Developing a skilled workforce in Artificial Intelligence

Guide

UKRI Innovate UK

BridgeAI

Creating a competitive business in the age of AI

Regardless of whether your business is adopting Artificial Intelligence (AI) or not, being ready to work alongside AI should be a top priority for everyone.

AI-powered technologies will reshape everyday life, changing how people live and work. Becoming more educated on AI's capabilities and limitations will help your business adjust to the new landscape and remain competitive.

Upskilling can have a transformative impact, driving innovation, profits and business growth. Developing a clear understanding of the skills required to responsibly and safely introduce AI is critical to AI adoption.

Developing a skilled workforce in Artificial Intelligence

The rapid advances in AI technology have accelerated the need for proactive upskilling for all individuals across organisations. There is a need for employees to be able to critically assess the potential impacts of AI on their current and future roles, and to support leaders to undertake their governance responsibility around the introduction and governance of AI technologies.

In this guide, we will introduce the competencies required to ensure the safe, responsible and effective application of AI within business.

Competency-based approaches to recruitment

Competency-based approaches to recruiting AI staff offer significant advantages, ensuring a more precise alignment of candidate skills with business needs. By emphasising proven abilities and practical experience over traditional qualifications, SMEs can attract versatile and capable talent while overcoming barriers to employment for those from non-conventional academic backgrounds.

Find out how BridgeAI can help your business to harness the power of AI technologies here

Competency-based approaches to upskilling

Competency-based approaches to upskilling existing staff focus on developing specific skills and competencies that directly align with business objectives. Employees can then receive targeted training that not only addresses current skill gaps but also prepares the workforce for future challenges.

Overcoming cultural barriers to adoption

A critical first step for businesses is to address ethical concerns around AI in the workplace. Colleagues may fear that AI will displace them, compromise personal data or perpetuate bias. It's important to help employees identify the opportunities AI provides, such as improving efficiency and reducing repetitive tasks. Once they understand the potential benefits and risks, this will ease concerns and encourage them to play an active role in the adoption of AI. BridgeAI offers expert support and collaborative knowledge sharing about ethical AI practices, transparency and data privacy.

The risks of using models like LLMs

The base level of digital proficiency will need to include both an understanding of the technology available and the potential implications of using it. Large Language Models (LLMs) like ChatGPT are one of the most accessible routes into AI adoption for businesses, but employees need to be educated about the risks and be able to use them with caution.

AI models can produce errors, outdated or irrelevant information, and even "hallucinations", where they generate false references but present them as facts. For example, if your employee uses ChatGPT to write an email or company blog post but fails to scrutinise its output, you risk misleading customers and eroding trust in your business.

As AI companies rely on vast data sets to train algorithms, your team should also recognise that personal data could be gathered and used to train future AI models. Tools like ChatGPT have safeguards in place such as stringent data encryption and data anonymisation, but there is still a risk that private or sensitive information could be accidentally disclosed.

Where to start with upskilling your business

Your business's AI readiness plan should set out the knowledge, skills and behaviour needed to use AI tools safely and effectively. The goal is for your team to develop a deep understanding of how your business could work with AI, where it can be incorporated and the specific tools that can be used in day-to-day tasks.

The plan should also outline the opportunities for collaboration between teams and disciplines. Firstly, it's important to think about how you will avoid siloing skill sets, so that each team can draw from skills across the business to solve challenges and work as efficiently as possible. Secondly, this approach will help to make everyone feel included in the upskilling process, and a part of your company's journey towards AI adoption.

Remember that upskilling isn't a one-off exercise either; it should be a key factor in your team's continuous development. As technology evolves, so will the behaviours and competencies needed to work with it. Your team should be supported to learn new skills and further their understanding to successfully use new technology both in the workplace and their daily lives.

Introducing the AI Skills for Business Framework

Working with the Department for Science, Innovation and Technology (DSIT) and The Alan Turing Institute, the Innovate UK BridgeAI programme has developed the AI Skills for Business Competency Framework. This identifies the knowledge, skills and behaviours required to navigate practical challenges and exhibit competency at work and in everyday life. The framework identifies four key learner personas: **AI citizens, AI workers, AI professionals** and **AI leaders**.

AI citizens includes people who interact with AI in their day-to-day lives. Businesses looking to build a culture that supports adoption, should be looking at the next level – **AI workers** – and using the framework to help review knowledge management practices, behaviours and competencies across the whole organisation. For the purposes of this guide, we've included some more information about AI workers and leaders, as relates to the work-based scenarios in 'Putting AI Skills into Practice'.

Persona: AI workers

AI workers will be employees whose primary role is outside of data and AI, but they may work alongside (and be impacted by) these technologies. They might also be expected to use these technologies in their own role. AI workers will have the following capabilities:

- Be aware of emerging technologies in AI, and the potential impacts on their role and the broader workforce
- Be able to make use of AI-based tools in their job role, and aware of their capabilities and limitations
- Be able to exercise critical thinking and professional judgement to interpret, assess and supervise the outputs of AI systems. This includes evaluating their effectiveness in line with ethical considerations
- Be aware of the opportunities and risks of AI and its underpinning technologies, and the need for security of personal data
- Be able to identify situations where open AI tools are appropriate or on-premise solutions are required when using business-sensitive data

Persona: AI leaders

AI leaders will be responsible for governance when introducing emerging technologies, including AI. They will have significant decision-making responsibility within their organisations, and may hold C-suite or Board roles. AI leaders will have the following capabilities:

- Be able to understand the role AI can have in furthering their organisation's objectives, and foresee new emerging technology
- Be confident in technology roadmapping approaches to help translate opportunity into reality. This will be implemented through an AI strategy
- Be able to operate in settings of organisational complexity and uncertainty
- Be able to work effectively at the interface with technical and business teams, to undertake governance responsibility. In doing so, they will ensure AI is used ethically and oversee legal and regulatory compliance
- Be aware of the risks of AI technology and able to take the required steps to mitigate these across their organisation

The Five Dimensions of AI Competency

The framework is formed of five dimensions, each representing an area of competencies. These five dimensions are:

Dimension A:
Privacy and stewardship

This area concerns the security and protection of data, including the design, creation, storage, distribution and associated risks. Awareness and activity around practical data controls will align fully with legal, regulatory and ethical considerations.

Dimension B:
Specification, acquisition, engineering, architecture, storage and curation

This area concerns the collection, secure storage, manipulation, and curation of data. Competencies in this area also relate to data management and analytical techniques. such as handling situations arising from the (mis)use of sensitive data.

Dimension C:
Problem definition and communication

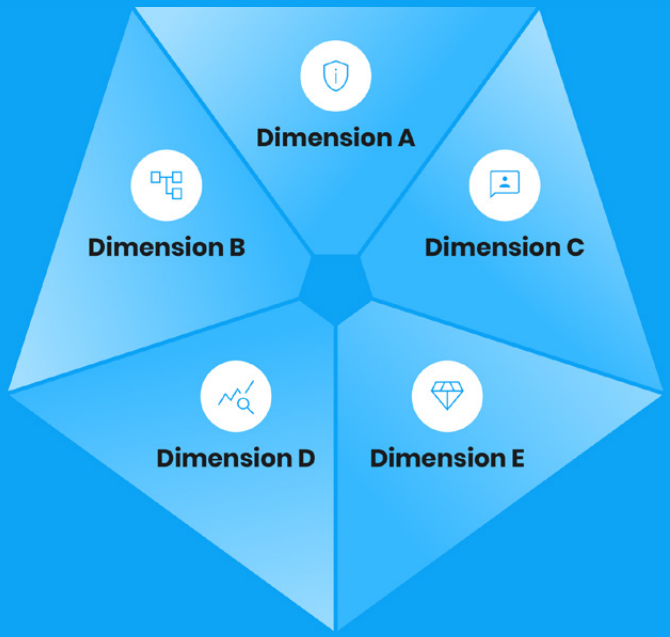
This area concerns the ability to identify and clearly define a problem, to understand the role artificial intelligence can play in potential solutions, and to be able to communicate this knowledge effectively to a variety of audiences.

Dimension D:
Problem solving, analysis, modelling, visualisation

This area concerns the knowledge of and ability to apply a range of mathematical, statistical and computing tools and methods to define and analyse a problem and present solutions.

Dimension E:
Evaluation and reflection

It is important that all professionals working within the field of data science and artificial intelligence have a clear understanding of the ethics that underpin their work, and take responsibility for the assurance of the models they build.

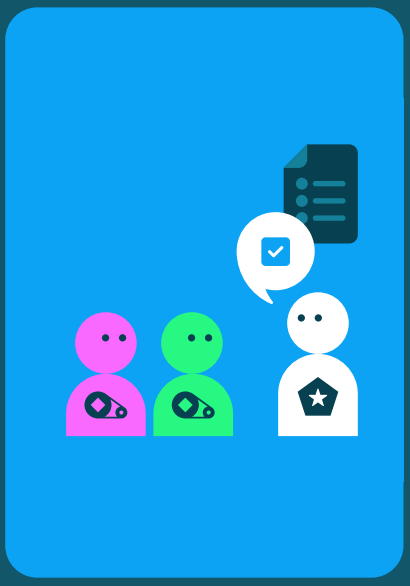


Note: Dimensions A through D provide skills against key phases of the AI project lifecycle. Meanwhile, the professional values introduced in Dimension E are expected to underpin activity across dimensions. For Scenario "A", utilising the Framework will support AI leaders and employees to understand what competencies are required to utilise AI within the business. For employees Dimension A and E are relevant. Training in these areas will support employees to implement best practices for security and protection of data, reflect on performance and outcomes of AI-based systems, identify risks, and apply principles associated with ethics and sustainability.

AI Skills in Action

The prior framework sets out the knowledge, skills and professional qualities needed to effectively engage with AI. It aims to provide a roadmap towards AI readiness, empowering professionals in every area of your business to use technology to be more efficient and productive.

The next stage is to be able to turn this theory into on-the-ground action. To do this, it's useful to have practical examples of how AI can be used in everyday scenarios to navigate workplace challenges. Below is an example of how AI leaders and workers might approach AI usage, with examples of the relevant competencies required.

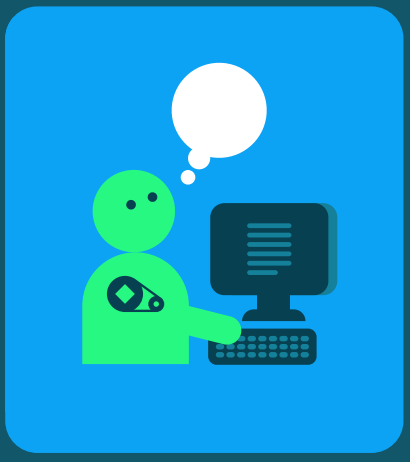


01: Leadership gives AI usage guidance

The leader engages with peers in their sector to understand how AI is being used within their sector, and develops and publishes guidance to govern how AI is to be used within the business.

Examples of AI Competencies

- Understand strategies an individual can apply to help advocate for and uphold principles of ethical and safe use of data and AI technologies
- Contribute to the management and empowerment of the broader team



02: Worker identifies potential case for AI usage

"ChatGPT can summarise these meeting minutes quickly but the meeting discussion was confidential. Is this a good idea?"

Examples of AI Competencies

- Assess vendor-supplied and third-party products and systems in response to business and project needs
- Judiciously analyse the availability of appropriate data and resources to meet project requirements

03: Worker colleagues discuss AI usage

"I think that using ChatGPT to summarise meeting minutes would be helpful. But, I don't know if using AI tools like ChatGPT for confidential data is safe."

"Let's talk to our leadership about this."

Examples of AI Competencies

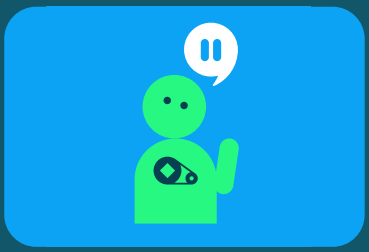
- The ability to foresee and evaluate possible future applications of AI and consider the positive and negative effects

04: Workers discuss concerns with leader

"Thanks for bringing this up, using AI tools like ChatGPT for confidential data can pose serious security risks and privacy issues. We need to manage how we use these tools to protect our information."

Examples of AI Competencies

- Ensure safe and secure management of sensitive data, models and infrastructures
- Clearly communicate to make stakeholders aware of their interactions with AI systems, including in the workplace



05a: Worker awaits further guidance

"Thanks, let me know once we have more info on this"

Examples of AI Competencies

- Act with integrity, giving due regard to legal, regulatory and security requirements

05b: Leader takes action on worker concerns

Leader takes responsibility to increase staff training, update guidance, and begins to procure a secure system to provide meeting note summarisation.

Examples of AI Competencies

- Awareness of effective approaches to leadership and collaboration across organisational, sector and project boundaries to achieve greater collective benefits
- Design technical and organisational approaches to enable those affected by AI systems to understand the outcome, and support their empowerment to challenge its outcome

Access support with AI upskilling

There's lots of support available to help you assess your business's digital and data maturity, and where there are skills gaps in your team.

BridgeAI aims to facilitate the adoption of AI and enable businesses to harness the power of new technologies to drive innovation and growth. Business owners can utilise expert support, cross-sector knowledge and training opportunities to upskill teams, and there's also funding available for priority sectors. Learn more about how BridgeAI can help.

Our strategic delivery partners The Alan Turing Institute, STFC The Hartree Centre, BSI and Digital Catapult. All our partners have a number of opportunities available to support your business in upskilling and becoming AI ready.

Want a more comprehensive analysis of your business's AI readiness and to understand the right pathway and skills required for a successful AI adoption, use the BridgeAI adoption toolkit, developed by Digital Catapult. It's designed for startups, scaleups and SMEs experimenting with or adopting AI solutions across the UK.

You can use the toolkit to evaluate your organisation on a range of factors, including leadership, AI readiness, digital maturity, data readiness and data ethics. Find out more here.

Once you've been through the evaluation process, you can start building a strategy to upskill your team. This useful infographic outlines all the key steps involved in upskilling teams to be AI citizens – download it now.