

REDEFINING SEARCH

**Intelligent results:
The new role of cognitive AI in the
information gathering process**

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n|matics

The rapid growth of artificial intelligence in data processing has been unprecedented within the past decade. From pocket devices to industry-scale automation, very few spaces of our daily processes have been untouched by the AI-backed shift. As technological cognition continues to expand, a key focus of this AI growth has been on the retrieval of information. In particular, intelligent search has come to the limelight as a format for improving efficiency and accuracy of query results. Now, the question may arise when you look at your business and daily behavior: “Can we be faster?”

To answer this question, it will be worthwhile to examine the behaviors that we’ve become accustomed to, and the behaviors that we can optimize. With search engines powering information retrieval at our fingertips, we have become accustomed to instantaneous feedback. Finding data on widely known information takes a few seconds, and the time it takes to gain background on a topic has been exponentially cut down.

A caveat of this shift though has been its limitations in scope. Search is fast for finding widely available information: general statistics, background news, or highly visible data. However, a space that intelligent search has not transformed is that of document-specific information.

In particular, parsing through contracts, journals, financial records, business reports, or even a paper such as this one is a task that is still manual in nature. In looking for a specific clause in a contract, for example, your best bet is control-f. And if that fails, then it's up to you, the user, to manually parse through a document of non-relevant information before coming upon the specific piece that you need.

It's a crucial question, then, what the developments in intelligent search are and what capabilities exist in their application. Investigating this question opens the door for drastic improvements in the efficiency and accuracy of our queries for information.

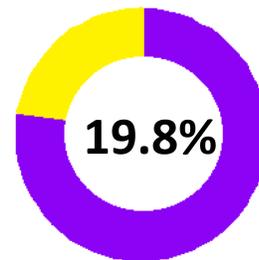
THE STATUS QUO OF SEARCH

The default for search is slow. Finding information in documents is a time-consuming, cost-heavy, and exceedingly manual process. What's more, the task being conducted is far from high-level thinking, meaning the opportunity cost of document search is even greater.

Developments in the process of search have been relatively stagnant in the timeline of virtual documents. The method of finding a specific piece of information is approximately the same as it has been for the past few decades—manually parsing through a document until the answer is found. It is a process that has been ingrained across roles and practices, becoming a necessary operation. For some, the act of searching for information is an ingrained part of work; due diligence necessary to complete the broader assignment.

However, this labor-intensive process does not come without its costs. In fact, McKinsey reports that “employees spend 1.8 hours every day—9.3 hours per week, on average—searching and gathering information.”¹ In other words, for every five employees hired, four of them are actively working, and the fifth is reading through documents looking for some specific piece of information.

This decrease in productivity further translates into direct costs. For a midsized enterprise of 500 employees with an average salary of \$80,000, the inability to find readily available information costs that organization **\$8 million per year**. In addition, this cost doesn't include the opportunity cost that's lost in the hiring of each employee. The potential increase in productivity with a greater employee extends well beyond the 20% lost inefficiency. Moreover, the manual task of searching through vast sums of information is a task that is unfulfilling and frustrating to employees themselves. Freeing additional time for employees to work on higher-level tasks increases both organizational productivity and employee satisfaction.



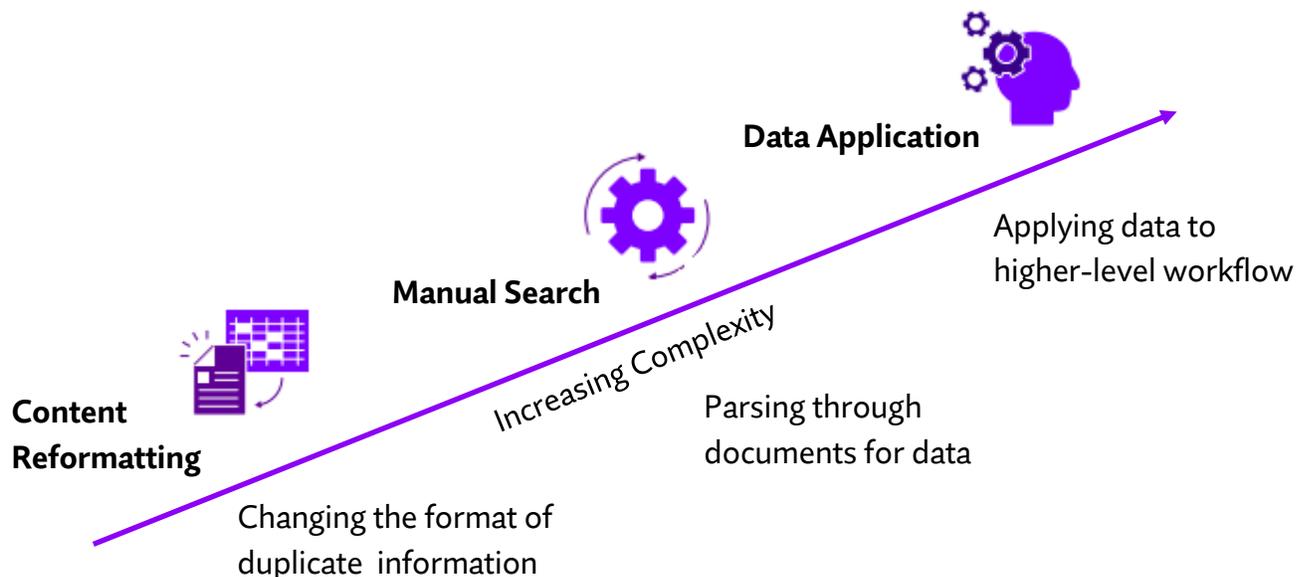
“19.8 % of business time is wasted by employees searching for information to do their job effectively.”

This lost statistic in productivity is especially problematic in its implications on high-impact fields. In our survey of law firm associates working in capital markets, NLMatics found that roughly **30% of the working day is spent searching for information**, via parsing financial reports, scrolling through contracts, searching for data on market trends, and executing due diligence on current opportunities. An even greater amount of time is spent by these analysts in reformatting the found information, duplicating the gathered statistic on a presentation or pitch book for clients.

This information search is mirrored in the realm of academia, in which researchers spend an average of **9 hours searching for and reading research articles**.³

The impact of search time on these high-impact fields, where time and energy are resources in scarcity, further necessitates a broader inquiry into changing the way we search. In this case, being efficiency in search isn't simply a matter of individual or firm-specific savings: reducing the time spent searching frees up opportunity for broader industry-wide developments. Greater space for productivity means faster processes and more rapid innovation across industries. When we scale down the time spent using control-f and skimming through articles, we open the field for –greater innovation.

Information Gathering by Degree of Complexity



INTELLIGENT SEARCH: THE NEXT STEP

With this gap in efficiency, we can then ask how we can minimize the manual input required to gather document-specific information. Finding an avenue for search efficiency will apply across industries and roles, serving to increase the productivity of searchers as a whole. The question then shifts to “How can we be faster?”

To answer this question, we can look at the field of **intelligent search**. Intelligent search, powered by artificial intelligence, uses natural language processing in order to find document-specific information that you are looking for. In other words, it's Google for documents.

The immediate benefits of this technology are highly recognizable, and to evaluate these technologies, we can target a few specific categories in regards to this alternative of manual search:

- **Speed:** Can intelligent search reduce the necessary time to find a piece of information
- **Accuracy:** To what degree will the search results reflect the user's query
- **Flexibility:** Can this search processing be applied across fields and content

To answer these questions, we can first evaluate the features of intelligent search. Following, we can then address the criteria set for evaluating this novel technology, and the potential increases in productivity with their implementation.

Intelligent search has a variety of underlying mechanism that parse through documents for a specified result, but the search itself can be broken into three simple steps.

First, a user uploads a document to the algorithm. This document can be a range from unstructured text to a formalized reports, and can include graphs, images, or other non-text detail. The algorithms will work in the background to break down the content in the given document.

Second, a user searches for the specified information. This search operates under the same principles as a Google query: a user can type in full questions (e.g. “What was the company's revenue for 2018?”) or with keywords (e.g. “company revenue 2018”).

Third, the search will return a set of given results that match the user query. The user can click on each result (similar to a search link), and view the found contents of that search.

A PATH TO EFFICIENCY: PROJECTING THE BENEFITS OF INTELLIGENT SEARCH

After understanding the features of this search, we can then return to our initial criteria for evaluating this search alternative, and consider its impacts on the aforementioned categories of speed, accuracy, and flexibility.

Beginning with speed, the process of intelligent search can definitively reduce the required time to find specified information. In a report by IBM across multiple law firms, it was found the intelligent search applications can “improve business processes and become four times more productive, generating revenue increases of as much as 30%.”⁴ The answer to our question of speed is definitive, looking at results of early adopters of this intelligent search.

The following question on intelligent search is that of accuracy. We trust broader search engines such as Google or Bing on their reliability as they have been user tested across an uncountable number of queries. However, can the same be done for personal documents?

According to business insider, the banking industry would think so; from a recent report, implemented banks have “been able to automate knowledge discovery to complete ten days worth of work in two minutes.”⁵ From these use cases, it is evident that the concern of accuracy is satisfied with intelligent search capabilities.

Finally, in regards to flexibility: considering the variety of industries that have been described, and the general application of search, it seems as if the boundaries of search are far-ranging in their application—demonstrating the flexibility of intelligent search.

Evaluation Criteria



Speed: reduction in search time



Accuracy: precision of search results



Flexibility: reliability of search across content fields

YOUR INTELLIGENT SEARCH JOURNEY TO OPTIMIZING EFFICIENCY

Intelligent search is still in its infancy, but its growth could be explosive.

To stay competitive and keep up with the industry, we encourage organizations and users to examine their processes and identify where intelligent search can add value. Whether you are in a major capital markets firm, looking for a quick way to find answers in hundreds of financial document pages, or if you are in academia, sifting through countless sets of previous papers, every organization should have a need that intelligent search can fill.

Here are three suggestions for incorporating intelligent search as a part of your operations:

- 1** Start with a small use case, examine its efficiency, and the scale as necessary.
- 2** Make sure to spend a thorough amount of initial time familiarizing with the search features.
- 3** Create a reverse timeline for implementation. Make the starting point an achievement and then work backwards to implementation

Now, go make your searches intelligent.

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