sheer access to the content, but also help them analyze it to make smarter decisions.

By harnessing technological advancements in areas such as artificial intelligence, big data, and cloud computing, a new generation of powerful innovation analytics solutions is emerging.

Such solutions need to offer their users the capability to easily, effectively and economically access and interpret the massive range of data relevant to their innovation projects.

These solutions need to transform the search of incredibly complex and multi-layered information into a simple and intuitive process. IP leaders expect the following features in a state-of-the-art innovation discovery and analytics platform:



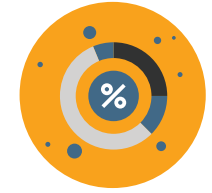
The ability to perform **complex searches** of worldwide data in multiple languages, with accurate translation capabilities, and the capacity for natural language input and output.



**Ease-of-use** and ease-of-access through a user-friendly dashboard and other user-centric design features.



Potential to **collaborate** across a team and with other internal stakeholders, enabling users to share information and projects securely.



**Analysis, visualizations, and reports** that derive insights from both patent and technical content to help make critical decisions.



# Best Practices For IP Professionals Series

Today’s busy R&D, IP and business professionals require these types of capabilities in their software solutions.

Tools that are intuitive to use will save professionals time and money learning to use them—while also making them useful and productive tools for people who aren’t necessarily experienced in conducting patent searches and other relevant analyses. While all of the latest innovation and IP analytics platforms seek to cover these bases, InnovationQ Plus, powered by IEEE and IP.com, possesses several unique features that set it apart.

In this eBook, gain targeted insight on:



**The Importance of Intelligent Search Capability.** InnovationQ Plus is powered by proprietary, patent-protected semantic search technology that enables the use of natural language to discover and visualize relevant content buried deep within complex patent and other technical documents. This not only provides more accurate results than a typical simple keyword search but also allows users to uncover potentially critical information that would not necessarily be found using only keyword or Boolean systems.

Other key competencies from InnovationQ Plus:



Unparalleled Library Of Prior Art, including Critical Non-Patent Literature.



User-Centric Interface



Business-ready analysis and visualizations



Search Solutions for  
Today's IP Professional

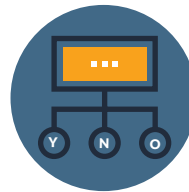


**Whether it's patent databases, non-patent literature collections or the broader World Wide Web, users expect far more of their search tools in this day and age than they did a few years ago.** They want to be able to search the Internet in as human a way as possible, without the need for complex and unforgiving technical operators. More to the point, users want their search engines to think about search queries in the same capacity as the human mind so their results are more relevant and focused on the task at hand.

Traditionally, patent and innovation-related search engines have generally relied upon one of, or a combination of, the following systems in order to retrieve information:



**Keywords** – a simple search of documentation for words which exactly match those included in a search query.



**Boolean Search** – a search that can be limited by specified parameters and the use of Boolean operators (YES, NO, AND, OR, etc.).



**Metadata** – search of relevant patent and invention-related datasets such as patent classification codes, patent citations, application and publication dates, assignees, named inventors, etc.

While each of these is useful—and the InnovationQ Plus search engine incorporates them all—they are not capable, on their own, of the ‘lateral thinking’ that can prove crucial when seeking out critical business information which could mean the difference between a patent application being granted or rejected.

**Semantic search, on the other hand, seeks information based on the intent of the searcher and the context of the search terms, rather than relying on simply matching the exact words used in the query.** With semantic search, requests can be based on meaning rather than words alone. This delivers a broader, and far more relevant set of results, as well as cutting out ‘noise’ and false positives that can be returned by pure keyword searches.

Many of the new generation of innovation analytics software providers have recognized how beneficial this ability could be to the complicated business of patent clearance, prior art, infringement, and competitive intelligence searching. Many now include some form of semantic search in their offering. **But the InnovationQ Plus engine stands apart from the crowd, offering users superior precision and recall.**

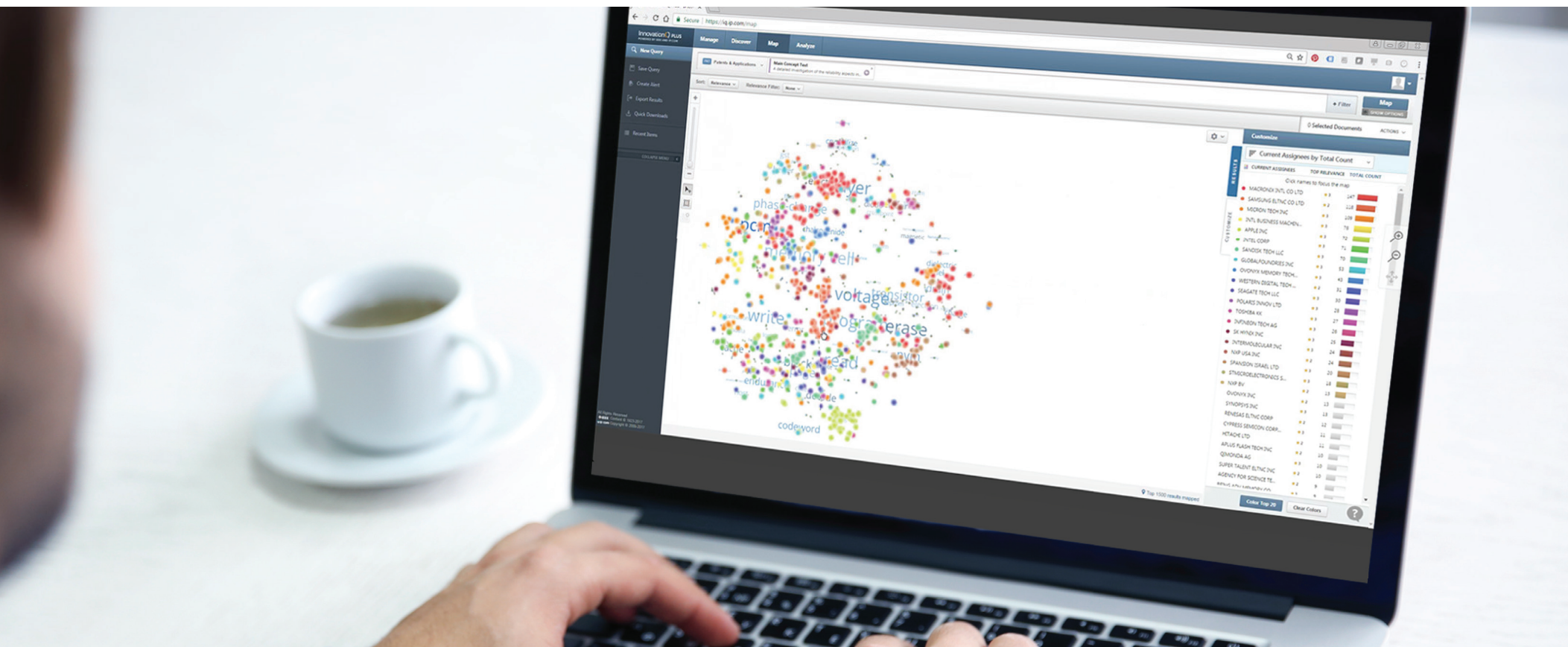


# Intelligent Search

**InnovationQ Plus gives its users the ability to conduct a single, comprehensive, natural-language search of all of the world's key patent-issuing authorities, at the same time as performing a full-text search of the world's largest collection of non-patent literature.**

The thing that makes the InnovationQ Plus search engine unique is its intelligence. IP.com's patented neural network machine learning technology, which is specifically tuned to IP and technical documents, has the ability to overcome the inherent ambiguities

in ordinary language. For example, InnovationQ Plus understands that the two terms 'car' and 'vehicle' have different but similar meanings, while the single term 'stream' may have multiple unrelated meanings. These may seem like minor intricacies, but missing even a single document at the search stage could potentially lead to millions of dollars wasted on attempting to obtain and maintain a patent that eventually fails to stand up to scrutiny.



**The InnovationQ Plus search engine is intelligent because it can learn from all the patent and NPL content being indexed.** Historically, traditional search algorithms were designed to search on a limited dataset based on a list of rules for logical operations in order to analyze them and produce results through inference. However, the intelligent machine learning systems of today such as InnovationQ Plus can now detect significant patterns by examining massive datasets. It can discover meaning in these patterns by applying statistical analyses, allowing it to calculate the relevance of a search result to the likely intent behind a user's query.

As a dataset grows over time, new terms and concepts emerge, while others may shift in meaning. For example, terms such as 'Internet of Things', 'cloud computing', 'blockchain' and 'autonomous vehicle' have become increasingly commonplace in technological discourse over the past few years. InnovationQ Plus automatically adjusts to these changes, detecting "semantic drift" through its learning algorithm and re-weighting concepts and topics accordingly. This enables it to powerfully and elegantly sustain high precision and recall in the retrieval task over time.



“The value of machine learning is rooted in its ability to create accurate models to **guide future actions and to discover patterns** that we've never seen before.”

*-Wired Magazine*

**InnovationQ Plus** does not need to extract entities and facts. It does not rely on machine readable semantic markup. It processes unstructured, unlabeled full-text collections and distills the key concepts to derive **comprehensive, meaningful, high-quality results.**

## A Unique Solution

**Not all semantic search engines are the same.**

Some vendors use phrases like ‘semantic search,’ ‘natural language searching’ or ‘intelligent search’ to refer to systems that return a knowledge representation based on entity and fact extraction. These systems rely on ontologies to define search terms—in other words, they do not represent a huge leap forward from older search engines that use pre-defined datasets and logical operators in order to come up with their results. While adding some value beyond traditional keyword retrieval, they typically require structured text that has been manually annotated with a machine-readable, industry-standard mark-up language. These taxonomies need to be manually kept up-to-date as technology evolves and also creates technology silos based on preconceived notions about how topics should be categorized.

Technology is changing daily and is becoming increasingly interdisciplinary. Having a system that learns new conceptual relationships from ingested content and imposes no bias onto how topics should interact with each other can lead to discoveries between topics and previously hidden connections that can ultimately lead to opportunities.

## Guide to Evaluating Your Search Options

When deciding on an IP and innovation analytics software provider, here are some of the key questions you should be asking about the power of the search engine they can offer:

### **Is The Entire Document Collection Semantically Searchable?**

Some vendors may only make a portion of their collection semantically searchable. With InnovationQ Plus, the entire collection of patents and non-patent literature is semantically searchable – over 100 million documents in all.

### **Are You Semantically Searching Full Text?**

Ensure your search contains more than just certain portions of a document or only bibliographic data. With InnovationQ Plus, the entire collection is full-text searchable to provide more comprehensive and accurate results.

### **Does The Vendor Own Its Semantic Technology And Tune It Specifically For IP?**

Some vendors may license their technology from a supplier and may not control the shape and pace of enhancements. One thing to check is whether or not the vendor holds a patent on the technology. InnovationQ Plus features patented search technology developed by experts in machine learning that allows users to find valuable content that is buried in complex patent and technical documents.

### **What Technology Does The Vendor Use To Power Semantic Search?**

While InnovationQ Plus uses some of the latest neural network machine learning technology, other vendors may still be using the much older search methodology of Latent Semantic Indexing as the basis of a semantic search. This is a technology developed in the late 1980s with known limitations.

**What Is The Response Time For Semantic Search?** Many systems require the user to wait and waste valuable time as it executes a data-heavy query. InnovationQ Plus is able to process millions of documents in seconds.

### **Has Semantic Search Simply Been Added To An Older Keyword System?**

Instead of designing a new semantic search system from the bottom up as InnovationQ Plus did, some vendors have added a limited semantic search ability to legacy systems, often resulting in sub-optimal performance and usability.

### **How Are Queries Processed?**

With a solution like InnovationQ Plus, the application of neural network learning algorithms means that search queries of varying length can be processed. Paragraphs or entire pages of text can be entered as a query, eliminating the need for the searcher to select keywords or phrases. Other semantic search engines have been known to struggle with either large blocks of text, or, conversely, with short descriptions of key inventive features.

## InnovationQ Plus also offers:



**Unparalleled Library Of Prior Art, including Critical Non-Patent Literature.** InnovationQ Plus can offer first-hand access to the most critical, full-text non-patent literature, unmatched by other solutions, with colossal datasets from both IEEE—the world’s largest technical professional association and a leading developer of industry standards—and IP.com, a leader in intuitive and powerful intellectual property tools.

In addition, InnovationQ Plus can search patent documents from the world’s major patent-issuing authorities, including in the United States, Europe, China, Japan, South Korea, Germany, Australia, the World IP Organization, and more.



**User-Centric Interface.** The intuitive user interface for InnovationQ Plus has been designed with a broad range of potential users in mind, reflective of the growing importance of IP strategy and related competitive intelligence outside of legal departments. The user-friendly dashboard, ability to visualize technical data in multiple ways, and options to simply and securely work on collaborative projects are also directed towards streamlining the patent and non-patent literature search workflow.



**Business-ready analysis and visualizations.** InnovationQ Plus will identify highly relevant data to help you understand the competitive landscape, view potential trouble spots for litigation or invalidation, or find potential partners or licensing opportunities. Using unique visualizations, discover relevant industry players that could lead you to opportunities or threats you may not have considered.

## Conclusion:

The benefits are clear: better patent searches allow organizations to make smarter, more cost-effective decisions about their entire innovation process. InnovationQ Plus has the power to sift through millions of full-text documents, the speed to deliver comprehensive results and insights, and the innovations to revolutionize your patent research workflow.

Read our other eResources

[innovationqplus.ieee.org/resources](https://innovationqplus.ieee.org/resources)

Discover the power of InnovationQ Plus today by requesting a demo.

[innovationqplus.ieee.org](https://innovationqplus.ieee.org)