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Making Cognitive Real: The Transformation of Service Agents

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As organizations are progressing toward the As-a-Service Economy with a dual mandate to drive down costs while increasing business agility, more than ever, service delivery is taking center stage when strategic imperatives are discussed. Notions of intelligent automation are not only enabling that journey but are also disrupting business models, as well as the delivery of services. Although there is no commonly accepted definition of what intelligent automation entails, the common denominator is about decoupling service delivery from labor arbitrage, thus challenging many global sourcing models that are predicated on access to cheap labor. In many cases, throwing labor at problems, as well as breaks in process and media flows, was cheaper and more convenient. However, this solution required organizations can modernize their legacy applications and processes. At a time when disruption has become commonplace, the need to transform legacy environments to enable digitized processes and workforces has never been greater.

The market adoption of intelligent automation is accelerating significantly as service providers are building out broad capabilities and organizations are increasingly setting up centers of excellence for automation. Across the industry, there is a marked shift in the maturity of the sourcing discussions evaluating these developments. In particular, the emphasis has moved from focusing on single tools, often misguidedly positioned as magic bullets, to notions of service orchestration and integration of increased cognitive capabilities. The emerging notion of virtual agents ties many of these trends together.

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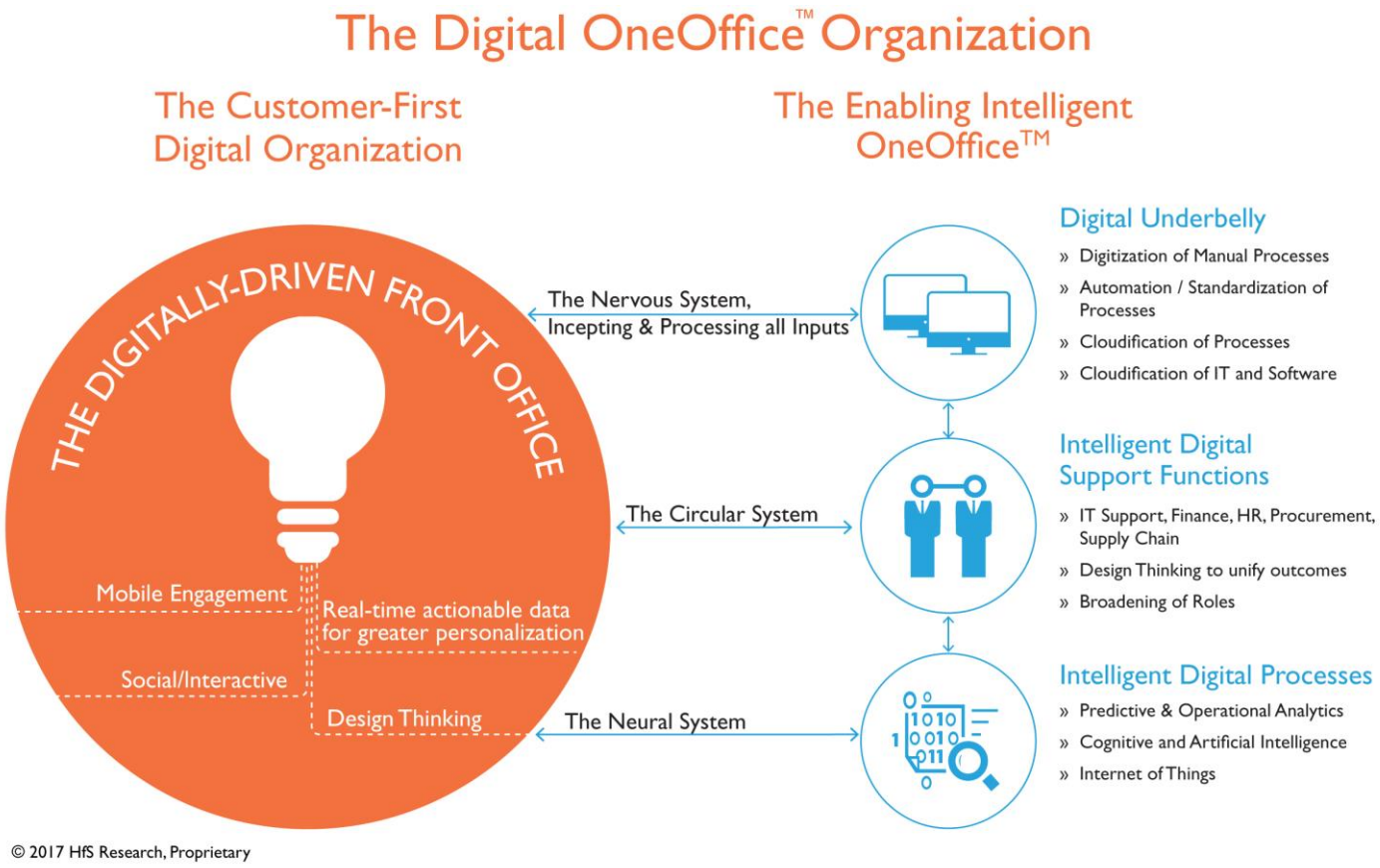
Intelligent Automation Is a Critical Element of OneOffice

At HfS, we have been looking at the customer experience and service delivery from a holistic viewpoint of supporting the digital customer, which breaks down the silos from front, middle, and back office to form the OneOffice digital organization (see Exhibit 1). In the OneOffice paradigm, "Customer-First Digital Organization" is the focus of an intelligent organization. It's about using any channel—phone, mobile, social, wearable—to communicate and accessing analytics to make actions relevant and meaningful. This communication needs a support function to serve customers, get products and services to market expediently, manage financial metrics, understand needs and future demands, and make sure the business has talent who can understand and deliver the outcomes that matter.

Exhibit 1: 2020 Vision: The Intelligent OneOffice Will Emerge from Digital and Automation



Source: HfS Research, 2017

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Enabling the Digital Front Office includes the following:

- **Intelligent Digital Data:** Essentially creating a digital infrastructure and content through automation of manual processes, digitized documents and data, and integration of smart devices and the Internet of Things (IoT)
- **Intelligent Digital Support Function:** Breaking down the silos between business units and IT with a singular focus on the customer experience, challenging the logic of the way, for example, finance, HR, and supply chain have always worked, and collaborating across business functions with multi-disciplinary teams
- **Intelligent Digital Processes:** Predicting instead of reacting by embedding cognitive applications into processes and being in constant learning mode by using dashboards, models, and other analytical and cognitive tools.

This paradigm is driving a lot of buyer strategy, using a customer-first mindset to drive business operations. In addition, senior-level executives have a significant interest in automating processes and increasingly are prepared to invest in adopting cognitive computing solutions. Forward-thinking companies are looking to those automated solutions to be highly intelligent, as well as self-learning and self-remediating. Within the overall ecosystem, we see that virtual agents will play a more important role in these strategies moving forward.

Virtual Agents on the Continuum

Virtual agents are not only automating tasks to support the digitally-driven front office but also using cognitive intelligence to have meaningful, secure, and efficient interactions with customers.

As with everything around intelligent automation, nothing is well-defined. In the context of service delivery, fundamentally different approaches overlap. In Exhibit 2, we outline the disparate approaches to automation that are interdependent and overlap. This illustration is meant to be a starting point for discussions to shed some light on segmentation issues. It is not meant to suggest that there is a logical evolution from the left-hand to the right-hand side. Similarly, the different levels of segmentation—activities, position in the value chain, and provider examples—are meant to be read as illustrations, not as a column or discrete offerings. For example, the notion of the OneOffice is not exclusively about self-remediation delivered through a virtual agent predominantly leveraging IPsoft Amelia. Instead, the suggestion is that the complexity, as well as the value, is increasingly driving more offerings to move to the right-hand side. However, those offerings can include a choice of various options and orchestration across the depicted elements. Despite this, the arrows at the top and bottom of the graph suggest that HfS is expecting an increasing focus on process execution, as well as the substitution of human agents. Suffice it to say, this is unlikely to happen in a linear or binary way but in different scenarios depending on the use cases.

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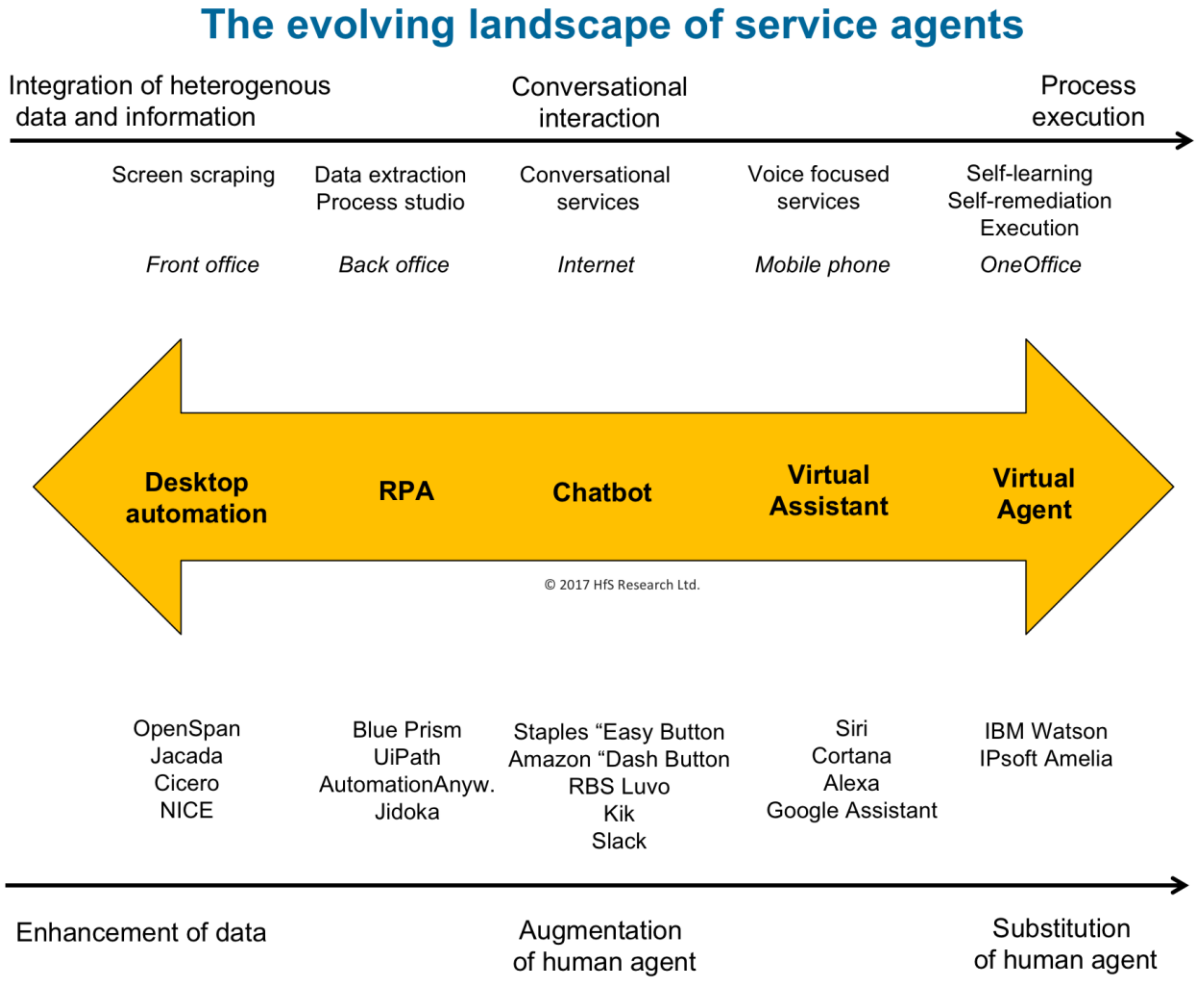
Exhibit 2: Virtual Agents on the OneOffice Continuum



Source: HfS Research 2017

In the context of service delivery, the emphasis is starting to move from chatbots to virtual assistants and virtual agents. The key differentiation is that virtual agents are moving beyond conversational or FAQ services toward services that execute process steps or even are capable of performing self-remediation. Such an offering demonstrates broad execution capabilities in use cases, such as the IT help desk. The central theme is self-service; however, this service not only is triggering service requests but also in many cases leads to automatic remediation. More broadly speaking, a Virtual Agent can integrate lower-level capabilities, such as desktop automation, robotic process automation (RPA), and chatbots, provided they are part of broader execution capabilities.

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IPsoft's Amelia Is Bringing Intelligence to Automated Interactions

IPsoft is a pioneer in developing cognitive solutions and educating the broader market on the business benefits of cognitive computing and artificial intelligence (AI). IPsoft's flagship IPcenter product is all about self-learning and self-remediation. For instance, IT help desk tickets can be routed to the most qualified engineer or even be automatically executed as the system learns from historical events and interactions. The Amelia Virtual Agent platform is extending those capabilities to conversations and interactions with users. An avatar, expansive knowledge bases, and even advanced AI capabilities, such as natural language processing (NLP) and sentiment analysis, provides an integrated experience of conversation, problem solving, and execution of process steps for users. Thus, Amelia is a compelling example of the advances in intelligent automation and the progress toward the OneOffice as front-office activities can be executed in the back office.

IPsoft has developed its Amelia platform as a virtual agent that is capable of analyzing language, understanding context, and applying logic to conversations to determine what actions to take. Amelia automates interactions, integrates vast knowledge libraries in conversations, and learns from the exchanges. This behavior is aimed at creating conversational, human-like interaction, unlike traditional chatbots.

Amelia accomplishes this behavior through three facets:

- Understanding natural language and the relationship between concepts instead of just memorizing words.
- Learning skills and new knowledge through natural language and using that information to diagnose users' goals and determine what action to take.
- Creating an answer based on experience, instead of regurgitating information as a search engine or a Q&A-style chatbot does.

Unlike some of the other virtual agents on the market, the lynchpin of Amelia's value proposition is the platform's ability to "build an episodic memory based on experiences." The developers of Amelia have designed the solution to work in similar semantic patterns as the human brain. Amelia learns but doesn't apply its learning until it has been reviewed and approved by a subject matter expert (SME).

IPsoft is continuing to develop the Amelia platform's machine learning capabilities. In a demo of the latest version (2.5), we saw a revamp of the user interface (UI) and strides made toward creating greater flexibility in personalizing experiences. The added nuances, such as the dots that indicate typing while waiting for Amelia's response, are aimed at making the interaction more conversational and comfortable for customers.

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In order to really support the digital OneOffice, Amelia's success relies on its integration with the other systems that provide much needed data to support customer experience, like knowledge management systems and CRM platforms. IPsoft works with clients and partners to implement Amelia and ensure business outcomes and process execution are achieved and works to make the process of integration simpler.

Lessons from IPsoft's Amelia Clients

Given the nascent state of virtual agents being deployed in contact center scenarios, taking insights and lessons from the early adopters is critical. UBS and an online gaming company are deploying IPsoft Amelia for customer interaction, and each client provided valuable insight to show how Amelia is evolving and being deployed within these organizations.

UBS

In mid-2016, UBS executives evaluated Amelia as a customer interaction tool for the company's retirement distribution customer processes. The financial services company generated funding for a proof of concept, and pilots have been under way for the last several months. Amelia will soon be live with customers but to date, has been in testing and training with contact center staff to handle a number of customer interaction use cases within the chat environment. Amelia currently interacts with UBS sales assistants to identify the right documents needed for the sales assistants' interaction with a recently deceased person's family member for the distribution of death benefits. Eventually, UBS aspires to have Amelia handle those interactions directly.

According to UBS, the differentiators that led to Amelia being the right solution were the capabilities for natural language processing, as well as the ability to integrate relatively easily into UBS's existing core knowledge bases, and then process that information for interactions. One of the more important use cases for which UBS has been testing Amelia is customer authentication. This process requires Amelia to ask probing questions and disambiguate the customer's response to assure the customer's identity. Once this most important test case is fully justified, Amelia will be rolled out to interact directly with customers.

UBS's current goal is to tweak and train Amelia until it reaches the point that the customer experience is as close to an exchange with a human as possible. The vision is that UBS will train and test the tool in different scenarios once, instead of training hundreds of agents repeatedly. The roadmap will be to deploy Amelia in chat and voice scenarios globally. Although the ultimate goal for UBS is to improve service quality and experience, UBS has set a conservative target of reducing operations costs by 20–30% once the solution is fully up and running.

In the words of Tom DeCarlo, managing director and head of WMA and Americas Client Services, UBS, "Cognitive agents are the future. You're going to be way behind if you don't get on the bus soon. It's as much about the quality of service as it is about cost." Luckily, forward-thinking companies like UBS that are early movers in adopting virtual agents for the front office are sharing their lessons learned. As for the big question of company culture regarding how the human staff feel about Amelia and some of their interactions being handled by a robot, there is still plenty of human work to be done. UBS is taking the approach of looking at Amelia as a tool that augments human interaction rather than a replacement.

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"It's motivating for people to know there will always be a role here for high performers," said DeCarlo. Although Amelia will eventually be trained to handle end-to-end interactions, there will always be a need for exceptions to be handled by live agents, as well as the people to train and build out the Amelia solution. "We're not taking anyone's job away," DeCarlo said. Instead, UBS is using Amelia to address the natural attrition and performance management issues within the contact center.

As the project continues, UBS is focused on finding ways to make Amelia more efficient to improve customer service quality. The implementation team is concentrating their efforts on exploring the different paths a conversation could take to better train the virtual agent through analyzing escalated conversations. As UBS is a premier wealth management firm, the interactions aren't black and white. The firm has many complex products and services where Amelia can be applied. UBS executives stated that it was a mutual learning opportunity, and that they were able to work closely together during the engagement with IPsoft.

"Cognitive agents are the future…it's as much about quality of service as it is about cost."

- Tom DeCarlo, UBS

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An online gaming company

HfS spoke with an online gaming company that is preparing to use Amelia for chat interactions. At the heart of this company's engagement with IPsoft is a sophisticated security issue that the company faces in chat conversations with its online gamers. People spend considerable amounts of their own money and time playing online games. As a result, customers feel invested in the games. In parallel, this high level of investment attracts criminals who target chatting with agents for phishing schemes. With chat conversations, it's natural for people to ask questions, and sometimes, those questions are enough to fool one of the agents into giving the phisher user account information. The average chat contact is between 12 and 20 minutes, and three of those minutes are spent on account verification. Thus, the goal for IPsoft's Amelia is to reduce chat time while improving ownership verification.

This gaming company evaluated several AI solutions for chat before landing on Amelia. The key considerations for choosing Amelia were its configurability and maintainability—and that the solution was built for business users so contact center staff didn't need to do programming and development. The company also felt that Amelia best demonstrated the ability to observe and learn from human interaction.

The initial results of the program point to solid results with the full deployment of Amelia. Right now, Amelia's initial verification questioning is aimed at identifying suspected phishers, which triggers an alert to pivot to a live agent who is specially trained to weed out potential criminals.

Although the company has been pleased with the results, a lesson was learned: The initial pilot resulted in a lower customer satisfaction (CSAT) score. As this pilot was this company's first experimentation with an AI platform, they were surprised that when Amelia passed the QA test and the functionality performed with flying colors, the satisfaction of customer expectations for conversation had room for improvement with the gaming company's general customer base. The contact center has a very regimented QA process that was challenging when a neural network is used; Amelia passed the QA test every time but failed at first to understand the nuance of the "messy" and "fuzzy" human interactions typical of a gamer. For example, when the gamers responded, "Hi Amelia," expecting a human-like interaction, Amelia didn't immediately respond the way a gamer would and instead asked for an email address. This issue is addressable. The lesson is that you have to approach testing and training differently with an AI interface and teach the bot the nuances of the customers it serves. This company is continuing on its journey to make Amelia as conversational and human as possible.

As for the company's approach to the staffing and human element of the contact center, this gaming company is focused on meeting increasing demand rather than displacing full-time employees (FTEs). Right now, the contact center is often swamped, prompting long wait times and drops in service levels, and the company won't be looking at reducing any headcount until those issues are resolved. Hypothetically, a company executive said that they would look at Amelia as costing significantly less than a human. It is likely that the company could increase the volume of calls handled at less cost than today.

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Gazing into the Crystal Ball: The Future of the Service Agent

The pace of change in innovating service delivery is nothing short of astounding. To react to faster-changing business requirements, the continuum of intelligent automation offers organizations a plethora of building blocks and options to digitalize even legacy processes. The direction of travel is toward the notion of the OneOffice, linking and integrating process flows and interactions between the front, middle, and back office. While intelligent automation is all about decoupling routine service delivery from labor arbitrage, the mainstream model for service agents will be one best described as human augmentation—not the kind of robotic domination depicted in sci-fi movies like The Matrix. Against this background, what could be realistic scenarios for the future market development? Three issues and scenarios jump to mind:

- **Human augmentation will be the leading narrative for service agents.** As the UBS client story highlighted, implementation of virtual agents within an organization needs to be coupled with a strong story about what this implementation means for human labor. The message is clearly to automate the technical and invest in the strategic; free up people to design and curate the customer experience. Not to mention, as with the second gaming company example, so many front-office organizations are currently swamped with volume growth that it will take some time to get to the point of actual displacement. Organizations urgently need help with the fundamental transformation of knowledge work that intelligent automation and other technologies are fostering. Partners should help these organizations identify future requirements for talent, adapt organizational structures, and support change management. Yes, we will see organizations deploying virtual agents to replace human service agents predominantly to save costs. However, those deployments will still require SMEs as part of a broader governance setup, as well for exception handling and escalation.

- **Security will be a lynchpin of service agent assistance.** The two case studies we highlighted hinged on the ability to authenticate the customer's identity; this element is critical for buyer stakeholders and one that will differentiate Amelia in this space. Authentication of customer identity is a segue to the broader issues of security and governance. The more processes are being automated, the more governance will be required to react to the interplay between human and virtual agents. With increasingly unattended automation scenarios, the curation and security of data will become the lynchpin for effective processes.

- **The virtual agent focus becomes about improving customer experience.** Virtual agents will prove out their use cases and move to higher-value interactions. Bots have been around forever. The sophistication of NLP and the ability to be more dynamic is making them more relevant now: translating everyday language into understanding what the questions being asked are, having the power to answer them, and being more conversational at the same time.

  However, a virtual agent has to be able to go beyond just conversation. The virtual agent has to be able to extend the conversation to the ultimate execution of customer requests and process steps. This is what we see IPsoft reaching for with Amelia and developing in tandem with clients.

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Recommendations for buyers

- **Pivot service delivery toward the notion of the OneOffice.** Service agents play different roles in front- and back-office activities. As we are seeing organizations progress toward the notion of the OneOffice, the scenarios for virtual agents should be expanded to an end-to-end view, encompassing the front and back office.
- **Work toward notions of service orchestration rather than single magic bullet tools.** Organizations have an ever-greater choice of enhancing the conversational capabilities of a virtual agent with a plethora of tools that typically get subsumed under the intelligent automation moniker. However, there is no magic bullet that will get organizations to a process Nirvana. Instead, it is all about orchestrating different tools depending on the different use cases.
- **Take an end-to-process view with data curation as the starting point and centerpiece.** In our view, the future of service delivery will be all about integrating unstructured data into the delivery backbone. Unlike big data projects, this integration has to be on an industrial scale and increasingly in real-time. Thus, the notion of data curation has to take center stage.
- **Approach virtual agents with a view to manage and control the journey of a customer request. Analytics and expansive media integration capabilities should allow for a real-time adaptation of process flows.** As virtual agents expand beyond basic conversation, the ability to analyze, adapt, and manage customer requests becomes more critical. Organizations should work with their partners on roadmaps that progress beyond initiating a conversation to fulfilling a request or resolving a problem.
- **Leverage cognitive engines to integrate unstructured content into process flows.** Amelia is a cognitive engine, but organizations should evaluate additional tool sets that integrate broad sets of unstructured content (such as handwriting), as well as tools that identify patterns without ontologies or broad knowledge bases. Again, success will be all about service orchestration. Amelia has expansive capabilities, but service delivery strategies should be set up to embrace other innovative approaches.

  In this fast-moving space of cognitive and AI, buyers should look at some of the real-world examples of companies leveraging cognitive agents today. Forward-thinking companies are looking to those automated solutions to be highly intelligent, as well as self-learning and self-remediating. Within the overall ecosystem, we see that virtual agents will play an increasingly important role in these strategies moving forward.

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About the Authors

Melissa O'Brien

Melissa O'Brien is Research Director, Customer Engagement, Retail and Travel Strategies at HfS Research. Her research coverage includes customer experience management services, exploring ties with marketing operations and developing thought leadership around intelligent automation for contact center and vertically-specific customer engagement business processes. In addition, she focuses on key dynamics within the retail and consumer packaged good industries, with regards to customer-centric strategies, intelligent operations and service delivery.

Prior to HfS, Melissa spent four and a half years at IDC leading the Worldwide Customer Experience Management Services program. Her role at IDC included analysis of evolving contact center business process delivery and consumer communication trends, delivering reports, presentations and custom consulting projects including market forecasts and in-depth competitive assessments. This included leading plenary sessions at NASSCOM, IDC Directions, and various other service provider and industry events.

Melissa previously worked within the BPO industry as Client Services Manager at PSG Global Solutions, an outsourced recruiting services business. Melissa held various roles at PSG Global, including new client implementation, program design, and training, including development and delivery of the original training program in their Manila and Cebu, Philippines offices.

Melissa graduated with honors from the University of New Hampshire with a BA in English and Communication, and is a member of the Phi Beta Kappa honor society.

Melissa is a Boston area native and lives just outside the city with her husband and adorably mischievous Bluetick Coonhound. She enjoys various outdoor activities, traveling, and has recently become a kickboxing fanatic.

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Tom Reuner

Tom Reuner is Senior Vice President, Intelligent Automation and IT Services at HfS. Tom is responsible for driving the HfS research agenda for Intelligent Automation and IT Services. Automation cuts across the whole gamut ranging from RPA to Autonomics to Cognitive Computing and Artificial Intelligence. This includes increasingly the intersections of unstructured data, analytics, and Cognitive Automation while mobilizing the HfS analysts to research Intelligent Automation dynamics across specific industries and business functions. Furthermore, he is supporting HfS' push to disrupt IT Services research by focusing on application services and testing. A central theme for all his research is the increasing linkages between technological evolution and evolution in the delivery of business processes.

Tom's deep understanding of the dynamics of this market comes from having held senior positions with Gartner, Ovum and KPMG Consulting in the UK and with IDC in Germany where his responsibilities ranged from research and consulting to business development. He has always been involved in advising clients on the formulation of strategies, guiding them through methodologies and analytical data and working with clients to develop impactful and actionable insights. Tom is frequently quoted in the leading business and national press, has appeared on TV, and is a regular presenter at conferences.
Tom has a PhD in History from the University of Göttingen in Germany.

He lives in London with his wife, and in his spare time he tries to improve his culinary skills in order to distract him from the straining experience of being a Spurs supporter.

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HfS Research: The Services Research Company™

HfS Research is The Services Research Company™—the leading analyst authority and global community for business operations and IT services. The firm helps organizations validate and improve their global operations with world-class research, benchmarking and peer networking. HfS Research was named "Independent Analyst Firm of the Year for 2016" by the Institute of Industry Analyst Relations which voted on 170 other leading analysts. HfS Chief Analyst, Phil Fersht, was named Analyst of the Year in 2016 for the third time.

HfS coined the terms "The As-a-Service Economy" and "OneOffice™", which describe HfS Research's vision for the future of global operations and the impact of cognitive automation and digital technologies. HfS' vision is centered on creating the digital customer experience and an intelligent, single office to enable and support it. HfS' core mission is about helping clients achieve an integrated support operation that has the digital prowess to enable its organization to meet customer demand - as and when that demand happens. With specific practice areas focused on the Digitization of business processes and Design Thinking, Intelligent Automation and Outsourcing, HfS analysts apply industry knowledge in healthcare, life sciences, retail, manufacturing, energy, utilities, telecommunications and financial services to form a real viewpoint of the future of business operations.

HfS facilitates a thriving and dynamic global community which contributes to its research and stages several OneOffice™ Summits each year, bringing together senior service buyers, advisors, providers and technology suppliers in an intimate forum to develop collective recommendations for the industry and add depth to the firm's research publications and analyst offerings.

Now in its tenth year of publication, HfS Research's acclaimed blog Horses for Sources is the most widely read and trusted destination for unfettered collective insight, research and open debate about sourcing industry issues and developments.

HfS was named Analyst Firm of the Year for 2016, alongside Gartner and Forrester, by leading analyst observer InfluencerRelations.