Accelerating Customer Response with Natural Language Search

Technology has always enabled users do amazing things. But complex tools come with a complex obstacle. Customers struggle to find answers to their questions, and submitting help tickets can be inhibiting. At worst, a bad customer response system can actually keep users from doing their best work, even with the obvious benefits to be gained from tech tools.

Across all sectors, customer service has never been more important. Studies show companies with **high Net Promoter Score** (NPS) grow twice as fast. Customers have high expectations; they have demands to be **addressed here and now**. Still, even the most customer-centric organizations with large, complex products run into trouble.

Jaded customers feel that their questions or complaints don't get addressed. Often, they don't trust that a human will even see their request. A complicated interface, impersonal communication, and long wait times just build frustration, which compounds as new features are released while the bugs that impede their own work isn't touched.

But it doesn't always have to be this way. With Coseer's Natural Language Search, a tech company catering to semiconductor engineers **increased their ticket deflection rate to 60%**, up from the 10% that they were getting with Google Search Appliance. Each deflected ticket saves them $400, and adds to their NPS.

Responding to help tickets instantly and cost-effectively is an important element of delightful, scalable customer service. Coseer's NLS can help:

- Answer 60% to 80% of tickets without manual intervention.
- Improve NPS, reduce costs.
- Invest more in new products vs. customer service only.

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"Natural Language Search brings hidden knowledge to life at the speed of human thought. From flat heaps of documents, images, databases, or websites, and input by human experts, comes something entirely new."

What is Natural Language Search (NLS)?

Natural Language Search is the latest among enterprise search technologies which appears to have solved all the traditional issues (inflexible keyword search, inaccurate or irrelevant answers, etc.).

- NLS answers as if a human read through every piece of information, understood your question and then found the best knowledge. Not documents. Knowledge.
- NLS doesn't rely on keywords. It relies on intents, concepts, ideas and facts.
- NLS can search through texts, tables, images, trees and ontologies irrespective of format e.g. PDF, Microsoft Office, Salesforce CRM data, HTML, text, etc.

Coseer's NLS module can be configured to automate workflows **specific to each client**. Training a Coseer machine for NLS does **not require any annotated training data**. Our clients do not need to spend on expensive Subject Matter Experts, which at times can be prohibitively expensive.

An NLS implementation by Coseer **takes only 4-12 weeks** to get started, with minimal time commitment from client teams. NLS can work over a single document, e.g. for a chatbot running on Standard Operating Procedures - or, it can find insights from a corpus of 10 million articles.

Lastly, Coseer's NLS **trains with very limited data**. The machine learns secondary context-specific documents or websites, human experts and other ancillary sources apart from the documents it searches over.

NLS is the building block of all cognitive automation.

Enterprise Search Solutions

	Amazon Elastic Search	Coseer Natural Language Search	IBM Watson Cognitive Search	Microsoft FAST Search	Open Source Implementation
Search method	Keyword search	Natural Search	Cognitive Computing	Metadata/ Semantic	Various
Description	Traditional keyword based search, implemented using Lucene/ Solr.	Natural Language Search, based on meaning of the query and the corpus. Uses AI specific to English.	Search using IBM's cognitive computing platform. A derivative of Deep Learning.	Search using metadata. Potential to add semantic ontologies over metadata.	Dependent on open source software used
Cost	Very low	Moderate	Very high, esp. for Subject Matter Experts	Moderate	High costs in implementation
Human effort	Very low	Moderate	Very high effort in training the machine	Very high effort in defining semantic ontologies	Very high effort in coding and implementation
Deployment time	Less than 4 weeks	4-12 weeks	6 to 36 months	8 weeks to 6 months	6 to 24 months
Key features	• Proven fast, scalable search with basic features	• No need for human-annotated data • Trains for context • Continuous learning	• High brand value • Trains for context • Continuous learning	• High brand value • Option to manually build semantic ontologies	• Complete control over the solution

Cognitive Computing for Customer Service

Technology companies know their products are complex, and usually create many platforms for users to get help. Unfortunately, more platforms lead to more confusion around how to best use these tools.

Because there is not a clear path to quick and easy answers, customers ask redundant questions and/or create help tickets that are vague or confusing and impossible to decipher. This wastes time.

Through cutting-edge cognitive computing and automation, Coseer can collect all existing data (text, images, tables, etc.), and generate insights to create a better search tool and increase ticket deflection in a big way.

With Coseer, customers can **submit questions in natural language and get a full answer in snippet form, with all metadata**, and **without an engineer or customer service** rep to decipher what's needed.

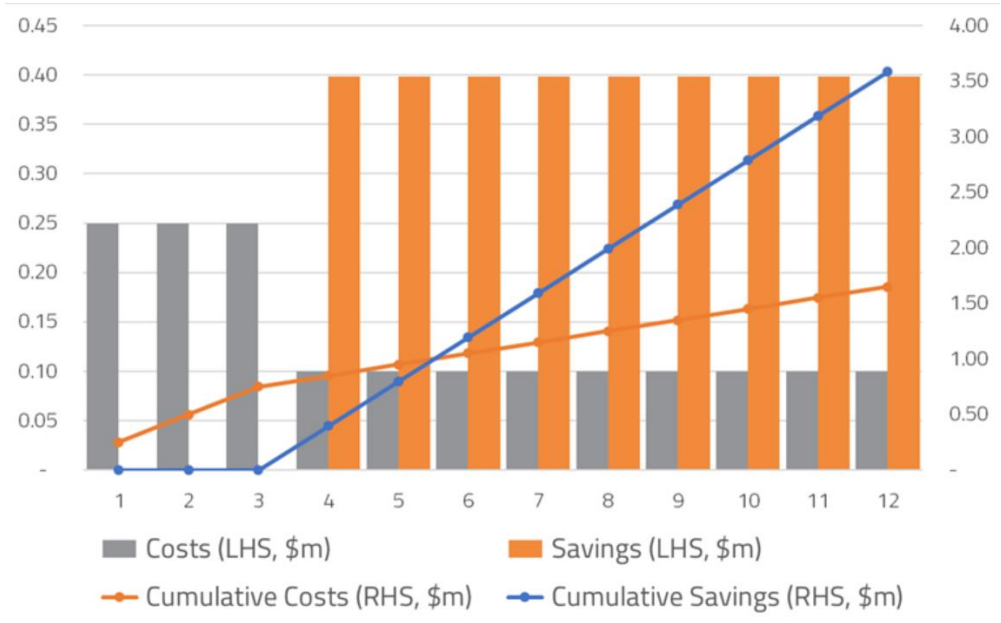
Quicker answers leads to more productive customers, which leads to **higher NPS, lowered costs, and less frustration for everyone** – most importantly, the end users.

In the conservative model depicted in the box, with ticket deflection increased by 20%, we predict **breakeven at just six months**. We expect ticket deflection improve by much higher than 20%. You can download the model from our website.

Potential use cases of Cognitive Computing in Tech or Industrial Companies:

- Knowledge management for internal/external R&D
- Answering customers' questions like a human
- Revision control for stability initiatives or new product development
- Contract management across BUs/ Locations

ROI of Coseer's NLS Solution



Case Study: NLS for Customer Response Management at a SaaS TechCo

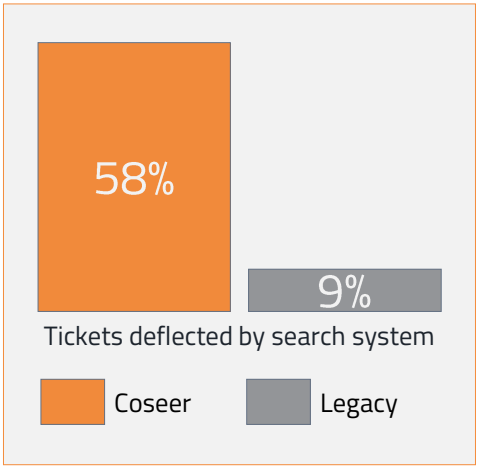
Our client, "TechCo", is a multibillion SaaS provider in the US that caters to engineers in the semiconductor industry.

Before Coseer, TechCo handled questions from customers in a fairly industry-standard way. Our client blended a Google Search Appliance search system with a proprietary interface to return keyword-based answers to customer queries.

Even with industry-standard features like advanced and faceted search, this tool was only able to deflect 10% of inquiries. Demanding customers who failed to find their answers opened new cases, which became expensive for TechCo and frustrating for users of TechCo's software.

Each ticket costs TechCo $400. With about 80,000 queries per year, this was a multi-million dollar expenditure. Tickets could stay open for three to four days before a TechCo representative answered. All the while, the users' work was stalled.

Convinced of the value of Natural Language Search, our client brought in Coseer to create a better solution.



It worked.

- TechCo's customers can ask questions in natural language, without worrying about the right keywords that capture their intent and the context.
- With Coseer, TechCo's customers don't get documents and data sheets that they must search through, but answers – sentences, tables, graphs – extracted and compiled.
- All this happens within an latency SLA of five seconds.
- TechCo manages the system with advanced features for auto-ingestion, updates, and version control.

Training Without Annotation Data

To train the system, TechCo provided us with 1,400 queries from one section of their corpus, entered by TechCo's customers over a span of two months. These sample queries came with click behavior and results from the legacy Google-based system. That was enough to get started. Our team went back with multiple domain specific questions, and **one TechCo team member spent 20% of his time for three months with us to develop the system.** TechCo did not have to annotate any data for Coseer.

You can try the Speed of Thought yourself right away. Just click on:
www.coseer.com/#trynow

Transparency and Security

Coseer has been designed with enterprise data security in mind. Not a single bite of data goes out of the system, irrespective of whether it is hosted in client's private cloud or Coseer's. There is no transfer learning across clients, even when the models are built on public data.

Further, Coseer is an Explainable AI – it logs all decision and the evidence used to get to that decision. Not only does this help with audits and regulatory compliance, it is often a source of counter-intuitive insights about the process.

"Data security is inherent to every aspect of Coseer."

Coseer vs. Traditional System

This table compares the various features of Coseer's Natural Language Search system, and the legacy system used by Techco on various qualitative aspects. The legacy system is based on a Google Search Appliance.

	Legacy System	Coseer NLS
Cognitive Search	Keyword based search that returns documents.	Answers returned based on most relevant concepts and data related to these concepts, independent of keywords, semantics or other common heuristics.
Purpose-built UX	An extension of Google Search Appliance's default UX, with advanced facets built in.	Same UX used for continuity, however answers and knowledge are the focus, rather than documents.
Smarter Discovery	Search only over texts indexed by Google Search Appliance.	Search also for relationships that are not explicit in text, like the knowledge contained in tables or images.
Faceted Search	Search filtered by various facets like source, type, name, device, etc.	Similar faceted behavior that can be configured to each use case. These facets can be explicitly selected or just typed in a natural language query in the search bar.
Reliability of Data	Dependent on users.	Automatic annotation of each piece of information back to the source system.
Actuation	Results copied or downloaded by users.	Multiple APIs for integrating with downstream IT systems so that answers found through the system can be acted upon immediately.

A Coseer NLS system:

- Answers just like a human with 95-98% accuracy.
- Trains without annotation from texts, websites and other data formats.
- Deploys in private clouds to keep data secure.
- Integrates with other IT Systems to act on search results in real time.

Other Use Cases

For a key customer service function like trouble ticket management, implementing cognitive computing can translate to months of saved time. Fixes and new features get released quicker and customers get their valuable time back to focus on their own goals. The same concept of Natural Language Search applies to many industries and departments:

- At private equity firms, NLS can convert cumbersome data rooms to source of insights that inform investment decisions within days.
- At consulting firms, NLS can integrate knowledge from diverse sources transforming it into actionable answers to relevant queries. Knowledge becomes sharable in real time.
- At pharmaceutical companies, NLS can streamline and automate the expensive FDA report creation process by 3X.
- At retail companies, NLS can provide advanced product search capabilities that have proven to increase conversion of traffic by up to 10%.

About Coseer

Coseer is a cognitive automation startup that uses NLS-based AI to unlock your organization's data, collective expertise, and elusive knowledge. Coseer understands human language, so unlike traditional search, the right information is always returned regardless of the user's phrasing. Integrating NLS with existing IT systems to automate complex workflow drives down cost, increases search accuracy, and frees up your employees to do what they do best - creative problem solving.

All of this at the Speed of Thought.

Technology

Coseer's AI uses Calibrated Quantum Mesh (CQM), an emerging algorithm specifically designed for human unstructured data, esp. human language. CQM addresses many of the shortfalls of Deep Learning, mainly the need for high volume of annotated data to train the AI. We have published about CQM at different IEEE forums.

Our website has a lot more information about our technology and use cases: www.coseer.com.