

# **CORPORATE AND COMMUNITIES OVERVIEW AND SCRUTINY PANEL 29 SEPTEMBER 2023**

## **ARTIFICIAL INTELLIGENCE (AI)**

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### **Summary**

1. The Panel has requested an update on the County Council's (the Council) use of Artificial Intelligence (AI) and the Council's future Strategy.
2. The Cabinet Member with Responsibility (CMR) for Corporate Services and Communication and the Strategic Director of Commercial and Change have been invited to the meeting to respond to any queries the Panel may have.

### **Background**

3. The Council faces various challenges in delivering services to its constituents. Budget constraints, limited resources, and the increasing complexity of service delivery require innovative approaches to provide quality services. Artificial intelligence (AI) has the potential to transform the Council by improving efficiency, increasing citizen engagement, and providing data-driven insights.
4. This paper outlines areas where the use of AI could benefit the Council and the Council's current position.

### **What is Artificial Intelligence**

5. AI is a number of different technologies working together to enable machines to sense, comprehend, act, and learn with human-like levels of intelligence.
6. AI is a transformative technology, which is already revolutionising many areas of people's lives. Without necessarily realising it, everyone interacts with AI every day - whether it is in social media feeds and smart speakers, or on online banking. AI, and the data that fuels people's algorithms, help to provide protection from fraud and diagnose serious illness. This technology is evolving every day and Examples<sup>1</sup> of daily activities that rely on AI, data science and machine learning are:
  - a. **Search engines:** Google, Bing and other search engines use sophisticated machine learning methods to find and rank webpages that match search criteria. These engines not only use machine learning to provide relevant results, but also combine data science and machine learning. The backend algorithms monitor responses, pages opened, how many are opened, length of stay on pages, etc. In this way, the engines tailor the search results.

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<sup>1</sup> Source: [The Dstl Biscuit Book WEB.pdf \(publishing.service.gov.uk\)](#)

- b. **Virtual Personal Assistants:** Alexa, Siri and Google home are all examples of personal assistants that apply data science to complete tasks such as answering simple questions, telling the news or weather, or playing music and podcasts. To do this they collect information about what is being said, as well as when, where and how they are being said. The assistants use this information to produce results that are tailored to preferences. They use machine learning for speech processing and understanding (to understand a person's speech better), improve performance based on previous transactions, and communicate back dialogue management.
  - c. **Traffic status:** traffic and map apps provide information on traffic congestion by using GPS location and speed of users. Data science methods are then used to build maps of current traffic to estimate the density of traffic. Machine learning is used to predict regions of heavy traffic.
  - d. **Chatbots:** Websites use chats to provide customer support. Often the person you are chatting with is a chatbot, not a person. These bots use machine learning to identify relevant information in the chat and provide relevant answers to queries. If the bots are not able to provide the information customers need, they are then transferred to a human representative.
  - e. **Recommendation systems:** these systems collect and pre-process data from activity within their site (i.e. What was looked at, for how long, wish-lists or shopping basket), to produce recommendation based on behaviours compared to the rest of the users on the site. Using data science, customers can be grouped by behaviour and recommendations shared with the group.
7. AI can support innovation and creativity in a range of ways. It can be a tool for scientists, entrepreneurs, and artists, enabling new human inventions and creations. Some believe that AI will soon be inventing and creating things in ways that make it impossible to identify the human intellectual input in the final invention or work.

## National AI Strategy

8. The [UK's National AI Strategy](#) (attached at Appendix 1) recognises that AI is the fastest growing deep technology<sup>2</sup> in the world, with huge potential to rewrite the rules of entire industries, drive substantial economic growth and transform all areas of life. It aims to:
- i. Invest and plan for the long-term needs of the AI ecosystem to continue our leadership as a science and AI superpower.
  - ii. Support the transition to an AI-enabled economy, capturing the benefits of innovation in the UK, and ensuring AI benefits all sectors and regions.
  - iii. Ensure the UK gets the national and international governance of AI technologies right, to encourage innovation, investment, and protect the public and our fundamental values.

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<sup>2</sup> Deep technologies are based on significant scientific advances or engineering innovations, but which require a longer period of development before commercial application.

## Potential uses of AI in the Council

9. The areas where use of the AI could be beneficial include:
10. **Improved Service Delivery:** AI can improve service delivery in various ways. Firstly, AI-powered chatbots can provide 24/7 assistance to citizens, answering frequently asked questions and directing them to relevant resources. This reduces the workload of human customer service agents and provides citizens with faster access to information. Secondly, AI can be used to optimise routes for service delivery, such as bin collections and public transportation. This can reduce travel time and fuel consumption, resulting in cost savings for the Council.
11. **Data Driven Decision making:** The Council has access to vast amounts of data but analysing this data can be time-consuming and challenging. AI can help the Council make better use of its data by automating data analysis, identifying patterns and trends, and providing data-driven insights. For example, AI can analyse traffic patterns to optimise traffic flow or predict the demand for public services, such as healthcare and education. This can enable the Council to make informed decisions and allocate resources more efficiently.
12. **Citizen Engagement:** Citizen engagement is critical for the Council to understand and meet the needs of its constituents. AI can improve citizen engagement by providing personalised services and communication. For example, AI can analyse citizen data to provide personalised recommendations for services, such as healthcare and education. AI-powered chatbots can also provide personalised assistance to citizens, improving their experience with Council services.
13. **Fraud Detection:** AI can help with fraud detection by analysing large amounts of data to identify patterns and anomalies that may indicate fraudulent activity. AI can also be used to detect suspicious behaviour in real-time, such as unusual spending patterns or suspicious account activity. While AI can significantly enhance fraud detection, it should be used in conjunction with human expertise. Human analysts can provide domain knowledge, interpret complex cases, and make informed decisions based on AI-generated insights.
14. **Citizen Engagement:** AI can improve citizen engagement in several ways, by providing more personalised services, facilitating access to information, and enabling efficient communication. It is important to ensure that AI systems used for citizen engagement are designed with transparency, fairness, and accountability in mind. Clear communication, privacy protection, and ethical considerations should be at the forefront to build trust and maintain the positive impact of AI on citizen engagement. Examples of how AI can enhance citizen engagement include:
  - Chatbots and Virtual Assistants
  - Natural Language Processing
  - Personalised Services
  - Data Analysis and Predictive Analytics
  - Social Media Monitoring
  - Citizen Feedback Analysis

- Open Data Initiatives

15. **Traffic Management:** AI can help with traffic management in several ways, improving efficiency, reducing congestion, and enhancing overall transportation systems. By utilising AI-powered solutions, traffic management authorities can make better-informed decisions, respond more effectively to incidents, and optimise transportation systems to improve overall traffic flow, reduce congestion, and enhance the commuting experience for citizens. Examples of how AI can contribute to traffic management include:

- Traffic Prediction and Optimisation
- Intelligent Transportation Systems
- Adaptive Traffic Signal Control
- Smart Parking Solutions
- Intelligent Routing and Navigation
- Incident Detection and Management
- Public Transportation Optimisation
- Integration with Connected Vehicles

16. **Environmental monitoring:** AI can play a significant role in environmental monitoring by collecting and analysing vast amounts of data, facilitating more accurate and efficient monitoring of various environmental factors. By leveraging AI's capabilities, environmental monitoring can be conducted at a larger scale, with increased accuracy, and in near real-time. This can enable proactive environmental management, support conservation efforts, and contribute to sustainable development and the protection of our planet.

Examples of how AI can help with environmental monitoring include:

- Remote Sensing and Image Analysis
- Air Quality Monitoring
- Water Quality Monitoring
- Species Monitoring and Conservation
- Climate Modelling and Prediction
- Environmental Risk Assessment
- Ecosystem Monitoring and Restoration
- Data Integration and Decision Support

17. **Social Services and Support:** AI can contribute to social services and support in various ways, helping to improve efficiency, accessibility, and effectiveness of programs and initiatives. Examples of how AI can assist in social services include:

- Case Management and Resource Allocation
- Personalised Assistance
- Predictive Analytics
- Mental Health Support
- Social Sentiment Analysis
- Data Integration and Collaboration
- Accessibility and Language Support

18. **Revenue Generation:** AI can play a significant role in revenue generation by improving operational efficiency, enhancing customer experiences, and

enabling data-driven decision-making. Examples of how AI can help in revenue generation include:

- Sales and Marketing Optimisation
- Customer Relationship Management (CRM): analysing customer interactions, purchase history, and behaviour to provide insights and recommendations
- Personalised Recommendations
- Pricing Optimisation
- Supply Chain Optimisation
- Revenue Forecasting and Predictive Analytics
- Intelligent Pricing and Bundling

**19. Public Safety and Crime Prevention:** AI can contribute to public safety and crime prevention in various ways, enhancing law enforcement efforts, improving response times, and aiding in proactive measures. Examples of how AI can assist in public safety and crime prevention include:

- Video Surveillance and Monitoring
- Facial Recognition and Biometrics
- Predictive Policing
- Emergency Response Optimisation
- Anomaly Detection
- Crime Analysis and Investigation Support
- Gunshot Detection
- Crime Reporting and Citizen Engagement

## **What is ChatGPT?**

20. ChatGPT is a language model developed by OpenAI. It is based on the GPT (Generative Pre-trained Transformer) architecture, specifically GPT-3.5. GPT-3.5 is an advanced version of the model that has been trained on a vast amount of text data from the internet.

21. ChatGPT is designed to generate human-like responses to user inputs in natural language. It can understand and generate text in a conversational manner, making it useful for chatbots, virtual assistants, and other interactive applications. The model uses unsupervised learning to pre-train on a large corpus of text data, allowing it to learn grammar, facts, and patterns in language. It can then generate coherent and contextually appropriate responses based on the input it receives.

22. It is important to note that while ChatGPT can generate impressive responses, it may occasionally produce incorrect or nonsensical answers. It also does not possess real-time information beyond its knowledge cut-off date, which, according to ChatGPT itself, is September 2021.

23. Appendix 3 sets out ChatGPT Alternatives.

## **What are Large Language Models (LLM)?**

24. LLMs are advanced deep learning models that are designed to process and generate human-like text. They are trained on massive amounts of text data to learn the patterns, structure, and semantics of language.
25. LLMs, such as ChatGPT models, utilise a transformer architecture that allows them to capture long-range dependencies in text and generate coherent and contextually appropriate responses. These models have millions or even billions of parameters, enabling them to handle complex language tasks.
26. The training of LLMs typically involves unsupervised learning, where the model learns from a large corpus of text data without any specific task or goal in mind. During training, the model predicts the next word in a sentence based on the previous words, learning the statistical patterns and relationships within the data.
27. Once trained, LLMs can be fine-tuned on specific tasks by providing supervised training data. This fine-tuning process allows the model to adapt its learned knowledge to perform various language-related tasks like text classification, question answering, translation, summarisation, and more.
28. LLMs have demonstrated impressive capabilities in natural language understanding and generation. They have a wide range of applications, including chatbots, virtual assistants, content generation, language translation, and aiding in various language-intensive tasks.
29. LLMs are undoubtedly impressive for their ability to generate a huge range of convincing content in multiple human and computer languages. However, importantly, they are not artificial general intelligence, and contain some serious flaws, including:
  - they can get things wrong and ‘hallucinate’ incorrect facts
  - they can be biased, are often gullible (in responding to leading questions)
  - they require huge computing resources and vast data to train from scratch
  - they can be coaxed into creating toxic content
30. For further information, please see [ChatGPT and large language models: what's the risk?](#)

### Current use of AI in the Council

31. The following are examples of the use of AI in the Council:

	System	Purpose of system	Application of AI
1.	Microsoft Sentinel	Microsoft Sentinel is a solution used by the Council that provides Security information and event management (SIEM) and security orchestration,	Microsoft Sentinel uses Fusion, a correlation engine based on scalable machine learning algorithms, to automatically detect multistage attacks (also known as advanced persistent threats or APT) by identifying combinations of anomalous behaviours and suspicious activities that are observed at various stages of the kill chain.

	automation, and response (SOAR).	On the basis of these discoveries, Microsoft Sentinel generates incidents that would otherwise be difficult to catch. These incidents comprise two or more alerts or activities. By design, these incidents are low-volume, high-fidelity, and high-severity. See <a href="#">Advanced multistage attack detection in Microsoft Sentinel   Microsoft Learn</a> .
2.	OutSystems OutSystems is a Low-code development platform which provides tools for us to develop, deploy and manage omnichannel enterprise applications.	A powerful combination of AI and machine learning that infuses AI throughout the OutSystems platform to eliminate friction, long lead times, errors, and technical debt. AI mentors guide developers through the OutSystems platform, dramatically accelerating and improving application development. It scans, reviews, and validates application portfolios, enabling the delivery of high-quality smart apps up to 100x faster.
3.	Commercial vehicle and trailer permit system The Commercial Vehicle and Trailer (CVT) permit scheme for vehicles and trailers that wish to use a Household Recycling Centre for the disposal of household waste.	Automatic number-plate recognition (ANPR) is the technology that uses optical character recognition on images to read vehicle registration plates. This technology will be used within our commercial vehicle and trailer permits system developed on our low code platform, OutSystems, to identify vehicles and look up number of permits available to use against the vehicle.
4.	Netcall Connect Chatbot Netcall Connect is the solution used by the council to provide the Chatbot service on our public facing website.	The chatbot uses an active learning technique to automatically match phrases entered by customers to specific service information held within the chatbot flows. The more phrases that are matched increases the accuracy of the chatbot in providing the correct answer.
5.	<a href="#">CLB &amp; AllyLabs Acoustic Monitoring</a> The Acoustic Monitoring system, an intelligent nurse call system from CLB, helps staff improve care quality and provide greater privacy for residents, targeting of resources for staff to focus on residents that need their help, while reducing operational costs.	A requirement by the NHS for acoustic monitoring in care homes. A sensor monitors sounds in a room at night. When any sound profile exceeds its individually set threshold, or unusual behaviour for the resident, then an alert is sent to a central station or forwarded to a mobile device to Care workers to notify them that they need to check on the resident and ensure their health and wellbeing needs are being met. This is part of a 12-month NHS pilot.

<p>6. <a href="#">Technicare (Armed)</a></p>	<p>Predict and detect early deterioration of patients to avoid admissions, and identify and monitor patients for earlier discharge, virtual wards and hospital at home services, using our real-time remote monitoring platform.</p>	<p>AI is used in four 3 types of technology:</p> <ul style="list-style-type: none"> <li>• Vitals for people with health conditions where it is useful to see constantly monitored vital signs, such as COPD.</li> <li>• The Fit bit watch shows sedentary behaviours and promotes activity. Perfect for people who are starting to worry about falling at home. linked up with Community OT and neighbourhood teams</li> <li>• Your Meds (instead of Biodose) assists with the delivery of right medication, at the right time to avoid over or inappropriate self-medication.</li> </ul> <p>It is intended these products will also be used to create virtual wards in conjunction with the NHS trial scheme. This is part of a 12-month NHS pilot</p>
<p>7. <a href="#">Cascade3D</a></p>	<p>Cascade3d Connected Care” is Cascade3d’s flagship healthcare platform that integrates smart IoT sensors and Bluetooth medical devices to support elderly and vulnerable people in their own homes</p>	<p>Behavioral insights are picked up by the small, discrete sensors that are located around the home collecting activity data (i.e on a kettle, in a fridge). Their data is sent back to the Cascade3d secure servers. This information is shared with family, caregivers, professionals and call centres to alert changes in daily routine in real time. This promotes early intervention, which in turn leads to higher standards of proactive care and cost savings.</p>
<p>8. <a href="#">Tendertec (Hestia)</a> -</p>	<p>is a non–wearable fall detector that learns the users behaviour and gait. It’s machine learning identifies insights about their health and identifies risk of the user falling. This is perfect for social care referrals.</p>	<p>The integrated machine learning platform captures, reconstructs and shares incidents and living activities to provide 24/7 reassurance. Built on thermal sensing data and integrating 3<sup>rd</sup> party health and activity data sources, the system monitors remotely behaviours.</p>
<p>9. <a href="#">Stroll DTx software</a></p>	<p>is a non–wearable device, used during physiotherapy sessions for people with neurological disorders (i.e. Parkinson’s Disease) that are at high risk of falls</p>	<p>Stroll Digital Therapeutics (DTx) software is the world’s first, patented augmented reality (AR) solution for cueing therapy and gamified exercise to improve gait, balance and reduce fall risk for people living with neurological disorders.</p>



## The Council's AI Policy

32. The Council's AI policy is designed to establish guidelines and best practices for the responsible and ethical use of AI within the Council. It ensures employees are using AI systems and platforms in a manner that aligns with the corporate values, adheres to legal and regulatory standards, the Council's existing information governance and security policies, and promotes the safety and well-being of the Council's stakeholders.
33. The Policy states that the use of AI must be in a manner that is responsible and ethical, avoiding any actions that could harm others, violate privacy, or facilitate malicious activities. Use of AI should promote fairness and avoid bias to prevent discrimination and promote equal treatment and be in such a way as to contribute positively to the Council's goals and values.
34. Staff may use AI for work-related purposes subject to adherence to the guidelines provided. This includes tasks such as generating text or content for reports, emails, presentations, images and customer service communications.
35. Particular attention should be given to transparency, governance, vendor practices, copyright, accuracy, confidentiality, disclosure and integration with other tools.

## Future Strategy

36. The use of AI is referenced in both the Council's [IT Strategy](#) and the [Digital Strategy](#). Individual projects progressing this will form part of the strategy implementation plans.

## Risks

37. There are risks associated with the use of AI, including:
38. **Ethics:** ensuring that the technologies currently being developed are used for the common good, rather than for the benefit of a select few.
39. **Bias:** in AI is when the machine gives consistently different outputs for one group of people compared to another. Typically, these bias outputs follow classical societal biases like race, gender, biological, sex, nationality or age.
40. **Privacy:** in the context of AI has different considerations to data privacy in general. One of the challenges of protecting privacy in artificial intelligence concerns how to create suitable regulations that protect privacy without stifling advances in AI technology. The data contexts at stake are both the scanning mechanisms that enable the AI tools to learn about their environments, as well as the nature of the data itself and how it is used to create the AI capability. The traditional consent requirement for organisations looking to use personal data is weak, and victims of spill over data have no say in the matter as they do not even know they are involved. Consent is also not as powerful a tool as one may be led to believe, even if the requirements for consent are that it is informed and freely given. For example, Microsoft removed its database of 10 million facial photographs – which were being used by organisations like IBM,

Panasonic, Alibaba, military researchers and Chinese surveillance firms – as most of the people whose faces were in the dataset were not aware their image had been included.

41. **Copyright infringement:** Robotic artists have been involved in various types of creative works for a long time. Since the 1970s computers have been producing crude works of art, and these efforts continue today. Most of these computer-generated works of art relied heavily on the creative input of the programmer; the machine was at most an instrument or a tool very much like a brush or canvas. The technological revolution that may require us to rethink the interaction between computers and the creative process.
42. **Secondary mining of the Metadata:** Extensible metadata that adds custom data labelling is common in object storage and available in some distributed filesystems. The metadata can be used to track data origin, add labels and even tag data used for different AI models.
43. **Consistency of output:** In the context of AI, reproducibility refers to the ability to achieve the same or similar results using the same dataset and AI algorithm within the same environment.
44. **Data Protection (UK GDPR):** Giving the right to query automated decisions. The Guidance on AI and Data Protection has been updated after requests from UK industry to clarify requirements for fairness in AI. It also delivers on a key ICO25 commitment, which is to help organisations adopt new technologies while protecting people and vulnerable groups. The UK GDPR has provisions on:
  - automated individual decision-making (making a decision solely by automated means without any human involvement); and
  - profiling (automated processing of personal data to evaluate certain things about an individual). Profiling can be part of an automated decision-making process.
  - Article 22 of the UK GDPR has additional rules to protect individuals if you are carrying out solely automated decision-making that has legal or similarly significant effects on them.
45. **Legal implications** – vicarious responsibility for Chatbot-GPT generated answers and advice.

## Conclusion

46. In conclusion, the use of AI can benefit the Council in various ways, including improving service delivery, data-driven decision making, cost savings, and citizen engagement. While AI presents challenges, these can be overcome with careful planning, investment, and workforce development. The Council that embraces AI can deliver more efficient and effective services to their constituents, improving their quality of life and the overall well-being of the community.

## Purpose of the Meeting

47. The Panel is asked to consider the information provided and:

- determine any comments to make to the Cabinet Member with Responsibility for Corporate Services and Communication
- agree whether any further Scrutiny is required at this stage.

## Supporting Information

Appendix 1: The UK's National AI Strategy

Appendix 2: Definitions for Artificial Intelligence, Data Science and Machine Learning.

Appendix 3: ChatGPT Alternatives.

## Disclosure

48. Disclosure: Some of the content of this report was generated with the assistance of an Artificial Intelligence (AI) based system to augment the effort. AI generated content has been reviewed by the author for accuracy and edited/revised where necessary. The author takes responsibility for this content.

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## Background Papers

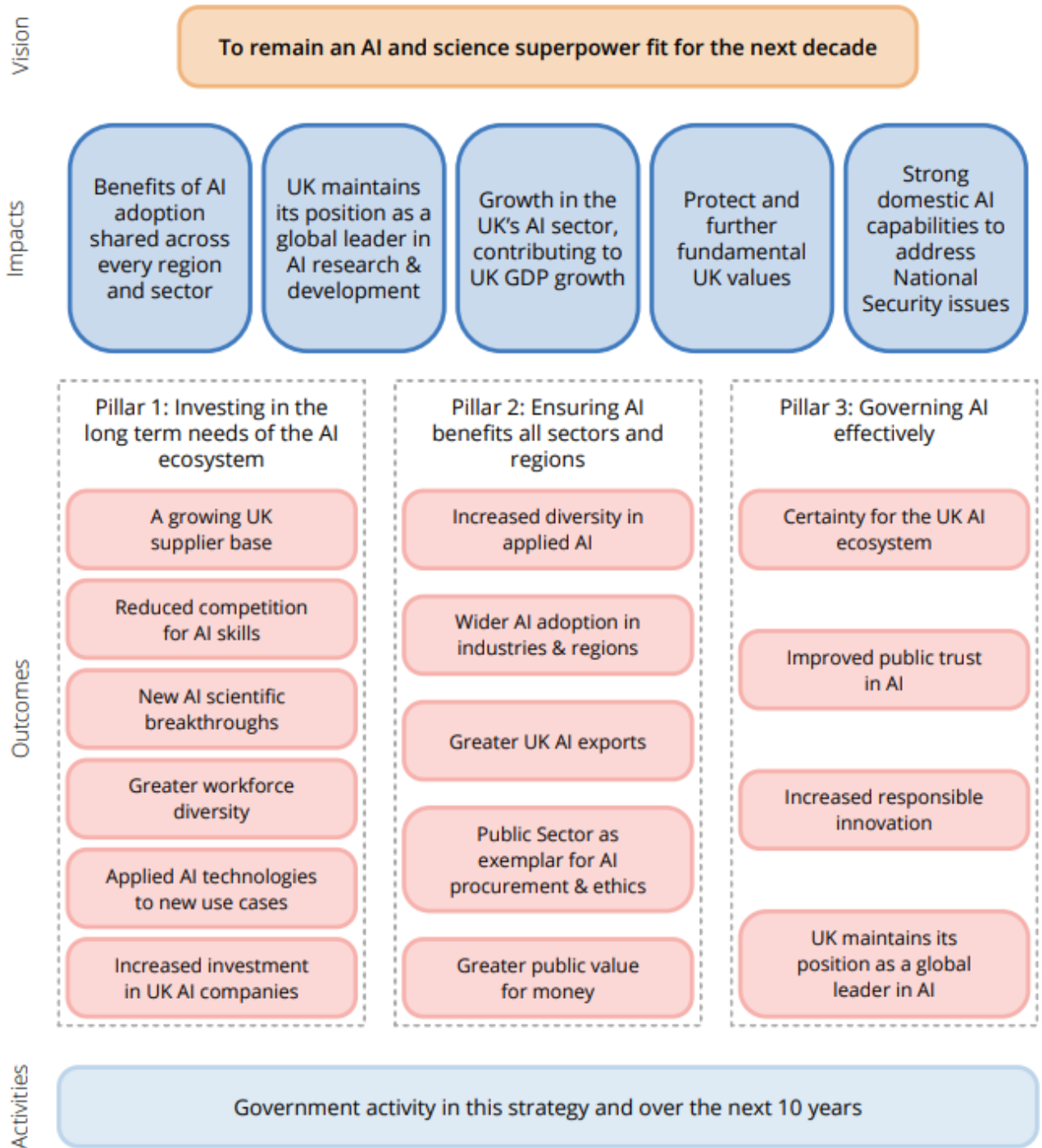
In the opinion of the proper officer, in this case the Assistant Director for Legal and Governance there are no background papers relating to the subject matter of this report:

[All agendas and minutes are available on the Council's website here.](#)

## Appendix 1: The UK’s National AI Strategy

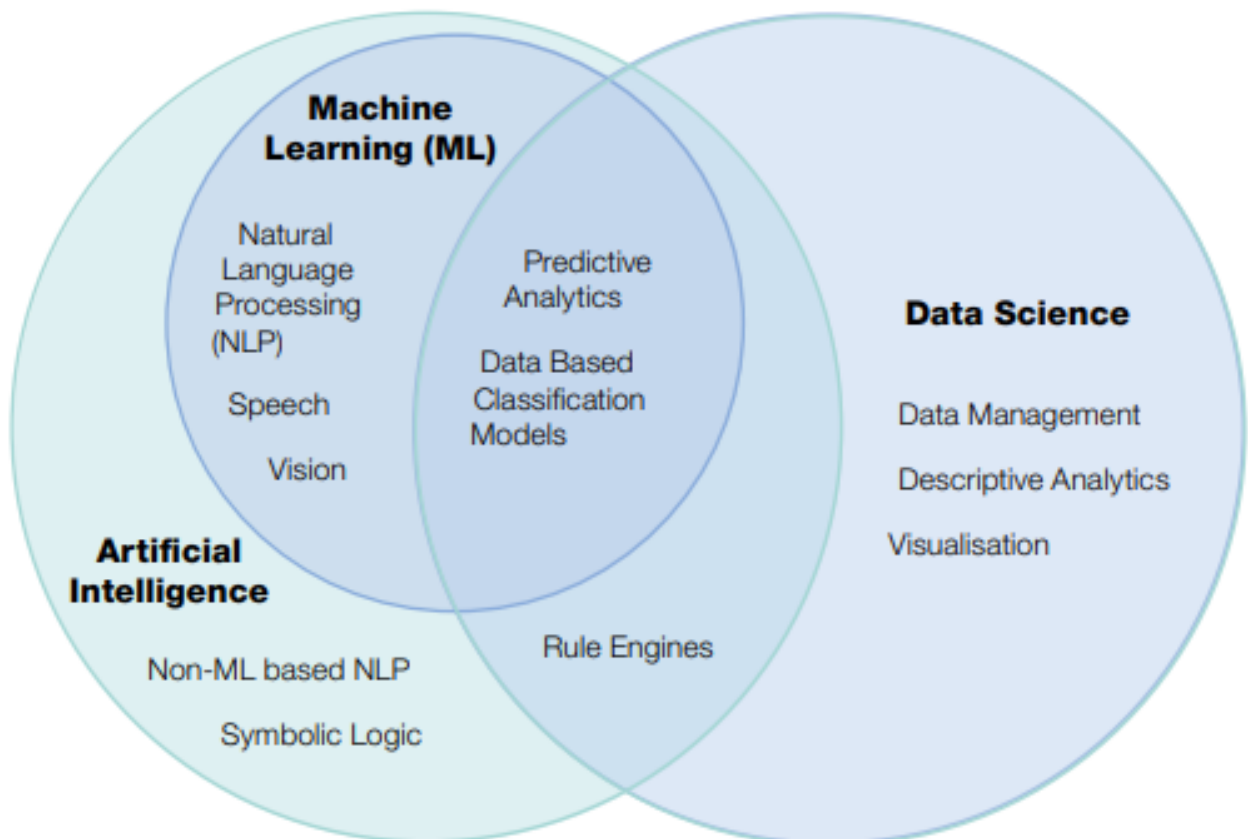
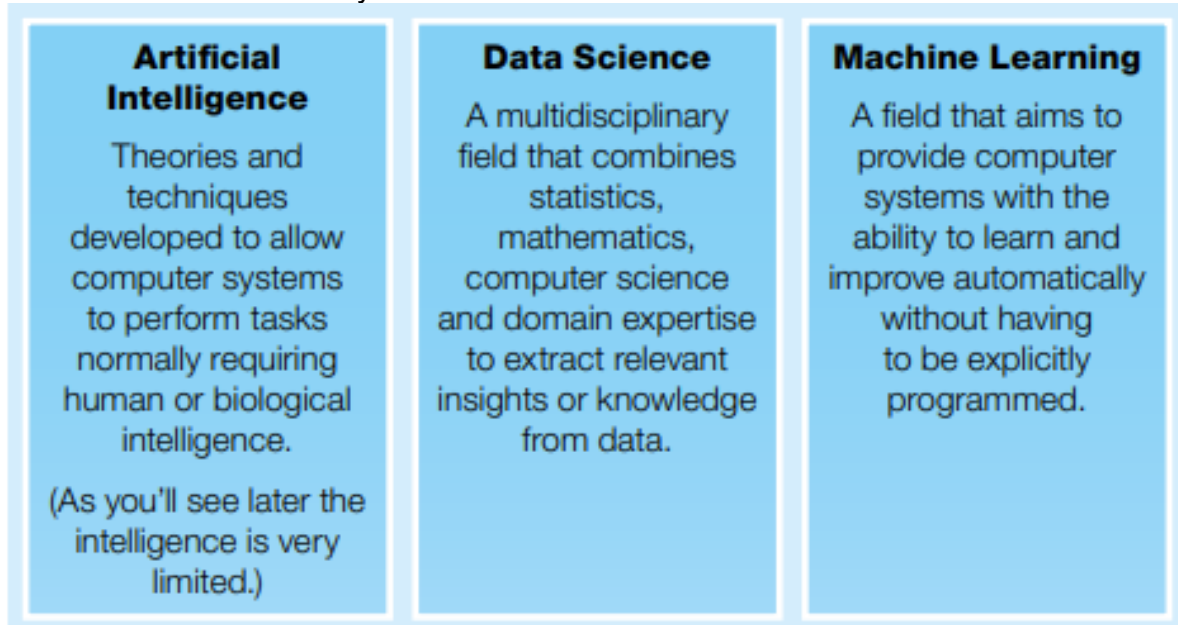
The National AI Strategy builds on the UK’s strengths but also represents the start of a step-change for AI in the UK, recognising the power of AI to increase resilience, productivity, growth and innovation across the private and public sectors. [National AI Strategy - GOV.UK \(www.gov.uk\)](https://www.gov.uk/national-ai-strategy)

The UK’s National AI Strategy Flow Diagram



## Appendix 2: Definitions for Artificial Intelligence, Data Science and Machine Learning

It is not unusual to see Artificial Intelligence, Data Science and Machine Learning used interchangeably in industrial, commercial or non-expert settings. The following definitions provide a sense of how they differ from each other<sup>3</sup>.



<sup>3</sup> Source: [The Dstl Biscuit Book WEB.pdf \(publishing.service.gov.uk\)](#)

## **Appendix 3: ChatGPT Alternatives**

### **ChatSonic**

India's Chatsonic was introduced in 2021, far earlier than Open AI's ChatGPT. Contrary to ChatGPT, ChatSonic incorporates text-to-speech and Google Search into its operation, making it effective enough to provide the most recent responses to your inquiries. processing to provide accurate summaries of current events, trends, and conversations.

### **Jasper AI**

Jasper AI, originally known as Jarvis, enables individuals and teams to scale their content initiatives using AI. It makes the claim that it can assist users with translating the text as well as writing "blog articles, social media postings, marketing emails, and more." Jasper also promises to deliver content that is "word-by-word original" and "plagiarism-free". In Jasper AI, the content is produced by selecting a topic and filling out a form with the necessary information.

### **Bard AI**

Like ChatGPT, Bard AI, Google's newest AI-powered chatbot, is an experimental conversational AI service that is expected to have a significant impact on the AI industry. LaMDA eliminates the limitation of having data confined to a specific year and revolutionises Bard's natural language processing capabilities by enabling it to interpret and respond to human input with more precision. Google claims that Bard can generate texts and answer questions.

### **Microsoft Bing AI**

Recently, Microsoft added artificial intelligence to their search engine, which is now referred to as Bing AI. The OpenAI large language model, which is far more potent than ChatGPT and GPT-3.5, is the foundation of Bing AI, has been optimised to maximum speed, accuracy, and efficiency. Microsoft unveiled new, AI-enhanced features for their Edge browser called "Chat" and "Compose." Additionally, Microsoft released Bing and Edge mobile apps for iOS and Android users. Bing gives users the ability to ask queries with up to 1,000 words and get AI-powered responses.

### **DialoGPT**

Microsoft's DialoGPT is a large-scale pre-trained dialogue response generation model specifically built for multi-turn conversations. DialoGPT is a significant pre-trained system for producing replies that can be used in multiple dialogue exchanges. It was trained using a massive dataset of 147 million multi-turn discussions extracted from Reddit discussion threads between 2005 and 2017.

Similar to the outputs of GPT-2, the sentences that DialoGPT generates are astonishingly diverse and include information that relates to the initial prompt. According to Microsoft, DialoGPT is more conversational, animated, frequently lighthearted, and generally extremely dynamic. DialoGPT, however, does not offer voice search, voice response, or personalities.

## **NeevaAI**

NeevaAI combines the efficiency and most recent data of the Neeva search engine with the strength of ChatGPT and other large language models. The system is capable of searching and sorting through hundreds of millions of web pages to produce a single, comprehensive response that includes pertinent sources. Neeva can be compared to a search engine that has been given AI enhancements, but it is not yet a fully functional chatbot that is powered by AI. Neeva AI also provides references in its outcomes.

## **CoPilot**

CoPilot, uses the GPT-3 model from OpenAI Codex for auto-completion. This application supports various well-known coding environments, including VS Code, Neovim, and JetBrains. It also supports cloud workflows via GitHub Codespaces. It can produce syntax in up to 12 languages, including JavaScript, Go, Perl, PHP, Ruby/Swift/TypeScript, and BASH. In addition, it supports multi-language scripting, and the model is powered by trillions of lines of open-source code from the public domain, such as those found on GitHub repositories.

## **Character AI**

Character AI is based on neural language models and has been trained from the ground up with conversations in mind. Instead of talking with a single AI chatbot, Character AI allows users to select from a variety of personas, including: Elon Musk, Tony Stark, Socrates, Joe Biden, and Kanye West. The AI adjusts its conversational style according to the person you selected. The AI has a built-in image generator for avatar creation.

## **YouChat**

YouChat was introduced by the search engine You.com. It functions similarly to ChatGPT and essentially performs what other generic chatbots do. Artificial intelligence and natural language processing are used by YouChat's AI to mimic human speech. It can create emails, write code, translate, summarise, and react to general inquiries. It offers average responses because it is still in the development phase. While you can just talk to it, YouChat can also write code, give advice, break down complicated concepts, summarise books, and a lot more.

## **Elsa Speak**

Elsa Speak is a language-learning programme powered by AI. It analyses the user's voice using AI and creates a set of tasks that are simple for the user to understand. Elsa Speak is thus another of the best ChatGPT alternatives to consider.

Elsa as an English-speaking speech assistant may aid you in translating between many tongues and English. The AI system used by ELSA was developed using voice recordings of English speakers with a variety of accents. This gives ELSA an advantage over most other voice recognition algorithms by allowing it to recognise the vocal patterns of people who do not speak with a native level of ability.