The Intelligent Assistance Playbook:

Integrating Intelligent Assistance and Intelligent Authentication into Self-Service Strategies

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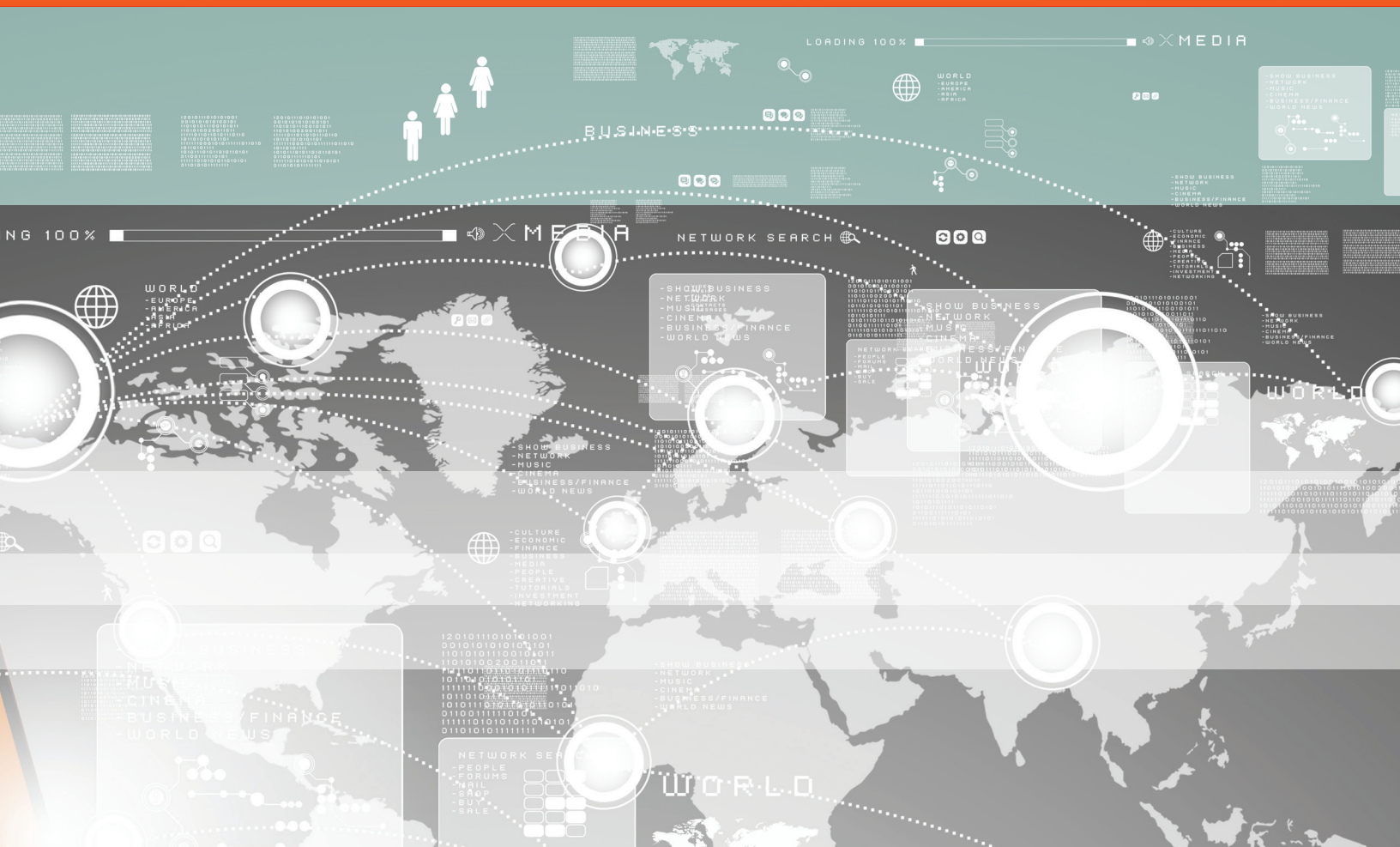

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Intelligent Assistance enables enterprises and brands to create a conversational path across multiple communications channels with both prospects and customers. Learn how USAA, Manulife, Domino's and others are utilizing Big Data, analytics, natural language understanding and machine learning to deploy customer-facing self-service strategies at scale.

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Summary of Findings

- **Today, self-service means "Intelligent Assistance" (IA) – People are now used to using their own words to get answers or complete transactions, employing the self-service resources of their favorite companies.**
- **Self-service starts with Natural Language Understanding (NLU) – Customer care specialists in financial services, telecommunications, healthcare and government agencies have wisely made investment in resources that are quick to ascertain intent from raw input.**
- **Smart UIs put customers in control – Individuals expect accurate and consistent responses to their instructions or queries regardless of channel or mode of communications, spanning IVRs, webchat, mobile apps and contact center agents.**
- **IA Technologies ensure responses are accurate and consistent – IA has evolved well beyond "glorified FAQs" and now offer responses based on the best available info from a multiplicity of sources and they "learn" or improve over time.**
- **The time is now – Case studies from USAA, Swedbank, Jetstar, Dominos and ManuLife demonstrate that IA technologies are mature enough to be deployed in customer-facing settings at very large scale.**

End-to-End Intelligent Assistance: Self-Service For the Rest of Us

Thirty years ago, in a song called "The Boy in the Bubble," song-writer Paul Simon gave voice to the lyric "These are the days of miracles and wonder!" followed by the observation, "This is a long-distance call." Today, such a thought may underwhelm, but each generation has its own sources of amazement. Here, in 2016, it has to be "artificial intelligence" (AI), referring ability of advanced computing systems and software to mimic or perform tasks that require human intelligence.

Of greater importance to professionals with a long standing commitment to customer care and self-service, is "Intelligent Assistance" (IA). In contrast to AI, which great minds like Steven Hawking, Bill Gates and Elon Musk see as an existential threat to mankind (and womankind) because of its potential to outperform humans in several intellectual pursuits, IA (which has been referred to elsewhere as "Intelligence Augmentation") is, by design, intended to assist, rather than replace mere mortals as we carry out everyday tasks.

- **Artificial Intelligence (AI) refers to the ability of advanced computing systems and software to mimic or perform tasks that require human intelligence.**
- **Intelligent Assistance (IA) describes how machine intelligence is applied to assist or augment human endeavors.**

IA enables enterprises and brands to use Big Data, Analytics, Natural Language Understanding, Machine Learning and a multiplicity of messaging and communications platforms to create a conversational path across multiple communications channels with both prospects and customers.

Helping People Help Themselves

Thanks to the proliferation of "smart endpoints," especially the smartphones and tablets that hundreds of millions of people carry around, we exist in the real and digital worlds simultaneously. The percentage of commuters with eyes glued to the screens of their smartphones is steadily increasing. They may be text messaging, emailing or updating their status on a social network. Regardless, they have simultaneous online and offline presence.

Businesses have adopted new tactics and strategies to promote communications with customers over channels that they choose, using their device of choice at times that suit their life-styles. Employing an automated, "Enterprise Intelligent Assistant" (EIA) gives enterprise the power to leverage existing investments in IVR systems, contact centers, e-commerce Web sites and mobile apps to enable both customers and prospects to take better and more immediate control of their digital activities.

Experience is the best teacher and a whole generation is being conditioned by voice-based personal assistants on their mobile phones and a growing number of household objects that enable them to ask for things or provide instructions using our own words.

These mobile personal assistants are close relatives of the EIAs that act as virtual agents via speech-enabled IVRs, Web chat, SMS or messaging platforms and provide an easy way for individuals to search, discover, compare, consult with others, experience, rate and share experiences. They provide a consistent, conversational user interface to support multi-channel or omnichannel self-service.

A growing number of shoppers and customers prefer using "self-service" resources, including mobile apps, virtual chat agents on Web sites and automated voice systems to help them accomplish their goals. A survey by Nuance Enterprise in 2012 revealed that 75% of respondents regarded self-service as a convenient way to resolve customer care issues, with 67% of them preferring self-service to talking with a company rep. **[See below link]*

Assistants Harness the Power of Apps, Bots and Agents

Intelligent Assistants offer a consistent, trusted resource that both customers and prospects can rely on to answer questions and complete desired tasks. Alternatives may have advantages but, depending on context, each has its shortcomings. Mobile apps have their place, but homescreens have become cluttered with more than a dozen different apps and it is time consuming to find, open and authenticate for each session. Plus, each user must overcome the challenges of small keys on a virtual keyboard, autocorrect and those clickable wheels that appear when an app enables you to select a time and date.

Still, research conducted by Pew Research Center in late 2015 showed that, regardless of the number of apps installed on a smartphone, only 1-6 are used with any frequency on a weekly basis – with social networking, search, entertainment and messaging being the biggest time sinks. This phenomenon goes a long way toward explaining why digital commerce specialists are focusing so much effort on conversational services that do not require customers to leave the apps or messaging platforms that they're already using.

Bots can expedite the completion of designated tasks in pre-specified use cases, but can fail miserably at dealing with "long-tail" issues. Often they become an annoyance when they interrupt the flow of an ongoing conversation. They can also trigger a strong negative reaction if they seem to be eavesdropping on an individual's conversation with friends and family. To prove value, the bots must be unobtrusive and wait until they are invoked by live individuals on a messaging platform.

If every airline, hotel chain, wireless carrier, bank and broker succeeds in getting customers to download their branded app, they merely create the cyber-equivalent of chaos: a formless mass of unused icons cluttering a pristine backdrop of a well-chosen photo. A useful alternative is for companies to offer customers the opportunity to "self-serve" using some form of intelligent assistant – through the Web site, over the phone, or in an app. These branded assistants or advisors streamline Q&A, search, discovery, product selection and, ultimately, purchasing.

When it comes to highly personalized searches, considered purchases and transactions that require lengthy input from customers, an intelligent assistant is better than a multiplicity of apps. It serves as an intermediary between an individual and the digital marketplace. Today's intelligent assistant does a decent job of recognizing a person's intent based on what he or she says and refining based on awareness of context – such as location, time-of-day, past activity and other indicated preferences. Rapid recognition of intent and personalized response is made easier when the intelligent assistant is closely linked intelligent authentication, especially biometric factors that unambiguously understand who a person is.

(**For reference:** http://www.nuance.com/for-business/by-solution/customer-service-solutions/newsletter-issue-2/index.htm)

As we describe in the next section, these assistants are already evolving, and are also taking advantage of other categories of "bots" and artificial intelligence resources that have specific subject matter expertise or capabilities.

Providing Consistent Customer Service in Context

"Intelligent Assistance" spans a variety of user interfaces, as well as natural language processing, knowledge management, artificial intelligence and multi-factor biometrics to deliver personalized, context-aware customer care. It is self-service on steroids because the technologies are capable of rapidly recognizing who's calling/making contact, surmising the purpose of the call/query and determining the best answer to a question or action to be taken in order to satisfy the intent of an individual.

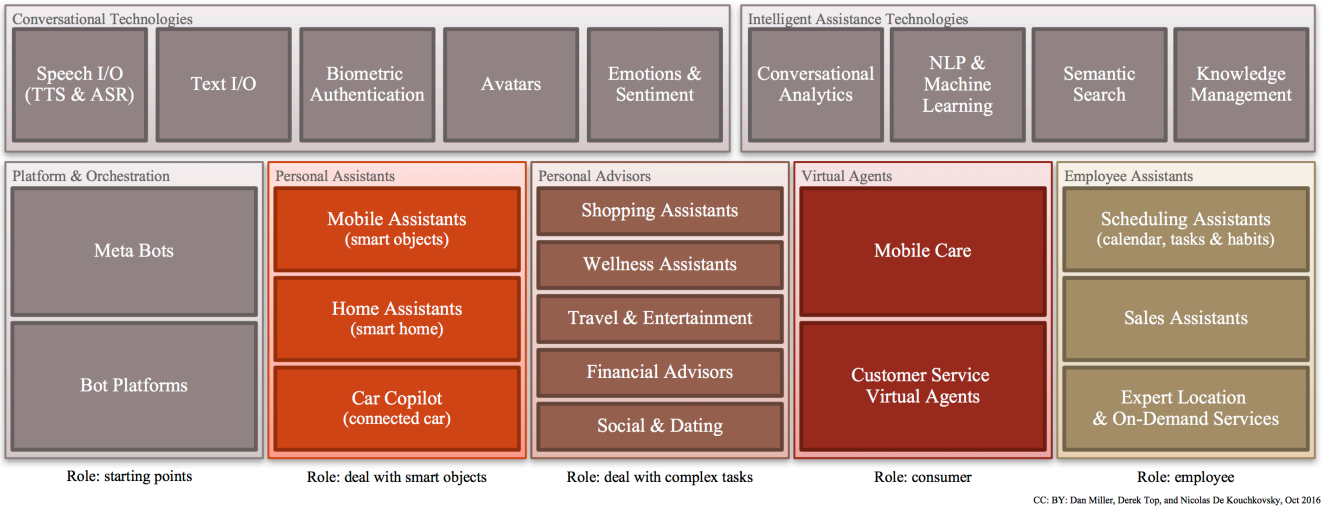
The conversation may start with a call to a speech-enabled IVR system that employs voice-based authentication to recognize the identity of a caller and provide personalized services. Alternatively, an event or customer activity may trigger a proactive session where an outbound call is made or message is sent according to rules established to prevent fraud or respond to a standing request from a customer.

Taking Stock of Existing Technologies

Opus Research has assembled an Intelligent Assistance Landscape which, along the top row, depicts the core technologies that help humans harness the power of artificial intelligence to recognize their intent, understand their words and help them complete tasks. The two boxes separate "Conversational Technologies" which are, in essence, a smart user interface (UI), including authentication and biometrics, from "Intelligent Assistance" technologies, which describe the functions that enable computers to identify topics, understand speech, learn from mistakes and manage voluminous amounts of data.

> IA technologies support each individual's self-service strategy across a multiplicity of devices and media.

Figure 1: Intelligent Assistance & Bot Technology Stack

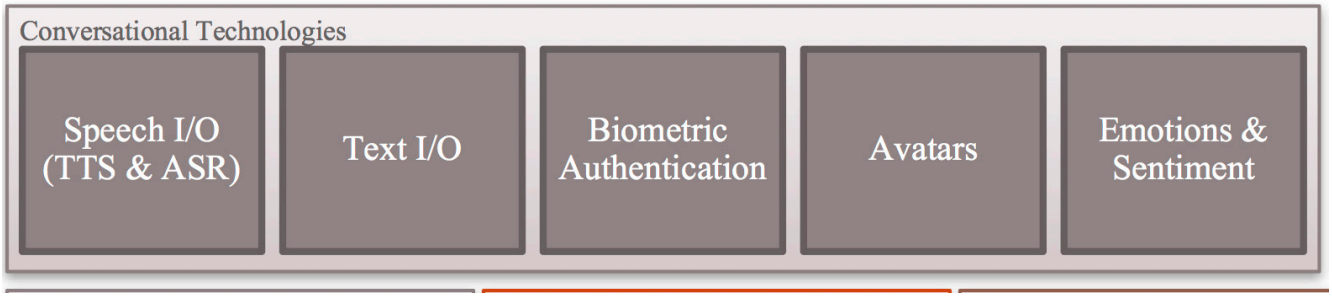


The Smart UI: Recognizing Intent, Emotion & Gestures

The core Conversational Technologies are those that provide a ubiquitous user interface, enabling individuals to use their own words to communicate. As depicted in Figure 2 below, the Smart UI uses a number of resources that can understand what people say or type, respond with a distinctive or expressive voice, verify who they are, and employ a static or animated image of a character who serves as an avatar or representation of the guide or alter-ego of the end-user.

When put into practice, IA developers can pick and choose among the features and functions. In fact, only a small percentage offer a full-blown IA, featuring an animated avatar and expressive text-to-speech (TTS) resources. The original GoogleNow, for instance, did not employ the full-spectrum of capabilities but used a Speech-based UI, incorporating automated speech recognition and text-to-speech to provide its basic services.

Figure 2: The Smart User Interface with Biometric Authentication



The technologies serve as a set of resources capable of carrying on a conversation and supporting the human tendency to treat computing resources as if they were people; i.e. to anthropomorphize. Meanwhile, we've been trained to enjoy success by using the words that come naturally to us in order to accomplish our goals; Intelligent Assistants are our friends.

- **Speech I/O** - Enables people to provide spoken input. They can speak their minds to a device – primarily smartphones, but expanding to include wireless speakers, TV remote controls, automobile entertainment consoles and public kiosks.

- **Text I/O** – Of growing importance because of the expanding role that "messaging platforms" play in the digital communications and commerce domains. Live chat has long been an option for individuals who seek customer care through a Web site and a growing percentage is being of conversations are taking place with "virtual" chat agents.

- **Biometric Authentication** – Represent "something you are" to support personalized and individualized responses to commands and queries.

- **Avatars** – Animated or static representations of characters that can be friends, allies or advocates for their users. They can appear on the support pages or Websites or the home screen of a smartphone or tablet.

- **Emotion & Sentiment Detection** – Enable IAs to be empathetic because our tone of voice and the way we wave our hands or arms indicate the level of urgency or emotion we attach to the tasks we are trying to accomplish.

AI for IA: Understanding Input and Recognizing Intent

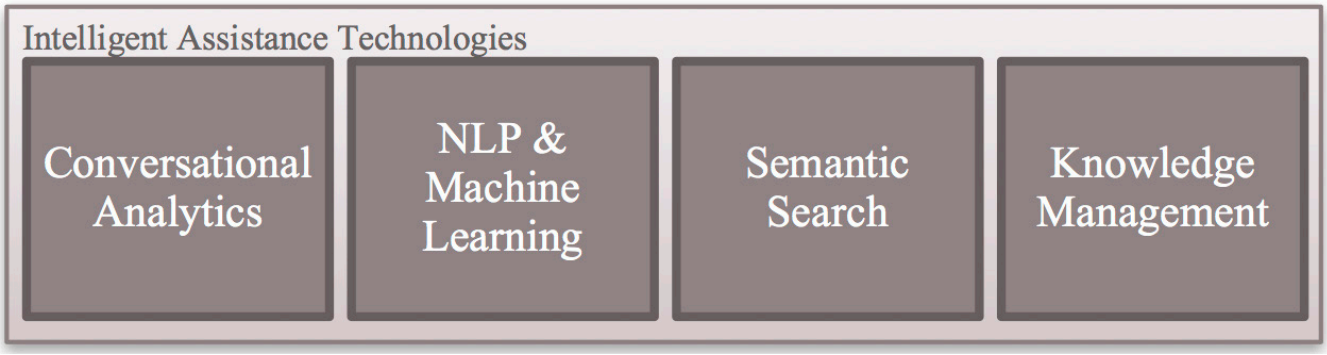
The Smart UI is backed up and enhanced by Artificial Intelligence (AI) resources, which can reside in the public cloud or enterprise IT systems. These resources "understand" or derive intent from the words that individual end-users say or key into their devices.

- Speech Analytics – Contact centers have long benefitted from employing systems that capture the content of dialogues between customers and agents and associate them with either positive or negative outcomes. This sort of "pattern recognition" has historically been a "batch process" often conducted overnight. Those early systems can now operate continuously and in real-time, making speech analytics investment the basis for full-blown natural language understanding.

- Natural Language Processing (NLP), Machine Learning (ML) & Semantic Search – This combination of technologies is the core of Artificial Intelligence for Intelligent Assistance (AI for IA). They provide self-service systems with the ability to find meaning in customer input by recognizing its topic, discerning between nouns and verbs and distinguishing between statements, questions and instructions. "Machine Learning" (ML) refers to the ability to detect incorrect answers and make corrections based on obtaining proper answers from subject matter experts or end-users, themselves. These platforms benefit from "Semantic Understanding," enabling them to build an ever-expanding database of terms and their meaning.

- Knowledge Management – Referring to systems that can aggregate both structured and unstructured data from a variety of sources and make them available for individuals or other systems to query, manipulate or generate reports.

Figure 3: Intelligent Assistance Technologies

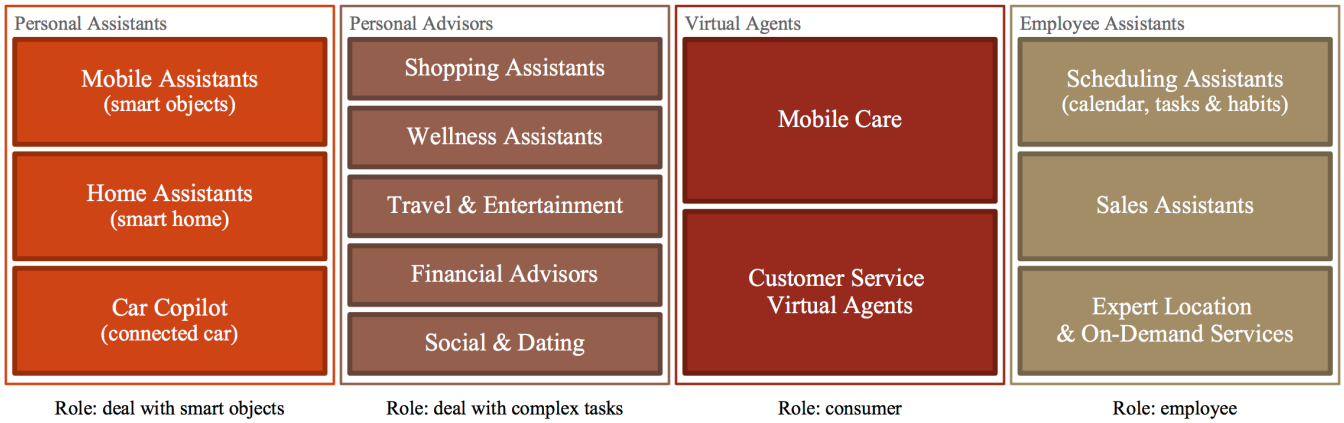


Long-standing contact center and customer experience professionals are familiar with these technologies. A large percentage have investigated options and made investments in them with the idea of improving the performance of customer service representatives or expanding self-service options for customers. They may not have perceived them as key elements to intelligent assistants but, if they move in the direction of implementing IAs, they will find that their current investments can be leveraged into IA solutions.

The Applications Layer: Evolving from Assistant to Advocate

The bottom layer of the "Intelligent Assistant Landscape" tells the story of IA evolution from an application perspective. Moving from left-to-right one can see how a ubiquitous "helper" that resides on every smartphone, tablet, laptop, kiosk and other random pieces of electronic hardware can transform how people take control of their digital lives.

Figure 4: Assistant-to-Advisor Continuum



- **Mobile & Personal Assistants** – Nearly ubiquitous resources that awaken at the utterance of a "trigger word" and provide help as best they can, primarily to control devices and the apps associated with them or respond to basic queries.

- **Personal Advisors** – Close relatives and direct beneficiaries of the personal assistants, these resources have domain-specific knowledge that can be brought to bear to help people reach specific objectives or make purchases. The areas of greatest activity thus far have been Shopping and Retail; Health, Wellness and Fitness; Travel & Hospitality; Entertainment; Dining; Personal Finance; and Dating/Social Activities. It is in this area that Opus Research expects a plethora of "bots" to emerge to offer their advice and assistance.

- **Virtual Agents & Customer Assistants** – Residing "inside" hundreds of enterprises are the resources that support automated chat or life-like voice response. They are branded assistants that serve as the first – and often only – point of contact for targeted prospects or customers.

- **Employee Assistants** – For many knowledge workers, their first positive encounter with an IA will be as a bot or helper app on a collaboration platform. Conversational front ends that support scheduling and project management are already finding lots of company to monitor and support the processes that make sales, product development, marketing and administration more efficient.

It Started with "Speechable Moments" on Smartphones and IVRs

When Apple introduced the iPhone 4s in October 2011, it showcased the new mobile personal assistant, featuring the ability to provide instructions or conduct simple searches by speaking to the assistant. At the time, it supported conversational interaction with many applications, including reminders, weather, stocks, messaging, email, calendar, contacts, notes, music, clocks, web browser, Wolfram Alpha, and Apple Maps.

Through primetime commercials that featured the likes of Samuel L. Jackson, Zoey Deschanel, Martin Scorcese and others, Apple promoted the idea of turning to Siri in times of need and began conditioning smartphone owners to use their own words to take command of their devices, apps and digital searches. Siri only lives in the world of iOS (the operating system for iPhones and iPads). While it has expanded its footprint to include the Apple Watch, Apple TV and some automobile entertainment systems (through CarPlay), it remains a relatively closed system.

Yet the voice-enabled world is constantly opening up to new devices and use cases, making the spoken word the most convenient way for individuals to take control of their digital lives.

Enterprise Implementations Span IVR, Outbound and Virtual Agents

Enterprise marketing, customer experience and contact center professionals can only shake their heads as they observe the problems that Personal Assistant developers are tackling. They have overseen the development and refinement of resources that serve as the primary touchpoint between companies and their prospects and customers.

Spotlight on Exemplary Enterprise Implementations

Customer experience professionals watched, reacted to and supported efforts to respond to customer contacts and queries quickly. They've benefitted from the rapid-fire introduction of new technologies in both IA and AI. Airlines, banks, electrical utilities, cable companies, wireless service providers and high-tech retailers had been the first to install automated systems to support natural language, conversational interactions through interactive voice response (IVR) systems and virtual chat.

They discovered, defined and refined outbound calling and text messaging of notifications for such things as flight schedule changes, package shipment status, service appointment schedules and, of course, reminders for bill payment. They bridged the gap between Intelligent Assistance and automated handling of calls. They made a big distinction between "call deflection," which was clearly a cost avoidance strategy that referred to the routing of calls to automated resources, rather than live agents and Intelligent Self-Service, which now equates to the fastest, most efficient way to complete a customer care task.

Swedbank Deploys Nina to Enhance Digital Self-Service

With 8 million private customers and 600,000 corporate customers, Swedbank has a leading position in its home markets of Sweden, Estonia, Latvia and Lithuania. Its contact center agents handle more than 3.5 million customer interactions each year, with more than two million of those comprised of basic transactional queries.

In 2016, an impressive 58% of Swedbank's customers banked with the company through digital channels, with 80% of those logging in at least once a month and users of the banks mobile channels averaging over 20 log-ins per month. In the face of this groundswell of activity, the bank wanted to evolve its presence in all digital channels to increase self-service capabilities. It implemented Nina, the virtual assistant from Nuance, to integrate online customer engagement with the company's contact centers.

By communicating with Nina on the company's website, customers can ask questions or provide instructions using natural language and a conversational style. After three months of deployment, Nina averaged more than 30,000 conversations per month with a first contact resolution of 78%. As a result, 55% of those conversations did not require customers to take any further action, such as calling the contact center. Nina also appears on agent screens and workspaces to help with information searches and bring speed and efficiency to answering customer queries.

Two million out of Swedbank's 3.6 million annual contacts are resolved through easier self-service, freeing up valuable time for the bank's 700 contact center staff and enabling them to focus on added-value activities, such as sales rather than service. Nina also enables agents to spend more time addressing the more complex queries that bank customers can originate.

Jetstar's Jess Converses with Travelers Online

In 2014, Jetstar, one of Asia Pacific's fastest growing airlines, launched a virtual assistant called "Ask Jess" to support self-service through Web chat. Based on Nuance's Natural Language Understanding (NLU) technology, Jess understands the customer's intent through an interactive, text-based chat, and is integrated into existing "live" chat service, so that a seamless hand-off can be made to human-assisted service when required.

The solution has reduced calls to the contact center by 20%, while also giving rise to a doubling of conversion (sales) rates that coincides with a 24% increase in the value of the average sale.

Domino's Dom is a Nigh Ubiquitous IA for Ordering Pizza

Domino's Pizza has over 10 million mobile app users, who are proving to be among the most enthusiastic users of multi-channel, conversational user interfaces. It introduced Dom, a speech-enabled intelligent assistant based on Nuance's Nina Mobile, embedded in its mobile app in mid 2014. Since then, customers have found the app to be faster and more efficient than calling a local outlet.

Simple input, ubiquitous access, consistent response and context awareness lead to a superior customer experience and sustained loyalty. From the implementation of Dom, Dominos saw a 33% increase in NPS and 57% fewer steps. Over 500,000 pizza orders were placed through Dom within the first few months.

Manulife: First to Combine Voice Authentication with NLU and Call Steering

Manulife Financial is a leading Canadian-based financial services group with principal operations in Asia, Canada and the U.S., serving one in three adult Canadians and receiving roughly 28,000 calls a day to the contact center. It is the first company across any industry in Canada to deploy voice biometrics and NLU, in both English and French, in a single IVR. The deployment has seen a 96% authentication success rate with voice biometrics, the elimination of 4 steps in the customer authentication process, and a 50% improvement in call routing.

With such a large reach of customers across the country, Manulife's contact centers play a big part in meeting the needs of many different demographics. Manulife needed to find a way to reduce the cost to serve its customers by introducing self-service applications in the IVR while also reducing the average call handle time.

USAA's Intelligent Assistance Strategy is "Our Moonshot"

As an all-in-one auto club, insurance company and commercial bank USAA has built an impeccable reputation around the quality of its customer service and self-service offerings. It has maintained its reputation and retained its customer base by introducing natural language understanding (NLU) to its banking customers as early as 2012, enabling to serve its far-flung base of 8.3 million banking customers through one physical banking branch and 10 financial centers.

The company has continually updated, upgraded and augmented its self-service resources to provide rapid responses to customer queries over secure, trusted communications channels. Two examples of its most recent innovations are the introduction of biometric authentication technologies for users of its mobile app. Enabling banking customers to use their voice, fingerprint or facial characteristics to initiate what it terms "Personalized Security," has enabled it authenticate customers rapidly and then offer services that are highly responsive to each individual's explicit instructions or implicit intent.

Savings Coach was an example of the highly personalized intelligent assistance that USAA's approach makes possible. The mobile app, which has recently been reformatted, employed an avatar-based user interface – in this case a cartoon-like eagle named Ace – that listens to people as they use their own words to describe financial objectives or desired outcomes (e.g. I want to save enough money to attend college). The service was privy to personal information, such as current account balances, due dates for bills and spending history.

It could apply rules to detect patterns in these data and metadata in order to recommend courses of action that an individual can take in order to reach his or her goals. To some, it feels like a game. Indeed, the app employed a number of familiar gaming techniques, like points and badges to reward desired behavior, like earning a number of points for eating at home rather than sending out for take-out. By consulting Savings Coach regularly and following its advice, USAA members were able to achieve desired results.

In one of its early pilots, Savings Coach suggested the experience is working to motivate some. Roughly 800 participating USAA members, aged 18-24, managed to save almost $120,000 in a four-month period.

At Delta Airlines, IA Bring Savings and Higher Customer Satisfaction

Delta, one of the world's largest global airlines, helps more than 160 million travelers get to the places they want to go to each year. Delta aimed to improve the customer experience through upgrading the decade old IVR system that was in place. The existing application had long menus that required callers to repeat information to agents that they had already put into the IVR. Delta also sought to connect the inbound and outbound channels to create a connected experience.

The refreshed IVR from Nuance is equipped with NLU technology to better interpret and understand what a customer is saying, eliminating the lengthy menu and enabling customers to simply state why they are calling and be immediately routed to the correct specialists for assistance. In addition, Delta can identify who is calling based on their telephone number, and view where s/he is in the travel cycle, and what personal travel preferences apply. They can then provide the customer with proactive information, dynamic menus, and tailored content including departure information, upgrades, scheduling changes, delays, and cancellations.

Upgrading the IVR and connecting the inbound and outbound channels has resulted in $3 million per year savings, a 46% increase in capturing customer intent and a 15% decrease in misrouted calls.

Building on the Enterprise Self-Service Legacy: "How May I Help You?"

Conversational IVRs are the most direct ancestor for today's Intelligent Assistant. These interactive voice response systems were among the first self-service resources to combine natural language understanding, automated speech recognition and life-like text-to-speech rendering to support life-like human-to-machine interactions. Instead of "Choose from the Following Options," callers were treated to the much more enticing greeting of, "How may I help you?"

Diversified communications service providers, airlines, financial service providers and hotel chains (among others) have learned the value of that open ended opening line, and the conversations that follow. The approach empowers customers to use their own words to accomplish the tasks they want to complete. Over time, in the course of successfully completing those tasks, businesses have built a database of successful answers to customer input. In effect, we are training automated systems to do a better job of recognizing our intent and fulfilling our requests.

The Future Promises Continued Improvement Across All Channels

Companies that have offered speech-enabled IVR for many years, recognize that the learning from customer input and refining responses has become programmatic. They now routinely recognize intent based on spoken (and keyed-in) input and the answers provided are constantly improving because they have a much better understanding of the context of each call and a knowledge base whose sources span product literature, CRM records, customer activities and the "sum total of human knowledge" that comprise the World Wide Web.

Virtual agents and other flavors of Intelligent Assistants have evolved into a conversational resource that enables each individual to take control of both their real-world and digital lives. The technologies described in this document are not "science fiction." They are in place and demonstrating their value to hundreds of millions of people, whether they are invoked inside a mobile app, over a messaging platform, through an IVR or with a living, breathing customer service rep co-browsing with a customer.

About Opus Research

Opus Research is a diversified advisory and analysis firm providing critical insight on software and services that support multimodal customer care. Opus Research is focused on "Conversational Commerce," the merging of intelligent assistant technologies, contact center automation, intelligent authentication, enterprise collaboration and digital commerce. **www.opusresearch.net**

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