

# A beginner's guide to AI for business transformation

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**BridgeAI**

# Introduction

Artificial intelligence (AI) has the potential to transform businesses, enhancing productivity and reducing operational costs. With increasing support and training around implementation, it's becoming easier than ever for businesses to use the technology.

AI covers a broad range of technologies, and is defined by [the National AI Strategy](#) as “machines that perform tasks normally performed by human intelligence, especially when the machines learn from data how to do those tasks”.

There's been a lot of excitement about Generative AI recently, but it's just one type of artificial intelligence. There are several other fields of AI that might be better suited to your business and what you want to achieve.

With a range of opportunities available, it can be hard to know where to start and how you can put AI into practice. The good news is that many businesses can reap the benefits of AI, and [the structure and support already exists](#) to help you with adoption.

A significant part of the AI adoption journey involves understanding the main risks, challenges and considerations for successful and trustworthy implementation. In this guide, we'll address why responsible and ethical AI adoption is crucial for any business, and what to consider before and during rollout.

This is the first guide in a series designed to support businesses on their AI adoption journeys. More in depth guides will follow, covering a range of topics, themes and key questions relating to AI adoption.



Want to understand the AI terminology before you start reading? [Jump to a glossary of common terms.](#)

# How AI will revolutionise businesses

AI has advanced rapidly over the last few years, yet we're only on the cusp of its enormous potential. It can have a positive impact on many areas of business operations, streamlining processes, increasing efficiency and driving innovation.

The immediate value of AI for most companies is that it will save time, improve productivity and reduce resource wastage. Finding a narrow subset of a process or product-centric use case to prove solutions can be a simple but effective way to test the waters with AI.

There are already some great real-world use cases for how AI can be used at a relatively basic level to revolutionise our everyday life.

Having explored using AI for everyday tasks, you can utilise AI at a more strategic level – and that's where its transformative impact really lies. Here are just a few examples of ways different sectors can improve performance with AI.



## Agriculture and food processing

**Challenge:** Making choices that efficiently use resources, minimise waste and boost farm yields, when there are countless variables involved.

**AI solution:** AI can capture and process vast amounts of data involved in each farming process, helping to increase yields, pinpoint pest infestations and flag issues in real time.

[Read more about agriculture](#)



## Creative

**Challenge:** The creative process often requires a lot of time-consuming back and forth between the creative and the client.

**AI solution:** AI can help with repetitive tasks and avoid multiple rounds of revisions, freeing up creative resource to be deployed elsewhere.

[Read more about creative](#)



## Construction

**Challenge:** Managing supply chains for construction materials, which suffer from uncertain material availability, differing specification standards and unexpected disruptions.

**AI solution:** AI can read construction plans to provide accurate quantity estimates, recommend the best available materials and secure the best prices based on real-time market information.

[Read more about construction](#)



## Transport and logistics

**Challenge:** Being able to accurately forecast demand, select routes around real-time disruptions and decide when to schedule fleet maintenance.

**AI solution:** AI systems can examine demand trends as well as planned and unplanned disruptions to optimise routes effectively. The systems can also deploy sensor, component and usage data to accurately predict when maintenance is required, reducing costs and downtime.

[Read more about transport and logistics](#)

# Assessing the risks of AI

The potential of AI is compelling, but there's a common barrier to real-world adoption: can the technology be developed and implemented in a safe, responsible and fair way?

It's a valid worry, since any new technology or automated process comes with questions about ceding control. If you're going to be rolling out technology in any area of operations, it's critical to trust that it's not going to disrupt day-to-day activity, cause stress in your team or result in unexpected costs.

However, adopting AI doesn't have to be daunting. Like any technology, you should do your due diligence before you invest, have a clear roadmap for implementation and make use of any [expert support and training](#) available. Upskilling your workforce will be central to successful implementation, and should be carried out alongside AI onboarding to remind staff that AI is there to enhance their work, rather than replace them.

The Innovate UK BridgeAI programme has produced an 'AI Skills for Business Competency Framework' which is designed to give organisations clear guidance on effectively upskilling workforces to adopt AI effectively and responsibly. [This can be found here](#).

It's also vital to educate yourself on the potential risks. The risks will depend on your own circumstances and specific use cases for the technology, as well as the type of AI technology you choose. That said, there are some categories where you should be aware of potential issues: bias, data protection and accuracy. Another important category not covered here is security, but you can find [further guidance in the NCSC guidelines](#).

## Bias

AI systems have the potential to reinforce or amplify human biases. In turn they risk creating exclusionary experiences and discriminatory practices. Biases may be introduced at all stages of AI system design and development, for example:

- Biases may arise from lack of diversity in training sets for AI models. Segments of the population may be underrepresented in the datasets used to train AI models, leading to inferior performance or inequitable outcomes for those groups.
- AI models may be trained on historical decision making, perpetuating biases which existed in that human decision making.
- Pre-trained models and open-source solutions lower the barrier to adoption by business, but without careful consideration, assumptions of these models may be violated, leading to incorrect outcomes.

Biases in AI can harm businesses in a number of ways, including discriminating against qualified candidates during recruitment or perpetuating stereotypes in marketing materials. See recent research from trade platform [Checkatrade](#), where Generative AI repeatedly failed to show women or ethnic minorities as builders or electricians.

We need to explicitly check the impact of bias during development and testing. A good place to start is by auditing your data sources regularly to check that data is complete, accurate and covers all circumstances, which can reduce the likelihood of bias in outputs. Additionally ensuring the teams that are governing the development and use of these technologies are diverse with different life experiences can mitigate the impact of potential system biases.

[You can find out more about assessing, mitigating and managing the impact of potential system biases here.](#)

## Data protection

If you are using an AI solution that collects, uses, or stores the personal data of your staff or customers, you need to comply with data protection law. You may need to consult your organisation's data protection policy, amend your privacy notice and address how you will balance use of your AI solution with your legal obligations under the General Data Protection Regulation (GDPR).

You should ensure staff are trained in their data protection responsibilities as a matter of course, as well as how to carry these out whilst working with your chosen AI solution.

The Information Commissioner's Office (ICO), the UK's regulator for data protection, has published [detailed guidance](#) for businesses on how to manage the risks.

## Accuracy

There's no doubt that AI is sophisticated, cutting-edge technology, but it isn't perfect and can occasionally serve outdated or inaccurate information. Some Generative AI systems have even been known to make up facts, known as "hallucinations".

The key is to remember that your AI systems aren't there to fully replace humans. You need to bake human oversight into your processes to ensure you can trust the outputs and operate in a way that's productive, ethical and safe.

This guide serves as a quick introduction to some of the key topics, themes and questions relating to AI adoption for business transformation. Future guides will delve into these in more detail, providing more support and information to those looking to progress their adoption journey.

On the next few pages, you'll find a glossary of key definitions and terms used throughout this guide, as well as further information about the support and training available via the BridgeAI programme.

# Glossary

The following definitions have been taken from The Alan Turing Institute online data science and AI glossary. Visit the site to learn more.

## Generative AI

An artificial intelligence system that generates text, images, audio, video or other media in response to user prompts. It uses machine learning techniques to create new data that has similar characteristics to the data it was trained on, resulting in outputs that are often indistinguishable from human-created media.

## Machine learning (ML)

A field of artificial intelligence involving computer algorithms that can 'learn' by finding patterns in sample data. The algorithms then typically apply these findings to new data to make predictions or provide other useful outputs, such as translating text or guiding a robot in a new setting. Medicine is one area of promise: machine learning algorithms can identify tumours in scans, for example, which doctors might have missed.

## Large language model (LLM)

A type of foundation model that is trained on a vast amount of textual data in order to carry out language-related tasks. Large language models power the new generation of chatbots, and can generate text that is indistinguishable from human-written text. They are part of a broader field of research called natural language processing, and are typically much simpler in design than smaller, more traditional language models.

## Computer vision

A field of research that uses computers to obtain useful information from digital images or videos. Applications include object recognition (e.g. identifying animal species in photographs), facial recognition (smart passport checkers), medical imaging (spotting tumours in scans), navigation (self-driving cars) and video surveillance (monitoring crowd levels at events).

## Other terms at a glance

### Algorithm

A sequence of rules that a computer uses to complete a task. An algorithm takes an input (e.g. a dataset) and generates an output (e.g. a pattern that it has found in the data). Algorithms underpin the technology that makes our lives tick, from smartphones and social media to sat nav and online dating, and they are increasingly being used to make predictions and support decisions in areas as diverse as healthcare, employment, insurance and law.

### Algorithmic bias

Unfairness that can arise from problems with an algorithm's process or the way the algorithm is implemented, resulting in the algorithm inappropriately privileging or disadvantaging one group of users over another group. Algorithmic biases often result from biases in the data that has been used to train the algorithm, which can lead to the reinforcement of systemic prejudices around race, gender, sexuality, disability or ethnicity.

# Get free support and expert training with BridgeAI

Need some help with AI adoption? You're not alone. BridgeAI provides funding, guidance and support to help businesses harness the power of AI technologies and drive innovation and growth. This includes:

- Access to technical and business expertise
- Training on AI ethics and governance
- Networking groups and collaboration opportunities

[Find out more about the programme](#)

[Stay up to date with upcoming funding and support](#)