

New AI Capabilities are Paving the Way for Advanced Virtual Assistants

A Whitepaper on Advanced Virtual Assistants

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As virtual assistants continue to rise in popularity and necessity, technological innovations in Artificial Intelligence are evolving to support advanced capabilities. As a result, the industry is seeing a massive revitalization of AI. The combination of various technologies is allowing a broader range of AI to customer interactions, ultimately providing richer customer experiences at reduced costs to the enterprise. With these new technologies emerging from several different but related domains, the industry sees a new empowered form of Advanced Virtual Assistants arising.

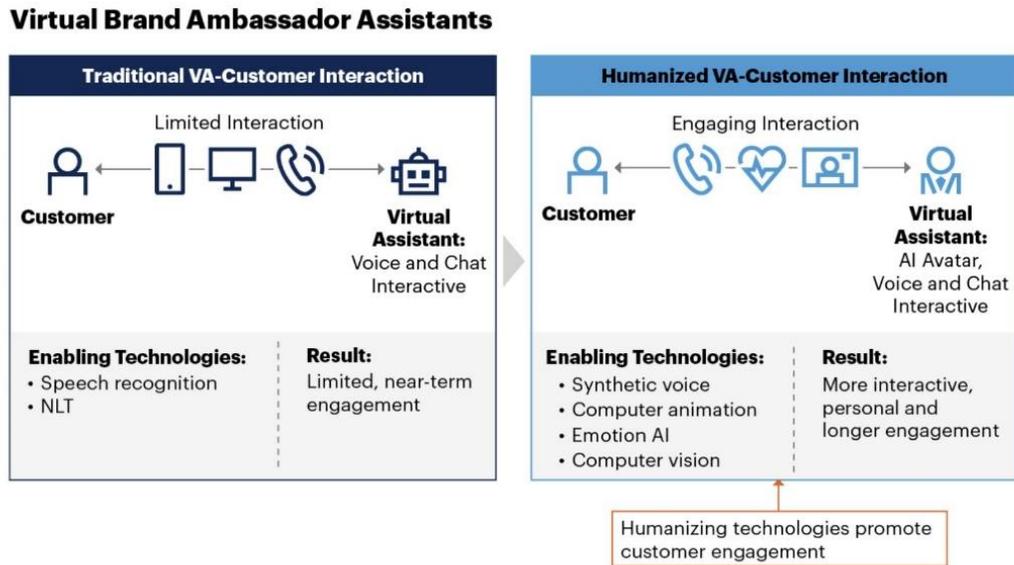
Technologies Supporting Advanced Virtual Assistants

In its June 7th, 2021 [report](#) entitled *Emerging Technologies: Top Use Cases for Customer-Facing Advanced Virtual Assistants* [1], [Gartner®](#) defines Advanced Virtual Assistants stating “Advanced VAs process human or environment inputs to execute tasks, deliver predictions and offer decisions. They are powered by a combination of:

- Advanced user interfaces (like 3D and multimodal)
- NLP (multi-intent recognition, syntactic and semantic-based methods, neural real-time machine translation and synthetic voices)
- Deep learning techniques (such as DNNs, decision support and personalization)
- Contextual and domain-specific knowledge

In this manner, advanced VAs assist people with more humanlike multiturn conversations and automate more complex tasks typically associated with work done by people.”

Figure 3. AI-Powered 3D Avatars Use Case as Virtual Brand Ambassadors



Source: Gartner
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Gartner.

While Advanced Virtual Assistants (or AVAs) cannot replace all human functions, they can effectively address repetitive inquiries, freeing up more time for customer service agents to focus on particularly complex or involved issues.

Leading the pack, a new class of Emotion AI technologies is enabling richer human-like engagement between businesses and their consumers or clients.

Emotion AI

One of many technological innovations that have brought virtual assistants to a more advanced level is Emotion AI. As stated by [MIT's](#) article *Emotion AI, explained*, "Emotion AI is a subset of artificial intelligence (the broad term for machines replicating the way humans act) that measures, understands, simulates, and reacts to human emotions." This technology can be broken down into four types as described below.

Facial Recognition:

Using software and live video to track and read the expressions on a user's face, facial analysis can determine what emotions the person may be feeling based on their visual cues. Solutions in this area are offered by software vendors like [MorphCast](#), or [Affectiva](#) (recently acquired by [SmartEye](#)).

Voice Analysis:

By analyzing the nuances and inflections in one's speech, this type of Emotion AI can infer sentiment from voice patterns and intonation. Vendors like [Agara](#) and [VoiceAnalytics](#) offer examples of these solutions. These can be used in-call to provide augmented information queuing or coaching to live agents. They are also effective post-call to understand trends or customers that may require follow-up conversations or loyalty offers.

Sentiment Analysis:

Using text analysis, sentiment Emotion AI can identify words and infer meanings and emotions within a text sample to determine the overall state of mind of the writer. This analysis can happen in real-time and support live agents or other actors, as well as being used post-event scenarios for training, research and customer loyalty. Some examples of post-event scenarios are analyzing text in a social media post or within a transcription of a customer service call. Sentiment analysis solutions are offered by vendors like [Keatext](#), [Cloudfactory](#), and [IBM Watson's Tone Analyzer](#).

Value and Behavior Analysis:

Expanding within the domain of Emotion AI, is a new set of emerging technologies that use more sophisticated models mapped to human values, needs, and desires of consumers or other user types. These types of Emotion AI technologies can be called Behaviour Models that can provide guidance to supporting technologies or functions. For example, Behavioural Models can provide insight into automated conversational solutions, consumer product recommendations, subsequent actions that live agents can take, or determine the correct live agent, or other resources, that should be engaged to support a user inquiry. Applications are not limited to consumer systems; they are also relevant to health care patient interactions, citizens of a municipality and a host of other service sectors. These models can be based on either Machine Learning (big data), Graph-type solutions or a hybrid of the two.

Also integral to the enterprise goal of enhancing customer/user experiences, and building customer loyalty, is the ability to rapidly evolve enterprise systems and enhance capabilities in a modular, scalable approach. This vision of an expanding enterprise service platform has been called the "Composable Enterprise" or "Composable Applications".

Enter the "Composable Enterprise"

"A composable enterprise is an organization that delivers business outcomes and adapts to the pace of business change. It does this through the assembly and combination of packaged business capabilities (PBCs). PBCs are application building blocks that have been purchased or developed." as defined in [Gartner's Future of Applications: Delivering the Composable Enterprise](#) [3].

According to [Gartner's Predicts 2021: Enterprise Architecture Designs the Composable Organization](#) [2], "what sets composed application experiences apart from traditional applications is that they are assembled to represent the specific responsibilities and ways of working of that person or role, excluding extraneous data and capabilities intended for different business roles. Unlike traditional applications, the composed application experience can be recomposed on demand if the responsibilities or best practices applicable to the user or role change."



In the creation and design of virtual assistants, enterprises are considering not only one solution but rather a combination of specialized software, merged in a modular approach to create the most ideal user experience(s) for their customers or clients. For example, this can mean combining a general, multi-mode, conversation AI front-end with an integration middleware platform and one or more small, packaged capabilities that automate specific functions.

Using the concept of the composable enterprise, combined with low or zero-code solutions, business fusion teams within an enterprise can first envision, and then enable, enterprise capabilities that create both efficiency for the business and more positive experiences for its consumers or clients.

Use Cases for AVAs

According to [Gartner](#) in *Emerging Technologies: Top Use Cases for Customer-Facing Advanced Virtual Assistants* [1], "the top three business challenges that organizations were addressing with VCA are:

- improving customer experience;
- improving operational efficiency, and,
- enabling 24/7 support (36%, 24% and 13% of cases and CBR2).

Other notable challenges were focused on decreasing call center congestion and enabling real-time data insights into customer interactions."

The following provides some examples of use cases that AVAs across a sampling of industries can support.

Product and Service Recommendation:

With the help of Emotion AI, Advanced Virtual Assistants can make informed recommendations of a company's product based on the identified values and interests of the consumer thereby improving the customer experience while increasing the business potential (sales, service etc.).

For example, an Advanced Virtual Assistant can speak with a consumer looking to purchase a book. By gathering the consumer's book preferences and values, the AVA can prioritize the book recommendations that align best with the consumer's multiple interests while increasing sales for the enterprise.

The same approach can apply to travel and leisure. With the ability to gather personalized vacation interests, a Virtual Travel Agent can put together the ideal vacation getaway for would-be travellers. The results are, improved user experience, lowered cost of service delivery and, often, increased business for the enterprise through higher digital conversion.

Customer Care:

With the aid of a contextually aware virtual assistant, an enterprise can ensure prioritized problem solving and empathetic issue handling at all hours. In addition, by freeing up the congestion of busy call centers from basic requests and FAQs, live agents can focus their time on the lengthier conversations and more complex issues.

This can be enhanced by utilizing the composable enterprise model and leveraging seamless transference from virtual agent to live agent within a central platform. In an example scenario, a consumer may be coming to inquire about the services of an enterprise. They may first speak with a virtual assistant who can give them immediate information about the service(s) provided, the benefits of choosing this service, and perhaps what differentiates it from the rest of the market.

After this conversation, the user may feel inclined to ask for a quotation or inquire about a demo. At this point, an enterprise may feel a live agent should handle the rest of the conversation to finalize a potential transaction. Here, a seamless hand-off between an AVA and a live agent can increase digital conversion of browsers to customers. The results are improved user experience and reduced cost of service delivery.

Health Care and Mental Health:

When handling topics like health care and mental health, contextual understanding, sensitivity, and empathy are of utmost importance. Virtual Assistants with Emotion AI can have improved understanding (enhanced intent capture quality) patient or client concerns and help guide users to proper resources and support, ultimately improving patient health and satisfaction. In this application, Conversational Intelligence platforms driven by Expert Systems or Behavioral Models may be best suited to determine the various contextual situations of patients.



92% of clinicians believe virtual assistant capabilities would **reduce the burden on care teams** and **improve the patient experience**.

Source: Nuance's "[*Healthcare virtual assistants: The future of clinical documentation*](#)"

In a report by software vendor [Nuance](#) titled *Healthcare virtual assistants, the future of clinical documentation*, it was found that with the help of virtual assistants, the following five improvements can be made:

- “clinicians spend more time with patients;
- easier access to patient information is achieved;
- time spent documenting care is minimized;
- physicians are less susceptible to burnout, and;
- patient satisfaction scores are increased.”

Given the above findings, it is apparent that there is a multi-pronged benefit to the application of AVAs within the healthcare industry. Firstly, patients can, at times, be assisted directly by automated agents, and secondly, the physicians have more time to spend directly administering care and medicine to their patients.

kama.ai’s Value-Driven Conversational Emotion AI

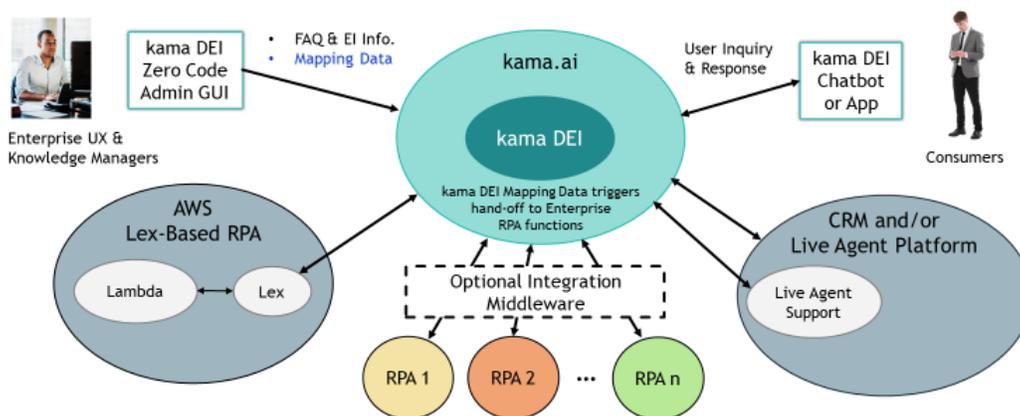
As discussed in this paper, technological advances in Emotion AI are allowing more human-like automated interactions between enterprises and their consumers or clients.

The evolving approach of integrating human behavioural models as a form of Emotion AI is enabling a greater understanding of situational contexts and predicting behaviour or implied intents behind a stated issue or request. While the primary goal of behavioural model solutions is to predict human interest, actions, or reactions, it can also be powerful when applied to Conversational Intelligence.

The [kama DEI zero-code platform](#) uses a patented graph-type behaviour model that is guided by human values. The platform uses this behavioural model to power its integrated conversational intelligence, delivering superior intent recognition quality. It also allows real-time sentiment analysis and provides personalized, natural language interaction for issue management, product recommendation, or other information dissemination.

Supporting the “Composable Enterprise”

kama DEI RPA 3rd Party AI Integration



RPA* = Robotic Process Automation = Gartner’s “Packaged Business Capabilities”

The platform also supports the concept of the ‘composable enterprise’ by integrating to live-chat or other bots that may perform specialized functions like service quotations, appointment bookings, product orders or a multitude of other tasks required by an enterprise’s customers. kama DEI’s flexible and secure APIs allow enterprises to create and deploy a capable & modular service architecture that delivers exceptional value to the consumer or client.

Benefits To the Enterprise

Since the dawn of the Internet, technology has continued to transform the interaction between enterprises and the populations they serve. With recent advances in Conversational Intelligence, Emotion AI, and other enablers of the human experience, the quest for accessible, ethical, and empathetic customer experiences are progressing to more online-centric environments. These emerging technologies are transforming our business models to reach more people, faster, and with a new level of digital understanding.

According to [Gartner](#) in their *Emerging Technologies: Top Use Cases for Customer-Facing Advanced Virtual Assistants*[1], “by 2024, advancements in VAs will automate up to 80% of call center agent tasks from 30% to 50% in 2021 with VA current capabilities.”

The [kama DEI](#) zero-code solution allows enterprise users to train their virtual assistants with no technical programming or data science capabilities whatsoever. This means less time from the idea for marketing a product or service capability, to Return-on-Investment based on the implementation of the capability.

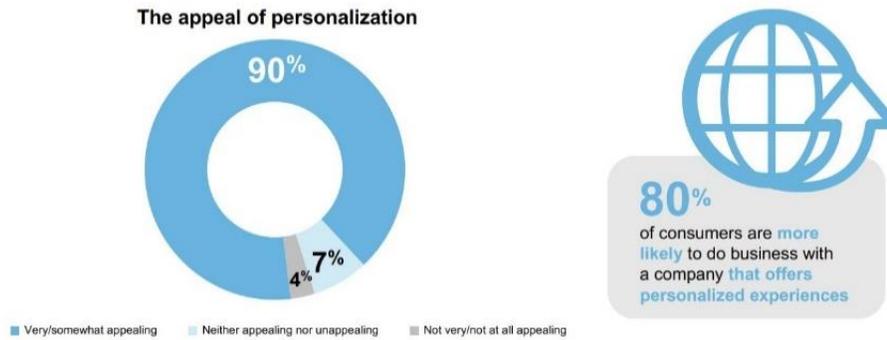
Of course, the ultimate beneficiaries of enterprise improvements should be the individuals, clients, or consumers of the enterprise’s products or services. Without this, businesses or service agencies are not sustainable.

Benefits To Users

Ultimately, the most valuable benefit to implementing Advanced Virtual Assistants technology in an enterprise is an improved consumer experience. According to [Epsilon](#), “80% of respondents indicating they are more likely to do business with a company if it offers personalized experiences and 90% indicating that they find personalization appealing.” Consumers want to be understood on a deeper level, which is why leveraging automated agents with customizable, accessible, and personalized capabilities can help curate a more immersive consumer experience. By being able to, for example, tell an agent what it is you are looking for in a product purchase, and to be provided with prioritized recommendations based on their values, enterprises can grow their business and build loyalty.

Overall, affinity towards personalization is strong.

EPSILON



Source: Epsilon's [“The power of me: The impact of personalization on marketing performance”](#)

The efficiency with which Advanced Virtual Assistants can complete tasks and assist consumers with basic requests can reduce the overall wait time and thus improve the overall experience for the user. “53% of US online adults are likely to abandon their online purchase if they can’t find a quick answer to their question,” as researched by [Forrester](#), meaning time is of the utmost importance when conducting customer service. Having a 24/7 AVA that can quickly assist users during their shopping or service inquiry flow can make or break a client’s follow-through or conversion.

Given these important consumer or client interests, having a zero-code conversational platform that allows your enterprise to envision and then deploy new business capabilities for your clientele in a matter of hours can be a game-changer for our organization. Furthermore, a platform like kama DEI, which is guided by a human behavioural model, provides enhanced intent recognition quality that better interprets, or predicts, the interest of the customer based on a personalized value profile.

The needs and demands of consumers are constantly changing; in a post-pandemic world, accessibility, ethical treatment, and empathy are appreciated, or expected, more than ever before within online consumer spaces.

The combination of conversational AI and various forms of Emotion AI is ushering in an important inflection point that enterprises should be considering as they look to evolve in the marketplace for increased customer excellence and sustainability.

In Summary

If your enterprise is reviewing automation opportunities in customer or client engagement, consider the following:

- Look for opportunities with the largest ROI and manageable risk (the 'low hanging fruit');
- Consider the concepts of the Composable Enterprise where business fusion teams can rapidly consider, design and implement improved customer experiences;
- Look for low-code, or even no-code, technologies to reduce reliance on specialized skills you may not have in-house;
- Investigate the emerging technologies within Emotion AI to support more human-like customer or client engagement;
- Ensure that your project incorporates monitoring, customer feedback and continuous service improvement functions from minute (not day) one. Consider internal trials or a soft launch to reduce exposure to negative social media impact with a poorly performing solution.

[1] Gartner, “Emerging Technologies: Top Use Cases for Customer-Facing Advanced Virtual Assistants”, [Annette Jump](#), [Danielle Casey](#), [Srijita Chakraborty](#), June 7, 2021.

[2] Gartner, “Predicts 2021: Enterprise Architecture Designs the Composable Organization”, [Marcus Blossch](#), [Saul Brand](#), January 15, 2021.

[3] Gartner, “Future of Applications: Delivering the Composable Enterprise”, [Dennis Gaughan](#), [Yefim Natis](#), [Gene Alvarez](#), [Mark O'Neill](#), June 11, 2021.

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About [kama.ai](#) and the [kama DEI Solution](#)

[kama.ai](#) is the creator of the Designed Emotional Intelligence® platform kama DEI that allows curated information to be rated and distributed through a conversational agent based on personality value profiles. This allows a level of personalization between the consumer and an enterprise’s product and service information that has not been achieved previously. The result is an automated consumer engagement service that works around the clock to address consumer inquiries with the right information for the right reasons for each customer.

kama DEI has an underlying knowledge base that unifies common information and an Enterprise Portal that allows non-technical users to curate and rate product and service information in simple natural language methods. The platform also allows for the setup of various target market demographic profiles (kama DEI ‘Personas’) to form the basis for various consumer/customer personality types.

kama.ai also offers a rapid launch front-end chatbot that can be configured and integrated within hours to your enterprise’s web and mobile web pages. As an alternative, the kama DEI Chatbot API allows integration to a current chat facility that you may already be using for live chat, and it can also power other channels such as FB Messenger, smart-speaker, or mobile phone applications.

For more information on kama DEI, please chat with “Kady” or fill out an inquiry form on our [website](#).