Decision Makers' Guide to Enterprise Intelligent Assistants

(2021 Edition)

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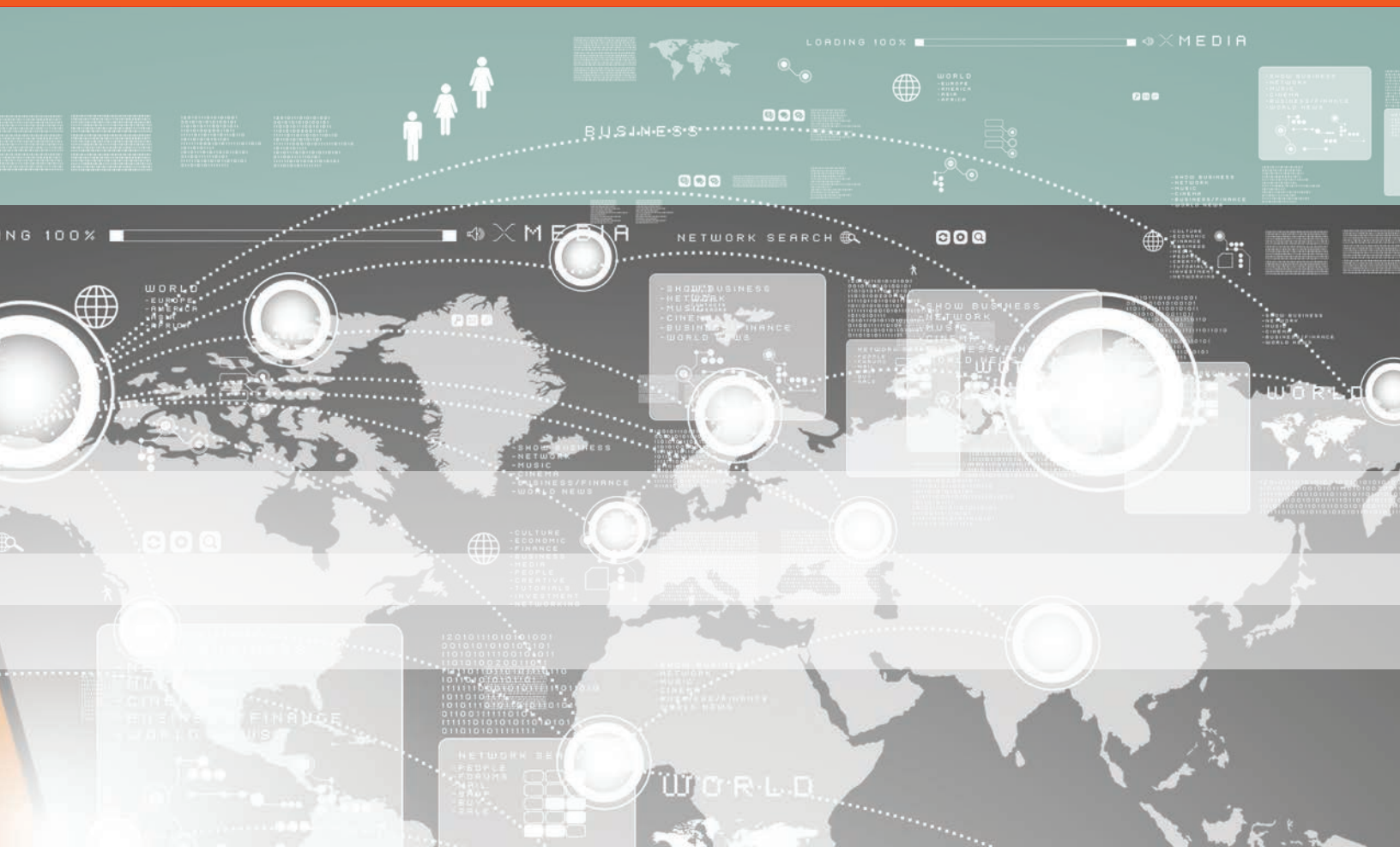

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While it's important to acknowledge we're still in the "early days" in the development and acceptance of Enterprise Intelligent Assistants, the proliferation of chatbots, voicebots and virtual assistants has already reached billions of end users. With a growing audience, the number of use cases will grow as well, and there is no turning back.

Opus Research presents a comprehensive assessment of enterprise-grade Intelligent Assistant solution providers bringing natural language processing, machine learning, AI and analytics to support customer care, self-service, employee assistance, messaging and device control. This report evaluates 13 firms to better understand enabling platforms & technology, integration points & scalability, track record and future vision for enterprise-scale Conversional AI.

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Tracking Developments in the Intelligent Assistance Solution Stack

Opus Research has been producing the Decision Makers' Guide to Enterprise Intelligent Assistants" since 2015 to describe how "NLP-powered, automated self-service resources can offer consistent answers and responses to queries or instructions on behalf of brands or enterprise companies."

That definition encapsulates the selection criteria Opus Research has applied to documenting how enterprise-ready Intelligent Assistants leverage automated conversational technologies to engage with customers, prospects and employees.

The companies included in this year's report offer the products and services that leverage technologies that support intelligent assistants for customer service and employee assistance (highlighted in gold, Figure 1 below). They offer platforms that include service creation tools and a range of native or third-party solutions capable of ascertaining the intent of each individual conversation based on natural language input. It associates that input to recognized "intents" and then, in the midst of the conversation, provides responses or recommended next actions that help people accomplish their goals more quickly.

Figure 1: Layers of Conversational AI

Source: Opus Research (2020)

Solution providers offer a growing range "Enabling Technologies" that may start with increasingly accurate Automated Speech Recognition (ASR) coupled with human-like text-to-speech rendering, supporting so-called "voicebots." In this document, we also evaluate each respondents library of native capabilities or connectors that support emerging requirements surrounding emotion detection and sentiment analysis that give a "bot" an empathetic feel as well as biometric measurement capabilities that support more personalized responses based on high certainty that the customer or prospect involved in the conversation is the person he or she claims to be.

Successful solutions also incorporate data or processes that Opus Research calls "Conversational Intelligence". In many, real world use cases, chatbots or voicebots are called upon to access highly-dynamic data such as flight status, store inventory or the physical location of a package. This report highlights exemplary integrations of chatbots, voicebots, and virtual assistants using natural language understanding, speech processing, machine learning, artificial intelligence and analytics to support customer care, self-service, employee assistance, messaging and device control.

In cataloging Intelligent Assistant implementations, Opus Research has found it starts with conversational data. Natural language processing, AI and automation help derive intents for businesses deliver insights, create operational efficiencies, and boost the bottom line. The goals achieved include completing tasks, reducing costs, universal availability, improving customer experience, and accelerating digital transformation.

PARAPHRASING OBSERVATIONS WE'VE HEARD FROM SOLUTION PROVIDERS AND PRACTITIONERS ALIKE: BUILDING BOTS IS EASY, MAKING THEM INTELLIGENT, SCALABLE AND SUCCESSFUL IS NOT.

From Risky to Robust: The Evolution of Intelligent Assistants

"Intelligent Assistance" has entered a new phase of maturity as firms of all sizes look for the best ways to employ chatbots, voicebots and virtual agents to create better customer experiences and promote employee productivity. In just five years, they have evolved significantly. Not long ago, core technologies like natural language processing (NLP), machine learning (ML) and dialog design were considered "risky" and were relegated to proof-of-concepts and pilots conducted only by the largest firms in select verticals like financial services, travel or healthcare.

Today, both the market and technologies have evolved from risky to robust. Intelligent Assistants (IAs) are now part of nearly every firm's strategy to improve customers experience and employee productivity across all digital channels. Large companies may call it "digital transformation" but, for the vast majority of companies, but for smaller firms, it is a competitive necessity. To handle a surge in both online and voice-based commerce from home-bound individuals that coincides with the mass deployment of work-from-home customer care personnel, companies were delighted to find that those customers often chose to accomplish those tasks through automated virtual assistants.

Expediency Meets Complexity

Through IAs, companies provide customers, prospects and employees with an increasingly broad array of answers, recommendations and actions. This year's evaluation of solution providers put a premium of the following:

- **Open platforms**: In year's past, this would have been an oxymoron, like "jumbo shrimp" or "working vacation." Yet one of the biggest changes in our evaluation criteria reflects an acknowledgement that businesses look to recognized brands like Google (Dialogflow), Amazon (Lex) or IBM Watson for trusted/reliable NLU, ML, speech processing, translation and the like.

- **Tools for the non-technical:** Responsibility for the performance of IAs falls to customer care and other departmental personnel who are not normally trained to know dialog design or computational linguistics.

- **Vertical knowledge modules:** Solution providers get extra credit for bringing pre-packaged dialog modules or conversations into the mix as part of plans to shorten the time it takes to get an IA up and running

- **Intelligent search & discovery resources:** Experience taught early adopters that tools that detect or discover query patterns that are ripe for automation are vital. This is especially true post-deployment for conversations that are treated as out-of-bounds or off-topic.

- **Integrated reporting and administration:** Accuracy and rapid recognition of intents remain important, but integration of metrics that reflect the value and impact of Conversational AI and EIAs revolve around impact on CX and task completion.

- **Ecosystem wingspan:** In the age of open platforms, extra credit goes to solution providers that have successfully integrated and created business opportunities for category leaders in contact center infrastructure, cloud computing, system integration, business process outsourcing, CRM and, most importantly, cloud-based NLU, ML, ASP, discovery and translation.

In addition, on an operational level, here are key considerations:

- **Service Creation and Administration Tools:** Highest ratings go to firms with proven tools for non-technical personnel to define, build, train and maintain Intelligent Assistants with capabilities that recognize and respond to complex customer intents. Extra points go to tools that integrate "no-code" or "low-code" user interfaces.

- **Pre-trained Language Models and Use Cases:** Out-of-box capabilities minimize the need for expensive resources and professional services to train chatbots, voicebots. In addition, "discovery" tools for adding new capabilities and use cases when groups of queries go off-topic.

- **Orchestration Tools:** Providing IA managers with comprehensive tools to provide consistent answers to complex queries across multiple channels and modalities, involving data from a multiplicity of processes. Extra points go to "openness" in integrating with third-party resources (like Dialogflow, Lex, Watson) and promoting AI-human balance.

- **Omnichannel Support** (Voice and Text): Supports conversations involving smartphones, websites, IVRs and multiple messaging platforms. Extra points for retaining awareness of activity/conversation across platforms and supporting smart speakers.

CUSTOMER PERSPECTIVE

"[The COVID pandemic] and work from home changed everything. With the resources to scale up, we saw automated conversations contained in our messaging channel increase from 15-20% to 60% of interactions inside 3 days. [Our solution provider] charted a really clear path."
—Chief Experience Officer, Global Financial Services Firm

Elephant in the Room: The Impact of Google, Amazon, IBM and Microsoft

Popularizing platforms for building Enterprise Intelligent Assistants relies on leveraging access to affordable resources for natural language understanding, machine learning, analytics and cognition. Dialogflow and IBM Watson were early choices based on accessibility, robustness, with Dialogflow winning out based on affordability. Amazon has been a relative newcomer to the contact center and it leverages long-standing experience as the engine that powers conversational virtual agent Alexa on hundreds of millions of devices worldwide.

Both Google and Amazon have added "agent assist" to their repertoire. They deploy conversational analytics to serve suggestions for scripts or next-best actions during a call, chat or messaging session. To support the conversational user interface among customers, agents and virtual agents, both constantly refine automated speech recognition, text-to-speech rendering and translation services. Both features improved sentiment or emotion detection in support of market demand for more empathy from both intelligent virtual assistants (VAs) and human customer service representatives or agents. Collectively they have turned what once were "bleeding edge" technologies into table stakes or mere features in a broader product offering.

Next up is applying NLU and analytics for after a call to support summation, analytics and sentiment analysis. This is an opportunity area where contact center managers see great justification for investment based on making agents more productive and detecting and remediating customer concerns.

Both Amazon and Google have invested billions of dollars in the personnel, compute power and cloud storage required to build the language models and such to make conversational commerce possible. Their peers, in this respect are Facebook, Apple, IBM and Microsoft. Google was first to forge ahead with packaging designed to bring conversational AI's to enterprise contact centers, but it is now becoming a crowded space where the projects that once required teams of developers and expensive computers can now be accomplished by having subject matter experts and departmental execs employ tools that bring in the expensive resources from Amazon, Google and others on an as-needed, pay-per-use basis.

Intelligent Assistants Support Conversational Service Automation

Since Opus Research issued the first "Decision Makers' Guide to Enterprise Intelligent Assistants", the solutions under investigation have been made available to employees in every sized enterprise across all verticals. Instead of a "digital transformation," we've observed the introduction of a "conversational layer" to systems and processes that make it possible for employees and customers alike to take command, achieve objectives and complete tasks by speaking, typing or texting to automated services using their own words.

That's Conversational Service Automation (CSA) in a nutshell.

Conversational Service Automation (CSA) makes sure that virtual assistants and conversational IVRs "don't suck." They are automated assistants that understand natural language input with above-average and human-like accuracy. They provide resources that enable intelligent assistants to recognize the intent of natural language input and take proper action. This year's leaders put emphasis on tools that enable managers to get IAs up and running quickly without offering a dumbed-down "answerbot" with "rule-based" responses and static, pre-defined answers.

CUSTOMER PERSPECTIVE

"In launching our intelligent virtual assistant, scalability was critical. We needed [our partner vendor] to be adaptable and flexible. Able to manage the resources and demand [in order for us] to meet our commitment to drivers and customers."

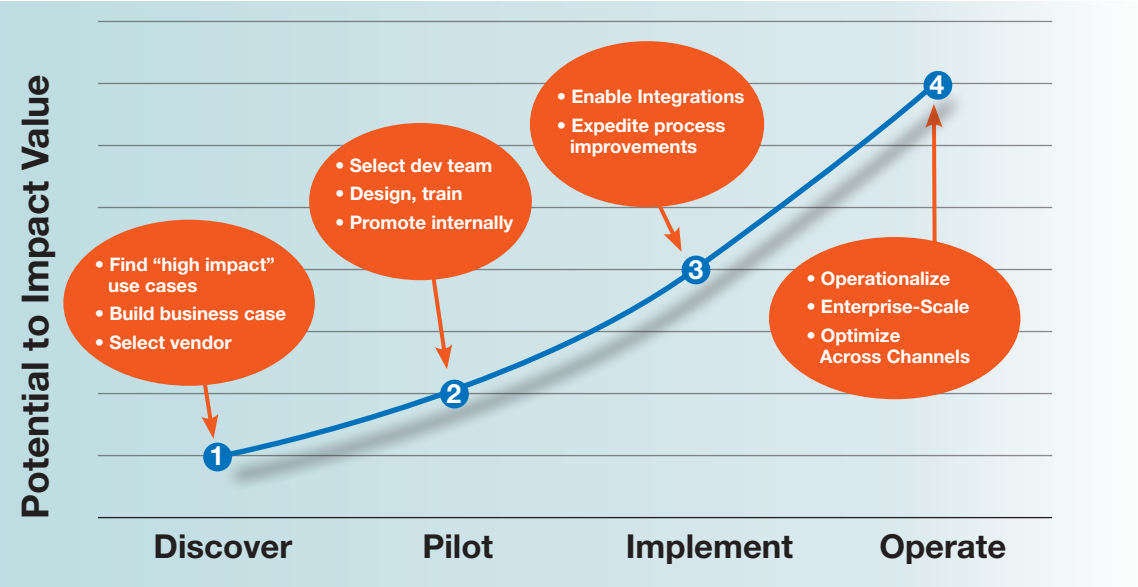
—Technology Manager, Global Ridesharing Company

How the COVID Pandemic Accelerated Adoption

With the ongoing global pandemic, millions of home-bound individuals are learning new ways to carry out daily commerce. In response, Enterprise Intelligent Assistants have been pressed into service at an unprecedented rate, driven by the adoption of customer care strategies that are multi-modal, multi-channel and conversational. The pandemic accelerated an already-established trend toward digital channels for e-commerce, healthcare, banking, government services and entertainment. Individual customers are finding that intelligent assistants serve as the most efficient ways for them to complete tasks.

These changes make selection of solution providers supporting Enterprise Intelligent Assistants (EIAs) a first-order concern for customer service and customer experience professionals. Intelligent Assistants are no longer relegated to "proof of concept" or "pilot" status. They are the first resources to answer important questions, complete tasks or, when necessary, steer individuals to the resources or live agents that are of the greatest help.

Figure 2: Maximizing Value of Enterprise Intelligent Assistants



In Figure 2 above, Opus Research outlines the steps that many teams take to launch a successful, scalable Enterprise Intelligent Assistant. What's notable is working with a seasoned solution provider at defined touchpoints in order to properly evaluate and assess the tools they provide and the services rendered. It's critical to work closely with firms that fulfill the "time-to-value" requirement without compromising robust results.

Selection Criteria for Today's Solution Providers

Evaluation criteria have new weightings this year. Companies with little or no staff or budget to master arcane language processing disciplines are being called on to spin up Intelligent Assistants that enhance both employee productivity and customer satisfaction. That means mastering much more than Q&A to recognizing workflows and providing conversational intelligence at the right place and the right time.

Top performers provide their customers access to an ecosystem of solutions for initializing, training, managing and administering Intelligent Assistants over their lifecycle. They take an "open" approach to connecting with or integrating both internal IT systems (CRM, ERP, RPA…) and cloud-based resources. They provide development and management tools that are accessible to both technically proficient and business-focused employees or developers.

Leaders articulate and follow a "vision" for IAs that anticipates and addresses the major challenges and opportunities involved in informing customer support, sales, marketing, operations, Help Desk, HR and other departments with "Conversational AI". Solutions are aware of the power of AI to augment, rather than replace, humans by rapidly recognizing the task(s) they seek to complete and propelling them toward completion. In addition, support of AI and DNN for both security measures and personalizing customer experiences.

Finally, the vision should speak to agility and reliance on an ecosystem of technology providers and partners that support deployments (large and small) across every medium, channel, platform, architecture and use case.

In these pages, Opus Research has compiled dossiers on 13 firms that specialize in Enterprise Intelligent Assistants (EIAs). [Note: All qualified vendors were invited to participate. To be included, solution providers needed to respond to Opus Research's request for information.] We evaluate the solution providers according to criteria that determine how well they perform in today's fast-changing digital, e-commerce environment. Specifically:

- **Features and Technologies:** Assessing tools, core technologies and resources that enable experts to incorporate what they deem to be "best-of-breed" resources for training EIAs and then to enhance their capabilities and capabilities in response to customer or employed driven changes in levels of demand as well as functions.

- **Integration and Ability to Scale:** Connecting to internal workflows and processes as well as APIs from others for Natural Language Processing, translation, cognition and other popular elements of Conversational AI.

- **Track Record:** Measure of market credibility, deployment strategy, reach and effectiveness, including multiple deployments, operating history, number of verticals, references, and enterprise-scale maturity.

- **Future Plans and Vision:** Assessing how well a solution provider's staffing, development, investment and partnering strategies create an ecosystem or platform that anticipates and fosters large-scale deployment of conversational Intelligent Assistants for customer care, employee productivity, sales, marketing and transactions.

Opus Research has asserted that the overall objective is to provide consistently correct responses, recommendations or actions across all media and devices at scale. That objective will always be true which places an emphasis on core platforms for rapidly recognizing intent, matching those intents with the proper resources and continuously learning new vocabularies. What will continue to change as we move into the future is the diversity and mix of devices, channels and use cases. It will be coupled with changes in the expectation surrounding conversations, such as the ability to engage not just in multiple turns, but multiple threads over time.

Vendors are grouped into one of two following categories:

- **Leaders:** Success is necessitated with a holistic approach, recognizing tangible differences in high-value use cases, omnichannel support, orchestration & management, and growing ecosystem of partners and industry collaborators.

- **Challengers:** Building the next generation of tools and platforms, with a keen understating of conversational intelligence data sources to help companies create compelling customer experiences and employee productivity gains.

Figure 3: Firms Included in 2021 EIA Report & Intelliview

Company	Category	Distinction
[24]7.ai	Leader	Emphasis on blended AI-HI; cost-per-resolved-conversation
Artificial Solutions	Challenger	Teneo platform for dialog management, integrated tools
ASAPP	Challenger	Focused on accurate ASR/Intent recognition; research commitment
Cognigy	Challenger	Targets non-technical with low-code support and developer options
Creative Virtual	Leader	Longstanding field experience, flexible integration options with V-Portal
IBM Watson	Leader	Highly regarded cognitive resources combined with next-gen tools
Inference (Five9)	Leader	Success with entry-level and midsize IVAs; acquired by Five9
Interactions	Leader	Solid engagement model, unique "Human Assisted Understanding"
Kore.ai	Challenger	Impressive NLP technologies, claim notable enterprise deployments
Nuance	Leader	True omnichannel deployments, superior platform, rich APIs
Omilia	Challenger	Full stack of solutions and tools, customer support model
Uniphore	Challenger	"Conversational Service Automation" platform for multiple touchpoints
Verint	Leader	Billions of interactions; open, modular platform; continuous improvement

This document (Appendix A) provides brief profiles of each company's enterprise intelligent assistant offerings and also positions them on a map below (Figure 4) based on the strength of their product offerings and market positions.

Intelliview Map for Enterprise Intelligent Assistants

To assist decision makers in evaluating competing solutions providers, Opus Research represents their positioning in a series of "Intelliview Maps. In reference to Figure 4 we have arrayed the solution providers to relative market positioning and success. The axes on the Intelliview reflect two, all-important factors:

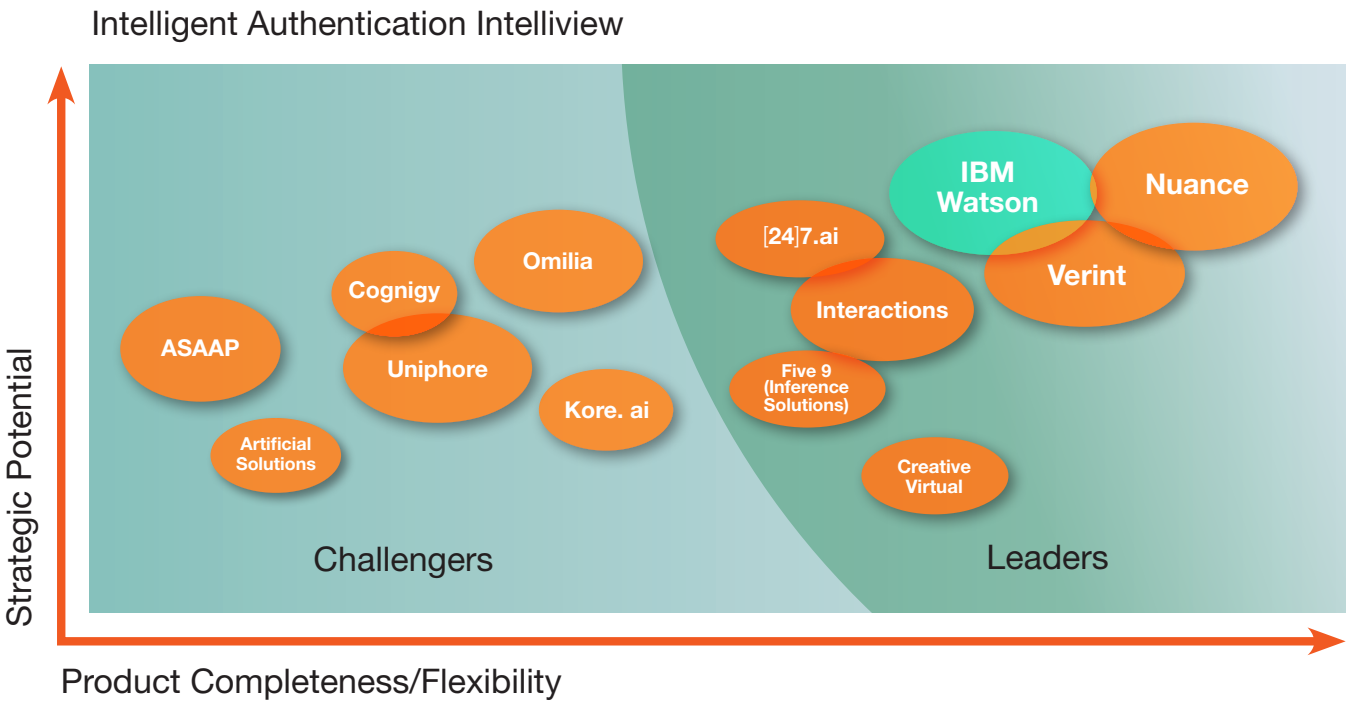
- **Product Completeness/Flexibilit**y – Platform providers receive the highest assessments of "completeness" of services, features, and orchestration capabilities.

- **Strategic Potential** – Capturing how vision and roadmap appeals to current and evolving technology requirements in contact center and beyond.

Opus Research has developed a solution provider comparison chart to help decision-makers evaluate how current enterprise solutions fulfill the requirements of Intelligent Assistance.

The size of the ovals represent each vendor presence based on company-provided or publicly available information of current financial strength (revenue, profitability, financial banking, longevity and size of customer base).

Figure 4: 2021 Enterprise Intelligent Assistant Intelliview



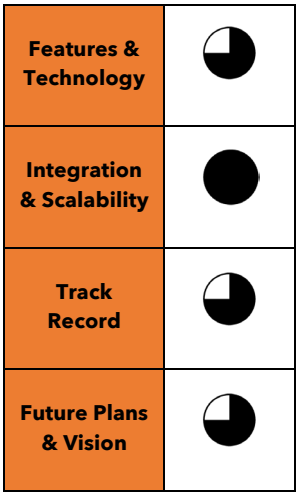
[Note: IBM Watson is a "category of one" because IBM provides both tools for development of Intelligent Assistants for many verticals (Watson Assistant) and simultaneously offers APIs and connectors to some of the most popular cloud based cognitive resources, including ASR/TTS, Discovery, machine vision, translation and others.]

Appendix A – Vendor Profiles

EDITOR'S NOTE: The accompanying dossiers contain information provided by the vendors under evaluation in response to a questionnaire and guidelines provided by Opus Research. While the information is directly from vendors, we have made an effort to normalize the responses in order to support comparison by prospective implementers in light of criteria that Opus Research has deemed important based on feedback from decision makers.

[24]7.ai

Founded: 2000
Employees: 12,000+
Revenue: Privately held



Core Intelligent Assistant Products and Services
[24]7.ai Engagement Cloud provides a single point of control for creating and managing human and bot interactions across digital and voice channels. Powered by AIVA conversational AI technology, enables self-service tools to set up intent selections and build conversational bots, business logic, conversation flows, user interfaces.

Enabling Technologies

- **ASR/TTS** - AIVA conversational AI technology. Also, leverages Microsoft's DNN-based speech recognition technology as part of the algorithm. After foundation of AI and machine learning (automated analytical model building), AIVA then adds multiple layers of data input, NLP, NLU and predictive intent.
- **Natural Language Processing** - AIVA understands user inputs expressed in slang, local nuances, and colloquial speech. AIVA powers voice interactions with Voice Biometrics and Neural Text-To-Speech. AIVA can also integrate with IBM Watson, Dialogflow, and Google TensorFlow through open APIs.
- **Dialog Management / Tooling** - Out-of-the-box includes enterprise-grade tools that enable the client to literally manage the customer journey themselves by editing or creating dialogues. Tools like Content Manager, Modeling Workbench and Voices empower the client with partial or near-complete control over the user experience if they choose those solution options.
- **"AI" / Machine Learning / Performance Optimization -** AIVA provides unattended services for most customer inquiries. [24]7 AIVA utilizes both automated machine learning and human-assisted machine learning. Predictive models designed for a vertical market and/or a specific client's needs are other manifestations of AI and machine learning in AIVA.
- **NoCode/LowCode service creation** - New enterprise-grade conversation builder enables rapid deployment of conversational journeys, usually within days. [24]7.ai clients may do integration with back end systems, however, outside of that, it's a no-code solution.

Conversational Intelligence Elements

- **Speech and/or Text Analytics**: AIVA uses natural language processing, language models and sentence embeddings to analyze the data and improve the VA experience, and the solution provides the organization with analytics about VA interactions.
- **Enterprise Search and Discovery**: Seeks to improve search accuracy by understanding searcher's intent through intent-tagging activities, tagging web pages on which chat or self-service is not offered.
- **Integration with CRM, ERP** – Provides integration on multiple levels; ability for a chatbot to pull data or send data to Salesforce and other CRM systems as well as product documentation.
- **Knowledge Management Tools** – Knowledge management tools serve up high-quality, up-to-date content to the virtual agent. Engagement Cloud also features Agent Assist with Google CCAI. Agent Assist is now capable of source recommendations from Google CCAI's Smart Reply, FAQ Assist and Doc Assist features, thus providing a wide coverage for semi-structured knowledge sources.

Platform Features and Functions

- **What works out of the box?** - Supports hundreds of industry specific intents, with more than 70 consumer journeys across multiple verticals. Day zero can integrate with 3rd party AI (e.g. IBM Watson); Best practices for key vertical journeys are captured in pre-built bots, simplifying deployment and ensuring success.
- **Channels supported:** Voice, web-chat, mobile-app chat, IVR, SMS/MMS, messaging platforms (WhatsApp, Apple Business Chat, Google Business Message, Facebook Messenger), two-way video.
- **Engagement Type/Modalities supported** – Supports both synchronous and asynchronous messaging across WhatsApp, Apple Business Chat, Google Business Message, Facebook Messenger and others.
- **Deployment Platforms supported** – 100% cloud-based deployments
- **Support of live agents** –Designed by agents, for agents, the Assist agent console integrates AI and human insights to handle both synchronous and asynchronous conversations. A key capability, the Lead Console, enables team leads to perform key monitoring tasks and take corrective actions in real-time
- **Analytics & Reporting** - Reporting for AIVA is carried out by [24]7 Insights: 1) Supports key engagement, revenue and operational data 2) Provides In-channel and cross-channel data and analytics 3) Provides data monitoring and alerting capabilities.

- **Authentication & Security** - Sensitive data is encrypted at rest and in transit. Browsing information is collected, anonymized, and handled in compliance with security policies agreed upon with the client.

Workflows, Process Automation and Complexity

- **Ability to support multiple use cases** – [24]7 AIVA excels at handling complex conversations and deployments, particularly when a consumer has multiple intents.
- **Organizational Roles** - Focus on several different personas including conversational designers, data scientists, developers, etc. On the agent side, enable to supervisors to manage agents, queues, skills, schedules, etc.
- **Support of multi-turn conversations** – [24]7 Conversations is designed for multi-turn and transactional digital and voice conversations. A new enterprise-grade conversation builder enables rapid deployment of conversational journeys, usually within days.
- **Recommended success metrics** – [24]7.ai has pioneered the "cost-per-resolved-conversation" (CPRC) model. CPRC is holistic 1) Costs driven by technology 2) Costs of the agent services 3) Costs of channel hopping (and repeat contact).

Track Record, Partnerships & Enterprise IA Maturity

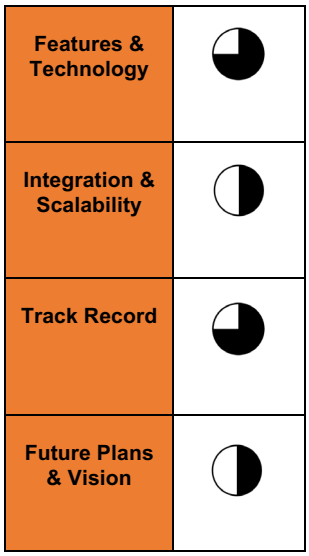
- **Market presence, vertical/horizontal experience, use cases** – [24]7.ai handles more than 36M chat interactions and 1.3B self-service interactions per year. Virtual agents deployed at more than 100 firms, based on hundreds of industry-specific intents and 70 consumer journeys across multiple verticals.
- **Customer engagement strategy** – [24]7.ai offers several components via a Customer Engagement Cloud that can be quickly deployed and turned on as needed.
- **Customer support models** – [24]7.ai provides end-to-end design services ranging from consultation to support. [24]7.ai professional services transform technology into exceptional customer experiences– blending the best of artificial intelligence and human insights to deliver better business outcomes. Go-to-market partners (system Integrators, re-sellers, BPOs) – Our primary go-to-market partners are KPMG, Infosys and IBM GBS.
- **Technology partners** – Engagement Cloud can interoperate with other AI technologies including IBM Watson and Google Dialogflow. Cloud Elements, Microsoft Azure Speech Services. On the business messaging side, we have partnerships with Apple, Google and Facebook.
- **Customer deployments** – Best Buy (Retail), DISH (Media and Entertainment), Hilton, Marriot (Hospitality)

Key Differentiators:

1) **Unique Blend of AI and HI** - Humans and AI-powered virtual agents work together to reduce average handle time and boost efficiency, while consumers can self-serve and effortlessly escalate to a human agent when needed.
2) **One consistent experience across any channel** - Provide the industry's first integrated suite of conversational AI services designed to power both voice and digital interactions, with the ability to automate across the two channels and deflect calls.
3) **Market-Leading Conversational AI** - [24]7 AIVA (conversational AI engine) uses advanced and proven techniques to uniquely understand intent and learn from every interaction.

Artificial Solutions

Founded: 2001
Investment/Funding: Listed on Nasdaq First North in (March 2019)
Number of employees: 120
Revenue: Predicted to exceed $30m (2020)



Core Intelligent Assistant Products and Services
Delivered through Teneo®, an ultra-rapid AI development and analytics platform, core modules are:

- Teneo Studio: Create conversational solutions using this powerful and intuitive tool,
- Teneo Engine: The brains of your conversational AI applications and core linguistic capabilities.
- Teneo Data: Real-time analytics and reporting for actionable insight based on the voice of the customer.
- Teneo Languages: Conversational AI solutions in 40 languages, using modular language resource libraries.

Enabling Technologies

- **Speech Processing (ASR/TTS):** The Teneo Platform supports voice as an interface through integration with third-party ASR/TTS providers. Third-party products previously integrated with include Google, Apple, Microsoft and Nuance.
- **Natural Language Processing**: Out of the box, Teneo Natural Language Processing capability allows the platform to analyse each user utterance and marks up the language into its constituent elements. This includes for example tokenization, normalization, part-of-speech "POS", entity recognition "NER", morphological analysis (singular / plural, past / present tense, etc.), sentiment analysis, time and date notation, spelling correction, language detection, and contextual understanding among others.
- **Dialog Management / Tooling**: Topics that end-users can talk about with your bot are designed graphically as 'flows'. Flows do what is needed to handle an intent of the end-user. They represent a pre-defined conversational pattern to fulfill the request of your end-user.
- **"AI" / Machine Learning**: The Teneo Platform includes integrated tools to monitor the performance of the ML model directly within Teneo Studio. Additionally, an automated learning loop analyses data from user conversations to identify prospective new training data to help avoid model drift.
- **NoCode/LowCode:** Designed from the outset with a graphical intuitive application to support all natural language solutions development tasks: manage intents, fine-tune the ML models, design and modify flows, manage contextual information, integrate with backend systems, simulate conversations, run solution wide regression tests and publish bots.

Conversational Intelligence Elements

- **Speech and/or Text Analytics**: Teneo Discovery is a comprehensive data mining tool for use with unstructured conversational data which uses unsupervised machine learning to gain deep insight into customer wants and needs. Can be used on almost any type of conversational data including live chat logs, call centre transcripts, social media.
- **Enterprise Search and Discovery**: Provision is made for the analysis of large qualities of unstructured language data such as existing live chat logs, FAQ's, etc., by using Teneo Data's Discovery component. This data can then be formatted to build understanding of company specific or vertical specific terminology.
- **Integrations (CRM, ERP):** Yes, SAP, Salesforce (support systems); RPA platform (BluePrism and UIPath)
- **Knowledge Management Tools**: From within Teneo Studio's UI, developer can build intents and entities, manage ML class training, build integration, and close the loop ML by applying the real time intelligent improvement suggestions for the ML model retraining.
- **Tools/Support:** Multiple developers can access the same solution at the same time, with full record locking. All flows are versioned, with comments, and can be rolled back if required.

Platform Features and Functions

- **What works out of the box**: Teneo has been developed from the as modular and open technology
- **Channels currently supported:** Web chat widget that supports various message types like buttons, quick replies, images, audio, videos and cards. Prebuilt channel connectors: Facebook Messenger, Teams, Microsoft Bot Framework, Alexa, WeChat, WhatsApp, Google Assistant, IVRs and RPA systems

- **Engagement Type/Modalities:** A single instance of Teneo can support dozens of individual and diverse solutions, for different use cases. Resources can be shared between solutions, with individual publishing workflows, as required. Often see the establishment of Enterprise Centres of Conversational AI excellence.
- **Deployment Platforms**: On-premises; hosting in secure data center; or managed cloud environment.
- **Intelligent Routing**: Supports routing and handover to human agents based on business rules defined.
- **Personalized CX:** Integration to backend systems built using Teneo Integration Manager plus real time access to the detailed logs of prior dialogs, detailed, personalised experiences can be delivered.
- **Support of live agents**: Live chats can be automatically routed to/through to provide an agent with a suggested answer to a user query; Live agents can use an internal bot for quick access to information.
- **Analytics & Reporting**: Teneo Discovery enables businesses to take raw, unstructured data from multiple sources and classify them into a visual representation. Teneo Inquire provides access to clean data for use in interactive management dashboards, data-driven products, and third-party BI tools.
- **Authentication & Security**: Solutions created are entirely agnostic to the technology used for authentication. For example, SSO with SAML 2.0 could be supported by the natural language solution.

Workflows, Process Automation and Complexity

- **Ability to support multiple use cases**: Many solution elements can be reused – such as building sub flows, linking flows, extending language resources, etc. Assets can be exported and imported and reused.
- **Support of multi-turn conversations**: Supports through its proprietary syntax called Teneo Linguistic Modeling Language, which allows the developer to specify exactly language constructs.
- **Transfers context with conversation**: The technology has recognition rates in excess of 98% and has the ability to escalate a query, for example to a human agent.
- **Recommended success metrics**: Works with the client to agree relevant success metrics: Typical examples of KPIs include: Percentage improvement in customer conversions; Number of service calls successfully completed; customer service calls handled automatically; Reduction in call volume to call centre; Customer satisfaction with EIA; number of intents successfully recognised; number of queries hitting the safety net.

Track Record, Partnerships & Enterprise IA Maturity

- **Market Presence:** Artificial Solutions now counts well over 200 customers globally; top verticals are Telecom, Banking, Insurance, Automotive and Retail.
- **Use Cases:** Customer facing or for internal processes, through many different channels such as web chats, mobile apps, smart home apps, in-car communication, messaging tools, etc.
- **Pricing Model:** Typically based on a license fee, a variable 'success-based' usage element typically based on overall sessions or successful interactions plus support & maintenance element and hosting (if required)
- **Customer support models:** Portfolio of services designed with an agile, feature-driven methodology for scoping, design, implementation, deployment and maintenance of Teneo solutions.
  Go-to-market partners: Through Teneo Partnership Program.
- **Customer deployments & case studies:** Clients include TIAA, Medtronic, Volkswagen Group, Vodafone, Shell, AT&T, Volvo, Skoda, Telenor, NTT, MPS, Webank, Widiba and many more.

Future Plans & Vision

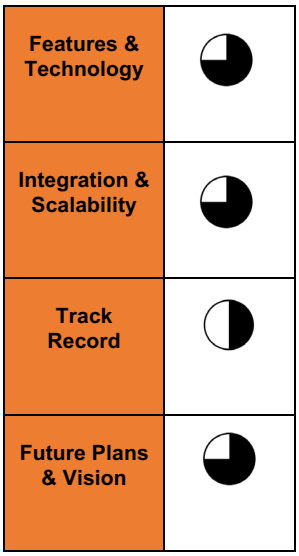
Data – the value of conversational data is only just being recognised. Measurable KPIs are increasingly important for CIOs to measure ROI – Teneo Data has been optimised to deliver tailored analytics. At a capability level, Conversational AI technology will rapidly start to deliver even more humanlike, conversational systems that are truly able to hold long, complex conversations around a broad range of topics and provide in-depth knowledge on specific subjects. This will ensure that Conversational AI based systems are able to solve complex issues and at the same time engage, entertain, socialise and exhibit emotional intelligence.

Key Differentiators

- **Conversational AI** - There's a world of difference between answering a question and holding an intelligent conversation; an engaging exchange will not only improve the customer experience but deliver the data to increase bottom line.
- **Enterprise** - Teneo's features for enterprise have automated coding to aid speed of development, web-hooks to allow flexible integration with external systems, and ease of portability to new services, devices and languages.
- **Data** - People reveal vast amounts of information in conversations; their individual preferences, views, opinions, feelings, inclinations and more are all part of the conversation. This information can then be used to feed-back into the conversation to increase engagement, train and maintain a conversational AI interface and analysed to deliver actionable business data.

ASAPP, Inc.

Founded: 2014
Investment/Funding: $260M
Number of employees: ~300
Revenue: N/A



Core Intelligent Assistant Products and Services
ASAPP provides an AI-Native platform to radically increase the productivity of the customer experiences team. The software platform learns what the best agents say and do to service customers and turns that learning into real-time suggestions for every other agent in similar situations. The platform then continuously self learns from every future interaction, increasing prediction accuracy, automating more and more of the agent workload and customer journey. ASAPP supports all interaction channels - voice and digital - and uses real-time transcription to deliver insights from its speech and quality management analytics.

Enabling Technologies

- **ASR/TTS:** Native, recent research paper illustrates 8.25% speech accuracy on Librispeech, the most used benchmark dataset for ASR research
- **Natural Language Processing:** Native
- **Dialog Management / Tooling:** Native. We support
- **"AI" / Machine Learning:** Products learn from and adapt to the humans who use the software, both customers and agents. Systems are built end-to end to improve, automatically and with high-quality data, and can be adjusted to prioritize different business goals. Invest heavily in deep learning and reinforcement learning approaches that learn to augment people end-to-end.
- **Process Automation:** Support using a robust approach to process automation

Conversational Intelligence Elements

- **Speech and/or Text Analytics:** Support
- **Enterprise Search and Discovery:** Support across omni conversations
- **Integration with CRM, ERP:** Support integrations
- **Knowledge Management Tools:** Support both management of Knowledge Base content in system as well as integrating with existing systems depending on preference
- **Tools/Support of curated content:** Curated content, while valuable, has inherent limitations as it is only as good as the human brain can devise. Approach is to dynamically and systematically create content based on what successful agents are actually saying - without any human involved attempting to write scripts or program workflow rules.

Platform Features and Functions

- **What works out of the box?** All capabilities are included in default implementation. Any integrations are custom, as are ML, NLP and ASR models that are trained exclusively on a customer's data.
- **Engagement Type/Modalities supported:** ASAPP is an inherently asynchronous product across all digital channels, which can enable a synchronous experience, but is not punitive should the customer leave the conversation for a few minutes. Tie synchronous voice conversations with asynchronous digital conversations.
- **Deployment Platforms supported:** Cloud
- **Intelligent Routing:** The ASAPP platform supports intelligent, ML-based routing and flexible concurrency.
- **Personalized CX:** Platform treats channel choice, multimodal support, proactive engagement, targeting, predictive capabilities and has ML-based predictive and proactive capabilities across channels.
- **Support of live agents:** The ASAPP platform has the largest impact with agent-assist machine learning capabilities, which drive massive efficiency and quality across the agent pool.
- **Analytics & Reporting:** Provides robust historical reporting, including customized reports; advanced real-time reporting and queue management; individual coaching capabilities; and integrations to export historical data and integrate with real-time reporting APIs
- **Authentication & Security:** Woven security throughout through enterprise, from management and product design through operations and development.
    - Identity & Access Management
    - Federated identity supporting customer SSO/SAML
    - Security and privacy by design
    - Redaction and masking of structured sensitive data
    - SOC 2 Type 2 Certification
    - PCI Certification for consumer payment integrations and highly sensitive data processing

Workflows, Process Automation and Complexity

- **Ability to support multiple use cases**: Yes
- **Organizational roles**: Support custom roles and permissions
- **Support of multi-turn conversations**: Yes
- **Transfers context with conversation**: Yes
- **Recommended success metrics**: First Call Resolution, Agent Throughput, Customer Satisfaction, NPS, assignments per hour, resolutions per hour. ASAPP takes a different approach, as not big believers in negative metrics like "containment." ASAPP focuses on the combination of end customer satisfaction and total organization productivity, which includes agent efficiency, fully automated interactions and semi-automated interactions.

Track Record, Partnerships & Enterprise IA Maturity

- **Market presence**: ASAPP has a track record of success among large, recognizable brands - including several F500 companies. Has presence in, and targets, many verticals including telecom, cable, airlines, retail, hospitality, banking, insurance, and more.
- **Customer engagement strategy**: Sells directly to customers and also has partnerships with leading services organizations such as EY and others. Can be up and running within a month, generating results from a customer's own data immediately. Increased value can be gained as customers choose to integrate the ASAPP platform further with other applications they have.
- **Customer support models**: ASAPP offers both initial implementation services as well as comprehensive support through the customer success organization. Also partner closely with customers to generate further success.
- **Go-to-market partners:** Partnered with several leading system integrators such as EY and others.
- Technology partners: Core technology is natively developed; do not partner for AI-related technology as this is a core competency. Considering partnerships in adjacent, complementary areas with leading technology vendors.
- **Highlighted customer deployments**: Vodafone, JetBlue, Charter Communications, Dish, American Airlines and many more.

Future Plans & Vision

ASAPP's vision is to make people fundamentally better. Apply AI disciplines to enable customer experience teams to achieve radical increases in performance, transforming not only the cost structure but also customer and employee satisfaction achievements throughout the organization. The state of the art in artificial intelligence today is not good enough to realize our medium- and long-term vision. That's why ASAPP is advancing the AI field with the ASAPP Research organization. Comprising dozens of PhDs in AI and Computer Science from the world's top universities, ASAPP Research is committed to developing innovations exclusively to make customer experience teams fundamentally better.

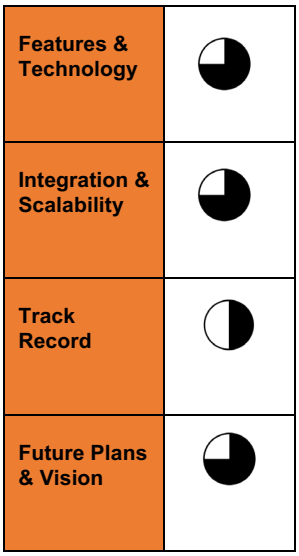
Topics Research and Engineering teams are working on include the highest real-time transcription accuracy in speech, applying AI to robotic process automation for faster and more consistent automated processes, more accurately predicting probability of a positive outcome (e.g., sale transaction, high CSAT score) at each utterance of a conversation, and telemetry capture and analysis of agent actions throughout an interaction.

Key Differentiators

- Native machine learning focused on agents - learning from what the best agents not just say, but also do, to successfully serve customers. ASR and Natural Language Processing models, developed by ASAPP Research specifically for use in contact centers. And then trained exclusively on a company's actual customer interactions.
- Real-time agent augmentation for all agents - voice and digital channels.

Cognigy

Year business started: 2016
Investment/Funding: Series A+
Number of employees: N/A
Revenue: N/A



Core Intelligent Assistant Products and Services
Cognigy supports customer service automation with its low-code platform, Cognigy.AI, that enables enterprises to automate contact centers for customer and employee communications using intelligent voice-and chatbots. With precise, reliable intent recognition, human-like dialogs and seamless integration into backend systems, Cognigy.AI creates superior user experiences and helps companies reduce support costs. Cognigy.AI is available in SaaS and on-premises environments and supports conversations in any language and on any channel including phone, webchat, SMS and mobile apps.

Enabling Technologies

- **ASR/TTS**: Provides a voice channel connector called Cognigy Voice Gateway. This feature allows any virtual agent to be deployed to voice channels by incorporating text to speech and speech to text services in line with message input and output. It leverages ASR/TTS technology from 3rd-party providers.
- **Natural Language Processing**: Comes built-in to the product and offers industry-leading performance. An external NLU connector feature to enable third-parties such as Watson, MS LUIS and Dialogflow.
- **Dialog Management / Tooling**: Features a smart intent building tool where user example sentences are trained via machine learning to the NLU model. While creating the model, predictive NLU quality indicators are displayed in real time for users to easily test, review and develop their agents.
- **"AI" / Machine Learning**: Cognigy.AI's on-board NLU is pre-trained with curated data from over 100 languages to support intent recognition and key phrase detection. Any other natural (or artificial) language is supported based on language-agnostic NLU algorithms.
- **Process Automation**: Provides standard connectors to UIPath, Kofax and other automation providers.
- **NoCode/LowCode service creation**: Projects created within the Cognigy.AI platform consist of multiple "flows" which contain simple graphical node based conversation flows. The user interface is designed for non-technical users but offers optional code nodes to fulfill the needs of developers. The flows are extremely flexible via use of the built-in node collection which come with options for performing dialog output, conversation logic, contact management or external communications.
- **Customized Integrations:** Extensions enable a virtual agent to connect to any third-party system. With these customized integrations, complex processes and procedures can be natively integrated into the AI. The nodes provided can be added to the respective flow as usual via the menu. Examples are integration of machine-translation, API requests from a webservice or custom extensions of end-user facing functionality.

Conversational Intelligence Elements

- **Speech and/or Text Analytics:** Sentiment analysis is provided out-of-the-box and can be used to control the conversational flow. Others can be connected through extensions.
- **Enterprise Search and Discovery**: Standard connectors to Elastic Search and others
- **Integration with CRM, ERP**: Standard connectors to HubSpot, Salesforce and others
- **Knowledge Management Tools:** Standard connectors to Zendesk, Service Now and others
- **Tools/Support of curated content**: Standard connector to Sitecore CMS

Platform Features and Functions

- **What works out of the box?** Cognigy.AI comes with prebuilt intent collections for a number pf use cases. There is no limit on the number of intents, training sentences, flows, endpoints etc.
- **Channels currently supported:** Endpoints connects user interface and the Cognigy Agent; can range from text based conversation to a conversation on your contact center phonelines.
- **Engagement Type/Modalities supported:** Synchronous and asynchronous modalities are supported, depending on channel and 3rd-party requirements.
- **Deployment Platforms supported:** Cloud/SaaS, dedicated cloud, private cloud, on-premises
- **"Intelligent Routing":** Part of the standard offering with Cognigy Voice Gateway
- **Personalized CX:** Optional GDPR-compliant user profiles can be used to store information and create personalized experiences across sessions and channels incl. a seamless cross-channel handover.

- **Support of live agents:** Offers a built-in live chat feature that enables customer service team members to both configure virtual agents and manually handle user conversations, all from the Cogngiy.AI platform. The live chat tool displays all user conversations that have active agent handover processes, allowing human agents to interact directly with end-users and take control of conversations or trigger specific bot responses.
- **Analytics & Reporting:** Cognigy.AI contains a built-in project analytics dashboard which displays key chatbot metrics to users within the platform. Conversation data is also available via the Cognigy Data feed which can be used to import live conversation data to external visualization tools such as Tableau and Power BI. Native analytics integration provided for Chatbase and Dashbot.io for each deployed endpoint.
- **Authentication & Security:** As a German company, Cognigy is bound to GDPR and European data privacy regulations while Cognigy is also accredited with SOC2 certification. Cognigy.AI offers features for deleting user data and disabling user data collection based on either flow logic or administrator control.

Workflows, Process Automation and Complexity

- **Ability to support multiple use cases:** Unlimited number of Virtual Agents per Cognigy.AI instance. Each Virtual Agent can have an unlimited number of flows.
- **Organizational roles:** Cognigy.AI is enterprise ready with a built-in user management module supporting SSO providers such as Azure Active Directory and Google. The access control module allows role-based and granular user permissions (~25 parameters) to be created and granted for platform accounts.
- **Support of multi-turn conversations:** Non-linear conversations are enabled in Cognigy.AI by the attachments feature that allows separate flows to be attached to one-another so that the intents are available within each parent flow. Cognigy.AI uses a modular flow concept which allows multiple flows to be created and accessed within an agent.
- **Transfers context:** Conversations can be customized to transfer a summary of the conversation transcript, conversation data and user profile information during agent handover process or channel switch.

Track Record, Partnerships & Enterprise IA Maturity

- **Market presence**: Cognigy is globally active with a focus on NA, Europe and APAC, and currently operates 5 offices (US, Germany, Australia, Korea, Japan). The product is designed industry-agnostic, the majority of current customers is from Manufacturing & Automotive, Finance & Insurance, Transportation & Hospitality, Service providers & Utilities, Government and Retail & E-Commerce. Use cases from all areas (B2C, B2B, B2E) have been implemented, proven track record for text- and voice-based virtual agents.
- **Customer engagement strategy**: Cognigy follows a hybrid sales approach: Traditional enterprise software sales PLUS product-led growth through an instantly accessible free trial version. The pricing as purely usage based with number of messages as the key value metric. The typical time to deployment is ~8 weeks from kick-off to go-live. For implementation, Cognigy relies on a global network of partners (Accenture, Deloitte, CGI etc.) and supports with know-how and trainings.
- **Customer support models:** Professional services department that supports customers and partners with know-how and training (incl. train-the-trainer). E-mail support is included for all customers.
- **Go-to-market partners**: +80 partners, c.f. https://www.cognigy.com/partner
- **Technology partners**: +25 partners, c.f. https://www.cognigy.com/partner
- **Highlighted customer deployments:** Public: Lufthansa, Bosch, Mobily (telco), Daimler

Future Plans & Vision

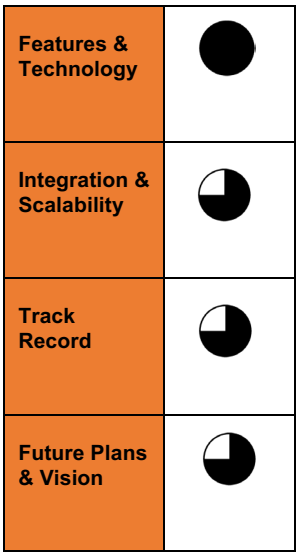
- **Democratized Conversational AI**: Developers started the conversational AI revolution - now non-technical business users ultimately take over the steering wheel from techies. No-code and low-code platforms will further mature in a way that anybody can build complex conversational AI experiences
- **Power of data: Smart Conversational AI analytics:** In the future, smart analytics will aggregate data, identify patterns and pro-actively provide actionably insights based on AI-driven analytics.
- **The UX tipping point: Let me talk to the bot, please!:** As virtual agents help "getting things done", users increasingly experience bots as powerful assistants and service providers.

Key Differentiators

- **Low Code and Developer Options:** Cognigy.AI provides a perfect balance in usability with low-code editors for non-developers alongside a full developer IDE experience.
- **Market Leading Natural Language Understanding:** Cognigy's NLU model has consistently proven to be the most accurate on the market with support for 100+ languages and features that enable users to easily deploy multi-lingual virtual agents.
- **Enterprise-Level Operations:** Cognigy.AI runs on Cognigy SaaS cloud or on private infrastructure as an on-premises deployment. It allows unlimited extensibility with customized back-end integrations that can be built by any citizen developer.

Creative Virtual

Founded: 2003
Investment/Funding: No outside funding or investors
Number of employees: N/A
Revenue: N/A



Core Intelligent Assistant Products and Services

- V-Person™ - virtual agent/chatbot technology, deployed across channels, including web, mobile, social media, messaging apps, voice, IVR, smart speakers, kiosks, contact center, HR, service desk.
- V-Person Live Chat™ - live chat technology; deeply integrated with V-Person; unique feedback loop allows live chat agents to help improve the virtual agent.
- V-Portal™ - knowledge management, workflow management and business intelligence platform; orchestration platform underpinning V-Person to bring together content sources, manage intents, blend together NLP, human curation of content, AI and machine comprehension.

Enabling Technologies

- **ASR/TTS:** Production implementations integrated with Alexa, Google Home and Cortana; can integrate with any third-party voice system, provided they have a full featured API.
- **Natural Language Processing:** Tool uses two core approaches for Natural Language Understanding; a neural net classifier provides an automated layer of understanding, allowing for build efficiency and reduced human effort. Users can define rules relating to words in the user question, meaning editors can always override the decisions of the neural net (i.e. the system is not a black box). This latter method also allows for recognition of complex features of language and context.
- **Dialog Management / Tooling**: V-Portal platform features a Visio-style drag and drop interface for creating dialogue structures across multiple transactions. Tree-like structures can be created through adding nodes to represent each step, alongside the contextual responses (branches) to transition to the next step.
- **AI" / Machine Learning:** Primary 'learning' workflow is built around the runtime's algorithms (principally DeepMatcher and Semantic) suggesting best possible match. Sentiment analysis implemented via the Python layer, either using external modules or via the integrated rule-based approach and NLP modules.
- **Process Automation:** Creative Virtual enables BPA in a wide range of contexts, both with and without the conversational modality. Internally, Creative Virtual is a firm believer in the power of pragmatic automation and curation and utilizes automation technologies internally in a wide variety of contexts.
- **No Code/Low Code:** Content curators have a low barrier to entry method to creating services and experiences within a conversational context. Various aspects of the user interface and presentation may be controlled from the V-Portal application in addition to the conversational / intent / dialogue aspects.

Conversational Intelligence Elements

- **Speech and/or Text Analytics**: Not a core feature; can integrate via third-party voice system with API
- **Enterprise Search and Discovery:** Solution features a fully scriptable runtime container (Python3). Utilizing the event-based scripting chronology, any required additional logic may be expressed within the tool itself.
- Integration with CRM, ERP: Various CRMs and other third-party tools via pre-built connectors.
- **Knowledge Management Tools:** V-Person components – the runtime and the management application – have python (2.x) scriptable event hooks for flexibility in achieving integration with external services and expressing business logics. Backend service integration occurs as familiar SOAP / RESTful.
- **Tools/Support:** Conversational applications are a novel blend of curated content and code. V-Portal enables management of assets and workflows which go into the full lifecycle of such applications.

Platform Features and Functions

- **What works out of the box?** Implementations done within days using predefined NLP and intent libraries.
- **Channels currently supported:** SaaS and on-premises deployments.
- **"Intelligent Routing":** Yes, can assign a relevant queue / customer designation at point of handover to another channel. In Live Chat, assign a queue based on customer question, profile attribute, launch point.
- **Personalized CX:** Make the virtual agent 'aware' of a user profile cookie to use attributes like language preference, line of business, page name, etc. More granular method relies on making a web service/API call to the client backend system (CRM, case history tool, etc.) to return account-level information.
- **Support of live agents:** Out-of-the-box feature with Live Chat system. Live Agents receive suggestions in their console. Also use the Virtual Agent knowledge Base content via search and browse. Agents can give feedback on Virtual Agent content, which creates a task directly in the V-Portal content management tool.

- **Analytics & Reporting:** Two, primary tools for reporting: Operational Reports (V-Portal) and Management Reports (Dashboard). Built-in reporting down to the object level to allow for quick updates by content and intent matching experts. The Reporting Dashboard is used for graphical representations of KPIs. Often integrate with 3rd party analytics a la SiteCatalyst, Google Analytics, etc.
- **Authentication & Security:** All users are assigned unique user IDs and granular permission profiles. Integration with a range of identity and authorization providers is possible (e.g. OAuth, SAML, MS AD et al) – and can deployed according to any industry/customer specific standards.

Workflows, Process Automation and Complexity

- **Ability to support multiple use cases:** User experience can be segmented based on channel and business area (e.g. user type), allowing one system (engine and editor) to power multiple 'touch points'.
- **Organizational roles:** The User Management module in V-Portal allows granular permissions to each user of the system (Content Approval, Script Editing, DTree Editing, Publish rights, etc.) Custom Permissions can also be created to control access to specific lines of business or channels within the knowledgebases.
- **Support of multi-turn conversations:** Objective Based Flow approach allows editors to define a list of objectives that need to be met before a particular answer can be given. Allow the editor to define objectives via simple UI controls and allow the chatbot to create the conversation around these objectives.
- **Transfers context:** Escalations to live agent (or any other support channel) can be performed at any point during the conversation. Typically pass the user's conversation, questions and personalization values, etc.
- **Recommended success metrics**: Created a standard scorecard that tracks engagement, escalation to live channels, accuracy, response quality, and a variety of customizable surveys.

Track Record, Partnerships & Enterprise IA Maturity

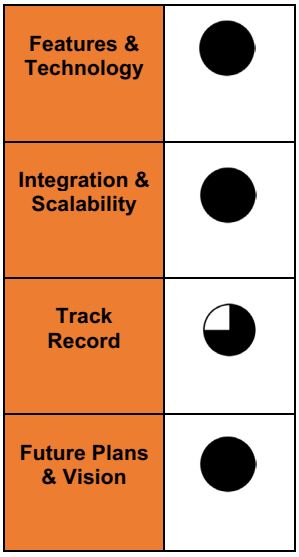
- **Market presence:** Global, headquarters in the UK with offices in the US, India, Australia, Singapore and Hong Kong. Extensive experience across verticals with many long-standing customers. Main use cases: general customer service and support; personalized support for logged-in customers; customized support and training for live agents in the contact center; internal service desk, supporting the on-boarding process and HR support for employees.
- **Customer engagement strategy:** Go-to-market strategy is a combination of direct sales and sales through partners. Have developed knowledge packs for industry sectors (e.g. Financial Services, Telecommunications, Service Desk, HR, etc.) and scenarios/user journeys for sectors (e.g. making payments, application process, resetting passwords, etc.) which, along with our Transcript Analysis Tools, reduces the amount of time needed to deploy a system. Offer a variety of pricing and licensing options depending on customers' preferences, including perpetual license, subscription, unlimited annual user license, annual concurrent user licenses, SaaS, cost per response, cost per session and cost per successful interaction. Offer consultancy for all deployments.
- **Go-to-market partners:** Extensive Global Partner Network, which includes Accenture, Automation Anywhere, Better Bots by Design, Continuous Technologies International Ltd, Deloitte, DXC, Fujitsu, Fuji Xerox, Genesys, Hong Kong Telecom, Nexify, Probe, Sogedes, Speakeasy AI, Spitch, Stellar, QPC, Tech Mahindra, Voitec.
- **Technology partners:** Own proprietary intent matching technology and analytics. Can leverage other tools in our deployments on an as-needed basis thanks to flexible architecture.
- Highlighted customer deployments, case studies:
    - American Family Insurance – *financial services* – deployed in 3 areas and expanding
    - IKEA – *retail* – recent deployment on website
    - HSBC – *financial services* – 18 deployments in 7 languages globally
    - BT – *telecommunications* – recently expanded to Plusnet brand
    - Lloyds Banking Group – *financial services* – 10 deployments across 5 brands
    - InterContinental Hotels Group – website, contact center & IVR for multiple brands
    - Rest – *financial services* – website, contact center, Google Home and Alexa deployments
    - Transport for NSW – *travel/ hospitality* – Facebook Messenger, website, Alexa and Google Home
    - RSPCA – *charities* – website and contact center deployments

Key Differentiators:

- Highly experienced team that delivers best practice expertise alongside our innovative/award-winning technology
- Industry-leading virtual agent, chatbot and live chat solutions underpinned by a powerful orchestration platform that blends together human curation of content, AI and machine comprehension
- Flexible integration options and unlimited customization by channel, product, business unit, user profile and device (including voice and contact center)

IBM Watson

Year business started: 1902
Employees:
Revenue:



Core Intelligent Assistant Products and Services
Watson Assistant is an end-to-end SaaS application that enables conversational AI experiences to help customers, employees, and agents resolve their problems in one session. Watson Assistant can be deployed on multiple channels: websites, applications, mobile, telephone calls, messaging platforms and many more. Watson Assistant applies market-leading AI to understand what users are asking and is designed to be an open ecosystem to ensure end-users get the information they need from existing customer care systems. Watson Assistant is also tightly aligned to IBM's broader hybrid strategy direction and can also run on any cloud including AWS or Azure, and on-premises.

Enabling Technologies

- **ASR/Text to Speech:** Watson Assistant can connect to native Speech to Text (STT) and Text to Speech (TTS) capabilities directly through a simple interface or users can customize STT and TTS models with sample data. Text to Speech uses the latest deep neural network technologies to generate natural sounding voices for a great user experience.
- **Natural Language Processing:** Watson Assistant provides native natural language processing capabilities that can be applied for 1) real-time intent and entity understanding in speech or text, 2) for automated clustering of historical data to accelerate training (intent recommendation), and for continuous improvement of the assistant's effectiveness (AutoLearning – Beta).
- **Dialog Management/Tooling:** Comes with a tooling interface to build and maintain all virtual assistant functions: intent training, dialog creation, connection to search systems, connection to backend systems via webhooks, connection to customer care platforms (e.g. Zendesk, Salesforce), messaging channels (Slack, Facebook), voice channels (e.g. Twilio), and digital channels via webchat.
- **"AI"/Machine Learning/Performance Optimization:** In addition to analytics, IBM offers advanced AI and machine-learning capabilities for 1) automated clustering of historical data to accelerate training (Intent Recommendation), 2) identifying conflicts within training data and suggesting resolution (Intent Conflict Resolution), 3) for extraction of FAQ Q&A pairs from existing websites (Search skill – FAQ Extraction Beta) and 4) continuous improvement of Assistant's effectiveness (AutoLearning – Beta). All 3 AI/ML capabilities mentioned above run in supervised mode.
- **No-Code/Low-Code service creation**: Watson Assistant is tailored for non-technical business users and offers a no-code service creation, configuration, and deployment experience.
- **Integrations:** Connect to Zendesk and Salesforce for agent-hand off. History and smart routing supported. Open source starter code to help developers connect to Genesys PureCloud, Twilio Flex, LiveChat ,etc.

Conversational Intelligence Elements

- **Speech and/or Text Analytics:** Watson Assistant provides analytics for speech and text interaction directly within the tooling interface. For more advanced analytics, users can securely access log data, process it, and analyze it in the business intelligence tools of their choice (e.g. Cognos). IBM has created a set of Jupyter notebooks and best practices to accelerate this work.
- **Enterprise Search and Discovery:** Watson Assistant connects to Watson Discovery — IBM's AI-powered enterprise search platform — through the Search Skill. Users can connect to document repositories on platforms such as Box or Sharepoint, and can ingest complex business documents such as scanned contracts, PDFs and Microsoft Office files.
- **Integration with CRM, ERP:** Integration to external systems can be performed via webhooks. Configuration directly within the Watson Assistant tooling interface. Users can then leverage the webhooks across multiple dialog flows.
- **Knowledge Management Tools:** Occurs through Watson Assistant's Search Skill, users can connect to a variety of knowledge bases – e.g. Salesforce Knowledge, website content, Sharepoint, Box and many more. Watson can then interpret the complex business documents within and extract explicit answers via Watson Assistant's webchat.
- **Tools/Support:** Intuitive tooling interface for users curate; Smart Document Understanding can leverage AI to curate complex business documents and break them down into easy to read answers.

Platform Features and Functions

- **What works out of the box?** Multitude of features and functionality for clients to leverage out of the box. Offer pretrained intents including common COVID-19 related material and intent recommendations. Users can automatically extract information from existing knowledge bases and website content.
- **Channels currently supported:** All core digital and messaging channels, plus offer seamless integration with an existing telephony or interactive voice response system through the Watson Assistant tooling.
- **Engagement Type/Modalities:** Support synchronous messaging across all of our channels including digital, voice, and numerous other channel integrations. Offer asynchronous messaging capabilities through SMS.
- **Deployment Platforms supported:** Can deploy solutions anywhere: with IBM Cloud Pak for Data, Watson Assistant on the IBM Cloud, on premise with own infrastructure, or third-party cloud vendor, AWS or Azure.
- **"Intelligent Routing":** Watson Assistant has pre-built integrations to Salesforce and Zendesk for live agent handoff. Intelligent routing provides context from the chat conversation and passes that into the respective customer service platform to ensure users get to the right agent without being passed around
- **Personalized CX:** Watson Assistant allows users to engage seamlessly across channels. Many clients leverage the voice channel for virtual assistant and rely on SMS messaging during calls to help validate users and provide detailed information that would be difficult to convey via voice.
- **Support of live agents:** Agent assist pattern lets clients leverage internal data such as product documentation, FAQs, and customer records and return that seamlessly back to the agent during a live call to support them. Can also listen into call in real-time to help provide agents with helpful suggestions.
- **Analytics & Reporting:** Offer analytics out of the box through the tooling interface, which address both coverage and containment, more detailed notebooks for deeper-dives into conversational history.
- **Authentication & Security:** Watson Assistant uses a monthly active user (MAU) pricing model. This type of user identification and authentication helps our clients reliably predict their monthly bills.

Workflows, Process Automation and Complexity

- **Ability to support multiple use cases:** Allows 100 unique virtual assistants within a single instance.
- **Support of multi-turn conversations:** Offer advanced AI capabilities like suggestions, disambiguation, digression, and context-specific prompting through multi-turn conversations.
- **Transfers context with conversation:** Context/history of the conversations is automatically passed to agents via the pre-built helpdesk integrations (e.g. Salesforce and Zendesk). In Watson Assistant context is automatically maintained by the assistant on a per-session basis. Both the dialog and the client application can read and write context variables.
- **Recommended success metrics:** Provided within the Watson Assistant tooling to help users visualize metrics and trends for: containment, active users, usage volume, top intent, and entities. Also include Autolearning to help reduce customer effort and Jupyter Notebooks for developers/data scientists.

Track Record, Partnerships & Enterprise IA Maturity

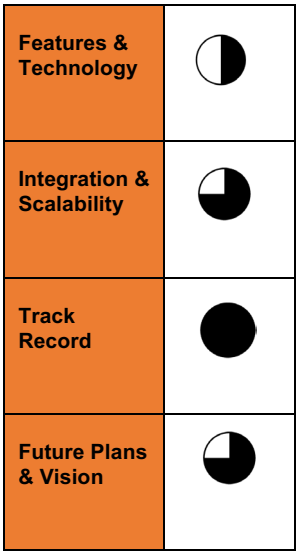
- **Market presence:** Watson Assistant sees continued growth in the Customer Care market across a wide range of industries — banking and insurance, telcom, government, computer services, retail, etc. Use cases are tied to customer and employee self-service, agent assist, and contact center insights.
- **Customer engagement strategy:** Watson Assistant now offers a set of simplified deployment plans, with one relatable and predictable pricing metric (monthly active users). We also offer a Lite plan with the pre-built webchat and service desk integrations so that users can get started for free. Customers can also opt to install Watson Assistant on-premises or on third-party clouds.
- **Customer support models: S**eeing an increase in clients getting started on their own with self-service plans. Engage IBM's professional services teams: Global Business Services**,** IBM Expert Labs, IBM Garage
- **Go-to-market partners:** Global systems integrators (e.g. Deloitte, Accenture, Softbank); value add resellers; independent software vendors
- **Technology partners:** For integration into existing digital or voice (IVR) channels, as well as integration into their helpdesks: Twilio, Genesys, Avaya, AT&T, Cisco, Nexmo, Blueworx, Facebook, Slack, WhatsApp, ServiceNow, Zendesk, Salesforce. Also embed in own solutions and products (e.g. VMware, Dxc, etc.)
- **Highlighted customer deployments:** Alaska Department of Labor, Caixa Banka (FSS/Banking), GM Financial, Idaho Secretary of State Services, Wind3, Siemens AG, National Health Services of Wales

Key Differentiators

- **First Contact Resolution**: Watson Assistant has been designed to improve first contact resolution rates. We offer capabilities to drive user engagement on the channel they prefer (digital or voice).
- **Connecting to the systems that matter:** Designed as an open ecosystem, connecting to systems, tools, and applications clients have already invested in - leveraging webhooks, connect into third-party systems.
- **Scaling & trust:** Make it easy for clients to scale securely for even the most complex use cases. IBM offers a single platform to cover both digital as well as voice use cases and can scale seamlessly across channels.

Inference Solutions (Five9)

Founded: 2006 *(acquired by Five9, Nov 2020)*
Investment/Funding: $18.6M
Number of employees: ~100
Revenue: N/A



Core Intelligent Assistant Products and Services

- **Inference Studio**, a code-free self-service design and reporting environment for managing virtual agents. The platform acts as an abstraction layer that enables self-service applications developed with Inference Studio to access engines and services including Google, IBM Watson and Amazon Lex.
- **React**, an event management environment allowing computer-telephony interface (CTI) to BroadWorks Xtended Services Interface (XSI), enabling virtual agents to monitor and react to activity on BroadWorks hosted endpoints and engage Studio services where appropriate.
- **QforMe**, Service built on Studio allowing virtual hold / hold my place in queue.

Enabling Technologies

- **ASR/TTS:** Inference virtual agents can leverage speech recognition and text-to-speech via third-party vendors. (ASR: Nuance, LumenVox, Google, IBM Watson; TTS: Any MRCP-compliant TTS engine, including Google TTS, including Wavenet)
- **Natural Language Processing:** Package and integrate Dialogflow, Amazon Lex and Watson Conversation
- **Dialog Management / Tooling:** Create conversations by dragging and dropping "nodes" on to a canvas. Those nodes do things like transcribing speech-to-text, making decisions based on speech or touch tone input, looking up information in third-party databases and responding in lifelike text-to-speech. With RMIT University have piloted a semi-automated virtual agent intent training technique called dynamic supervision.
- **"AI" / Machine Learning:** Leverage machine learning via an integration with Google Dialogflow, which utilizes a supervised learning approach.
- **Process Automation**: Supports a 'workflow' channel within Studio, triggered by either a webhook, time interval or specific time of day. Workflows are typically used for RPA. Also provides a Studio extension called Inference React, which enables virtual agents to trigger workflows based on BroadWorks XSI events, used for conditional call recording, conferencing, managing users and driving call center analytics.
- **NoCode/LowCode:** Inference Studio is a web-based platform that allows users to create, manage and deploy virtual agents with zero coding. The platform also includes a Task Library of pre-built templates that businesses and service providers can customize to deploy natural language IVA applications.

Conversational Intelligence Elements

- **Speech and/or Text Analytics:** N/A
- **Enterprise Search and Discovery:** IVAs built in Studio can access Watson Discovery's AI-enabled search technology to mine unstructured data and retrieve specific answers to customer questions over voice, chat and messaging channels.
- **Integration with CRM, ERP: F**acilitates integration and data sharing with third-party systems and applications via RESTful APIs. Prepackaged Integrations include: CRM: Salesforce, MS Dynamics 365, Copper; SMS: Nexmo, Twilio; Payment Gateways: Merchant Warrior, eWAY Payments, Fat Zebra, Authorize.net (U.S. only), Worldpay, Pay Trace, First Data (Pay Ezeey), Westpac PayWay; Scheduling: Google Calendar, Acuity Scheduling
- **Knowledge Management Tools:** Partners and end-user developers can use Studio data stores to house and maintain the answers they want to provide to the virtual agent, regardless of channel.
- **Tools/Support:** Watson Discovery applies text analytics and natural language processing to understand an organization's domain-specific language and accurately search through complex and disparate content.

Platform Features and Functions

- **What works out of the box?** Platform contains all necessary components to build and manage virtual agents for customer, sales and employee-facing channels. Includes an integrated Task Library of 40+ pre-configured, packaged IVA solutions for customer intents (checking an account balance, making a payment).
- **Channels currently supported:** Omni-channel capabilities include voice, IVR, web chat, in-app chat, text/short message service (SMS), and WhatsApp.
- **Engagement Type/Modalities:** Synchronous conversations over the phone as well as multiple asynchronous channels including SMS and In-App Messaging.

- **Deployment Platforms supported:** 100% SaaS-based with global points of presence.
- **"Intelligent Routing":** IVAs are often used to enhance or replace the intelligent network (IN). Integrated with leading hosted contact center platforms such as those provided by Cisco, BroadSoft, 8x8 and Five9, as well as leading CPaaS platform such as Twilio, Nexmo and Clickatell.
- **Personalized CX:** With Smart Attendant application, virtual agents can use speech recognition and custom text-to-speech prompts based on caller location, preferences and history, to provide customers with a personalized interaction rather than a standard tree of menu options.
- **Support of live agent:** Offers a Screen pop node that can help forward relevant customer information to a call center agent or sales representative when a call is transferred from a virtual agent. Studio also supports user-to-user (UUI) style information in both incoming and outgoing SIP Headers.
- **Analytics & Reporting:** Studio's Data Store is an application-wide controller that allows users to track and generate reports on key data captured by the call flow, such as the number of calls, virtual agent talk time, etc. For more advanced reporting, Firebase or Amazon Aurora options can be leveraged.
- **Authentication & Security:** Active voice biometrics support (ArmorVox); PCI-DSS and HIPAA compliance.

Workflows, Process Automation and Complexity

- **Ability to support multiple use cases:** Support hundreds of use cases across nearly every vertical for customer, sales and employee-facing channels.
- **Organizational roles:** Task designers log into a secure web portal. Standard user profiles for system access include administrator user, standard user and read-only user; assignment of different levels of system permissions can be further defined based on individual user identity.
- **Support of multi-turn conversations**: Complex, conversational interactions and dialogs are designed in Inference Studio by assembling series of nodes.
- **Transfers context with conversation**: Tasks built in any channel access shared (global) resources including Dialogflow agents, data stores, payment gateways, and omni-channel reporting.
- **Recommended success metrics**: IVR containment rate, overall service cost savings, the number of FTE that can be reallocated as a result of automation, the reduction in average handle time (AHT) for the live agents, and reduction in average time to answer a call.

Track Record, Partnerships & Enterprise IA Maturity

- **Market presence**: Highly diversified customer base – more than 550 end-users. Horizontal use cases include, but are not limited to, intelligent callbacks, frequently asked questions, natural language call steering, natural language address change, customer surveys and payments. Top vertical use cases include: Retail, Hospitality, Healthcare / Insurance, FinServ
- **Customer engagement strategy**: (Acquired by Five9, Nov 2020). Integrated into many of the leading UC and contact center platforms. Low cost of entry and low deployment complexity.
- **Customer support models**: Offer self-service platform and professional services capability
- **Go-to-market partners**: Diverse set of over 40 partners headquartered in 7 countries: USA, Canada, UK, Australia, France, Belgium, South Africa. Partners include AT&T, CTBS, Cisco, 8x8, Five9, Masergy, Momentum, Nextiva and Vonage.
- **Technology partners**: Google (Speech-to-Text, Text-to-Speech, Dialogflow); IBM Watson (Sentiment Analysis, Watson Discovery); LumenVox (Speech recognition and TTS), Nuance (Speech recognition and TTS, Amazon (Lex NLP), Auraya (Voice Bio), Clickatell (Messaging), Cisco, Twillio, Datatility/Equinix.
- **Highlighted customer deployments, case studies:**
    - Citizens Insurance: AI-powered virtual agents to weather hurricane season
    - Pizza Hut Australia: Building a new customer experience
    - Marriott: Virtual concierge frees up employees to do what they do best

Future Plans & Vision

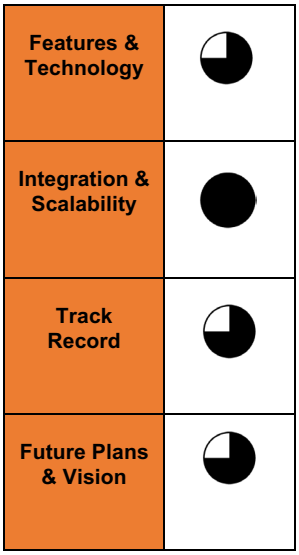
A clear vision for the ongoing innovation of Inference Studio, focusing on four key areas: developing the leading SasS platform for service providers; our easy to use, no-code service creation environment; our voice-first platform powered by next-gen NLP functionality; and increased omnichannel support.

Key Differentiators

- Affordable: No per minute, per API or per call charges. Easy to determine what a specific outcome will cost and provide all the components of an IVA solution in a single platform.
- Fast: With Inference, businesses can deploy new services in days. Previously they had to depend on long professional services engagements to bring new services to market.
- Flexible: Studio's vendor agnostic interface gives users greater flexibility and choice, and get access to the latest advancements without being locked into a single vendor and without negotiating direct agreements with each vendor.

Interactions

Founded: 2004
Investment/Funding: $162.8M (last $56M, 2016)
Number of employees: ~475
Revenue (either estimated or publicly available): $110M+



Core Intelligent Assistant Products and Services
Interactions provides Intelligent Virtual Assistants (IVA) that seamlessly blend conversational AI and real-time 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 customer experience and significant cost savings for some of the largest brands in the world.

Enabling Technologies

- **Speech Processing ASR/TTS** - Speech and Language Platform provides accurate automatic speech recognition (ASR) and natural language processing (NLP) that can recognize and understand complete sentences. Interactions use both proprietary and third party TTS to generate dynamic responses to callers.
- **Text Processing** - Utilizes same Curo Platform as for speech (minus the ASR step); includes both the same NLU capabilities and the extensions mentioned below.
- **Natural Language Processing** - NLU leveraged by the Interactions IVA focuses on intent classification and data capture, and it performs both with a mixture of AI and human assistance; if the input processed by the NLU models does not score a high confidence level, Human Assisted Understanding will direct the input be sent to an Intent Analyst, in real-time, for accurate intent determination and processing.
- **Dialog Management / Tooling** - Intent models are built primarily after the deployment of an application, which is a unique approach powered by the special use of Human Assisted Understanding. Initial models at deployment time are heavily supported by real-time human input, which simultaneously supports excellent dialogue performance on day 1 and creates labeled data for training the intent models
- **Data & Design** - Fully-featured conversational IDE that provides designers with a starting dialogue flow and a selection of standard modules with prepackaged intents, in order to streamline the process of starting a basic application. Verticalization efforts have extended this to a library of specialized archetypal flows that can provide a starter kit reflecting the most commonly occurring content in dialogues of that type.
- **Dialog Management** - Proprietary conversational development environment that allows for complex conversation flows to be designed in a graphical environment that combines dialogue interactions and back-office integrations to control a flow that is both hierarchical (allowing for reusable sub-flows to be encapsulated into modules that can be invoked at multiple places in the application) and nonlinear (enabling for the flow to be interrupted by firing global triggers and intent handlers).
- **"AI" / Machine Learning** - Processing includes proprietary machine learning capabilities, including deep neural networks (DNNs), support vector machines (SVMs), and MaxEnt, reinforcement learning, and sequence learning, etc. The appropriate ML algorithm is used based on the data and task at hand.
- **Intent Discovery** - The reasons why callers come into the contact center are often poorly documented by disposition codes; classification of entire dialogues by topic, or clustering of opening intent-bearing utterances by semantic similarity, can provide insight into the best opportunities for automation by highlighting the most commonly used intents. Human-in-the-loop machine learning models through have extended training models and building APIs for task automation.

Conversational Intelligence Elements

- **Speech and/or Text Analytics** - Proprietary analytics engine that uses NLP in conjunction with Machine Learning to surface unique insights and competitive analysis for the Social Engagement platform
- **Enterprise Search and Discovery** - FAQ Assist provides a conversational approach to knowledge retrieval and helps assign the most relevant FAQ or FAQs based on the user's intent. FAQ based responses can also be provided to agents upon escalation.
- **Integration with CRM, ERP** - Use standard APIs and integration techniques with client backend systems. Back-office integration includes a specification for data exchange, API availability, and integration services.

Platform Features and Functions:

- **What works out of the box?** - Traditionally started with generic models for many entity data types (numbers, dates, etc.) and large vocabulary general purpose recognition models that are then tuned for a domain using domain-specific training corpora.
- **Modalities & Channels** - Voice, chat (web or mobile) native IOS, Android, interactive SMS/text, Facebook Messenger, WhatsApp, Twitter, Line, Apple Business Chat, WeChat, also smart speakers
- **IVR Integration** - Interactions can integrate with a client's IVR or replace an IVR entirely. A number of integrations with client IVRs are running in our Production system today.
- **"Intelligent Routing" / Integration** - Can capture intent at a highly granular level (with the potential of hundreds of intents at the opening prompt) and route the customer to the correctly skilled customer service agent, working within our client's business rules. Interactions has successfully integrated with many leading customer interaction management platforms, such as Genesys, Zendesk, Avaya, Amazon Connect, Salesforce and Liveperson, via APIs or web services.
- **Support of Live Agents** -"Always On" IVA supports live agents and improves automation. Even after escalation the IVA can provide hints and recommended answers to agents. The agents can also re-engage the automation at any time to perform known tasks or take over conversations.
- **Human Supervision** - If the AI engine triggers a below-threshold confidence score, the audio or text is forwarded in real-time to an Intent Analyst, who listens to the utterance or reads the text string to guarantee the correct response is provided to the customer. Automation is used when possible, human assist when necessary, all in real-time, ensuring an engaging and productive interaction.
- **Analytics & Reporting** - Each client has access to a reporting and insights portal that presents a customized dashboard combining a standard set of performance reports with individualized KPIs and insights aimed at their unique business objectives and desired ROI.
- **Authentication & Security** - Supports three factors of Authentication: Knowledge-based, Device-based, and Voice Biometrics. IVA clients can choose what authentication factors are used for each transactions

Workflows, Process Automation and Complexity

- **Ability to support multiple use cases** - Yes: Automated room reservations, password resets, utilities start/stop after moving, bill payment and settlement, order status and management, account management, food ordering, claim status, handling debt collection and payments, conversational banking and FAQs.
- Recommended success metrics - Track common contact center KPIs such as AHT, FCR, containment rate, self-service fulfillment rate, CSAT, NPS etc. Examples:
    - MetLife halved misdirected calls, raised self-service rates to 25, boosted CSAT by 7%.
    - TXU Energy's self-service rate rose an impressive 18%, CSAT improved by 11%.
    - Westar Energy's self-service rate increased to 39%, customer satisfaction improved to over 80%.
    - Salt River Project nearly doubled the self-service rate achieved by its traditional IVR.
    - ERC, a global debt collection and BPO, saw 60% reduction in wrong numbers handled by agents
    - Constant Contact decreased overall call handle time by 15-30 seconds

Track Record, Partnerships & Enterprise IA Maturity

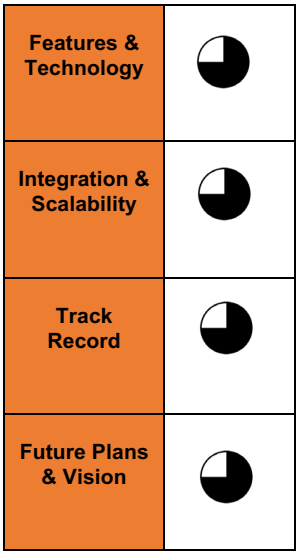
- **Verticals**: Telecommunications, Retail, Travel & Hospitality, Financial Services, Utilities, Healthcare, Insurance, Federal, Restaurants/Food Services, Automotive, Debt Collections and loan servicing
- **Go-to-market Partners**: Maximus, VAR: Sync3
- **Customer Deployments** - Utilities: SRP, Westar, TXU; Constant Contact, Lifelock (Symantec), GoDaddy; Financial Services: Mountain America Credit Union, Citi; Account Receivable Management : DCI, ERC; Food Services: Pizza Pizza; Insurance: Metlife, MAPFRE; Retail: 1800Flowers, Colony Brands

Key Differentiators

- **Adaptive Understanding** - Blends Artificial Intelligence and real-time Human Understanding to recognize complex utterances, classify compound intents and tag data to aid machine learning.
- **Proprietary, Patented Technology** - The Curo Speech and Language Platform (ASR, NLP, TTS, Dialog Management, Voice Biometrics and a suite of Machine Learning tools) has been developed over decades and continues to be enhanced to meet the challenges of applied AI for Customer Care.
- **Success-based Business Model** - IVA clients pay only for successful transactions that have been mutually defined before the IVA solution launches.

Kore.ai Inc.

Founded: 2013
Investment/Funding: $60M
Number of employees: 360
Revenue: $21.7M (estimated for FY 2020-21)



Core Intelligent Assistant Products and Services
Kore provides a conversational AI software platform that lets customers configure virtual assistants that automate business interactions. Central to Kore's low-code platform along with components required to configure and manage virtual assistants are its 3-NLP engines. These engines are: 1. Foundational meaning to analyze the structure of a user's utterance to identify words by meaning, position, conjugation, capitalization, plurality and other factors. 2. Machine learning that uses state of the art algorithms and models. 3. Knowledge graph, which provides the intelligence required to represent key domain terms and their relationships in identifying user's intent.

Enabling Technologies

- **ASR/TTS**: The Kore Platform supports third-party text as well as voice-based commands by integrating with third-party voice engines/technology providers. For the ASR and TTS capabilities, the platform integrates with leading technology solutions, including Google (WaveNet, GSR), Nuance (Vocalizer, Krypton) and Twilio.
- **Natural Language Processing**: Kore provides native NLP, which is patent-pending proprietary technology: A computational linguistic based approach called fundamental meaning (ML) built on ChatScript, an award-winning open source package for NLP that Kore.ai has customized; custom machine learning (ML) based approach; statistical model ontology-based Knowledge Graph (KG) based on domain-specific ontologies.
- **Dialog Management / Tooling**: Developers have control of defining the dialog turn and context switching experience for users. Can allow users to implicitly pause a task, start and complete another task, and then return to the original task. Provides a dynamic experience, accounting for natural conversational switching between intents and entities. Can handle multiple intents at the dialog management layer.
- **"AI" / Machine Learning**: Has native machine learning algorithms that use customized training sets and Deep Neural Networks for virtual assistant performance optimization. Suggests a different form of "unsupervised learning" for NL in which recognized utterances are automatically used to expand the language model and re-train the virtual assistant. This includes user-provided confirmations of intents for conflicts. This approach enables automatic, constant training of virtual assistants as the ML model improves its accuracy and excludes failed utterances.
- **NoCode/LowCode service creation:** Includes drag and drop bot building tools; dashboard for managing user and bot statics; guided help; inline tip; component reusability to accelerate virtual assistant deployment.

Conversational Intelligence Elements

- **Speech and/or Text Analytics:** Kore virtual assistants contextualize, remember and use data from conversations to execute human-like actions. The virtual assistants carry contextual memory at various levels. Analyzes user utterances and classifies them based on detected levels of anger, disgust, fear, sadness, joy, and positivity.
- **Enterprise Search and Discovery:** Provides tools to extract knowledge queries and answers from PDFs, CSV and web URLs. Once extracted, they can be verified by the developer/SME and can be added to the bot knowledge graph to train the VA to identify intents and respond.
- **Integration with CRM, ERP:** Supports integration by invoking API calls to third-party systems and by using the BotKit SDK, for internal service calls, if the APIs are unavailable. Kore has proven integrations with ERP and CRM tools/software such as ServiceNow, SAP, Salesforce, LiveAgent and ServiceNow. The platform can integrate with any third-party system, provided the APIs are available.
- **Knowledge Management Tools:** Using ML and advanced analytics data patterns, the platform can predict user behavior or anticipate follow-up questions. The platform also supports behavioral analytics for a large user base. Conversational flows map popular user paths, tasks and exit points.
- **Tools/Support of curated content:** Provides a way to declare and use variables within the bot via content variables. Content Variables can act as a central repository for maintaining all the bot responses. Also offer a solution named Findly, which is specifically meant to intelligently search for information relevant to a particular topic or area of interest. It is a cognitive, conversational, and complete search assistant.

Platform Features and Functions

- **What works out of the box?** Kore's dialog management, context management and sentiment management features work out of the box, including hold and resume, multiple intents detection, amend entity, etc. The platform also has built-in bot debugging that provides an entire trace of conversation understanding and drop off or failure. The bot analytics dashboard helps keep track of bot usage, behavior, and performance.
- **Channels currently supported**: Kore VAs perform across 30+ channels. The platform offers interoperability and integration capability with various social media sites including WhatsApp, Facebook, and Twitter.
- **Engagement Type/Modalities**: Supports synchronous and asynchronous engagement for IVR Channels.
- **Deployment Platforms supported**: On-premise, cloud (AWS) and hybrid deployment models.
- **"Intelligent Routing":** Integrates with third party live-chat and customer interaction management platforms, including live-chat products like SFDC LiveAgent, Live Chat Inc, ServiceNow Chat, Freshdesk, and IVR systems like Genesys, Avaya, Nuance etc.
- **Personalized CX:** Allows bots to be configured to proactively take actions independent of their invocation. Can be configured to prompt users with a customized message, guide them through completing an activity. Supports 'Alert Task' which sends periodic/triggered alerts to pre-configured user lists.
- **Support of live agents:** Escalation mechanisms for Live Chat Software via APIs, email and phone (outgoing call to agent, assuming agent availability). Supports out-of-the-box escalation / routing to a human agent using built-in intelligence and sentiment analysis capabilities.
- **Analytics & Reporting:** Native dashboard for monitoring and managing virtual assistants. Customers get real-time, actionable insights into VA performance through reports based on roles and permissions.
- **Authentication & Security:** Built-in security features such as multi-layered authentication, encryption, and redaction of content, secure connectivity (cloud and on-premises), and federal regulations on data privacy.

Workflows, Process Automation and Complexity

- **Ability to support multiple use cases:** Yes, provides pre-built VAs for industries and functions.
- **Organizational roles:** Master Admin, Bot Owner, Bot Developer and Bot Tester are created by the system and with each role a set of permissions are provided. Users can edit the permission settings.
- **Support of multi-turn conversations:** Using its dialog management feature, empowers VAs to handle human conversations, including interruptions, clarifications and context switching experiences for users.
- **Recommended success metrics:** Engagement duration, drop-off rates, live agent transfer, total number of tasks performed, count of active users, number of alert notifications sent, trend graph of chats and sessions.

Track Record, Partnerships & Enterprise IA Maturity

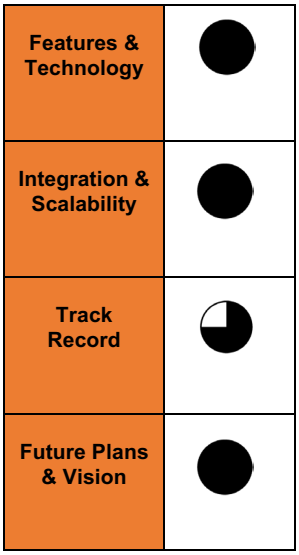
- **Market presence**: Provides to 100 of the Fortune 500, the top 4 banks, and top 3 healthcare companies. Kore.ai expects a CAGR of 120% and to reach $50 million in revenue by 2021, with most significant growth within banking. Primary verticals include banking and financial services, P&C insurance, life insurance, health insurance, airlines, hotels, transportation, business services (staffing agencies & professional Services), telecom, logistics. Built solutions for enterprise search, ITSM, HR, and object-based collaboration.
- **Customer engagement strategy:** Both inside and direct sales teams and partnerships with service providers. Half of our revenue is generated by internal sales and half through channel partners.
- **Customer support models:** Trains customer/partner developers and provides ongoing support.
- **Go-to-market partners**: Accenture, Capgemini, Deloitte, Cognizant, Doliotte, E&Y, HP, L&T Infotech, Tech Mahindra, Wipro, Virtusa, etc.; ISVs: Automation Anywhere, BMC, BluePrism, Finastra, Nuance, UiPath
- **Highlighted customer deployments:**
    - AB InBev: VA email sorter solution; reduced time consumption, improved team productivity.
    - CITI Group: SMS-based intelligent VA for credit card users to automate transactions.
    - Logan Manufacturing: Create, communicate and track the inventory dispatch and pickup schedule
    - Verizon: Deployed multiple VAs to automate 100+ task, both B2B and B2C

Key Differentiators

- **Superior NLP**: Kore's VAs are built on 3 NLP engines, that understand, manage and lead conversations to deliver higher automation rates with superior accuracy.
- **Intelligent Context Management:** Understand conversation context and connect intentions across multiple sessions; understand and identify personal preferences, past interactions, domain lingo, and context.
- **Explainable AI:** Eliminates the Big Tech blackbox by making the decisions of algorithms transparent, to let customers trace how interactions are processed, identify drop-off points, and continually optimize platform.

Nuance

Year business started: 1992
Investment/Funding: Public (NASDAQ NUAN)
Number of employees: ~8,500
Revenue : ~$1.5B



Core Intelligent Assistant Products and Services
The Nuance Intelligent Engagement Platform (IEP) provides one omni-channel platform for virtual agent (VA) and human-assisted, async or sync conversations, including biometrics capabilities. Enterprises can author VA/chatbots once and manage and deploy on all channels – such as voice IVRs or digital VA/Chatbots on asynchronous messaging channels like SMS, ABC, WhatsApp, FBM, web, in-app chat and more. Enterprises create consistent VA experiences across IVRs and digital channels enabling customers to easily switch from voice to digital or vice-versa without starting over. Conversational proactive outbound capabilities allow consumers to respond to an outbound SMS or WhatsApp message in the same channel and have it fielded by a VA/chatbot and, if needed, passed to live agents with context.

With an open and flexible framework and cloud-native services and APIs, IEP modules can integrate with solutions from other vendors (3rd-party chat, VAs, other AI services).

Nuance offers one conversational AI development tool, Nuance Mix, and unified reporting across channels with Nuance Insights. Customers can access all that the Intelligent Engagement Platform offers through one unified pricing model with a single price for IVR or digital VA/live agent conversations. Firms using Nuance IEP span all major verticals including financial services, insurance, telecom, retail, government, healthcare and travel.

Enabling Technologies

- **ASR/TTS** - Nuance offers over 50 TTS languages/dialects, >160 voices, and 90 languages/dialects across voice, NLU, and text spanning all major geographies. ASR and TTS can be utilized for various channels and devices, from the phone (to design IVR experiences), to mobile apps, TV, and the website.
- **Natural Language Processing (NLP)** - Foundation of the platform to power both text and voice engagements. This "one brain" approach allows for one underlying knowledgebase that updates and tunes across any channel quickly and easily. Has approximately 2,350 patents; 300 patent applications. Creates and maintains its own unique NLP engine that utilizes the latest advancements in DNN and ML.
- **Dialog Management / Tooling**: Shared dialog management enables organizations to utilize one platform to manage customer engagements in any channel (IVR, messaging, webchat, TV, etc.) Tools are used to design, deploy, and maintain the VA and automate intent and entity handling. Automatic clustering used to suggest the right intent for each user response from production. Nuance Mix offers a unique approach to managing multi-channel, multi-language virtual assistants and IVRs in a single project. Mix.nlu allows users to define and train a multi-language ontology with intents and entities, leveraging a comprehensive set of predefined entity types. Mix.dialog allows users to orchestrate the dialog logic. For voice-enabled deployments, Mix supports any combination of prerecorded prompts and TTS for system output and both speech and DTMF recognition for user input.
- **"AI" / Machine Learning**: In addition, the platform also intertwines AI and live agents seamlessly and offers active learning for both VAs and live agents. Agent Coach leverages an ML-based prediction model to provide next-best-response recommendations to live agents, resulting in higher agent SAT, and improved business results like higher sales conversions, lower AHT and better compliance
- **NoCode/LowCode service creation**: Mix enables organizations to build out dialog logic in a configuration-only environment that allows users to build out conditional logic and channel- and language-specific behavior without having to code. The Intelligent Engagement Platform is open by design, which enhances experiences by linking other apps; supports external interfaces for customers & live/virtual agents; feed client analytics, data lakes & real-time dashboards; flexibility to start small and add functionality.

Conversational Intelligence Elements

- **Speech and/or Text Analytics**: Captures customer insight from calls as well as text-based communications to monitor customer interactions. Can extract information from transcripts to create business-specific VAs, streamlining design and reducing time to create knowledge base.
- **Integration with CRM, ERP:** Provides a flexible, highly customizable integration framework that enable integration with third parties and/or their existing deployments through various APIs.
- **Knowledge Management Tools:** Can integrate with any third-party knowledgebase platform. Working on leading-edge AI to support low-effort creation of FAQ-style bots.

- **Tools/Support:** Web-based Authoring Tools (Mix.dialog, Mix.nlu, Mix.dashboard and others) that support creation of conversational dialog & NLU models. Clients have access to Portal, a Web-based tool that enables admins to configure client integrations, set agent skills, and add/manage targeting business rules

Platform Features and Functions

- **What works out of the box?** - Offers vertical-specific packaged design, from leveraging existing data stores (FAQs, search engine data, chat logs/transcripts, customer IVR data) to language models for each supported language and vertical-specific NLU intent starter packs, social interactions, etc.
- **Channels currently supported**: Phone/IVR; Messaging: SMS, ABC, FBM, Twitter DM, GBM, WhatsApp, Viber, Line, Telegram and soon Instagram & RCS; Web/Mobile/in-app chat; Smart devices such as television, and soon Alexa and Google Home; Two-way and one-way video for web/mobile web.
- **Engagement Type/Modalities supported**: Asynchronous and synchronous; Inbound initiated and conversational proactive outbound initiated; Speech, text, rich text, rich widgets
- **Deployment Platforms supported**: With a cloud-native foundation, solutions can be deployed in Nuance datacenters, third-party cloud, or on-premises, offering a broad choice of deployment scenarios.
- **"Intelligent Routing"**: Routes consumers from one channel to another; utilizes real-time data from the customer journey to direct consumers to the agent (VA or live agent) with the best skill set to help. Asynchronous conversations enable both users and agents to be flexible.
- **Personalized CX:** Serves consumers on their channel of choice with a "build once, deploy many" approach to enable the deployment of shared NLU and Dialog content across multiple channels; providing targeting capabilities to present the right engagement at the right time.
- **Support of live agents:** VA can seamlessly escalate to the best skilled human agent with full context
- **Analytics & Reporting:** Nuance Insights: intuitive, omnichannel reporting/analytics solution that provides monitoring/near real-time actionable intelligence to improve on going optimization/ROI. Provides organizations with a unified view of customer engagement via highly secure/scalable data platform
- **Authentication & Security:** Secure every channel with layered approach; advanced voice and behavioral biometrics engines, intelligent detectors, ConversationPrint language analysis, anti-spoofing technology.

Workflows, Process Automation and Complexity

- **Ability to support multiple use cases:** Differentiators include: conversational design expertise; enterprise-grade, mission-critical, secure technology; complex multi-turn dialogs and advanced semantic reasoning;.
- **Organizational roles**: Recommend Project Manager; UI/Marketing Lead; Content Manager; NLU Specialist; Subject Matter Experts; Technical Team; Testing Team; Reporting Specialist; Optimization Lead
- **Support of multi-turn conversations:** Supports multi-turn and multi-slot conversations for the VA and IVR; (enables fewer turn conversations that are correlated with higher VA containment)
- **Transfers context with conversation:** Targeting engine and business rules enable the platform to collect data prior to the user invoking the VA; this data can be used to capture user intent, offer potential questions.
- **Recommended success metrics**: For sales-focused: improved conversion rates, uplift in average order value, increase in revenue; For service-focused VA: CSAT and increased self-service rates

Track Record, Partnerships & Enterprise IA Maturity

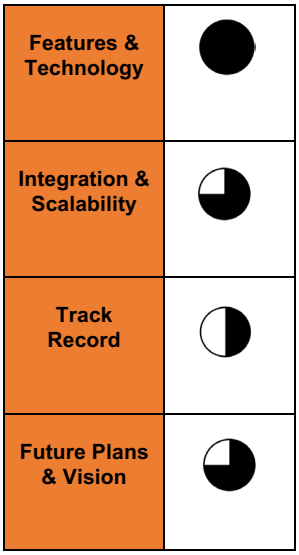
- **Market presence:** More than 6,500 enterprises; customers include more than half the world's largest banks and telecom companies, as well as many global travel, logistics, government, and retail organizations.
- **Customer engagement strategy:** Supports the full spectrum, from licensing individual components (i.e. ASR, TTS, NLU, etc.) to full solution design across multiple channels and modalities.
- **Go-to-market partners:** CCaaS partners such as Avaya, Cisco, Genesys, NICE InContact, Mitel, Enghouse Interactive and Five9; system integrators like IBM, Telstra, Verizon Business, AT&T, Presidio, Accenture.
- **Highlighted customers:** H&M, Rakuten, USAA, Cabify, Albertsons, and hundreds more.

Key Differentiators

- **Omni-channel customer engagement, with seamless blend between AI and live agents:** Delivers a truly integrated omni-channel customer engagement solution for VA and human-assisted conversations, on messaging, voice, and video channels. Targeting and proactive outbound allow VAs to initiate conversations proactively on messaging and voice channels and route customer responses back to a VA/live agent
- **DNN-based Advanced NLU:** Pre-training using large-scale data and Deep Neural Nets enables the NL model to better generalize the user input and more accurately identify the words, intents, and entities with less adaptation required by the author of the NL model.
- **Open Platform with Rich API Integration Framework:** Option to deploy out-of-the-box packaged VA or use Conversational AI APIs to deploy custom solutions. The platform delivers the kind of flexibility and high customizability that is often critical for successful enterprise deployments.

Omilia

Founded: 2002
Investment/Funding: $20M (2020)
Number of employees: 300
Revenue: N/A



Core Intelligent Assistant Products and Services
The Omilia Cloud Platform® offers customer service automation solutions in a secure and consistent fashion. Core capabilities are offered either separate as individual micro-services, or integrated together in a single service that clients can consume all at once. OCP® provide a full stack of building blocks for Conversational Voice and Conversational Chat as well as independent and configurable natural language sub-flows and Conversational Insights with a set of rich, graphical dashboards to improve operational efficiency conversational AI services.

Enabling Technologies

- **ASR/TTS**: Speech-To-Text technologies for the contact center with a state-of-the-art deepASR® engine that runs on Deep Neural Networks and to maximize performance. Custom-trained from scratch, recognizing 24 languages. Also offer transcription services, STT and TTS services optimized for IVR virtual assistants.
- **Natural Language Processing**: deepNLU® (Natural Language Understanding) Engine works to extract meaning from any transcribed (textual) utterance of free unstructured speech. deepNLU® 's role is to categorize customer requests with maximum accuracy and applies multiple layers of language analysis on each individual customer utterance.
- **Dialog Management / Tooling:** Designed with three basic natural language building blocks sandboxed: Coding & Development; Linguistics & Semantics; Call-flow & business logic design. Changes in application logic can happen on the fly and allows for a single-point of integration with backend systems.
- **"AI" / Machine Learning**: Omilia platform supports both Machine Learning based and Algorithmic-Ontology based approaches for intent identification, and detection of entity sequences and relations, as well as a fusion methodology for reconciling the output of the two modules (ML and Algorithmic).
- **NoCode/LowCode service creation**: miniApps® are independent and configurable natural language speech dialog components that handle a complex task in a single, configurable interface. Pre-trained and pre-tuned, they can accurately handle exceptions and real-world conditions, complete with data validation, disambiguation and error recovery strategies.

Conversational Intelligence Elements

- **Speech and/or Text Analytics**: Provides out-of-the-box reporting and analytics with rich, graphical dashboards of key performance metrics in real-time in order to pinpoint opportunities for continuously improving the Virtual Assistant and gaining a deeper insight into what customers are saying.
- **Integration with CRM, ERP:** Platform includes a flexible Java integration layer to any type of internal clients' systems. Enables integration with any type of internal system that offers an API, either be a web interface such as a SOAP or Rest API, or integration with a RDBMS system. API calls can be executed in real time and on-demand, based on the caller's request or information from previous web service calls.
- **Tools/Support of curated content**: Offers an automated caller experience that enables efficient distribution of routine information to callers. The Intent OCP miniApps® allows callers to speak their request or concern to the automated system using speech and natural language understanding. Reduce live calling volumes by handling more requests in the IVR; help your decongest contact centers by transferring out callers.

Platform Features and Functions

- **What works out of the box?** DiaManT® and deepNLU® handle changes to a referred entity, which are common in task oriented dialogs. While all this functionality is automated and pre-built, if required the developer can still access this information and configure the application behavior ad hoc to cover for edge cases. Out of the box reporting include sessions metrics, intents distribution, self-services, etc.
- **Channels currently supported:** Omilia's Virtual Assistant service offering consolidates and manages all customer care interactions across all digital channels (social media, live chat, email, and IVR) all into a single view and dialog management platform. automation by supporting conversational self-service across all channels. Has integrated dialog management platform with: Genesys Chat Bot Gateway, LivePerson, Freshdesk, Talkdesk, NICE inContact, Zendesk, Facebook Messenger, Twitter, Whatsapp.

- **Engagement Type/Modalities:** Provides asynchronous conversation abilities where incomplete chats can be saved and resumed at a later time / session. Asynchronous messaging is the ideal container for bots and artificial intelligence. These technologies can work in tandem to collect information, suggest helpful self-service options, and route issues to the proper agents ensuring that your customers' issues are resolved as quickly and efficiently as possible.
- **Deployment Platforms supported:** Option to deploy the solution on-premise at geo-redundant data centers or cloud, or with a fully managed hosted deployment from geo-redundant Cloud service (OCP).
- **"Intelligent Routing:** Virtual Assistant provides the capability to escalate seamlessly to a live human agent on any channel, as well as include all the contextual information from the users dialog with the VA, so that the human agent knows what was discussed with the VA. DiaManT can hand off to a live human on IVR via CTI, Web Chat, Facebook Messenger, SMS, and Mobile App.Avaya Voice Platform
- **Personalized CX**: Omilia's automation solution is able to verify a caller's identity. Combined with the power of the DiaManT platform (tracking and retaining context, working across all channels, not losing context between channels) enables a highly customized experience that feels naturally tailored to each caller.
- **Support of live agents**: Products will offer multiple features including: Agent Assist Knowledge Base Assist: Dynamically push product and service information content to the agent desktop in real-time, based on what the customer and agent are discussing. Agent Assist Script Adherence Analytics: Visualize and analyze script adherence, in real-time, if Agents are following the designated script. Agent-Assist Customer Sentiment Analysis & Agent Discourse Assist: Analyzes phone conversations and provides real-time guidance. Based on energy, interruption, empathy, participation, tone, and pace.
- **Analytics & Reporting**: Provides out-of-the-box reporting and analytics with Conversational Insights®, dozens of reporting options: KPIs, success rates, performance, intents, functionalities & solutions. Direct from the system without any analysis from a human. The reports present key metrics of the system's performance in an analytical way — making it possible to identify areas of improvement (e.g., which calls should be further automated, re-organize the call center agents to better serve the callers).
- **Authentication & Security:** Omilia solution access control is based on an RBAC model that ensures that assigned access is the minimal required for each application role; utilizes own identity management and authentication system; has established formalized procedures per certified ISO 27001 framework.

Workflows, Process Automation and Complexity

- **Ability to support multiple use cases:** Omilia uses a standard XML format that integrates natively to Git repositories. Combined with tools like Omilia's Testing Studio and Conversation Studio, multiple developers can develop code and run testing scenarios in parallel.
- **Organizational roles:** Offers purpose built user interfaces that allow teams to share the tasks needed to maintain a complicated automation experience.
- **Support of multi-turn conversations:** Native to all Omilia interactions, crucial as each new time the user responds to DiaManT®, the NLU Engine combines: **a)** any previous dialog history, **b)** Dialog context **c)** information queried from the back-end (i.e. CRM, attached data, Data Warehouse Database, etc.) to achieve maximum understanding.
- **Transfers context with conversation:** Ability to transfer contextual data, Omilia's omni-channel platform allows for seamless handover and continuity from one channel to another, providing one unified user experience across all channels.
- **Recommended success metrics:** Concept Identification Success Rate ("CISR"), Task Completion Rate ("TCR"), Semantic Analysis Depth ("SAD"), and others.

Track Record,

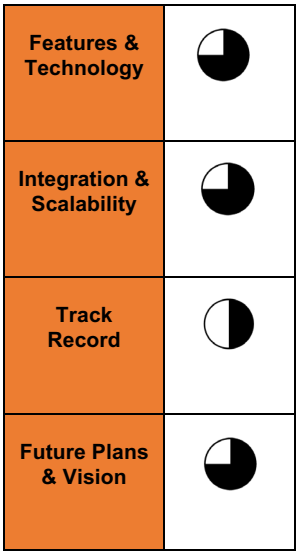
- **Market presence**: Verticals served: Banking and securities, Healthcare, Insurancem Public sector, Retail, Energy, Transportation. Utilities
- **Use cases**: Royal Bank of Canada; Publicly available: https://omilia.com/case-studies/
- **Customer engagement strategy**: Omilia's primary engagement strategy is around CCP miniApps approach: Drop into any existing customer experience (existing CCaaS or CX environment); Go live FAST (matter of minutes or hours); Zero-coding (wizard driven configuration); Cloud platform (no install); Existing integrations (no custom work); Focus on ease of use. All technologies (dialog design, diagnostic and troubleshooting, reporting, tuning, adaptation) are aligned to support ease of use and deployment.

Key Differentiators:`

- Owns the full technology stack required to deliver automation applications: Machine Learning, Natural Language Understanding, Speech to Text, and Dialog Management.
- Focused on client outcomes: Strong pre-sales / post-sales engagement, focus on performance indicators.
- Native Identity and Validation offering (ID&V): Any speech application can add voice biometrics, and verify caller identity, leads to a highly engaged, highly customized user experience tailored to each caller.

Uniphore

Year business started: 2008
Investment/Funding: $71 M
Number of employees: 260
Revenue: N/A



Core Intelligent Assistant Products and Services
Uniphore provides a conversational service automation (CSA) platform that combines Conversational AI, Robotic Process Automation (RPA), Workflow Automation and Natural Language Processing (NLP) to personalize, automate and optimize the entire customer-agent conversation in real-time. The CSA platform has four distinct products:

- U-Self Serve (formerly akeira) – AI-driven intelligent virtual assistant that delivers next generation CX using Conversational Packs to set up intents in a matter of minutes by importing intents from a pre-built library, a Visual Modeler to create and edit conversation flows and train intents to be deployed in multiple channels, continuous improvements of the intent recognition model using Assisted Training, Sandbox testing to develop intent conversation flow and Intent based routing of calls to a live agent.
- U-Assist (formerly auMina Real-Intent) – leverages real-time call transcription to deliver in-call alerts, guidance and automation of agent after-call work summaries and call dispositions.
- U-Trust – frictionless agent authentication using voiceprints/voice biometrics
- U-Analyze (formerly auMina) – 100% post interaction analytics (speech, email and chat) to deliver actionable insights for smarter agent quality management and compliance.

Uniphore's platform enables holistic analysis of every interaction agents have with customers through every medium – keeping information from calls, chat and emails all in one place.

Enabling Technologies
U-Self Serve (akeira) Intelligent Virtual Assistant

- Conversations driven by Natural Language Understanding ML models (native or third-party)
- Visual Conversation Flow builder (Intent flow, Training data for learning, Multi-channel, Multi-language and Multi-mode)
- No Code development of Multi-turn branched conversation flows with personalized responses to the user at every single turn
- Next-best intent recommendation
- Seamless context switching between topics in a conversation
- Language independent intent detection NLU*
- Simulate conversation flows in-App with a built in Simulator "AI" / Machine Learning / Performance Optimization (human supervision, supervised machine learning)
    - Supervised machine learning for Intent driven conversations
    - Human Assisted Training – Continuous management of the IVA
- ASR/TTS (native or third-party)
- Process Automation
    - Recently acquired an exclusive third party license for Robotic Process Automation (RPA) technology from NTT DATA to drive innovation, quicken time-to-market and deliver intelligent front office automation for modern contact centers

Conversational Intelligence Elements

- Personalization of responses to the end customer
- Use end customer profile to drive a specific conversation flow such as recommendations
- Guide the user towards a specific outcome with a specific chained flow
- Use complex business logic using data from multiple 3rd party cloud and on-premise systems to drive the flow of a conversation.
- Rich presentation of data for cards, widgets, charts in digital channels for easy consumption of data
- Identify user inputs which are irrelevant to or out-of-scope of the current VA context
- For every user input not resolved, akeira recommends the best possible Intent to aid training
- Ability to securely integrate with APIs from on-premise and cloud systems such as ERP, CRM, KB, etc.

Platform Features and Functions

- What works out of the box, including metrics? (categories supported, number of intents per category, etc.)
  - Health Card to track and control the health of a Virtual Agent
  - Operational Metrics - Intent accuracy, % containment, Top Intents, Top Reasons for Hot Transfer

- Channels currently supported:
  - Phone (IVR)
  - Web – (chatbots)
  - mobile-app chat and voice

- Engagement Type/Modalities
  - Synchronous Support – IVR, Web, Mobile

- Deployment Platforms supported
  - Cloud
  - On-premise

- "Intelligent Routing" and integration with Customer Interaction Management Platforms
  - Secure Context transfer API from akeira for Intelligent Routing to agents
  - Context API provides intents, end customer profile, reason for transfer, incomplete Intents, etc.

- Personalized CX
  - akeira has the ability for proactive engagement where specific end customers can be given recommendations of offers, products, etc
    - While the product recommendation model itself will be outside the scope of Conversational AI – akeira has the capability to drive a conversation with this aim

Workflows, Process Automation and Complexity

- Ability to support multiple vertical and horizontal use cases
- Maintain an Organizational structure and hierarchy of managing VAs
- Support of multi-turn conversations and secure integrations with on-premise and cloud business systems
- Transfers context with conversation (w/ agent, between channels)
- Conversational Analytics API to use conversation session meta data in existing data lakes to extract relevant metrics

Track Record, Partnerships & Enterprise IA Maturity

- Market presence
  - Presence in APAC and North America
  - Healthcare, Insurance, Financial Services are the top vertical use cases
- Go-to-market partners
  - Sitel
  - FirstSource
  - WNS
  - NTT Data
- Technology Partners
  - NTT Data
  - UiPath

Future Plans & Vision

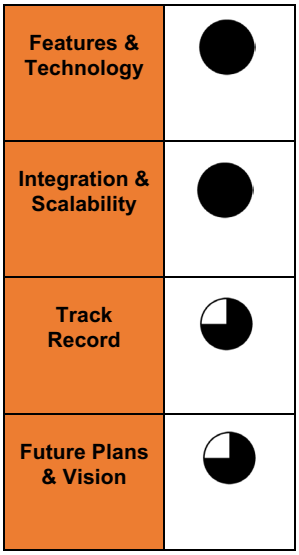
  - Ability to deploy in just days a purpose specific IVA
  - Allow customers to turn on and turn off specific IVA's On-demand

Key Differentiators

- Context switching - Users can switch topics seamlessly and be guided to target outcome
- Best Intent recommendation to help IVA designers in continuous bot training
- Visual modeler – design, simulate and test in IVR, mobile and web in multiple languages

Verint

Founded: 1994
Employees: 6400
Revenue: $1.34B (Jan 2020)



Core Intelligent Assistant Products and Services

- Verint Intelligent Virtual Assistant: Verint® Intelligent Virtual Assistant (IVA) is the leader for trusted, automated, natural-language conversational AI for supporting large enterprises in delivering meaningful ROI and sustainable self-service results for customer engagement and workforce support across channels.
- AI Blueprint: AI Blueprint is an AI and machine learning powered conversation analysis system that provides a roadmap for AI implementation and improvement opportunities for existing IVA implementations. Organizations can use AI Blueprint accelerate their AI, IVA and knowledge strategies, and plan for long-term automation success, by aligning needs to business goals.

Enabling Technologies

- **ASR/TTS:** Native Verint ASR for real-time, natural language speech understanding and can also apply third-party ASR to platform through Verint IVA Voice Extension.
- **Natural Language Processing:** NLP is native through Verint IVA; platform can also support third-party.
- **Dialog Management / Tooling:** Dialog Management and Tooling are native to the Verint IVA and support smarter self-service, with conversational AI tools designed for business users and integrated to front and back-end systems, creating an integration platform that enables data flow across interfaces, enterprise applications, and systems of record. Verint helps enterprise customers create, grow, and optimize an IVA solution using a four-step approach: Discover and Understand; Design and Customize; Engage and Support; Measure and Improve.
- **"AI" / Machine Learning:** Machine Learning is one component of the intelligent system that supports the Verint IVA. Our proprietary Machine Learning tools are used both for defining the model and during runtime. Verint also leverages semantic information for specific applications. The Verint IVA uses a variety of Machine Learning techniques that include supervised and unsupervised learning to analyze IVA interactions and pinpoint opportunities for enhancement. ML-driven insights identify and prioritize opportunities, trends, and risks with conversations for continuously improving the IVA and informing across the business, making human trainers super-human and removing bias and blind spots in knowledge expansion.
- **Process Automation:** The Verint Conversational AI Platform supports process automation through its open and modular architecture. The input to the IVA can be an external event that Verint can respond to, and Verint can trigger events and pass along information to help process the events. The Verint IVA fits nicely with process automation as it has the ability to consume external information, perform logic, mine information from the user's input, and emit information and trigger events based on its understanding.
- **NoCode/LowCode:** Offers low code Quick Start options for fast deployment.

Conversational Intelligence Elements

- **Speech and/or Text Analytics** - Full-function speech analytics (and text analytics, if the escalation is not voice) product that transcribes and analyzes the interaction. Insights from both the IVA and agent interactions are used to optimize the customer journey. Text Analytics is available to analyze and extract insights from IVA interactions, as are analytics tools that are available with the Alme platform.
- **Enterprise Search and Discovery:** Verint IVA's intent recognition and associated concept structures provided by the Conversational AI platform can be run against any series of text for search and discovery.
- **Integration with CRM, ERP:** Most enterprises have unique deployments of their systems of record, or require the IVA to integrate through enterprise middleware. Verint approach is to have the conversational AI platform provide an integration layer which uses multiple integration frameworks and reusable components to quickly achieve a requirements-driven integration. We have done this integration with over 300 different systems, including: Databases, CRM Systems, ERP, HCM/HR Systems, RPA, WFO, Back-Office, CCaaS, KM, Service Desk, Search, and more.
- **Knowledge Management Tools:** Supported by an intelligent system comprised of knowledge management tools, including Verint Knowledge Management and IVA Administration and integration tools.
- **Tools/Support:** Workflow tools used to design interactions, define actions, generate content, and deliver a personalized experience. Verint KM is also an add-on module that provides AI-augmented knowledge and works with the Verint IVA to improve and enhance digital adoption, intelligent search, content creation and

the customer experience.

Platform Features and Functions

- **What works out of the box?** Skills include: customer service functions; e-commerce functions, form completion; launch new offers in real-time; IT Helpdesk functions; Human Resource functions; work from home support; healthcare member services (payers) support; healthcare product and disease support; brand persona and characteristics; live chat escalation; RPA; back-office support and functions (accounting, operations, ticketing system, services, procedures, requirements, facilities, standards, special requests, etc); risk and compliance with internal live agents; collections; fraud; common courtesy.
- **Channels supported:** Web chat, voice/telephone line, SMS messaging, email, Android App, iOS app, Microsoft Teams, AWS Alexa, Google Assistant / Dialogflow, Slack, Facebook Workplace, Facebook Messenger, Twitter, Desktop.
- **Engagement Type/Modalities:** IVA and Conversational platform supports contextual persistence in information state and across channels, including dynamic asynchronous messaging.
- **Deployment Platforms:** Can be hosted in the Verint cloud, customer cloud, or on-premise.
- "**Intelligent Routing"**: Supports intelligent and unified routing for optimizing channels, use cases and ROI.

Track Record, Partnerships & Enterprise IA Maturity

- **Market presence:** Financial, Pharmaceuticals, Healthcare, Public Sector, Communications, Insurance, Services, Travel, Retail, Automotive, and Technology.
- **Primary use cases:** Multi-functional, multi-lingual supporting comprehensive conversational and actions for Customer Engagement and Workforce Support; including Customer Service, Conversational Marketing, Real-time Agent Assist, IT Helpdesk, Human Resources, eCommerce, and more.
- **Customer engagement strategy:** Flexible, open business model that enables enterprises with all types of multi-generational infrastructure to start and move at their own pace without disrupting existing business processes. Verint IVA's platform approach, enables Verint to work with components that the customer may choose from different vendors, it has an open approach to work with the customer's needs and avoid the costs of rip-and-replace.
- **Customer support models:** Verint offers Basic, Standard, Premium and Premium Plus Support Levels. Verint provides industry standard or better (meaning more beneficial to our customers) terms and conditions to simplify negotiation processes.
- **Technology partners:** SDL for Foreign Language Machine Translation; third-party STT and TTS service for voice channels as well as native mobile STT capabilities in app, smart speaker, or mobile web deployments.

Highlighted customer deployments:

- Large automotive retail club with touch-tone IVR yielding only 10% self-service turned to Verint to provide natural language understanding and AI powered self-service. Improvements included a 40% reduction in calls to agents. Considering their average cost per call of roughly $5.00 vs $0.15 within the IVR, savings were significant.
- Global pharmaceutical company during COVID-19 made its Verint IVA available to employees to address questions about new work-from-home policies. Deployed in 4 days with 25 additional business intents added to cover various topic needs, this approach provided a real-time, machine learning augmented review of interactions to address constant change. 1,000 questions were answered daily by the IVA to alleviate stress on the IT organization.
- Global software provider applied Verint's AI Blueprint technologies to better identify user intent and needs for assistance with products. Utilizing the AI and machine learning powered technologies, they were able to quickly analyze 5.6M user queries to identify 4,500 unique user intents. The findings enabled them to adapt their knowledge management and improve user engagement by 28% in just 30 days.

Key Differentiators

- Performance – Unlike many other IVA or chatbot solutions, Verint IVA has driven successful voice and digital conversational AI solutions for 100% of our customers to generate proven, measurable results that has delivered meaningful ROI across industries, channels, and use cases.
- AI + Automation – Unlike other conversational AI providers, Verint IVA is equipped with proprietary AI and machine learning-powered tools that drive efficiencies with data and intent-level insights to rapidly grow your solution without bias, all while maintaining complete control of the solution and your most valuable asset, customer data.
- Customer Experience – Unlike other IVA or chatbot solution providers, Verint IVA is backed by our proprietary AI Blueprint that tells you exactly what your customers want to know and need, and is supported by a platform that can grow where you need grow and go where you need to go, so you keep your self-service solutions in lock-step with your customers' needs.

About Opus Research

Opus Research is a diversified advisory and analysis firm providing critical insight on software and services that supports digital transformation. Opus Research is focused on the merging of intelligent assistance, NLU, machine learning, conversational AI, conversational intelligence, intelligent authentication, service automation and digital commerce. **www.opusresearch.net**

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