

# Intelligent Chatbot Conversational Interface for Enterprises using Text to Speech



## Project Challenges

Skilled technology professionals are in immense demand around the globe, even as an ever-growing list of enterprise technology clusters drives the need for more specialization than ever before. Technology companies recruiting to support major initiatives face an immense challenge in sourcing skilled candidates with appropriate backgrounds and relevant specialist knowledge for the project at hand.

**Strategic Staffing Companies are becoming increasingly instrumental in addressing this challenge.** These specialized firms have an advantage: they're permanently 'hiring', they have a continuously expanding and updating database of candidates. These firms are constantly seeking to expand overall candidate pool size and quality. More candidates mean better, faster expert talent acquisition for clients.

Strategic staffing organizations also face a unique dual challenge: working for the interests of client hiring organizations while providing matches that fulfill the long-term goals of candidates. Unhappy clients won't continue paying for talent acquisition, while candidates who don't expect to be placed successfully have no reason to submit their information to the firm.

In this context, data is essential in the never-ending search for more talent, more detailed information on the attributes of that talent, and ultimately better matches for businesses and professionals alike. These firms are taking in so much data, in fact, that its navigation and analysis can become a major drag on the day-to-day value created by strategic staffing experts.

## Objectives

Prior to Zen3's engagement, Oslo's internal candidate management capabilities were struggling to scale at a pace that could meet client expectations. An increased headcount of staffing professionals wasn't scaling as hoped: the sheer number of interactions required to wade through a sprawling sea of data and find qualified candidates was overwhelming.

We were tasked with developing a text-to-speech solution that could naturally interact with potential candidates to solicit and input key information, relieving the logistical burden on human recruiters while facilitating a seamless handoff for candidates deemed relevant according to customizable parameters.

## Our Services

Our solution is founded on Zen3's natural language processing system, which can translate both chat and audio conversations into fully processed data. We developed a bot which uses the natural language solution to eliminate time and medium of communication constraints for candidates. Candidates were free to choose to provide information for open job positions at their leisure. Candidates could also choose the communication mode, leading to a significant increase in the number and quality of applicants.

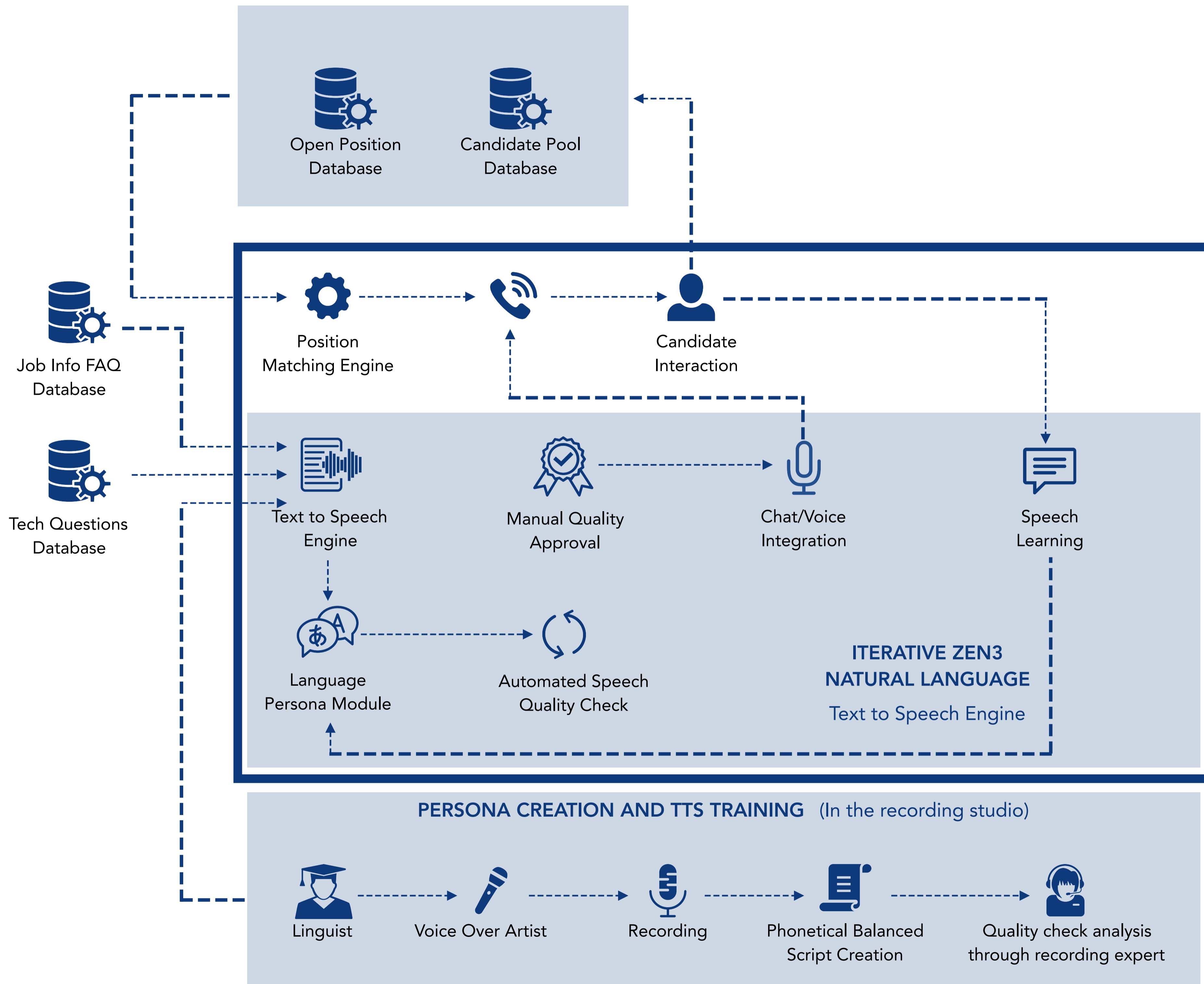
The platform was built from the ground-up to facilitate two-way interaction. The solution informs the candidate of key details about the open position while collecting job specific data, all through the natural language processing engine. The natural language processing engine records the candidates' answers to questions, transcribes it to text, and analyzes it relative to job requirements to ensure a relevant match. Finally, the natural language tool leads candidates to the web application and confirms interest in the open position. In total, this approach can intake candidates faster while taking less recruiter time. The solution was configured to import and export data to application tracking systems, integrating with social media and can providing the customer with a 360-degree view and full status tracking capability.

## Our Client

With more than 7 years of experience, our client is a major IT Strategic Staffing and Services company in the technology industry. A Microsoft Preferred Partner, they are based out of Redmond, Washington, United States and specialize in supporting complex technology deployments.

Our client works to fulfill an ever-increasing number of open positions for their clients. This growth can present overwhelming complexity in candidate intake and analysis if not properly managed.

They engaged Zen3 to assist in the creation of an intelligent conversational interface that could enable them to better leverage their skilled recruiting professionals, streamlining day-to-day recruiting operations while enabling a seamless handoff to human staffing resources.



# Best Practices and Solutions

Zen3's Text-to-Speech processing technology leverages institutional knowledge and custom studio persona creation to enhance the ability of client systems to interact with prospective candidates in a natural manner.

This natural quality is further ensured by the provisioning of a high-grade audio generation process. For believable user interactions, a professional voice-over artist was used for natural sounding audio output rather than a strange robot voice. A professional recording studio ensured pristine recording quality, with recordings continuously analyzed by sound engineers to ensure a polished final product.

Zen3's text-to-speech solution focused not only on quality acoustic characteristics, but text pre-processing and linguistic realization to maximize final speech quality. Utilizing a 5-level Mean Opinion Scoring (MOS) methodology, three groups of native speakers were used to determine the naturalness of the TTS output.

Zen3 engaged language experts to create a phonetically-balanced script for the recording. These experts also analyzed and tweaked the output of the exercise from a language and persona creation perspective. Voice quality analysis was employed to reduce characteristics such as undue loudness, breathiness, tense articulation, or abrupt changes in speech. This analysis includes granular features of speech such as changes in overall shape, stressed phonemes, emphatic stress, clause boundaries etc., all analyzed for clearer and more organic sounding speech.

We backed the effort with regular quality checks at strategically selected stages of the development process. Multiple speech analysis parameters were utilized to check suitability with the ultimate business case while ensuring natural sounding language.

Recruiters can custom-configure the recruitment process for each job position to suit the specific requirements of an open position and collect relevant information. This customization goes down to the audio-level, where recruiters can use a custom persona and voice for the natural language solution for each job type

Audio Interview		
<b>Sidharth Ganapathiraju</b> 9848798486 sid@sidharthvarma.in	7/10 <b>Very Good</b>	<a href="#">Go to All Responses</a>
<b>Question 1</b> Tell Us something about yourself?		I am a sales professional with over 5 years of work experience. I have done sales for hardware, software products and IT services. I have extensive exposure to banking industry domain. I am looking forward to manage a sales team in my next role.
<b>Question 2</b> What attracted you for the role of business development?		I saw a fair for identifying challenges in a work environment and thinking of solutions to solve them. I felt this ability will help in sales & business development role. Hence it was attractive.
<b>Question 3</b> How would you identify a new market to enter?		I will first research about the market and understand core problems that my solution solves. I will then also understand my competitors in the market and then collectively prepare our positioning for that market.
<b>Question 4</b> How do you negotiate with an aggressive prospect?		In my experience the best way to negotiate with aggressive prospects is to present factual data about our past successes.
<div style="text-align: right;"><a href="#">Reject</a> <a href="#">Shortlist</a></div>		

## We're Hiring!

Hi there! We are looking to strengthen our team with senior NLP guys like you

Are you interested in solving complex linguistic problems using Artificial intelligence?

Yes, I'm interested. **K**

Great! How many years of experience do you have in this field and what's your expected CTC?

I have an experience of 6 years and my expected CTC is 12LPA **K**

Rate yourself in the below NLP concepts on a scale of 1-5?

Automata Theory?

4 **K**

Context Free Grammar and Parsers?

3 **K**

Thanks for your time Kishore. We'll get back to you soon.

Is there anything you want to ask?

# Policy and Guidelines

Zen3 worked to understand challenges, the expected outcome as well as process and policies related to security and privacy.

## Data Sources & Ingestion

Data from the customer was ingested, live plugins for application tracking systems were created.

## Quick POC

Zen3's tools qualify initial images for quality. Contextualization, affinity-categories and labeling automated.

## Solution Development

Natural Language engine was developed based on the output of the POC and matched with the expected outcomes.

## Rollout

A phase-wise rollout was initiated for different features-set of the solution. The solution was further customized as part of the process and the natural language model improved throughout.

## Validation

The solution was validated to ensure that it serves the original business case and matches the outcomes expected at the beginning of the project.

## Stabilization and Go-Live

The final stabilized version of the solution was hosted, and customer's team were trained. This final version was analyzed in comparison with the original business case.

## Outcomes

- The natural language conversation feature led to an increase in the number and quality applicants. Oslo achieved efficiency gains driven by optimized candidate outreach & shortlisting ability. Natural language enhanced the bot's capability to automate active and passive hiring of candidates based on job profile requirements – both candidates already in the database, and those who apply specifically to an open position
- Passive hiring became more effective: the chat bot was able to answer deep questions candidates about the job offerings. Conversion on passive hiring increased by 43%
- Candidates hiring experience improved dramatically. Post recruitment survey scores improved by 35%
- Reduced candidate form filling time by 25%
- Lower cost per hire by 40%



## Contact Us

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