

Under the Hood: How Best-in-Class IVAs Work

Understanding the unique blend of AI and human intelligence that powers effortless customer interactions



Over the past several years, there's been a concerted effort by technology providers to simplify the lives of harried IT staff, developers, and end users. This path to streamlined experiences has brought about low-code solutions, intuitive UX design, and AI co-pilots to help people navigate the expanding sea of tools that we use at work.

The trade-off for simplicity is abstraction. Oftentimes, it can be challenging to learn what's under the hood of the solutions your organization is evaluating, which in turn makes it difficult to differentiate between vendors. If you don't know what makes the tech tick, how can you know which solution is the best for you and your customers?

For example, is the solution built on modern technologies and continually being evolved for lasting relevance and value? Is it built to help you scale while running efficiently? How is your data being used and protected? How do the technical capabilities map to the value and competitive differentiation your business seeks?

In the following pages, we're going to pop the hood on a modern, best-in-class Intelligent Virtual Assistant (IVA) to show off the key technologies and features that bring ease to customers, efficiency to the contact center, and lasting value to the overall business. Let's get started!





Defining the terms

First, what exactly is a best-in-class IVA, compared to other conversation automation tools?



IVR

An IVR (Interactive Voice Response) system is the predecessor to IVAs, and is still used by many businesses. IVRs use phone trees, can rarely offer self-service actions, and require users to be precise in stating their goal (“talk to agent”) or press a button to be properly routed.



CHATBOT

Basic chatbots are answer-and-response machines, where responses are linked to keywords rather than natural language processing (NLP), dialog management, or machine learning. Advanced chatbots, however, are often part of a best-in-class IVA solution (see more below) with the ability to understand complex requests, personalize interactions, complete tasks, and maintain context across channels.



VIRTUAL PERSONAL ASSISTANT

Examples of virtual personal assistants include Amazon Alexa, Apple’s Siri, and Google Home. They use Automated Speech Recognition (ASR) and NLP and have simple dialog management, but do not carry context from one conversation to the next.



BASIC INTELLIGENT VIRTUAL ASSISTANT (IVA)

An off-the-shelf IVA offers AI understanding, automated dialogues, and more self-service task capabilities. However, they can be difficult to customize in terms of AI models and integrations, and may be limited in their accuracy, value, and ability to manage complex intents.



BEST-IN-CLASS IVA

Offering superior accuracy, personalization, and omnichannel consistency, a best-in-class IVA eases customer journeys and brings new efficiencies to the contact center. The IVA vendor will work alongside its customers for a successful implementation and ongoing IVA optimization.

Under the hood of a best-in-class IVA

At the core of a best-in-class AI is Conversational AI, an umbrella term for several AI technologies working together.

Automated Speech Recognition (ASR)

ASR systems are trained on vast amounts of data to recognize patterns and nuances in spoken language, allowing them to accurately process and interpret human speech. A best-in-class IVA should also employ sophisticated noise filters and speaker diarization (identifying who spoke when), state-of-the-art deep neural network modeling, and superior accuracy for general transcription, which vastly improves data capture and call records that can be analyzed for continuous IVA optimization.

Natural Language Processing (NLP)

NLP is the umbrella term for AI that's used to understand the context and meaning of language (Natural Language Understanding) and for generating language (Natural Language Generation, also a subset of Generative AI).

Natural Language Understanding (NLU)

NLU is the subset of NLP that specifically focuses on comprehension, including intent recognition, sentiment analysis, and entity extraction, which involves identifying and pulling out specific information, such as a name, date, or common intention. Whether customers are communicating via written word (SMS, chat) or voice, NLU is critical for IVAs in order to understand what customers want and to provide accurate and relevant responses.

Dialog Management

Dialog management is where AI understanding meets automation and human expertise. Via structured decision-making based on business rules and task execution capabilities (such as integration with a payment system), dialogs are created and automated, which enable the IVA to respond properly to customer intent and move the interaction toward a satisfactory conclusion. This involves programmed call-flow, information-state-updated, and statistical dialog managers, along with industry expertise and deep dives into past calls and analytics.

Natural Language Generation (NLG)

As dialog management orchestrates responses, NLG converts it into a human-understandable format. NLG can be used for both verbal and written interactions, and voice NLG can utilize both text-to-speech (TTS) automation and pre-recorded audio from voiceover artists.



Dive deeper into Dialog Management

- **Call-flow dialog managers** follow predefined paths to guide conversations.
- **Information-state-update dialog managers** adapt to user input by updating internal state, which embodies the current conversation, user goals, and the system's knowledge.
- **Statistical dialog managers** learn from data to improve their responses over time.

How humans enter the equation

No matter how advanced AI gets, some utterances can still stump it, whether due to background noise, unclear speakers, complex requests, or unstable audio connections. This is where human listening and intelligence comes in.

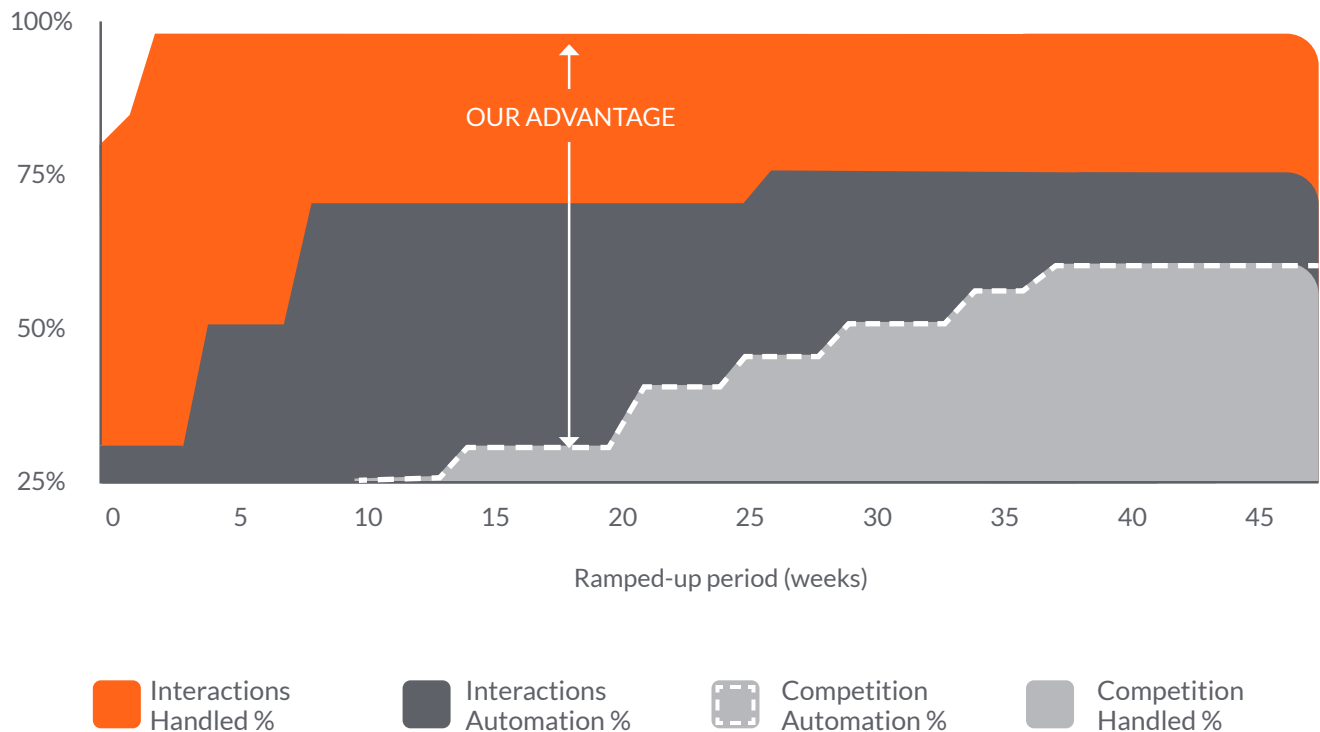
When a string of text or speech is interpreted by Conversational AI, it receives a confidence score. Should that confidence score not meet the required threshold for clear comprehension, an IVA might request clarification, suggest alternative options, or escalate the customer to a human agent. But there's another way.

Human Assisted Understanding (HAU)

HAU is a patented process that is unique to Interactions. When a low-confidence utterance occurs, the IVA transmits the phrase to a human intent analyst (IA) working in the background in real time. This agent interprets the low-confidence phrase by selecting from a list of intents or by typing in data. Then the IVA can continue the conversation, rather than escalating the customer to a live agent queue.



**HAU delivers
97% accuracy for
Interactions clients.**





Workflow Orchestration

Taking AI-human partnership a step further, our proprietary Workflow Orchestration solution enables agents to seamlessly complete tasks that require human decision-making, while customers stay within the IVA. Because agents are brought in only when their skills are required and live agent transfers are minimized, Workflow Orchestration can lead to as much as a 30% decrease in customer call time and 50%-70% decreased Average Handle Time (AHT).

A few key contact center challenges are addressed with HAU and Workflow Orchestration:

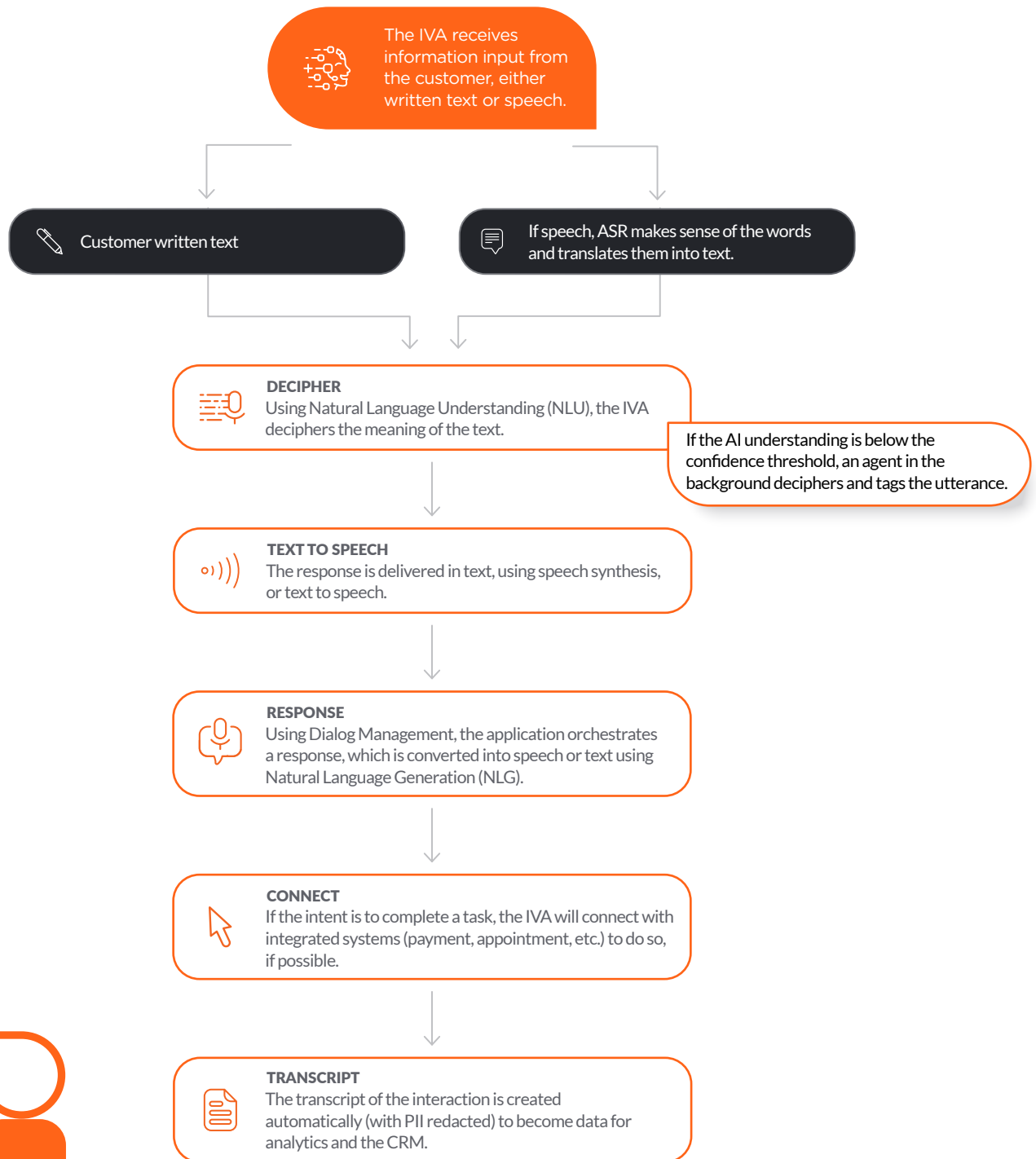
- Agents work within clear guardrails and their own language, allowing any agent, regardless of language or experience, to assist.
- By reducing live contacts, agent productivity is elevated and burnout risk is reduced.
- Workflow Orchestration specifically reduces the challenge of introducing AI-powered automation into complex contact center environments by eliminating the need for new APIs to communicate between systems.
- It allows businesses to incorporate real-time human intelligence when needed, helping ensure that you can adopt transparent, responsible AI protocols.

From saying to doing: IVA integrations

Integrating key systems is crucial for driving the most value from your IVA investment. Smooth integrations deliver easeful experiences to customers. They mean the difference between telling the customer how to complete their intention vs. actually helping them complete the intention during the interaction. (It's so critical, [we wrote an ebook about it.](#))

Out-of-the-box IVAs may offer turnkey integration with the most common telephony systems, customer relationship management (CRM) solutions, and payment providers. But for companies with more bespoke needs—from industry-specific solutions and less commonly used applications to DIY systems—it pays to find an IVA company that acts as a partner, not a vendor. Interactions provides on-the-ground support for setting up integrations, as well as a solution (Workflow Orchestration) for companies with challenging contact center stacks.

How it all comes together in real time



The role of Generative AI

Generative AI in the contact center requires well-thought-out use cases and guardrails to ensure that results are accurate, tailored, and vetted. At Interactions, our GenAI features can save both customers and employees time and effort and they always include humans in the loop to provide validation. Edited and curated responses can then move into predictive AI models over time to optimize future results.

Here are few ways we use GenAI to automate contact center tasks:



AGENT SUMMARIES:

Automated customer conversations summarization that saves agent minutes and provides QA teams with accurate, consistent, actionable dialogues



CUSTOMER SUMMARIES:

Transparent post-interaction follow-ups that assure customers their goals were achieved and provide an additional opportunity to rate the interaction



SUGGESTED RESPONSES:

GenAI-supplied responses that agents can readily use or modify and recommended step-by-step tasks that help improve productivity



KNOWLEDGE EXTENSIONS:

Applications that can be built quickly based on our hybrid approach of AI and humans, combined with a brand's unique data, to answer unanticipated customer queries



Robust analytics and white-glove service for continuous improvement

A key area where less robust or DIY IVRs and IVAs often falter is analytics. Without a streamlined way to dive into data and calls, it's challenging to optimize your IVA over time.

A best-in-class IVA should offer analytics tools that measure the end-to-end customer journey, tracking customer effort, automation performance, and agent effectiveness, not just containment. The right analytics with the right eyeballs on them can help you unearth broader problems you didn't know existed, identify new intents to automate, and help you understand customers better.

Interactions' robust analytics suite, powered by an advanced business intelligence engine, delivers granular reporting, dynamic data visualizations and drill-downs, custom reporting, and event-based notifications and real-time alerts. Even those interactions that must be escalated can still be analyzed through integration with contact center software.

In addition to this powerful analytics suite, our lifecycle services means Interactions becomes an extension of your team. We meet with clients as often as once a week—and we do our homework, showing up with insights from analyzing your KPIs and calls. We can share successful ideas we've seen from across our customer base and develop creative solutions together.

Why are we so invested in ensuring that your IVA continues to evolve with your business and that you maximize value over time? Our success-based pricing model means you only pay for successfully completed transactions.



To learn more about how your company could benefit from a state-of-the-art IVA, take our [IVA Maturity Assessment](#) or [contact us for a demo](#).

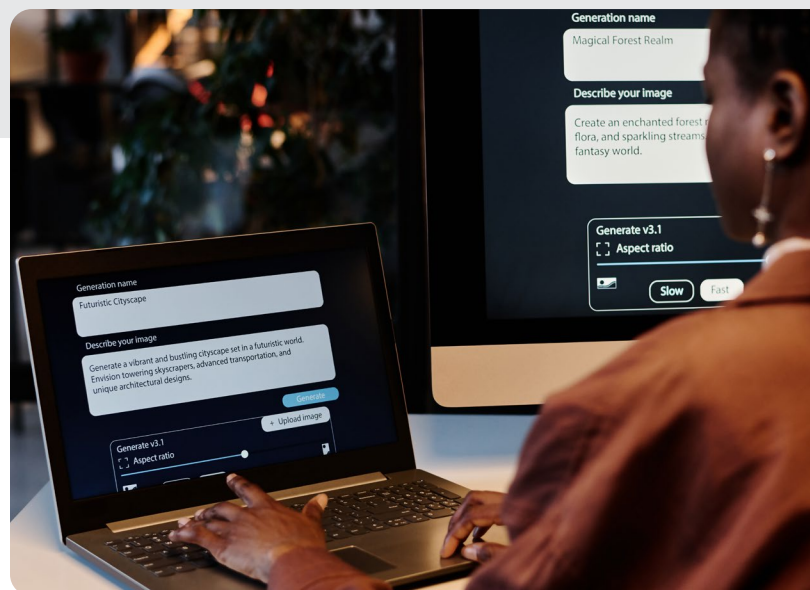
Adding up the value

The value of a best-in-class IVA like Interactions is demonstrated by the complexity that we can handle. With HAU and a dogged commitment to continuous improvement, our IVA can automate more conversations and transactions to minimize customer effort and provide stellar self-service experiences. This in turn translates to lower operational costs and increased scalability.

Third-party independent analysis shows that Interactions IVAs average 6.4 utterances per call, which is typically enough for a successful resolution. By comparison, competitors average just 1 to 3.5 utterances before the customer needs to request live support.

And even as utterance length goes up to 20 seconds, we still consistently average 97% intent recognition accuracy. Competitors average only 2 to 4 seconds before intent recognition starts dropping to subpar levels.

With 130+ patents, 20 years of experience, and \$300 million in savings for top clients, Interactions delivers a best-in-class IVA experience that engages customers on a human level, while providing deep efficiency, scalability, and ROI for contact centers across industries.





interactions

ABOUT INTERACTIONS

Interactions provides Intelligent Virtual Assistants that seamlessly assimilate Conversational AI and human understanding to enable businesses to engage with their customers in highly productive and satisfying conversations. With flexible products and solutions designed to meet the growing demand for unified, omnichannel customer care, Interactions is delivering unprecedented improvements in the customer experience and significant cost savings for some of the largest brands in the world. Founded in 2004, Interactions is headquartered in Franklin, Massachusetts with additional offices worldwide.

For more information about Interactions, contact us:

866.637.9049

[interactions.com](https://www.interactions.com)