Aileen

Powered by

ardonis

AI-Powered Transformation for the Modern Contact Centre White Paper

This transformation is not just a change, it is a significant revolution. With the promise of e**motional-aware AI solutions**, it is set to reshape the contact centre industry, marking a pivotal moment in the evolution of customer service. The potential of AI in customer service is vast, offering a future that is genuinely **human-centric** and **inspiring**, with the potential for **enhanced customer service experiences**.

ardonis

Table of Contents

ardonis

Evolution of Innovation

Understanding the current state of AI in customer service is crucial for comprehending its full potential and limitations. Leveraging technology to bring a smile to customers is nothing new in the contact centre industry, and creating an edge with the latest technology is now regarded as old-fashioned.The key change is not in the technology itself but how it is connected to simulate emotion and boost customer satisfaction. At the highest level, understanding the four types of AI: reactive AI, limited memory AI, theory of mind AI, and self-aware AI is crucial to comprehend the potential and limitations of AI in customer service.

1. **Reactive AI:** This is the most basic form of AI. Reactive AI systems respond to immediate inputs and provide predefined outputs. They help automate simple tasks and responses, such as answering FAQs or routing inquiries.

2. **Limited Memory AI:** This is a giant leap forward, as AI can learn from past interactions, allowing for contextually relevant responses. Generative AI (GenAI) solutions have expanded rapidly in customer service since early 2023, as this type of AI can suggest solutions based on available data from previous customer interactions.

3. **Theory of Mind (ToM) AI:** This emerging field explores AI's ability to understand and respond to human emotions and intentions. In customer service, Theory of Mind AI could identify customer sentiment in real-time, adapt communication styles, and provide empathetic responses. In simpler terms, it's like AI being able to understand and respond to human feelings, making interactions more human-like.

4. **Self-Aware AI:** This hypothetical level of AI and its potential implications for customer service are vast, envisioning human-like interactions; however, this is quite some time away (if at all), so we will only explore the first three types.

Reactive AI platforms have supported contact centres for nearly 40 years. However, the ability for AI to learn from limited memory and adapt based on vast datasets is only now being fully understood as organisations seek knowledge and partnerships to implement these solutions.

The true potential of AI in customer service lies in the emerging field of **Theory of Mind AI**. This next frontier in AI development focuses on understanding and responding to human emotions and intentions, promising a new level of empathetic and personalised interaction. It holds great promise for the contact centre industry, offering a vision of customer service that is genuinely human-centric and inspiring. In other words, it's like AI being able to understand and respond to human feelings, making interactions more human-like.

Imagine a contact centre where AI agents can resolve issues quickly, understand a customer's frustration, adjust their tone accordingly, and offer genuinely empathetic solutions based on the specific problem the customer is experiencing.

This is the future that Limited Memory and Theory of Mind AI promise – where customer service becomes a truly emotional, human-centric experience. Leading AI platforms already incorporate elements of the theory of mind into their solutions, enabling them to deliver personalised and emotionally intelligent interactions.

Current State

In this white paper, we explore the potential technologies and toolsets that will soon be available to contact centres looking to embrace the cutting-edge technology of AI. However, before diving into this, let's consider the current state and the investments needed to ensure these innovations can be leveraged effectively.

AI-powered automation is emerging as a key strategy for businesses to reduce workloads, create consistency, and eliminate errors to maintain a competitive edge. According to a survey by Forbes Advisors, 600 business owners identified valuable AI-driven solutions in customer service, cybersecurity, fraud management, and digital assistance, with customer service leading the way in AI adoption. This insight highlights the industry's progress and the strategies driving it forward, ensuring that you stay informed and up-to-date with the latest developments.

Business Function	Share
Customer Service	**56%**
Cybersecurity & Fraud Prevention	**51%**
Digital Assistants	**47%**
Customer Relationship Management	**46%**
Inventory Management	**40%**

Figure 1. Source: Forbes

Contact Centre Started with Innovation

The roots of today's contact centre can be traced back to the 1960s in the UK, where the Birmingham Press and Mail pioneered a new way to handle customer calls with a “Private Automatic Branch Exchange” (PABX) system. This revolutionary technology allowed for automatic call routing and management and featured rows of dedicated agents. It was a significant leap forward in customer service, allowing for more efficient handling of customer calls and paving the way for the modern contact centre.

Throughout the 1970s, call centre technology exploded, and forward-thinking industries like airlines and banks jumped on the bandwagon, recognising its power to elevate customer satisfaction and reduce per unit cost-to-serve through scaling operations.
By the 1990s, the contact centre was a well-oiled machine, coordinating people, processes, and technology. This "customer-centric" powerhouse idea has evolved to deliver value through multi-channel communication. We have fine-tuned these systems for three decades, primarily relying on rule-based technology and established processes.

Then, 2022 rolled around to shake things up!

Contact centres are once again leading the way in innovation, and embracing cutting-edge technologies. These technologies, when combined, can significantly enhance the level of service provided to customers at a fraction of the time and effort. The future is bright, and contact centres are proudly taking the lead, boosting pride and empowerment in the industry.

Investment & Opportunities

Investment, Opportunities and Contact Centres Leading the Change

The contact centre has been at the forefront of the AI journey, proudly leading the way and leveraging technology to stay one step ahead of the competition. This leadership instils a sense of pride and empowerment in the industry, highlighting the crucial role of contact centres in the AI revolution.

AI achievements have been groundbreaking in the last two years, with massive hype and investment, but this has generated overconfidence in AI's ability. AI is not something that just magically integrates into your business and aligns with your strategy, at the press of a button. AI systems must be planned with strong governance, risk management and clear objectives.

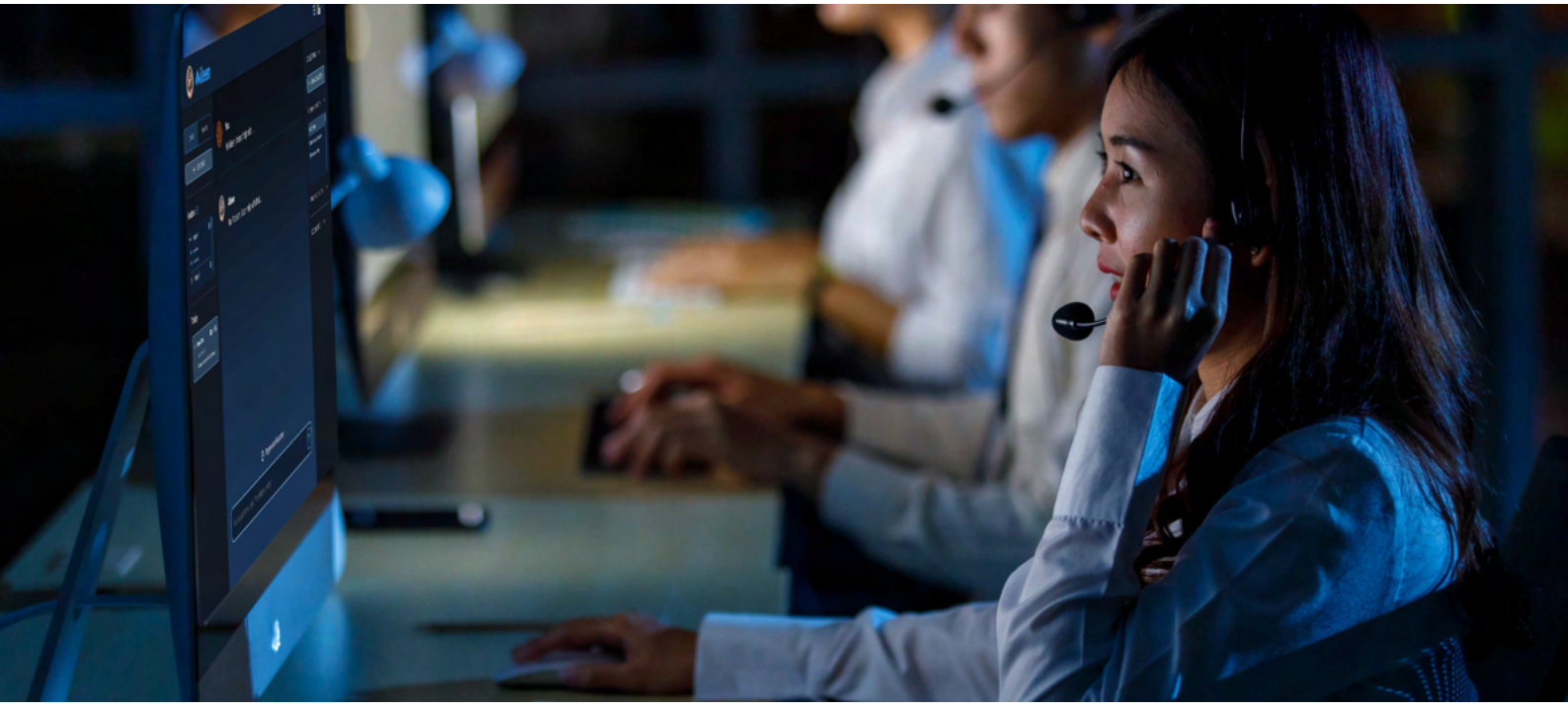
However, the consequences of not doing this can result in your company's reputational damage, mismanaged customer data, employee distrust, operational, and regulatory risk. It is essential to be cautious and aware of these potential risks.

Over the last 40 years, heavy investment in technology has resulted in technology barriers around communication channels and data structures within point solutions. This has led to wasted hours where customer representatives suffer under the weight of "swivel chair" activities as they switch between CRM, ticket/email and knowledge management systems to meet and exceed customer queries. Outdated, incompatible technology and data structures are a significant bottleneck for all contact centres, leading to frustration and inefficiency.

According to the 2023 Deloitte article “Trends & AI in the Contact Center,” the highest technology focus is on investing in self-service capabilities, modernisation, and deploying agent-enabling technologies.

Contact centre leadership will always prioritise customer experience and satisfaction; however, the methods and approaches must be flexible due to ever-changing customer expectations, competitor improvements, and technological evolutions. The client experience must be balanced with cost escalations—which is a constant balancing act.

A massive investment by Bank of Ireland (BOI), recently announced in April 2024, is its single most significant investment in frontline customer-facing services. BOI will invest €34 million primarily in its telephone and customer relationship systems. The core outcome of the investment is to achieve faster customer resolution by investing in call process streamlining and self-service solutions to provide standard services 24/7. These self-service options will reduce contact centre queries and limit repetitive requests, such as changing account addresses, ordering duplicate statements, and requesting a new card. The investment will also incorporate biometrics to improve customer authentication, enhance fraud protection and reduce call waiting times.



Theory of Mind AI In Contact Centres

In psychology, the Theory of Mind is the ability to attribute mental states such as intentions, goals, emotions, and beliefs to ourselves and others, which has become one of the most fascinating concepts in human-AI interactions. This supports the adoption of AI and, ultimately, the success of AI projects.

AI systems need to make reliable predictions about human behaviour in high-risk situations in near real-time. For example - picture this scenario: “An autonomous self-driving car is travelling down a suburban road. It determines the presence of several children ahead, subtly adjusts course, and prepares so that the child is likely to act randomly and not consider danger. Integrating theory of mind into robotics and visual systems has been considered for several years. Still, it's only now considered a practical solution in the adoption and usefulness of process automation, like in contact centres.

Consider, for a moment, basic interaction, how the Theory of Mind is crucial for our everyday success in life. We use it without even thinking about it, it is integrated into our way of being and then cemented through cultural norms and beliefs. Without it, we could barely order a cup of coffee without getting into a heated argument. Try being robotic the next time you request a coffee and see what happens; you may get your coffee, but there will also be something extra for you!

The Theory of Mind allows one to attribute ideas, intentions, and sentiments to others, predict how they will or should behave, explain their actions, and respond accordingly. Simply put, it's a method for us to understand, describe, and predict the behaviours of others. It also helps us reflect on their ideas, intentions, and sentiments to create an emotional response. We develop this ability from our earliest interactions and continuously refine it through social experiences throughout our lives. It is a skill, and therefore, it can be enhanced to exceptionally high levels. Think of the theory of mind as a spectrum, with low awareness on the one hand and then high levels of sensitivity and understanding on the other.

In the context of the theory of Mind in AI, this emerging field explores how AI systems can use “emotional response modules” to mimic emotional responses.

The same Deloitte study noted, “81% of contact centre executives are investing in AI.” These "cognitive investments" are designed to improve customer representatives' training and efficiency. However, it goes on to say that “as few as 7% of respondents report their cognitive capabilities are delivering significant value to the organisation.”

Like in the autonomous car example, integrating ToM into AI increases the opportunity to multiply the value of the service or solution by adjusting for interactions that can take into account safety, complexity, emotions, context, and intent. Marry this with the overwhelming power of AI to crunch vast amounts of data to find and deliver solutions - and you have something extraordinary.

The value to the organisation and its customers will be an ongoing and compounding return by removing friction and adding speed with emotional response.

Assume a conversation between an AI and a customer in which the customer asks the AI to change their debit order date. The AI system can use a series of emotional modules to:

Categorise the conversation

Calculate intent and sentiment

Determine context

Complete security, compliance and fraud checks

Leverage historical interactions

A likely change will be determined, resulting in the ideal outcome or response

In this case, the AI will update the debit order date and inform the customer. AI behaviour that results in ideal outcomes can be reinforced through training. Over time, through fine-tuning, the AI will become equipped to cater to cultural and geographical social norms, developing a simplified personality.

The customer will likely have a positive emotional response because the AI has completed the actions reflected in the response, which exhibits positive intent and sentiment. The person may not even need to know an AI-enabled customer journey was used to support them.

Assuming the AI system's design, development, and implementation are correctly scoped, the ideal outcome and response will be appropriate. Theory of Mind AI could **identify customer sentiment in real-time**, **adapt communication styles**, and provide **empathetic responses** that the contact centre specialist can vet.

Limited Memory & Theory of Mind Solutions

Business leaders are becoming more aware of AI-based solutions, and they can track their maturity areas and readiness to implement AI solutions safely and sustainably.

"When implementing AI solutions into a business, using as little as possible is best."

Planning

Planning for such a solution must involve excellent governance, compliance, and risk analysis. Frameworks like ISO 42001 provide businesses with controls and frameworks to guide organisations in establishing and maintaining an Artificial Intelligence Management System. On the other hand, the NIST AI RMF provides a framework tailored specifically to managing risks associated with AI systems.

Once the business context of how AI can enable the business to achieve its vision and mission is thoroughly understood, the business leaders are prepared to start planning and preparing the company for AI.

To start, identify processes based on specific categories that must be audited—map workflows across the business through a series of audits. For a contact centre, identify the top repetitive tickets and overlay these with a customer journey, associated processes, data requirements, compliance requirements, and resolution methods. This is a useful exercise, as it identifies broken processes, customer journeys, and resolution methods that must be addressed and fixed before further automation and AI are considered.

For example, suppose only half of the customer journey is working, and the resolution method could be more convenient, manual, and often consistent. In that case, automation will simply automate a broken, inconsistent process.

Automation should only be done once the entire process, including resolution, is well understood. Addressing this will support the business in streamlining and increasing its governance and consistency. Once the above workflows have been mapped, the next step is to analyse the volumes and resolution methods in great detail.

Every step a contact centre specialist takes to resolve a high-volume repetitive ticket must be mapped to determine what an AI must 'do' to be considered an appropriate replacement for this workflow.

However, AI must also consider the Theory of Mind to replace these repetitive workflows effectively. It must provide a sufficiently emotional response that considers tone and response.

As such, this can currently be done by simulating the theory of mind by meeting these three core aspects to be a practical replacement for a repetitive workflow:

1. **Thoroughly understand the ticket**
2. **Create an appropriate contextual response**
3. **Remember the interactions and actions**

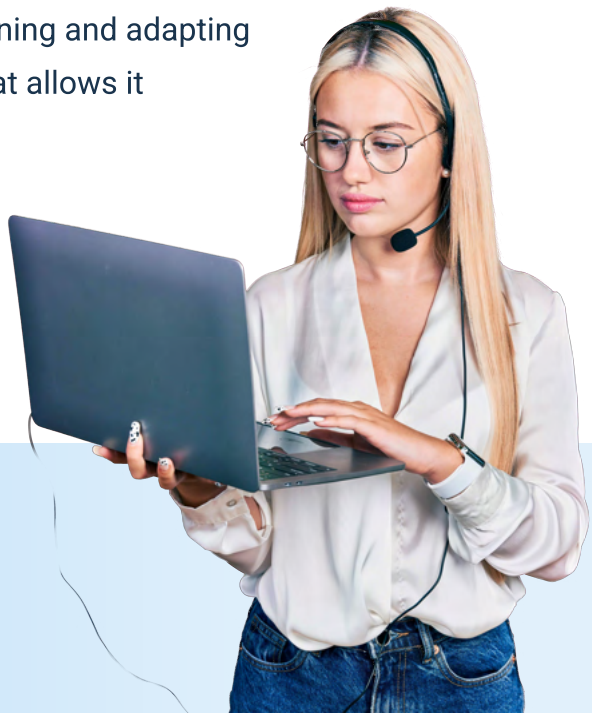
“Understand” in the context of a repetitive ticket type can be identified and understood by considering the following;

- **Intent, what the customer is asking for?**
- **Sentiment: how is the customer asking for this - what is their mental/emotional state?**
- **Categorisation: how do the intent and emotional state fit with what the possible options the AI can respond to?**

“Responding” is an action that generates a response, which is either delivered automatically to the client directly or sends it to a specialist for verification. The response is based on the intent, sentiment, and category.

“Remembering” is critical to the ongoing refinement and training. The AI system is agentic—meaning it acts autonomously and proactively. It is not simply responding to direct commands. Instead, it can maintain a record of all past interactions with the customer, understand those interactions and build on its knowledge. Finally, the AI uses this gained knowledge to generate responses and take actions that align with the customer's needs and preferences, even anticipating future requests.

This process is continuous, with the AI constantly learning and adapting based on its interactions, creating a feedback loop that allows it to become more effective and personalised over time.



Implementing

The right planning ensures that the business can accelerate its implementation because the risks are understood and can be managed when other risk events occur.
AI tools must be used in combination to achieve the desired outcomes. In contact centres, the desired outcomes are often to reduce the cost-to-serve (the cost a business incurs to serve a customer) while striving to increase the customer's delight factor.

Agentic Generative AI processes are complex and can produce imperfect answers, hallucinate, or “go off the rails” entirely through interaction with bad actors or through their inherent non-deterministic outputs. Integrating them into existing data and business systems is also complex and involves more than just pressing a button.

To prevent inherent problems with AI and to simplify integration into business data and systems, a well-designed AI solution must, by necessity, be highly modularised with the ability to assemble various tools and functionality into workflows. These modularised workflows enable the creation of solutions that can mirror complex human interactions and leverage the immense power of agentic GenAI safely using real-time safeguards, auditing, and the ability to place a "human in the loop" at each stage.

Modularisation

The ideal solution should be implemented in a modular and open manner to ensure safety. The client should have access to the logic and sequences that generated a response. Within a contact centre, this ability to check and recheck each part of the steps used to create a response must be fully understood. GenAI solutions should be tightly regulated. This can be done by implementing them in a modular format with structured output requirements or secondary analysis of outputs. This creates simple modular blocks that can be interrogated individually and combined into highly sophisticated, auditable, testable, and controllable processes for complex tasks.

Governance Controls

AI controls must be implemented to prevent the generation of information that is not aligned with company policy. Implementing an AI system requires checks and balances to ensure that the outputs from an AI system that leverages GenAI are controlled with deterministic outputs. The controls must consider broader ethical, moral, and biased concerns and the practicality of the ideal outcome that will quickly solve a customer's issue. These controls can be applied as part of a secondary analysis to inputs and outputs from a given GenAI module.

Intelligence Layer

For a modularised AI system to be implemented effectively, an intelligence layer must combine and control the modules that chain workflows, data, and integrations across multiple platforms to deliver concise intent and sentiment-based AI responses in seconds. By separating an AI system into building blocks, businesses can integrate AI safely, systematically, and with confidence that the company and its customers are not being put at risk.

The intelligence layer can be implemented in the following combined manner:

- **Categorisation Module:** Customer communications are categorised from initial queries to replies.
- **Intent Module:** Determines the intents within the content and can be implemented as follows;
  - Simply identify the following: “What is the main intent?”
  - Or a more complex one - “What is the main intent, and what are the other intents? How do they relate to each other?”
  - Intent identification could be limited or directed to a fixed list of available actions or left open based on the actual intent expressed by the customer.
  - The intent module monitors the status of each intent in terms of the resolution process.
  - Finally, to ensure completeness, intent gathering occurs during every interaction, and as the conversation extends, it becomes an array of intents.

- **Sentiment Module:** Gathers multiple sentiment levels, including emotional state and customer-specific requirements such as vulnerability. This is critical when faster responses for those in need must be prioritised or when providing consistent, compassionate responses based on emotional state.

- **Action Module:** This is a series of tools that can perform actions in the real world, such as getting/sending data to/from third parties and Interacting with external APIs.

- **Retrieval-Augmented Generation (RAG):**
  It incorporates a company's proprietary intellectual property, not part of a large language model. This intellectual property is used to build a contextual response. It is not “shared” externally but is tightly controlled in a dynamic database ideal for complex, secure, enterprise-grade implementations.

This approach and implementation provides a safe transformation process that delivers on the promise of “emotional-aware” AI solutions.

Return on Investment

Automation and AI assistance can eliminate the need to handle tickets in most repetitive cases while efficiently generating suggested responses to complex and challenging cases. This approach will increase first-time resolution and significantly reduce average handling time, resulting in higher customer satisfaction ratings and a reduced cost-to-serve.

Further savings can be harnessed through deflection and self-service options to resolve common customer issues without agent intervention. Encouraging self-service and text-based communication reduces reliance on higher-cost channels like phone calls.

Finally, and most importantly, although difficult to measure in monetary terms, using AI to prioritise vulnerable customers who may require specialised assistance puts the customers who need urgent service first.

Conclusion

Theory of Mind AI has the potential to increase customer satisfaction through speed of response, convenience, and accuracy and to reduce the cost to the service provider without the customer feeling like they are engaging with just another generic bot. Contact centres have led the technology race for nearly six decades to create scalable customer solutions that are affordable, easy to use, and accessible through widely accessible communication channels. The fast-paced world of AI is at a tipping point that could reshape the contact centre industry, marking a pivotal moment in the evolution of customer service.

The potential of AI in customer service is becoming well understood, and the financial value for both business and customers is becoming clearer by the minute.

Selecting a trusted partner and using a modular-based approach ensures that a company can future-proof its AI by easily swapping out architecture.

Ultimately, customers want as little fuss as possible in the shortest possible time. They simply want their expectations met with virtually no effort on their part. If an AI system can do that quickly and with no fuss, the customer experience and value received will increase.

AI systems must focus on leveraging an already abundant technology investments and create synergy and connection across these fragmented systems to reduce waiting times, increase accuracy, and manage compliance and fraud risk.

When there is a technology step-change like this, there are massive opportunities for growth and risks. A business must balance its values and principles, as well as its customer needs, and it must be able to deploy AI systems sustainably and responsibly. Limited memory systems should be used sparingly, with clear goals, and tested regularly to ensure they provide ongoing, safe, and sustainable value.

References

1. Cuzzolin, F., Morelli, A., Cîrstea, B. & Sahakian, B. J. (2020). Knowing me, knowing you: theory of mind in AI. Psychological Medicine. [online] Available at: https://www.cambridge.org/core/journals/psychological-medicine/article/knowing-me-knowing-you-theory-of-mind-in-ai/C935A66A018117BA5B1991071393655F [Accessed 3 September 2024].

2. Bank of Ireland. (2024). Bank of Ireland investing additional €34 million in customer service improvements. [online] Available at: https://www.bankofireland.com/about-bank-of-ireland/press-releases/2024/bank-of-ireland-investing-additional-e34-million-in-customer-service-improvements/#:~:text=This%20investment%20in%20technology%20will,phone%2C%20and%20improved%20customer%20security. [Accessed 3 September 2024].

3. Forbes Advisor. (2023). How Businesses Are Using Artificial Intelligence In 2024. [online] Available at: https://www.forbes.com/advisor/business/software/ai-in-business/#how_businesses_are_using_artificial_intelligence_section [Accessed 3 September 2024].

4. Deloitte. (2023). Trends & AI in the Contact Center. [online] Available at: https://www2.deloitte.com/content/dam/Deloitte/us/Documents/process-and-operations/us-consulting-trends-and-ai-in-contact-center.pdf [Accessed 3 September 2024].

5. Ahmed, T. & Hussain, B. (2023). The Role of AI in Enhancing Customer Experience and Engagement in Digital Transformation. https://www.researchgate.net/publication/371205771_The_Role_of_AI_in_Enhancing_Customer_Experience_and_Engagement_in_Digital_Transformation Call Centre Helper. (2023). How AI is Transforming Contact Centres. [online] Available at: https://www.callcentrehelper.com/how-ai-is-transforming-contact-centres-228324.htm [Accessed 3 September 2024].

6. McKinsey & Company. (2024). Where is customer care in 2024? [online] Available at: https://www.mckinsey.com/capabilities/operations/our-insights/where-is-customer-care-in-2024 [Accessed 3 September 2024].

7. McKinsey Global Institute. (2024). A new future of work: The race to deploy AI and raise skills in Europe and beyond. [online] Available at: https://www.mckinsey.com/mgi/our-research/a-new-future-of-work-the-race-to-deplo [Accessed 3 September 2024].

8. Bristow, L. (2024). HUMAN AI ALLIANCE: Meditations For Leaders [Paperback]. May 6, 2024. https://a.co/d/cN6sIsa.

Authors

Ivan Goor

Group CEO

JC Durbin

Head of AI Innovation

ardanis

Visit us at https://ardanis.com/

Aileen

Powered by

ardanis

Contact us to see Aileen in action:

E: info@ardanis.com T: +353 (0) 1482 6918