

AI's Journey in Payments and Finance

Banking on intelligence.



Contents

01	<u>A new era of business possibilities</u>	Page 3
02	<u>The pressures on firms to create well-considered data strategies</u>	Page 5
03	<u>Developing a data and AI strategy</u>	Page 7
04	<u>The currency of tomorrow, AI's impact on payments and banking</u>	Page 10
05	<u>A new flexible business model</u>	Page 25
06	<u>How we can help you</u>	Page 29

01 A new era of business possibilities

Artificial intelligence (AI) powered banking and payments is becoming a compelling proposition for businesses looking for faster and more efficient workflows. But beyond the typical use cases and benefits, AI is now extending into fraud prevention, enabling self-serve onboarding and helping to exceed customer expectations through optimised user experiences.

Yet successful AI adoption requires a deep understanding of its nature. With solid understanding, well-defined objectives and through alignment with the right partner, you can become well equipped to seize the opportunities AI undoubtedly presents.

In this e-book we'll unpack how to prepare the way for AI and help ensure your data is fit for purpose. Let's explore insight into the types of AI available now and coming down the track and how banking and payments can utilise this technology in multiple processes and ways.

It is an exciting time! We're on the cusp of advances that we can't yet fully envisage, which is why it is essential to understand core concepts and become cognisant with AI as it is and open the door for the AI it will become.



02 The pressures on firms to create well-considered data strategies

From data gathering, validation and monitoring, to intelligent data analytics-driven decision-making, AI and automation can potentially transform your organisation.

While financial services recognise that data is their lifeblood, the opportunities provided by AI is driving the demand for a more structured approach to data to help address key pain points across the organisation. Now more than ever data needs to be easily accessible and well managed, as for AI to learn and take autonomous action, data needs to be in the right format.

Externally, increasing customer expectations, evolving capabilities, competitor investment and disruption, coupled with internal frustrations from employees expecting more modern tools, are all driving urgency.

What is more, younger digital-native consumers expect proactive use of their data to aid product development and offer them the imaginative solutions that continue to delight and excite them.



03 Developing a data strategy

'Working with data' shouldn't be confused with a well thought out strategy that helps an organisation on their data journey and work towards a data-enabled future.

Siloed working is a significant challenge that prevents organisations from becoming data-driven. Without the right knowledge of what data is available in the organisation, it can be almost impossible to decide what data teams need, let alone provide easy access.



Not all organisations have focused and accountable leadership setting their data strategy, such as a chief data officer. Without this single point of responsibility for data across the organisation, it's challenging to govern how data is used and make the most of it.

While there are countless factors that can restrict a data-driven future, with the right strategy and expert guidance, organisations of any data maturity can reach a point where they're able to exploit the potential of their data to drive great outcomes.

As seen in our [2024 Retail Banking Report](#), 75% of surveyed Financial Institutions (FIs) believe they need to modernise their cores. Legacy technology is still prevalent and often not API-enabled. So, instead of seamlessly sharing data at the touch of a button, organisations are hamstrung by time-consuming batch processing.

What is a well-considered data strategy, *exactly*?

Almost every organisation has a written business strategy – how you want to succeed and how you'll make it happen. Data is no different and needs a written record of its goals, execution and what success looks like and how you will deliver on your business ambitions. To help you get started let's consider these three key questions:



After these key questions have been answered, you'll have a better understanding of how improving utilising data will impact your organisation.

01 /

Why?

This involves answering questions about the opportunity for data and AI. What value could we gain? What does a potential future state look like? What would be the benefits of arriving at this future state? What happens if we don't do things differently?

02 /

What?

Understand clearly what data your organisation already has so you can understand what you can change, your starting point and the enablers that will help to accelerate transformation. This can include data analytics, governance, platform, skills and culture.

03 /

How?

Answer fundamental questions about the journey from your current state to a future one, describing everything you'll encounter and the incremental value you can expect to gain. This includes short-term activities and quick wins but also sets expectations around investment and timeline.

04 The currency of tomorrow: AI's impact on banking and payments

Generative AI has raised the bar in customer expectation. We now expect far more seamless interactions with organisations and intelligent automation. This, of course, brings challenges and opportunities.

Yet even generative AI is still in the very early stages of enterprise adoption. An August 2023 [McKinsey survey](#) showed that, for most business functions, the percentage of regular users remains in single digits, with the highest adoption at 14% in marketing and sales.

Before making investments, leaders need to look past the hype cycle and consider the most important question of all: **what do you need your technology to do?**

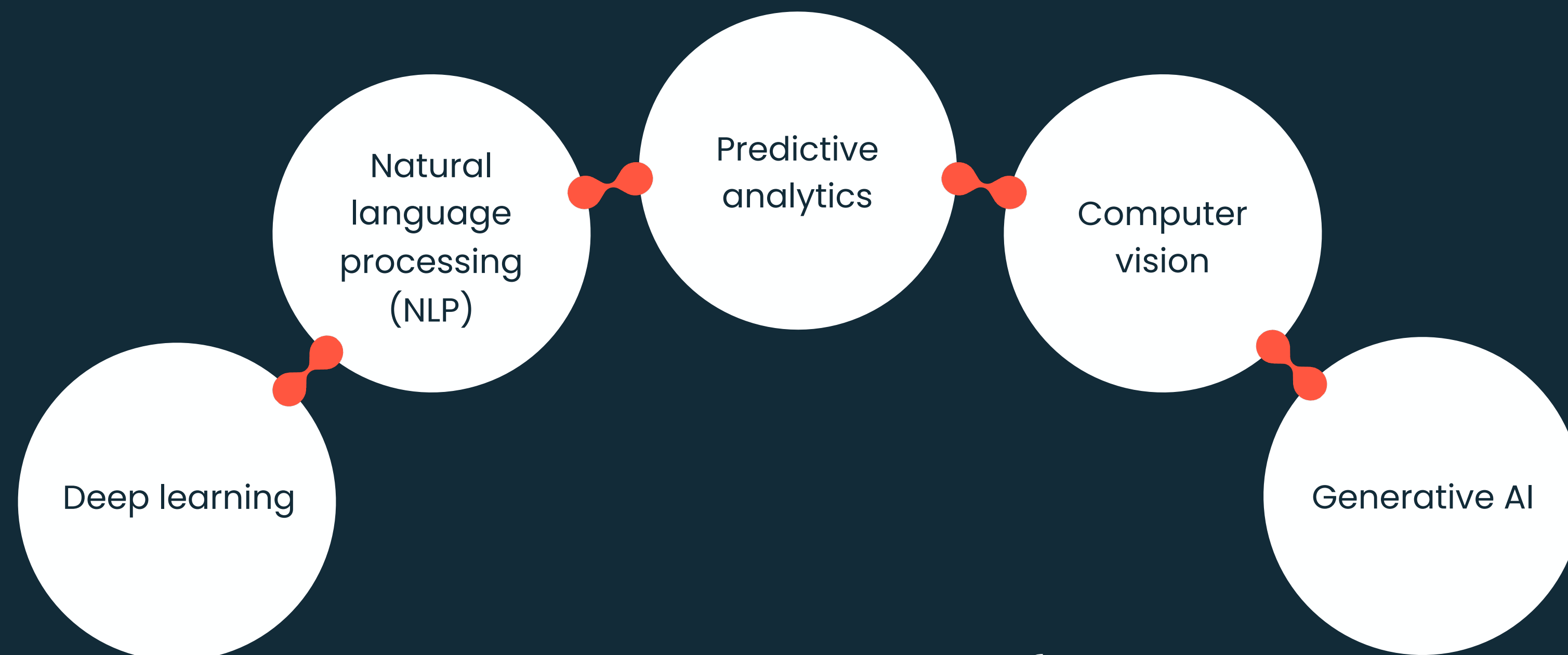


Creative use case → thinking

We've broken down some of the major fields of AI, alongside their main applications in banking and payments. We've also included other ways we could use AI based on our experience in supplying AI across the many different sectors in which we operate. We are learning new use cases daily that we can help other industries take advantage of.

This creative use case thinking can help you make the leaps and bounds possible with AI whilst also staying competitive and at the forefront of this rapidly evolving technology.

Let's now explore the major fields.



What are some of the → major fields in AI?

Deep learning

Today's AI tools, generative or non-generative, are generally the product of machine learning (ML) technology: computer models that use algorithms to notice patterns within large datasets.

Deep learning (DL) is a type of ML inspired by the workings of the human brain. At its core, deep learning employs 'artificial neural networks' to process information, like a series of interconnected checkpoints. As information travels through each checkpoint, it gets refined, leading to better decision-making.

DL's ability to automatically extract complex features from data makes it particularly well suited for working with language, speech, images, or videos.



Connecting large language models to internal data

The first step towards automation with large language models is connecting them to internal data, usually achieved through an information retrieval approach based on semantic search. This process maps a user's query into a semantic space where text segments with similar meanings are closer together.

After mapping the query and running a semantic search, the relevant information is sent to the prompt of the language model and incorporated into its context when generating answers. The system relies heavily on the user's initiative, who typically seeks out information through a user interface, such as a chatbot.

In common use in most industries, chatbots can be frustrating but when used in the right combination with a human, can provide easier access to accurate information while saving time and effort. They sometimes even unlock previously inaccessible sources of information which can lead to better coordination across an enterprise and more rapid updates in decision-making processes.



Use cases

We've helped customers from all sectors apply deep learning to functions as varied as customer service, product personalisation and parsing documents. But these use cases in banking and payments stand out:

01 /

Fraud prevention

The ability to process vast amounts of information at speed and in a timely manner means that AI can become a critical line of defence in fraud prevention. AI can spot unusual data (anomaly identification) and can recognise and learn a new fraud pattern (pattern recognition) that would take too much time for a human to process and comprehend. Use cases include:

- Monitoring of accounts and spotting and intercepting early fraud indicators, protecting both your customer and your liability.
- Speeding up the development and testing of new detection models.
- Reducing the number of false positives.



Looking at where a transaction came from, where it is going, time of day, IP address and other device-related data can result in a single transaction having hundreds of fields of data to analyse. With transactions speeding up to real-time the level of checking required can only be achieved through AI and ML based approaches.

Andy Davies
Global Head of Payments, Endava

02 /

Product development

Analyse customer behaviour patterns – for instance what, when and how customers buy and suggest fresh solutions to help them better manage what they are doing.

03 /

Targeted marketing and hyper personalisation

Analyse what you know about your customer, their user preferences and their segment and send the right offers to the right customers with intelligent presentation of products and services.

04 /

Customer service

Deliver accurate search results quickly. Using both natural language processing (NLP) and ML you can help to identify most relevant search results and provide a unified experience.

05 /

Onboarding

Provide automated onboarding experiences and carry out the required know your customer (KYC) checking. Intelligent data ingestion leverages ML to learn and adapt to the profile of the user being onboarded. Removing unwanted actors, saving costly third-party checks, and streamlining escalation and back office processes.

06 /

Compliance monitoring

Carry out ongoing monitoring required by legislation and for compliance. For instance, Digital Operational Resilience Act (DORA) monitoring for managing information and communication technology (ICT) risk for European financial institutions.

07 /

STP enablement

With the global shift to real-time payments with mandated 10 second execution rules, leveraging AI can increase straight-through processing (STP).



Being able to collect money, make a decision and disperse within seconds gives any solution an advantage in the market that many can't offer today.

Andy Davies
Global Head of Payments, Endava

Natural language → processing (NLP)

As the parent category of large language models (LLMs) like Chat GPT, Bard and LLaMA that have taken the world by storm, natural language processing (NLP) is AI's most talked-about manifestation. Less a single technology than a multi-disciplinary field of inquiry, it is all about how computers can understand and replicate the mechanics of human language.

LLMs are just one aspect of natural language processing. From speech-to-text voice recognition software to a virtual chatbot, that's NLP in action.

Data sources are often found in different databases and in different formats and languages. Locating and recovering this data is time consuming. NLP can be used for cognitive search across all formats, languages and platforms.

Let's take a look at some of the many use cases emerging.



01 /

Advanced enterprise search

This fast retrieval can have multiple uses including:

- Reviewing and ensuring regulatory compliance
- Staff onboarding and management
- Customer query handling/answering
- Finance professionals can use these tools to quickly analyse a company's financial health and make timely decisions.

02 /

Sentiment analysis

Banks already use this form of NLP to monitor social media and other channels for customer sentiment and feedback. Gauging customer satisfaction, it quickly identifies issues and enables improvements to be quickly made to products and services.

NLP apps can parse thousands of reviews and social posts to find patterns. Bidirectional Encoder Representations from Transformers (BERT) provides superior results on many NLP tasks and uses a context based embedding model and is pretrained on a large corpus of words.

One of the domain specific models to emerge is FinBERT, a tool used in financial text analysis that outperforms almost all other NLP techniques for financial sentiment analysis.

03 /

Fraud detection

What is simply dummy text of the printing and typesetting industry has been the industry's standard dummy text ever since the 1500s when an unknown printer took a galley of type and scrambled it to make a type specimen book it has.

04 /

Risk assessment/management

When borrowers are assessed for risk, multiple data channels are used. Manually this can result in incorrect evaluation or other mistakes, it is also very time consuming.

NLP tools allow financial statements and reports to be quickly digested to highlight metrics and trends. Lenders can also use Named Entity Recognition (NER) to identify and prevent ambiguity through its appropriate classification.

05 /

Customer services/analysis and retention

Chatbots and virtual assistants use NLP and predictives to process and accept text and voice commands and respond to customer queries. Sentiment analysis can be used to improve this servicing of queries and identify the sought-after services, the primary challenges of customers and get a feel for how customers rate the organisation. All this data can be used for hyper personalisation, measuring response rates, and improving services and products offered.



Natural language chat engines are finally coming into their own and when connected to the right data models can be used with a high degree of effectiveness to reduce unwanted first, second- and third-line support issues.

Andy Davies
Global Head of Payments, Endava

Predictive analytics

Predictive analytics (PA) counts among the most widely used applications of machine learning. By combining statistical methods with machine learning, PA tools can detect meaningful patterns across large, historical datasets. Those trends are then extrapolated into the future to create scenarios that decision-makers can act on.

Predictive analytics allows businesses to anticipate levels of demand and optimise their inventories in advance of sales spikes or dips. It also helps retailers and direct-to-consumer businesses predict buying behaviour, right down to the level of individual customers.

Machine learning is already playing a leading role in the green energy transition. As an example, at Endava, we've **helped energy companies** use predictive optimisation to serve energy more cheaply. We have also seen healthcare organisations auto-generate personalised well-being plans for patients.

For hardware-intensive businesses, PA can also safeguard against equipment issues by gauging the likelihood of machine breakdown or failure. For any company dealing in uncertainty and risk, like banks, PA allows for a new level of differentiation and precision.

Predictive analytics is not a crystal ball, and the outputs are only as good as the inputs. But with a strong data hygiene regimen, PA can help you sweep away the snags and snares from your path to growth.



Computer vision

Computer vision (CV) is a variant of AI wherein deep learning models are taught to discern and differentiate information contained in images. The training consists of exposing a neural network to an enormous mass of images with human guidance on what is in the pictures.

A machine that can distinguish between the features of a crowded street scene – and flag anomalies – could aid public safety efforts. Yet these capabilities raise concerns about potential misuse by government agencies. In the meantime, many uses of CV are emerging in the private sector, though come with their own controversies.

Take autonomous vehicles: if you want to let your car's software take the wheel, you need to be able to trust that it can tell a traffic light from a lamp post. CV's level of sophistication and reliability will determine whether self-driving cars can ever become a mass market reality. [You can read more about Software-defined vehicles \(SDV\) here.](#)

The implications for quality control processes are radical too. A CV-enabled camera on a factory floor production line can detect anomalies or defects at scale.

The facial unlock feature in mobile devices is already well used for increased security. Using Google lens to translate content in real time and auto tagging in uploaded social media images are all examples of CV.

There is immense potential to harness CV across the entire financial services value chain.



Retail banking	Customer experience	Data extraction for physical documents	Fraud prevention
Know Your Customer	●	●	●
Channel sentiment analysis	●		
Customer facial ID and/or biometrics	●		●
Customer authentication	●		●
Advanced data extraction from documents	●	●	
Commercial banking			
Data extraction from commercial loan documents	●	●	
Data extraction from trade documents	●	●	

KYC processing and onboarding

Banks can search and match customer photos to identify adverse and negative reporting or information on web and social media. An example is BBVA, SA, Spmain that asks customers onboarding online to submit photo ID and a selfie, facial recognition confirms the images match.

Automating document classification and data extraction

Paper-based manual processes to scan, store, classify and extract data can be streamlined and result in fewer errors for KYC, onboarding, mortgage, credit card and loan requests. Tools such as Amazon Rekognition, Google's Vision API and Azure Computer Vision 'read,' classify, extract and process unstructured documents increasing accuracy.

Customer experience

Facial recognition can be used to identifying a customer, analyse facial expressions for insight or potentially to flag fraudulent activity.

Emerging

We believe in the power of advanced technology to solve complex business problems and challenge existing expectations. AI is poised to soon create limitless opportunities. Many of these practical applications are already in use and we have launched our own innovative solution that combines the power of data and multi-agent autonomous teams to tackle complex challenges.

What is it?	What does it do?	How does it do it?	Practical application
Ambient intelligence	<ul style="list-style-type: none"> Intrinsic part of the background. Responsive, adaptive and consistently working in harmony with human tasks and processes. 	<ul style="list-style-type: none"> Process info from a multitude of sources, spoken, visual and written. Act as both archivists and curators, capturing and digitally encoding information then filtering, eliminating noise and highlighting pertinent info. 	<ul style="list-style-type: none"> Enhances capacity for informed decision-making. Analyse user interactions and preferences. Offer context-aware recommendations/guides to useful resources.
Intelligent agents	<ul style="list-style-type: none"> Observe their environment, proactively seek info, and direct their actions and tasks towards specific goals. Can initiate interactions, undertake tasks and delegate. 	<ul style="list-style-type: none"> Uses a combination of self-reflection and code generation. Iterative refining process allows model to assess if output aligns with goals and adjust responses accordingly. Self-reflection via evaluation of output is used as context or input for subsequent responses. Code generation ability allows it to leverage software tools, overcome limitations and evolve from a passive to a proactive assistant. 	<ul style="list-style-type: none"> Credit approvals through analysis of customer data and transaction history. Customer services - rapid response to queries, anticipating and addressing proactively. Personal assistants - schedule meetings, manage comms, proactively provide info or reminders. Could research markets for specific needs. Manage and optimise workflows. Auto generate reports and conduct predictive analyses to aid strategic planning.
Embodied intelligence	<ul style="list-style-type: none"> A convergence in the progress of LLM and robotics. The impact in enterprise environments could be extensive. 	<ul style="list-style-type: none"> Intelligent agents extend beyond the virtual to the real world, interfacing with APIs, allowing them to impact our physical environment as a fully embodied entity. 	<ul style="list-style-type: none"> Already in many industries. At the end of 2023 Amazon was utilising over 750K robots in highly repetitive tasks. Can carry out maintenance in industrial environments. Assist employees in daily operations.

05 A new flexible business model

Unlocking value

Utilising AI can help you to meet business objectives and be more flexible in your delivery. There are numerous advantages that AI can help to deliver.

It is likely that the true value that enterprises stand to gain from these models will only materialise once they are integrated into larger systems.



Delivering what the customer expects

Customers expect fast transactions and convenient payment methods. They expect easy self-service, smoother processes and convenience. This is increasingly becoming the norm and not the exception. Providing the right level of service boosts conversion rates and maximises acceptance.



Speed to delivery

AI tools provide speed to delivery as there is less need to rely on IT teams. Algorithm changes can be made within minutes and not days.



Goal setting and learning

With AI it's possible to set rules to fulfil your business goals. For instance, you could push higher margin products to boost revenue, or trial new products to understand market receptiveness. This all enables a level of flexibility that has not previously been possible. Results from testing can also be compared and scored and learned from in much quicker time, allowing for new revenue streams to be opened up more quickly.



Opportunity spotting

Quickly enhance your online presentation by identifying the biggest opportunities for improvement. Such analysis can include identifying zero results queries, underperforming categories or heatmaps, where customers are clustering on key pages and where you can improve your responsiveness or what you are offering.



Bundling and embedded

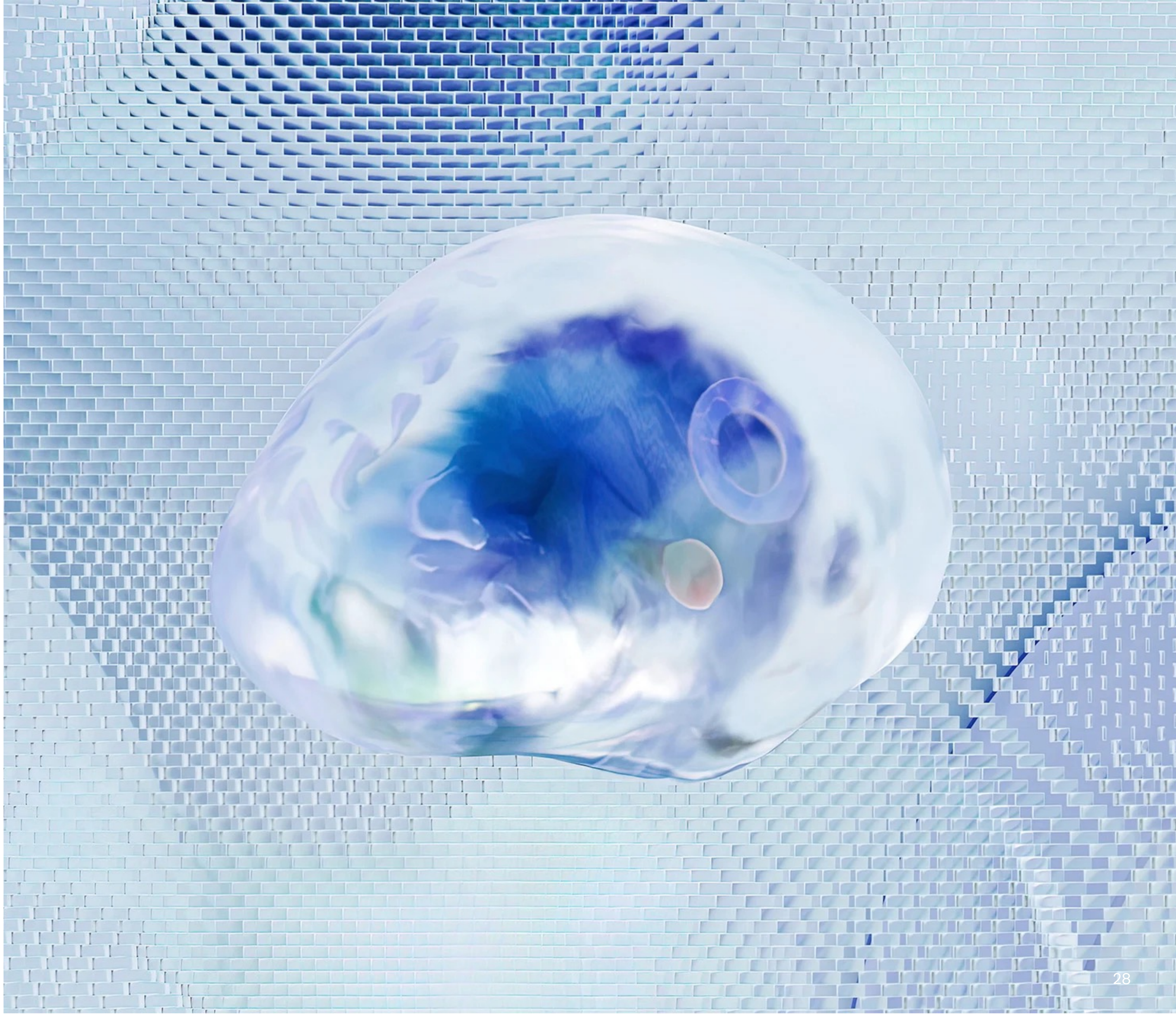
In retail we are already seeing automated trending products and with recommended products, or 'frequently bought together' solutions that are similar or related. These sorts of tools can be applied to banking and payments. If a customer takes out a mortgage there are then a host of other services that are related that can be bundled together for quick and easy resolution of customer needs. These embedded solutions make the buyer experience far more frictionless and easier to complete. You can read more about AI in retail [here](#).



Accelerating industries with agentic AI

Our perspective and philosophy on AIs' potential led to our creation of our agentic AI industry accelerator, which we internally call Morpheus.

Combining the power of data and multi-agent autonomous teams, our first-of-its-kind AI solution marks a significant step in applying large language models (LLMs) to highly regulated sectors. Learn more about our solution [here](#).



06 How we can help you

As organisations step further into AI it is essential to collaborate with a partner who not only understands AI but who understands your business model and the challenges and opportunities faced by your industry.

For over 20 years we have helped evolve the payments and banking ecosystems. We partner with pure payments companies for consulting and engineering and offer payments expertise to banking, retail, automotive and travel.

From modernisation, integrations and complex foreign exchange challenges to bespoke end-to-end orchestration or credit solutions, we are here to help you define your payments roadmap, strategy and business case to realise your ambition.



Our data & AI services

Strategic advice

Our data and AI experts help our customers to understand their opportunity and create a clear path to delivery.



Maturity assessment

Establishing a foundation for transformation by understanding current data and AI maturity, including an analysis of potential barriers, enablers and quick wins based on existing pain points



Leadership literacy

Inspiring and educating business leaders and management on the language, potential and opportunity of data and AI, so they are better enabled to lead your transformation



Use case ideation

Surfacing and prioritising high value use cases enabled by the potential of data and AI, supporting business cases for investment in the right initiatives



Roadmap

Creating or reviewing your data and AI roadmap to ensure it delivers value aligned to your overall business ambitions



Strategy

Creating a clear path forward with a pragmatic data and AI strategy, creating a unified view on the role that data and AI will play in your future business success

Get in touch with our payments and banking experts to discuss your data and AI challenges and opportunities.

About Endava

Technology is our how. And **people** are our why.

For over two decades, we have been harnessing technology to drive meaningful change.

By combining world-class engineering, industry expertise and a people-centric mindset, we consult and partner with our customers to create technological solutions that drive innovation and transform businesses.

Working side by side with leading brands, we build strategies, products and solutions tailored to unique needs, regardless of industry, region or scale. From ideation to production, we support our customers through every step of their digital transformation journey, creating dynamic platforms and intelligent digital experiences across various industries.

