Microsoft Azure

Nine AI Trends Driving App Innovation

This eBook is for you if...

- You're an IT leader who owns the digital experience at your organisation evaluating how to use cloud AI services to develop or modernise new apps.
- You want the competitive advantage that comes from using emerging AI technologies in app development to drive operational efficiencies and improve customer experiences.
- You want to ensure your team has the expertise to work confidently with AI tools and infuse AI into your apps and services.

Estimated reading time: 14 minutes

Contents

The time to innovate with AI is now

The question is – how?

Ever since ChatGPT burst into public consciousness, businesses have been eager to join the AI movement. According to a recent Gartner, Inc. poll, 45% of executive leaders have increased their AI investments directly due to the publicity surrounding ChatGPT.[1] Many of today's leaders see immense potential in using AI to develop business applications that are more intelligent, user friendly and cost effective than their traditional apps.

Generative AI isn't the only groundbreaking trend in the world of AI. The modern landscape is full of AI tools that are inspiring intelligent app development in product optimisation, customer support, security and maintenance and dozens of other applications. Now, leaders are in a race to determine what kinds of AI will be most impactful in helping their organisation build and modernise apps that support business objectives.

With new trends in AI, machine learning and analytics emerging every year, knowing what holds the greatest potential for your business is important. To jump-start your intelligent app strategy, this eBook explores nine of today's most significant AI trends that are driving intelligent app innovation.

What makes an app 'intelligent'?

An intelligent app uses AI, machine learning, advanced analytics and cloud-scale data to create smarter and more intuitive interactions than a traditional app. Currently, organisations across industries are working to develop intelligent apps that drive efficiency, save time and create game-changing customer experiences.

[1] Gartner Poll Finds 45% of Executives Say ChatGPT Has Prompted an Increase in AI Investment, May 2023

Modern apps integrate AI and advanced technologies to provide benefits to customers, employees and businesses

Customer benefits

- Interact with business apps in an intuitive, human-like manner.
- Get personalised experiences based on historical and real-time interactions.
- Receive around-the-clock assistance and support across different channels and devices.

Employee benefits

- Gain access to more advanced capabilities like coding, imaging and analytics, even for non-technical employees.
- Eliminate redundant tasks to allow more space for creative and strategic tasks.
- Receive on-the-job personalised assistance for complex tasks.

Business benefits

- Go to market faster with enhanced personalised and unique digital experiences.
- Build scalable apps that handle large volumes of users without sacrificing performance.
- Enhance your understanding of customers and their needs.
- Improve decision making to mitigate risk and keep pace with emerging trends.

Nine AI trends to power app innovation

Trend 1: Low-code/no-code development

Make AI development accessible to non-technical users

Low-code and no-code technology is an AI trend that helps users build apps, websites and workflows without coding experience. Using drag-and-drop capabilities and point-and-click interfaces, low-code/no-code tools automate and streamline the development phase of a project, making it easier to build apps without needing extensive IT skills. Plus, low-code/no-code platforms typically adapt to the user's preferences, style and feedback, helping developers become more efficient over time.

This kind of technology is transformative for companies with teams that need to develop solutions constantly and quickly. For instance, an organisation might create a no-code app that churns out AI-powered workflows in minutes to keep projects moving forward. One company has developed a low-code app for building supply chain solutions that help customers improve warehouse management.

Benefits of low-code/no-code development

- Save time and money by eliminating the need for manual coding, configuration and testing.
- Empower non-technical developers to build and scale intelligent apps faster and more efficiently.
- Reduce the development bottleneck during project lifecycles to accelerate time to market.

Intelligent app innovation example: Build an AI copilot that improves customer services

Low-code/no-code development could be used to create an AI copilot for customer service agents. The developers give natural language descriptions of what they want the copilot to do – for instance, providing real-time coaching and feedback to improve agent performance – and the no-code development tool generates the code, formulas and components required to build it in a fraction of the time it would take manually.

Trend 2: Conversational AI

Create natural and engaging interactions between humans and machines

Conversational AI simulates human conversation to make interactions more engaging and realistic. Using natural language processing and machine learning to understand and generate natural language responses, apps enabled with conversational AI allow users to communicate via text or voice as they would with another person.

Conversational AI powers human-like interactions for various intelligent apps – for example, a chatbot that helps banking customers find their routing number, an automotive assistant with sophisticated voice interactions or a translation app that enables real-time communications during multilingual videoconferencing.

Benefits of conversational AI

- Reduce costs and increase productivity by automating tasks that humans currently perform like answering common questions, scheduling appointments and giving product recommendations.
- Deliver better customer experience by providing personalised support anytime, resolving issues faster and offering additional information and suggestions.
- Collect and analyse data from interactions to improve performance over time, learn preferences and provide insights for business decisions.

Intelligent app innovation example: Create a conversational AI app to generate and qualify leads

Conversational AI can help businesses generate and qualify leads through websites, social media or email. For instance, you could create a conversational AI app that engages with potential customers on their channel of choice. Asking relevant questions and providing the necessary information in a knowledgeable, human-like tone, the app autonomously moves prospects to the next logical step in their journey, providing a personalised experience while freeing team members up for other tasks.

Trend 3: Generative AI

Create novel content based on existing data

Generative AI is a type of AI that can create new content, such as text, images or code, by training on existing data. It uses deep learning and neural networks to analyse the patterns and structure of the input data and then generate new content with similar characteristics.

Today, generative AI powers various intelligent app experiences involving text, voice, code and images. For instance, it could power an app that summarises complex financial documents, a medical app that generates images showing the future progression of a disease or an AI assistant that surfaces insights from a company's sites to speed up research. Generative AI is also used to create synthetic data, which helps enhance existing datasets and anonymise sensitive information.

Benefits of generative AI

- Quickly produce novel content like summaries and emails, freeing employees for more critical tasks.
- Increase cost savings resulting from improved productivity and enhanced customer support interactions.
- Provide knowledgeable customer support anytime, resolving issues faster and offering personalised information and suggestions.

Intelligent app innovation example: Generate synthetic data to protect patient confidentiality

A healthcare organisation could develop an intelligent app for medical research that uses generative AI to create synthetic data from information found in patient records, medical images and lab results. This application of AI helps preserve the statistical properties and relationships of patient data, while also ensuring sensitive information remains confidential. In this way, the app can protect patient privacy while providing large and diverse datasets for better research.

Trend 4: Predictive analytics

Forecast future outcomes and performance based on historical data and statistical models

Predictive analytics involves using data to foresee future events so leaders can plan and strategise accurately. It employs data analysis, machine learning, AI and statistical modelling to detect patterns that indicate future behaviours and outcomes. The process involves gathering and analysing past and present data and then using different methods to spot trends, connections and unusual patterns.

With these capabilities, predictive models can be used to build intelligent apps that gauge the likelihood of specific events or results and suggest next actions. For example, a manufacturing company might build an intelligent app with predictive analytics to monitor machine performance and predict when maintenance is needed before potential issues cause downtime. In the medical field, a company might use predictive analytics to innovate an app that analyses medical records to predict health outcomes and prescribe possible treatments.

Benefits of predictive analytics

- Find new revenue opportunities based on current and historical trends and customer behaviour.
- Enhance supply chain management by providing a snapshot of future demand and inventory levels.
- Improve risk management by identifying and mitigating threats.

Intelligent app innovation example: A CRM app that predicts customer churn

There are usually signs that indicate a customer is considering no longer purchasing – but they often go unnoticed until it's too late. Predictive analytics can be used to build CRM apps that segment customers, predict their behaviour and personalise their interactions based on past behaviour. This kind of app could help identify which customers are most likely to churn and automatically offer incentives or discounts to convince them to stay.

Trend 5: Cybersecurity

Protect data, networks and systems from cyberattacks

AI is becoming increasingly essential in cybersecurity for safeguarding online systems against attacks by cyber criminals and preventing unauthorised access. Using data mining, machine learning and natural language processing, it helps monitor and analyse behaviour patterns to detect real-time cyber threats. AI also enhances user identity and access management by analysing login attempts using biometrics, multifactor authentication and behavioural data.

These capabilities are useful in finance and insurance, e-commerce and healthcare industries. For instance, a bank might build an AI-powered fraud detection app that monitors user behaviour to spot fake identities. In an e-commerce setting, an intelligent app could use machine learning to analyse transaction history to flag suspicious behaviour and prevent fraudulent activities in real time.

Benefits of AI in cybersecurity

- Reduce costs and increase productivity by automating system monitoring, threat detection and incident response tasks.
- Reduce human error from security processes.
- Process huge amounts of data to automatically detect emerging threats that might go undetected with traditional cybersecurity systems.

Intelligent app innovation example: AI-based identity verification and authentication

Traditional verification and authentication methods like passwords and security questions are becoming increasingly vulnerable to cyberattacks. In response, cybersecurity apps that integrate AI can help keep identities secure and prevent unauthorised access. These apps use AI and machine learning to analyse and evaluate user behaviour and context – such as device, location and network – to determine the risk associated with a user's activities.

Trend 6: Hyperautomation

Save time and human effort by automating as many business and IT processes as possible

AI hyperautomation involves automating everything in an organisation that can be automated, reducing the pressure on workers and freeing them up for other business-critical or high-impact activities. It employs AI, machine learning, robotic process automation and other technologies to run processes and tasks without human intervention.

AI hyperautomation collects and analyses data from various sources like sensors, databases or user inputs with greater accuracy and speed than a human could. This makes hyperautomation a great tool for intelligent apps that handle large and complex datasets. A company might build an intelligent app that uses hyperautomation to collect data from scanned invoices, check them for errors and then enter the results into its enterprise resource planning system. It could also automatically monitor, detect and diagnose IT incidents, freeing up IT teams for other critical tasks.

Benefits of AI hyperautomation

- Increase employee productivity and reduce human error by automating time-consuming tasks that are prone to mistakes.
- Save on cost by eliminating hours of manual activity.
- Discover ways to optimise development workflows so processes are faster and more cost efficient.

Intelligent app innovation example: An AI-powered app that eliminates manual invoice processing

Invoice processing is a key business task involving receipt, validation and payment of supplier invoices. It's also a slow and costly process prone to errors when performed manually. Using robotic process automation, an intelligent app could use hyperautomation to gather and extract data from various sources, including emails, scanned documents or web portals, without human intervention. Then, it automatically validates the invoice data by checking for duplication, fraud or compliance, eliminating hours or days of tedious work.

Trend 7: AI simulation

Create and test virtual models of real-world systems or phenomena

AI simulation involves using AI to create realistic models of physical systems in the virtual world. By mimicking the behaviour and outcomes of real-world scenarios using data analysis, machine learning and statistical methods, AI simulation lets users virtually explore different configurations, models and material components before applying them to solve real business problems.

The process begins with data collection from various sources, which is then used to train a machine learning model. Once trained, the AI model can simulate real-world scenarios, predict outcomes and provide insights for the next iteration. In the pharmaceutical industry, this technology is used in intelligent apps to design novel molecules for new medicines. In the energy sector, it powers solutions that use drilling data and geological factors to simulate well and reservoir behaviour.

Benefits of AI simulation

- Analyse complex datasets and scenarios to better anticipate potential challenges and opportunities.
- Predict and model various risk scenarios, enabling you to prepare for and mitigate potential risks.
- Streamline processes and reduce the need for physical prototypes for significant cost savings and increased efficiency.

Intelligent app innovation example: An AI simulation app that optimises supply chains

Using an AI simulation app, businesses could optimise their supply chain operations by virtually modelling their products' demand, supply, inventory, logistics and distribution. It could also help evaluate the potential impact of market changes, customer behaviour, weather conditions or geopolitical disruptions on their supply chain performance. AI simulation apps make it possible to explore different scenarios so businesses can see how using other suppliers, routes or modes of transportation would help or hurt their supply chains or impact customer satisfaction.

Trend 8: Content creation

Produce and optimise content to make room for human creativity

AI content creation is a trend that uses generative AI to produce digital messaging content like text, images and videos based on prompts. Then, using machine learning algorithms, natural language processing and other AI tools, it autonomously creates original content that replicates human-like creativity at a speed and scale unattainable by human creators.

This technology enhances efficiency and productivity while catering to audience demands for relevant, timely messaging. Today, intelligent apps built for content creation are used to produce updated content for websites, create engaging content enhanced for specific social media channels and automatically turn articles into podcast scripts.

Benefits of AI content creation

- Speed up the process of generating content and enable the production of large volumes of material in a fraction of the time it would take a human.
- Tailor content to specific user groups or individuals, ensuring that the content is more relevant, engaging and effective.
- Reduce labour costs and operational expenses.

Intelligent app innovation example: An app that generates personalised newsletters

AI newsletter generation streamlines the creation of personalised and engaging newsletters for customers, prospects or subscribers. Using AI tools like ChatGPT, an organisation could build an intelligent app that generates content tailored to specific topics, audiences and goals. It could also optimise the newsletter design, layout and subject line to increase the open and click rates, then analyse the newsletter's performance and provide feedback and suggestions for improvement.

Trend 9: Data grounding

Enhance the accuracy and relevance of AI-generated content

Sometimes, large language models produce responses that seem factual on the surface, but are actually untrue. These are called hallucinations, and they can drive down the trust of an AI system. AI data grounding helps eliminate hallucinations and improve the accuracy of AI apps by linking abstract knowledge in AI systems to concrete, real-life examples. Data grounding works by gathering and analysing data from both internal datasets and external sources like sensors, networks, databases and human feedback to help verify what is factual before generating output.

Data grounding helps build intelligent apps that produce contextually relevant results. Bing AI uses data grounding to provide additional context to its web page searches, which helps it answer queries with cited sources. Data grounding could also be used in a large language model to give driving directions based on external information like road closures, traffic conditions and electric charging points.

Benefits of AI data grounding

- Minimise the chances of generating incorrect or fabricated information.
- Facilitate fact checking by allowing users to check and verify the sources from which the data was retrieved.
- Continuously improve performance and learning by collecting and analysing data from the generated content to improve its accuracy, adaptability and usefulness.

Intelligent app innovation example: An AI app for sales, marketing and finance reporting

AI report generation creates informative and persuasive reports for business purposes, including sales, marketing and finance. Using a tool like ChatGPT, a company could generate reports based on internal data. Then, to help ensure the report is credible, the AI tool could ground its outputs with data from reliable external sources and incorporate it into the report content, providing citations and references to give the reader added confidence that what they're seeing is accurate.

Azure leads the way in intelligent app development

In a landscape where technological evolution can drastically change market dynamics, keeping pace with AI trends isn't just about staying relevant – it's about discovering opportunities to transform your business.

Azure solutions help organisations use AI to build and modernise groundbreaking intelligent apps that drive efficiency and better customer experiences. These solutions form a stack of integrated tools that make the process of creating intelligent apps fast, intuitive and cost efficient. Using integrated tools designed for cloud-native app development, your team can seize the latest AI trends to create adaptive and personalised user experiences.

Azure solutions for building and modernising apps with AI

- **Azure Kubernetes Service (AKS)** is a managed service that allows you to run Kubernetes clusters in Azure without worrying about the operational overhead of managing them. Use AKS to deploy and scale containerised applications, integrate Azure services and use Kubernetes features and tools.
- **Azure Cosmos DB** is a fully managed NoSQL and relational database that supports various data models, including relational, document, vector, key-value, graph and table. It offers guaranteed speed, scalability, availability, security and integration with Azure AI services and Azure Synapse Analytics.
- **Azure AI services (Azure OpenAI Service)** give customers advanced language AI with OpenAI GPT-4, GPT-3, Codex, DALL-E and Whisper models with the security of Azure. Azure OpenAI co-develops the APIs with OpenAI, ensuring compatibility and a smooth transition from one to the other.
- **Azure App Service** is an HTTP-based service hosting web applications on Windows and Linux-based environments. Develop in your preferred language, including .NET, .NET Core, Java, Node.js, PHP and Python.
- **Azure SQL DB** is a fully managed cloud database for handling database management functions, including patching, backups and security, with minimal user configuration and control.
- **Azure DB for PostgreSQL** is a relational database service based on the open-source Postgres database engine. It's a fully managed Database-as-a-Service that can handle mission-critical workloads with predictable performance, security, high availability and dynamic scalability.

Build and modernise with Azure to sharpen your competitive edge

A commissioned study by Forrester found that using the Azure solutions stack approach resulted in significant benefits for fast, efficient app development.

- Up to **1.5 months faster** time-to-market for new applications[2]
- Up to **25% reduced** app downtime[2]
- Up to **25% increased** developer efficiency[2]

[2] The Total Economic Impact™ of Microsoft Azure App Innovation, a commissioned study by Forrester Consulting on behalf of Microsoft, June 2023

Take the next steps

Launch your intelligent app journey with Azure to deliver innovative and high-performing apps.

Explore Azure Innovate >

Learn about Azure OpenAI Services >