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Digital Platform Regulators Forum

Examination of technology: Large Language Models

Working paper

25 October 2023

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1. Background

This paper examines Large Language Models (LLMs). It is the second public paper prepared as part of the Digital Platform Regulator Forum (DP-REG)'s joint work to understand digital platform technologies and their impact on the regulatory roles of each DP-REG member agency.

The first part of DP-REG's work examined the harms and risks of algorithms. This paper supports DP-REG's 2023/24 strategic priorities, which involve evaluating the benefits, risks and harms of generative AI, along with its relevance to the regulatory responsibilities of each DP-REG member. It also aims to increase collaboration and capacity building among the four members to deepen our knowledge of technology, which can support the future work of individual regulators and DP-REG.

New services powered by LLMs have significant potential to benefit consumers and boost productivity. This technology can be applied in various ways to enhance the quality of goods and services for consumers and improve efficiency and productivity in sectors such as programming, legal and support services, education, academia, media and public relations. It also has the potential to enhance digital literacy and create positive online experiences for all Australians.

However, the use of these models carries risks, including increased exposure to harmful content such as misinformation, abusive or exploitative content, manipulation, coercion, scams and fake reviews. There are also concerns related to anti-competitive behaviour and threats to privacy and safety due to the collection and use of personal data.

While LLMs will likely intersect with a wide range of legal and regulatory issues, such as copyright and anti-discrimination laws, this paper specifically addresses how LLMs intersect with the regulatory responsibilities of DP-REG members, which include consumer protection, competition, the media and information environment, privacy and online safety.

The paper outlines the challenges presented by LLMs in each of these areas but does not consider the specific application of Australian laws to the issues raised by LLMs or propose reforms. DP-REG member regulators are monitoring and considering developments related to LLMs in line with their individual regulatory responsibilities (outlined further at 4.1 below).

Other government activities on generative artificial intelligence (AI) in Australia include the Department of Industry, Science and Resources' (DISR) 'Safe and Responsible AI in Australia' consultation, and the House Standing Committee on Employment, Education and Training's inquiry into the use of generative AI in the Australian education system. DP-REG's joint submission to DISR's 'Safe and Responsible AI in Australia' consultation, provided in attachment A, offers a closer look at how the regulatory frameworks of DP-REG members apply to LLMs and generative AI more broadly.

2. Description

LLM technology has advanced rapidly due to the availability of more training data, enhanced artificial neural networks with larger datasets and parameters, and greater computing power. This could impact almost every aspect of our lives, in both positive and negative ways.

The public release of LLM chatbots such as OpenAI's ChatGPT in late 2022 or Microsoft's new Bing in 2023 has generated huge interest in the potential benefits and risks of LLMs. The significant industry and public interest in this technology is reflected both in the volume of media coverage on these emerging services, and in the fact that many major digital platform firms have launched or are testing their own LLM products. This includes Amazon, Apple, Baidu, Google, Meta, Microsoft, Open AI, Snap and X (formerly Twitter).[1]

This development has the potential to influence the availability of digital platform services, bringing benefits but also introducing and exacerbating online risks. This paper explores the possible implications of this technology for consumer protection, competition, the media and information environment, privacy, and online safety.

3. Key insight questions

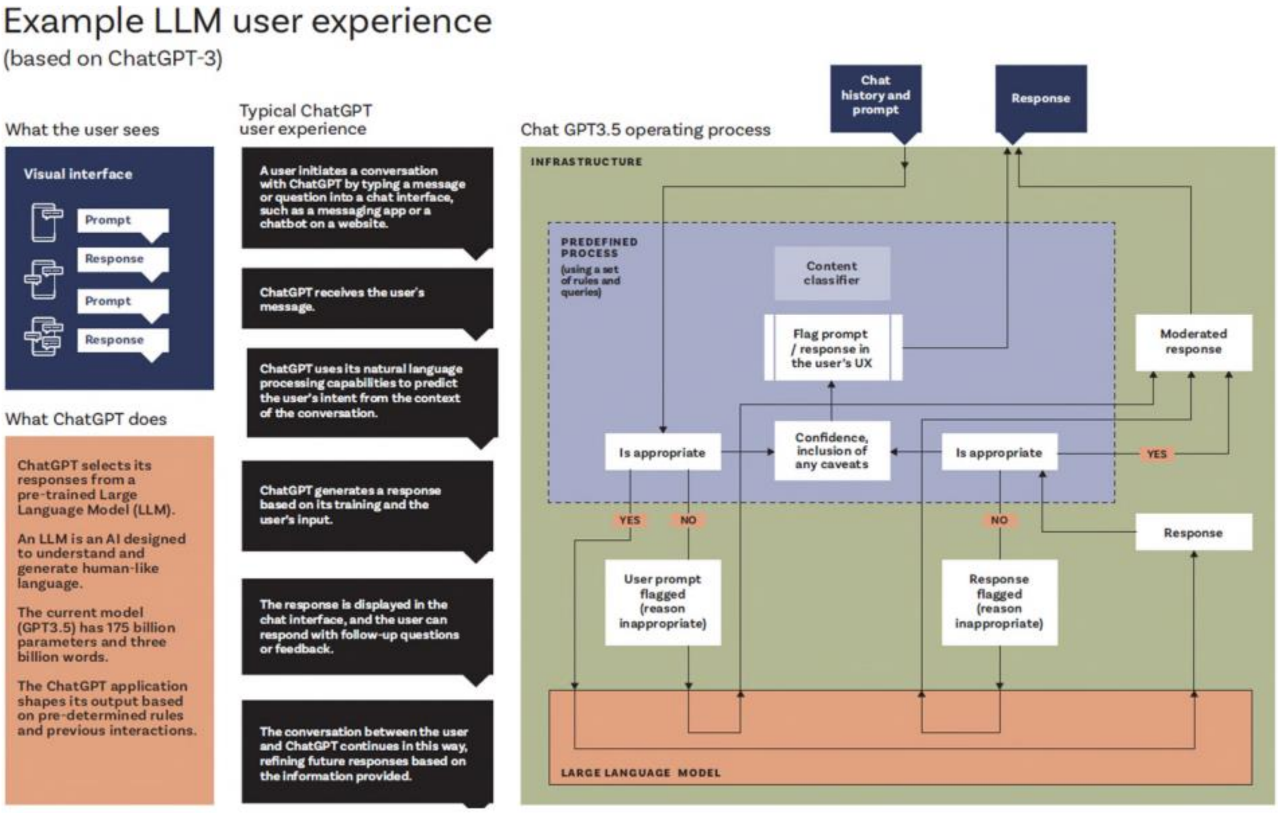
3.1 What are Large Language Models?

LLMs are a type of language model[2] that form the basis of certain generative AI systems,[3] a subset of 'artificial intelligence' or AI.[4] These terms can be contested and difficult to define.[5]

LLMs, like other generative AI models, produce outputs based on inputs or 'prompts'. They use algorithms trained on vast amounts of data, primarily text in the case of LLMs. This training helps them predict and approximate relationships between data. In simpler terms, if you give an LLM some words to start with, it can predict what characters or words might come next, much like the 'auto complete' functionality in many smartphone messaging apps.

The results generally appear original, even though they are essentially a synthesis of the existing data used to train the LLM, including direct excerpts from that data.

This ability allows LLMs to power 'chatbots' that can mimic conversations with users in natural language and generate text that appears 'human-like'. Examples of LLM chatbots include AliBaba's Tongyi Qianwen, Baidu's Ernie 3.0, Google's Bard (which incorporates its PaLM 2 LLM), Meta's LLaMA and LLaMA 2, OpenAI's ChatGPT, and Microsoft's new Bing search engine (which incorporates OpenAI's GPT-4 model)[6]. Platforms such as Amazon (through Amazon Bedrock)[7] and Microsoft (through Azure AI)[8] have also started to leverage their cloud operations to sell various LLM technology services.



Example LLM user experience

(based on ChatGPT-3)

What the user sees
Visual interface
Prompt
Response
Prompt
Response
Typical ChatGPT user experience
What ChatGPT does
Chat GPT3.5 operating process
Chat history and prompt
Response
INFRASTRUCTURE
PREDEFINED PROCESS
(using a set of rules and queries)
Content classifier
Flag prompt / response in the user's UX
Moderated response
Is appropriate
Confidence, inclusion of any caveats
Is appropriate
YES
YES
NO
NO
Response
User prompt flagged (reason inappropriate)
Response flagged (reason inappropriate)
LARGE LANGUAGE MODEL

A user initiates a conversation with ChatGPT by typing a message or question into a chat interface, such as a messaging app or a chatbot on a website.

ChatGPT receives the user's message.

ChatGPT uses its natural language processing capabilities to predict the user's intent from the context of the conversation.

ChatGPT generates a response based on its training and the user's input.

The response is displayed in the chat interface, and the user can respond with follow-up questions or feedback.

The conversation between the user and ChatGPT continues in this way, refining future responses based on the information provided.

ChatGPT selects its responses from a pre-trained Large Language Model (LLM).

An LLM is an AI designed to understand and generate human-like language.

The current model (GPT3.5) has 175 billion parameters and three billion words.

The ChatGPT application shapes its output based on pre-determined rules and previous interactions.

Source: G Bell et al., Rapid Response Information Report: Generative AI - language models (LLMs) and multimodal foundation models (MFMs), Australian Council of Learned Academies, 24 March 2023, page 4.

3.2 How does the technology work?

To be effective, sophisticated LLMs need vast amount of training data. For example, GPT-4 uses about 1 trillion parameters according to some sources)[9] . The training process also demands a significant amount of computing power.

Most LLM chatbots can only provide answers based on the information they have been trained with, usually large amounts of data collected from the web. However, others, such as GPT-4, can connect to the internet via plugins to search for new information.

This is what happens when a user enters a prompt into an LLM chatbot:

1. The model turns the prompt into a series of numbers that capture the relevant information about the query (encoding). These numbers are structured so related or similar queries have similar values. In some models, this string of numbers captures both the user's query and the conversation history for context.
2. These numbers are processed through the LLM's mathematical equation, which is encoded as a 'neural network' made up of layers of 'nodes'. Each 'node' takes in numbers, applies weights (the model's parameters) and returns a result.
3. As the numbers pass through the layers of the network, they transform from the input numbers to the output numbers.
4. At the end of the network, a final set of numbers comes out from a final layer of nodes, known as the output layer.
5. The numbers from the output layer are converted back into text (decoding).
6. In some chatbot systems, there is then a validation step to ensure the text does not contain offensive or prohibited content.
7. Finally, the chatbot sends the text back as a response to the user.

Some LLM developers may publish ‘model cards’ or ‘system cards’ about their products. These cards explain how the LLMs work and outline potential use cases and risks associated with misuse.

For example, in March 2023, OpenAI published a system card for GPT-4 outlining some of the safety challenges and what steps OpenAI had taken to address them.[10] However, LLM developers, including OpenAI, have faced criticism for a lack of transparency in how their LLMs operate, such as not disclosing the datasets used to train them. One critic described the GPT-4 system card as ‘lacking in technical detail’ and ‘disclos[ing] none of the research.’[11]

3.3 What are the applications of the technology?

LLMs can do many things and offer benefits to a wide range of industries. For example, LLMs can:

- create content, such as emails, essays, news stories, speeches, creative works, language translation, press releases, and customer service chatbots
- find information, such as articles and books
- summarise information quickly, or turn bullet points into full text
- write and debug programming code
- analyse data by identifying data sources, formatting and cleaning data, and creating charts.

These capabilities are expanding and can be used in digital platforms such as gaming platforms, search engines, social media, websites, as well as in programming, education and academia, legal and support services, health, customer service, journalism, creative sectors, and the public sector.

3.4 What are the limitations of the technology?

LLMs don’t really understand the information or language in their inputs and outputs. For example, the 2022 paper ‘On the Danger of Stochastic Parrots’ notes that text generated by an LLM lacks a true understanding of communication, the world, or the reader’s state of mind. As the paper says, the generated text ‘is not grounded in communicative intent, any model of the world, or any model of the reader’s state of mind’. However, users tend to think LLMs understand like humans do, due to ‘our predisposition to interpret communicative acts as conveying coherent meaning and intent, whether or not they do.’[12] This can lead to LLM chatbots producing information that might be inaccurate or harmful while also appearing authoritative.

The effectiveness of generative AI models depends on the availability of human-created training data. This data may be limited and could cause privacy concerns, leading to the use of synthetic data (AI-generated data) for model training. Still, there are concerns that AI models trained on synthetic data, including LLMs, may be vulnerable to ‘Model Autophagy Disorder’, causing precision and recall to progressively decrease in a ‘self-consuming loop’.[13]

3.5 What are the projected trends in usage, adoption and development of the technology?

There are strong indications and forecasts of rapid and widespread adoption of generative LLM-powered services. For example:

- ChatGPT, released in November 2022, gained rapid popularity, reportedly reaching 1 million users in 5 days,[14] 100 million active users by January 2023[15] and 1.6 billion site visits in March 2023, surpassing Bing.[16]

- Microsoft's Bing experienced a 15.8% increase in traffic between 7 February 2023 (when it unveiled the LLM-powered 'new Bing') and 20 March 2023.[17]
- The global generative AI industry is expected to exceed US$100 billion per year by 2030,[18] with a more recent projection (April 2023) suggesting US$51.8 billion as early as 2027.[19]
- Microsoft and the Tech Council of Australia have estimated that rapid adoption of generative AI could add up to A$115 billion annually to the Australian economy by 2030.[20]

Specialised skills will be needed to harness the opportunities offered by this technology. A report commissioned by Australia's National Science and Technology Council (NSTC) says that over the next 2 to 5 years, domestic and international competition for workers with digital technology capabilities is expected to be 'a key risk for Australia'.[21]

3.6 Debate about risks associated with the technology

There is ongoing debate about the risks of LLM technology. Right now, LLMs and other forms of generative AI are attracting significant attention from media and the public. Headlines range from 'Advanced AI could kill everyone'[22] to '5 Unexpected Ways AI Can Save the World'.[23] Industry leaders, such as Google DeepMind CEO Demis Hassabis and OpenAI CEO Sam Altman, signed an open letter in May 2023 that describes 'the risk of extinction from AI' as a 'global priority alongside other societal-scale risks such as pandemics and nuclear war'.[24]

However, this focus on the theoretical 'existential risk' of AI systems may make people think the current technology is more useful and powerful than it really is. It could also distract attention from the more immediate and tangible risks posed by this technology.[25] You can find more about broader AI risks in the DISR Responsible AI discussion paper (see Section 5.1).

4. Potential impacts in regulated areas

4.1 Overview

LLMs have a broad range of applications and potential impacts within each DP-REG member's regulatory remit. This includes:

- The Australian Competition and Consumer Commission's responsibilities for regulating consumer protection (see section 4.2) and competition (section 4.3)
- The Australian Communications and Media Authority's responsibilities for regulating communications and media services and some online content (section 4.4)
- The Office of the Australian Information Commissioner's responsibilities for regulating privacy law (section 4.5), and
- The eSafety Commissioner's responsibilities for regulating online safety (section 4.6).

DP-REG acknowledges that there is a broad range of cross-cutting issues, such as bias and discrimination, that are not covered within this paper.

4.2 Consumer protection

4.2.1 Scams, fake reviews and harmful applications

Public commentary and research point to multiple ways LLMs may be used for scams.

- 'Phishing' scams trick victims into giving away personal information such as bank account numbers, passwords or credit card numbers. They often pretend to be from trusted organisations such as banks, and use generative AI to increase the volume and sophistication of campaigns (while reducing the effort and cost required to run these campaigns). This includes:

  - feeding genuine messages from trusted organisations into models to create text that impersonates organisations with greater accuracy[26]
  - improving the quality of grammar and spelling in phishing/scam messages[27]
  - altering the tone of messages to better emulate the style and sophistication of real communications, making action from consumers more likely[28]
  - generating seemingly authentic 'spear-phishing' emails, which may be targeted at specific groups or communities using relevant keywords, or at individual users based on their social media posts.[29] LLMs could also be used to extend spear-phishing attacks beyond single emails, continuing an entire conversation with a user to elicit information or trick the user into falling for the attack.

- These tools may also be used to increase the volume and sophistication of romance scams.[30]
- There is an emerging market of potentially questionable AI products claiming to be useful implementations of LLMs being advertised and sold on social media[31] which may mislead consumers.
- Scam chatbots could become more effective by using LLMs. Currently, many scams start with a human-bot interaction, before the bot sends a refined pool of potential victims to human scam operators. More realistic and human-like bots are likely to trick more people.[32]
- Since LLMs can also generate code, they could enable malicious users without sophisticated programming skills to write code creating malware.[33] Usage policies typically do not allow such malicious uses.[34] However, researchers have found loopholes which could be used to exploit LLMs for these nefarious purposes[35] as well as ways users can defeat 'guardrails' meant to prevent the harmful use of LLMs.[36]
- AI is being used to improve phone-based scams by making digital voices sound more realistic,[37] and text-to-audio generative AI could further facilitate audio-based scams.
- AI, including LLMs, might be used to create higher-quality fake websites, more easily replacing 'lorem ipsum' placeholder text with seemingly genuine content,[38] or more easily plagiarising content from legitimate websites. LLMs are already in widespread use to create low-quality 'content farm' websites that can earn advertising revenue for their creators by paraphrasing content from other sites, inserting many advertisements, and optimising the website keywords to get on the first page(s) of a search engine.[39] This trend is already making it more difficult for users to find good quality and authoritative content on the internet.
- LLMs might be used to generate higher-quality fake documents for scams. Many social engineering scams which result in large consumer losses involve fake official documents implying the scammer has existing funds or that the victim is legally protected. The quality of these documents vary, but LLMs are likely to increase how convincing they appear.[40]

LLMs may also be used to increase the volume and sophistication of fake reviews online. Previous ACCC Digital Platforms Services Inquiry reports say such bogus reviews can frustrate consumer choice, distort competition and erode consumer trust in the digital economy.[41]

4.2.2 Misleading and deceptive conduct

LLMs and other generative AI applications have been described as 'extremely useful yet fundamentally fallible'. They are 'particularly prone' to risks stemming from system failures, malicious or misleading deployment, and overuse or reckless use.[42] For example, LLMs can provide false yet authoritative-sounding statements that could mislead users. There has been widespread media reporting about examples of mistakes made by ChatGPT and Bard;[43] this could extend to misleading information when consumers are making purchasing decisions.

Also, because LLMs are becoming more popular, they are generating a lot of hype. This might encourage false and misleading claims about a wide range of products that use AI. In February 2023, the United States Federal Trade Commission (FTC) published a blog post warning marketers against:[44]

- exaggerating the capabilities of AI products
- promising AI products do things better than non-AI products without adequate proof
- labelling products as 'AI-enabled' when they do not use AI technology.[45]

Compared to traditional search engines, LLM chatbots or LLM-based search engines may pose a greater risk of misleading consumers or facilitating scams. They might provide a single authoritative-sounding but potentially incorrect response to a query, as opposed to producing a more varied list of websites to investigate.[46] Removing the usual indicators of information quality, such as sources, exacerbates this risk. This highlights the need for users of these tools to consider their outputs critically. It also suggests consumers who lack understanding of the limitations of this technology may be disproportionately affected by its risks.

4.3 Competition

Developing and operating LLMs requires large sums of money upfront, access to vast datasets, long development lead times, sophisticated AI systems and talent, and substantial ongoing computing costs. These models are likely to have features common to digital platform services that make them tend towards concentration. These include a positive feedback loop involving collection and use of user data, economies of scale, and access to large volumes of high-quality user data. Because of these characteristics, new entrants could find it difficult to compete with digital platform services that use LLMs as part of new and existing services.

People have noted in public discussions and research that certain characteristics might give existing 'big tech' firms a competitive advantage in creating and releasing LLMs. These include:

- **Data advantage**: The output of LLMs becomes more accurate as the size and quality of training data increases.[47] However, beyond a certain point, the cost of building such large models and datasets leads to diminishing returns.[48] While open-source training data for general LLMs is available through digital libraries, firms with pre-existing access to the best and largest data-sets may benefit from first-mover advantage when creating LLMs. Many technology companies have focused on expanding their data advantage through strategic acquisitions. This has allowed them to establish strong positions in a range of industries.[49] LLMs developed by smaller start-ups or other firms may have less access to training data. This makes them more prone to mistakes and 'hallucinations',[50] making it more difficult for these firms to compete with the large digital platforms. Proprietary data is increasingly seen as a valuable (and monetisable) asset for existing and emerging niche LLM datasets. Companies such as Bloomberg, Reddit and X (formerly Twitter) are closing off open access to data that can be used to train LLMs.[51,52]
- **Computing power advantage**: The importance of materials such as chips and the location of data centres in developing and running LLMs means economies of scale

apply. Only a few companies have the cloud and computing resources necessary to develop AI system as sophisticated and competitive as the leading LLMs. This means AI start-ups and other new entrants are likely to need to license infrastructure from large providers such as Microsoft, Google or Amazon. These providers may be their competitors in providing generative AI and LLM services.[53] There is also a relatively small pool of highly-skilled tech workers from which firms seeking to develop these models can recruit.

- **Financial resources:** For example, Microsoft recently announced it will pay to defend any customers of its Copilot AI software against copyright lawsuits, as well as the amount of any adverse judgments.[54] This assumption of legal liability could potentially become a barrier to entry for new market participants with limited financial resources.
- Other relevant characteristics may include **economies of scale and 'positive feedback loops'**. In these loops, a service's performance improves as more people use it. This leads to increased popularity and further performance improvements.

4.3.1 Competition among search services

People are speculating that new services based on LLMs may disrupt Google's enduring dominance[55] in the search engine market by providing more relevant, direct and comprehensive responses to user queries. The launch of the LLM-powered 'new Bing' has been described as a fight for search engine supremacy between Google and Microsoft.[56] After Microsoft announced 'new Bing', the Bing app's downloads increased ten-fold..[57] In April 2023, Samsung considered replacing Google with Bing as the default search engine on its mobile devices,[58] and in May 2023, Microsoft made Bing the default search engine for ChatGPT Plus users.[59]

Google's Bard LLM chatbot is separate from its search engine services, but Google is trialling its new 'Search Generative Experience'. This feature provides AI-assisted answers to a user query before showing standard search results.[60]

However, the potential for LLM technology to disrupt the search engine market may have been overstated.

- Firstly, existing search services, such as Google Search, already have similar features, such as snippet summaries of website content and responses to questions from users or predicted by the search service. Secondly, the limitations of LLM-based services in providing accurate responses may discourage people from using them.[61]
- Moreover, digital platforms such as Google and Microsoft, which are leading LLM developers, often acquire or copy new technologies quickly .[62] They then leverage these technologies to maintain and defend their market positions in various digital platform services. For example, Microsoft has reportedly threatened to restrict access to Bing's search data for customers developing competitors to GPT-4.[63]
- The difficulties smaller firms face in overcoming these obstacles are highlighted by the example of Neeva. The subscription-based search engine announced in May 2023 that it would withdraw from the market on 2 June 2023, despite its investment in LLM technology to be 'the first search engine to provide cited, real-time AI answers to a majority of queries'.[64]

4.3.2 Other digital platform services, and digital platform ecosystems

Outside of search, using LLMs can increase a user's interaction with particular digital platforms. Over time, this may make it more difficult for users to leave these platforms. For example, to use the new Bing, users need to join a waitlist with a Microsoft account. This process encourages the user to stay logged in or download an app for password-free sign in.

Likewise, using Google's Bard requires a Google account sign-in.[65] In general, LLMs and other generative AI services are becoming part of already-dominant platforms' services, partly through investment and acquisitions.[66] Such investments include Google's interests in DeepMind[67] and Anthropic,[68] Microsoft's significant investments in OpenAI[69] and Amazon's investment in Anthropic.[70]

LLMs may also affect competition in other digital platform service markets, by giving competitive advantages to firms with the most effective LLMs. This could happen in markets for:

- *Browser services*: Their use is linked to search services. LLM-powered search functions can be incorporated directly into browsers, as Microsoft has done with the new Bing and its Edge browser,[71] and Google as announced with Search.[72]
- *Services that incorporate search functions*; This includes app stores and online retail marketplaces. LLMs can potentially reduce search costs for users and increase sales for sellers by more effectively matching shoppers with products they're most likely to buy.[73]
- *Social media services and advertising-funded services*: LLMs could allow advertisers or platforms to better target their display ads or sponsored social media posts.
- *Productivity suite services*: Popular enterprise applications (such as email or word processing) may default to using a service provider's own services when generating LLM-powered content.

4.3.3 Potential to increase anti-competitive conduct

LLMs could allow big digital platforms to strengthen and expand their market power by continuing to engage in difficult-to-detect anti-competitive practices the ACCC has previously observed. For example, large digital platforms that use LLMs could engage in:

- *Self-preferencing*: This could make it more difficult for users to tell when LLM-based chatbots are making sponsored recommendations or referring to products or services offered by the same company that operates the chatbot.
- *Tying*: This could involve linking the availability of 'must-have' LLM services to use of other services, such as browsers or search engines.
- *Data access restriction*: This could limit the training of rival LLMs, such as restricting their ability to respond to queries about recent events.

The Organisation for Economic Co-operation and Development has also suggested LLMs could facilitate anti-competitive behaviour in broader markets, such as setting prices, determining bids, or sharing markets.[74] This includes:

- *Generative collusion*: This could involve accessing rival chatbots' prices and other business contract terms and suggesting changes to their own terms accordingly.
- *Platform collusion*: This could involve competitors in a different market providing an LLM with commercially sensitive pricing data and obtaining similar data about others by putting relevant questions to the chatbot.[75]

4.4 Media and the information environment

4.4.1 Risks for the information environment

LLMs can make it easier and cheaper to produce news and other information sources, but they also pose several risks.

- LLMs can reinforce and reproduce biases presentin their training data, which can distort the quality of the information they provide.[76]

- LLMs can ‘generate outputs that sound authoritative but are factually incorrect.[77] Called ‘hallucinations’, these outputs can be difficult for both experts and non-experts to detect.[78]
- This can lead to the spread of misinformation, potentially causing harm. For example, in June 2023, a US man initiated defamation proceedings against OpenAI, claiming ChatGPT had falsely told a journalist he had been sued for embezzlement.[79]
- While some LLMs may eventually access and interpret real-time data, they are generally trained with data that is current to a certain point in time. This means they might struggle to provide accurate information about current events or real-time data. As a result, using LLMs for news may lead to the spread of outdated and unreliable information.[80]
- Given the ease with which LLMs can generate information, bad actors could use them to disseminate misinformation on a large scale in several ways:
  - LLMs can generate misinformation that mimics the styles of authoritative sources such as news outlets or government organisations.[81]
  - LLMs could impact democratic and political processes by generating significant amounts of text that spread false information or propaganda at low cost. This content might appear more reliable than content generated by bots.[82]
  - The widespread use of LLMs could further mislead people and disrupt the quality of public interest information.[83]
- In May 2023, NewsGuard identified 49 sites in 7 languages as ‘content farms’ that mostly or entirely used LLMs to generate articles. Some of these articles promoted false narratives such as vaccine conspiracy theories.[84] LLMs make it easier to generate these low-quality or deceptive websites.

LLMs can also impact news creators and other information sources by compiling their information (including content behind paywalls) into responses without compensation.[85] This effect now extends to search results, with AI presenting snapshots of information collected from sources across the internet without users needing to click website links. This has led to calls, such as by former ACCC Chair Rod Sims, for LLMs to be covered by Australia’s News Media and Digital Platforms Mandatory Bargaining Code.[86]

4.4.2 Benefits to the information environment

Conversely, LLMs can help improve trust and safety in the information environment, while also improving productivity and the viability of news production. LLMs can:

- serve as a learning tool to help a variety of learners, including primary school students, university students, group learners, remote learners, learners with disabilities, and those for whom English is a second language[87]
- create personalised news feeds or recommend content that is more relevant to users.[88]
- to help fact-checkers quickly synthesise and process large amounts of information.[89]
- support the creation and distribution of original journalism, including generating article ideas, interrogating large data sets, identifying errors or suggesting corrections, and reducing time spent on business processes and administration. The BBC and *The Guardian* have already used AI to generate hyper-local news stories.[90]

4.5 Privacy

4.5.1 Opacity in the handling of personal information

LLMs may collect, use, disclose and store personal information. This can happen during large-scale internet data scraping to prepare data for LLM pre-training or when a user submits personal information in their prompt to a chatbot.[91] If there are no clear details about how personal information is handled, people won't understand the privacy risks when using the service.

4.5.2 Disclosure of inaccurate personal information

LLMs can sometimes produce incorrect or misleading outputs, including 'hallucinations'.[92] This can lead to the creation of false information about individuals. For example, a mayor in regional Victoria is considering defamation action against OpenAI because ChatGPT falsely stated he was a guilty party in a foreign bribery scandal. In reality, he had been the whistleblower and he was never charged with a crime.[93]

4.5.3 Data scraping impacting control over personal information

LLMs are often trained on public data due to their large data needs. There are concerns about scraping information from public websites without the knowledge or consent of the content creators or subjects, which may include their personal information.[94]

Some commentators have also raised concerns about the limited ways for users to access or delete their personal information.[95] The industry has tried to address these issues by introducing certain features to their services. For example, some companies have introduced an 'export' function that allows users to request a copy of their stored information or a mechanism to request access to, correction of, deletion of or transfer of their personal information that may be included in the entity's training data.[96]

4.5.4 Data breach risk

The vast amounts of data collected and stored by LLMs may increase the risks related to data breaches, especially when individuals disclose particularly sensitive data in their conversations with the LLM because they are not aware it is being retained.[97]

Using LLMs to generate malicious code noted above could also lead to an increased risk of data breaches.

4.5.5 Uses of personal information by LLMs

The use of personal information by LLMs can have particular impacts on individuals. For example, LLMs could be trained on large amounts of customer data to recognise consumer preferences, and then used to create personalised advertising content for individual users.[98] As noted above, LLMs may also produce discriminatory results.

4.6 Online safety

LLMs can impact online safety. They have the potential to create both risks and opportunities. These may be standalone or intersect with consumer protection, competition, the media and information environment, and privacy.

Some potential opportunities for LLMs and generative AI tools to enhance online safety include:

- detecting and moderating harmful online material more effectively and at scale
- enhancing learning opportunities and digital literacy skills
- establishing more effective and robust conversations about consent for data collection and use
- providing evidence-based scalable support that is easy to understand and age appropriate to meet the needs of young people, such as through helpline chatbots.

However, the possible threats from LLMs are not just theoretical. Real-world harms already exist. Some of these online safety risks and challenges are outlined below.

4.6.1 Abuse, bullying, harassment and hate at scale

LLMs can generate online abuse, hate and discriminatory content. This can harm society and harass individuals online. There's a risk LLMs could automate these kinds of outputs at scale. Coupled with their ability to produce unique outputs, they could enable campaigns of hate speech or other harmful content that flood online platforms.[99]

4.6.2 Manipulation, impersonation, and exploitation

LLM-powered conversational agents can influence a person's decisions because they can adapt and respond to data in real time.[100] This can manifest in a variety of harms. For example, a chatbot designed as an eating disorder hotline once encouraged a user to develop unhealthy eating habits.[101]

LLMs can also create fake personas or impersonations of people or organisations, making it easier to deceive and manipulate others online. They've been used to create convincing text for grooming,[102] catfishing[103] or sexual extortion[104]. The risk of impersonation increases when LLMs are combined with other forms of generative AI, such as image or voice generators.

They can also create terrorist and violent extremist content (TVEC) or terrorist propaganda.[105]

4.6.3 Age-inappropriate content

Some LLM chatbots, such as Snapchat's My AI (which accumulated 150 million users out of 750 million Snapchat users from its release on 20 April 2023 to 11 June 2023)[106] may be providing users with age-inappropriate results. For example, they've told teenagers how to mask the smell of alcohol and marijuana or engage in sexual conduct.[107] There are also reports of the chatbot advising a user pretending to be 13-years-old on how to lie to her parents about meeting a 31-year-old man.[108]

To safeguard children and young people, it is essential to implement age-appropriate design, supported by robust age assurance measures. Services and features accessible to children should be designed with their rights, safety, and best interests in mind. Specific protections should be in place to reduce the chances of children encountering or being exploited to produce harmful content and activity.

4.6.4 Mitigations

Everyone involved – technology developers, downstream services that integrate or provide access to the technology (such as LLM-aided search engines and chatbots), regulators, researchers and the public – should be aware LLMs' potential harms and play a role in addressing them.

Services can use various interventions and measures to minimise the risk of harm from deploying LLMs. A Safety by Design approach, based on core principles, is crucial for user safety and building trust with communities. Safety measures include well-resourced trust and safety teams, red-teaming and violet-teaming before deployment, routine stress tests with diverse teams to identify potential harms, digital watermarking of content, real-time support and reporting, regular evaluation, and third-party audits.[109]

Other ways to mitigate potential harms include developing models that draw on a wide range of perspectives and establishing evaluation metrics that actively address racial, gender, and other biases, while promoting value pluralism. It's crucial to adopt holistic evaluation strategies to address various risks and biases.

For more detailed information on generative AI's opportunities and risks to online safety, as well as specific Safety by Design interventions, refer to eSafety's position statement on generative AI.[110]

5. Recent Australian Government developments

There have been notable developments from the Australian Government in 2023 in response to the growing popularity of LLM applications.

5.1 DISR discussion paper and NSTC-commissioned report

On 1 June 2023, the Department of Industry, Science and Resources (DISR) published a rapid response report on generative AI, commissioned by the National Science and Technology Council (NSTC) as well as a discussion paper titled ‘Safe and responsible AI in Australia’.[111]

The paper explores potential regulatory responses to mitigate AI risks and invites feedback on Australia’s potential actions. It also considers existing and proposed approaches in the European Union, United Kingdom and United States.

5.2 eSafety decision on the draft Search Engine Services Code

In September 2023, the eSafety Commissioner registered the Internet Search Engine Services Online Safety Code (Class 1A and Class 1B Material), also known as the SES Code.

This decision was made after industry associations submitted a revised SES code to address the Commissioner’s concerns that an earlier draft did not adequately include generative AI features in search engine services.

The SES Code sets out specific measures for generative AI to minimise and prevent the generation of synthetic class 1A material (such as child sexual exploitation material or pro-terror content) on internet search engine services. It requires providers to:

- improve systems, processes and/or technologies to reduce safety risks related to synthetic materials generated by AI that might be accessible via their search engine service
- ensure that any AI-enabled features integrated into a search engine service, such as longer-form answers, summaries or materials, do not return search results containing child sexual abuse material
- clearly indicate when a user is interacting with any AI-enabled features.

The SES Code will come into effect in March 2024. Further information on what the SES Code will cover, including how it considers generative AI functionality, is available on eSafety’s website.[112]

5.3 Senate Select Committee on Foreign Interference through Social Media recommendation

On 2 August 2023, the Senate Select Committee on Foreign Interference through Social Media recommended the Australian Government investigate options to identify, prevent and disrupt AI-generated disinformation and foreign interference campaigns. This is in addition to the DISR’s consultation process on the safe and responsible use of AI technology.[113]

5.4 ACMA’s second report on digital platforms’ efforts under the Australian Code of Practice on Disinformation and Misinformation

Given the rapid growth and adoption of generative AI technologies across a range of digital platform services, an ACMA report recommended that the Digital Industry Group Inc (DIGI) and signatories consider whether the current code adequately addresses the scope and impacts of this technology.

5.5 eSafety Commissioner’s Tech Trends paper on generative AI

eSafety regularly scans the horizon and consults with subject matter experts to guide its work. This allows eSafety to identify the online safety risks and benefits of emerging technologies, as well as the regulatory opportunities and challenges they may present.

In August 2023, eSafety released its new position statement on generative AI, examining LLMs and multimodal models. This statement, part of the Tech Trends workstream, provides an overview of the generative AI lifecycle, examples of its use and misuse, consideration of online safety risks and opportunities, as well as regulatory challenges and approaches. It also suggests specific Safety by Design interventions industry can adopt immediately to improve user safety and empowerment.

5.6 Inquiry into the use of generative AI in the Australian education system

In May 2023, the House Standing Committee on Employment, Education and Training started an investigation into the use of generative AI in Australia’s education system, including early childhood education, schools, and higher education sectors.

The inquiry is looking at the strengths and benefits of generative AI tools and how they can improve education outcomes. It’s also examining their impact on teaching and assessment practices, safe and ethical uses, how disadvantaged students can benefit, local and international practices and policies, and recommendations to manage the risks and guide the potential development of generative AI tools, including standards.

5.7 Australian Framework for Generative Artificial Intelligence in Schools

Commonwealth, States, Territories and the non-government school sector are also currently working together to develop a framework to help schools and education systems use AI.

6. Regulatory challenges

The growing use of LLMs may pose regulatory challenges. Australian regulators face difficulties in balancing innovation and regulation, enforcement, and keeping pace with evolving technology and business models.

- **Challenges in balancing the need to promote innovation while protecting Australians:** Regulators need technical expertise to regulate AI effectively without stifling dynamism or hindering competition between LLM providers.[114] However, obtaining independent advice can be a challenge because technical expertise often lies within the entities being regulated.
- **Cross-jurisdictional challenges:** More widespread use of AI by regulated entities can exacerbate cross-jurisdictional enforcement issues. Australian regulators need to collaborate with international counterparts while protecting Australians. They also face challenges in using their investigative powers to access algorithms, code and other technical materials stored overseas.
- **Challenges in keeping pace with evolving technology and business models:**
    - Generative AI is rapidly evolving, and so efforts to regulate it (including through policy developments or enforcement actions) face the risk of becoming quickly outdated as the nature, capabilities and uses of these services evolve.
    - The ecosystems around generative AI are also in flux, requiring careful consideration of how best to allocate responsibility across relevant actors.
    - The sheer size of LLMs poses significant challenges, such as auditing.[115] The ‘black box’ nature of generative AI systems can obscure accountability. It’s

difficult to explain how LLMs generate specific outputs due to the use of deep learning, a technique based on multi-layered neural networks (discussed at 3.2 above). A range of regulatory and auditing approaches are being considered to address these challenges. To be effective, these should seek to overcome challenges in establishing consensus in risk definitions and methodologies across wide-ranging platforms.[116]

  - LLMs can impact regulated areas of the economy. Regulators should continue to assess how current regulations apply to LLMs and provide guidance where necessary to make sure existing regulatory and enforcement tools remain effective. As noted in section 5, the DISR consultation on 'Safe and responsible AI in Australia' has started a whole-of-government consideration of these issues. The responses received, including DP-REG's own submission, will guide government decisions on any regulatory and policy responses. As noted above, DP-REG's joint submission, included as attachment A, examines more closely how the respective regulatory frameworks of DP-REG members apply to LLMs (and generative AI more broadly).
  - Generative AI's ability to produce large amounts of unique text can be misused, potentially disrupting public submission processes run by regulators and other government agencies. This misuse could put a strain on staff time and resources and make it difficult to accept and consider public submissions made in good faith.[117]

7. Next steps/future work

DP-REG member regulators will continue to monitor and consider developments in this space, in light of their individual regulatory responsibilities. For example, eSafety will explore how AI-related harms can be addressed through the upcoming review of the Online Safety Act 2021. The Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA) is leading this review, which is set to happen in 2024.

DP-REG members will also take part in government-wide discussions to plan Australia's response to these technological developments.

8. Acknowledgements

DP-REG members acknowledge the contribution made by experts in sharing their insights on generative AI with the DP-REG forum in the context of preparing this paper. In particular, we thank the following experts:

Dr Ke Deng, RMIT

Dr Joanne Gray, University of Sydney

Professor Mark Sanderson, RMIT

Bill Simpson-Young, Gradient Institute

Dr Aaron Snoswell, Queensland University of Technology

Professor Kimberlee Weatherall, University of Sydney

Professor Jenny Zhang, RMIT

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[1] Formerly 'Twitter'.
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[3] Generative AI is a type of AI that can create content such as text, images, audio, video or data, usually in response to plain language prompts entered by a user, using 'natural language processing'. Generative AI adopts a machine learning approach for turning inputs and outputs into new outputs by analysing extremely large data sets to derive relationships between inputs and outputs.
[4] Artificial Intelligence is the ability of computer software to perform tasks that are complex enough to simulate a level of capability or understanding usually associated with human intelligence.
[5] For example, note that LLMs may also be categorised as a type of 'foundation model'. Some LLMs, such as OpenAI's GPT-4 and Baidu's Ernie, are also described as multi-modal foundation models because their inputs or outputs may include other types of information as well as text. Nonetheless, for the sake of convenience, these models will be referred to as LLMs in this paper. See e.g. G Bell et al., Rapid Response Information Report: Generative AI - language models (LLMs) and multimodal foundation models (MFMs), Australian Council of Learned Academies, 24 March 2023, pp 2-3.
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Attachment A: DP-REG Joint Submission to Department of Industry, Science and Resources – 'Safe and Responsible AI in Australia' discussion paper

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DP-REG Joint Submission to Department of Industry, Science and Resources – 'Safe and Responsible AI in Australia' discussion paper

1.1. The Digital Platform Regulators Forum (DP-REG) welcomes the opportunity to contribute to the Department of Industry, Science and Resources (DISR) consultation on the 'Safe and responsible AI in Australia' Discussion Paper (the Discussion Paper).

1.2. DP-REG is an information-sharing and collaboration initiative between Australian independent regulators with a shared goal of ensuring Australia's digital economy is a safe, trusted, fair, innovative and competitive space.

1.3. Emerging technologies such as artificial intelligence (AI) present new opportunities but also new challenges. An effective approach to the regulation of AI requires collaboration and coordination between regulators given the need for complementary expertise to address these challenges.

1.4. The purpose of this submission is to outline how DP-REG members are working together to understand the potential impacts posed by AI in Australia, and how our respective regulatory frameworks currently apply to AI technology.

2. About DP-REG

2.1. In March 2022, the Australian Communications and Media Authority (ACMA), the Australian Competition and Consumer Commission (ACCC), the Office of the Australian Information Commissioner (OAIC), and the eSafety Commissioner (eSafety) formalised existing collaborative arrangements to form DP-REG.

2.2. Through DP-REG, members share information about, and collaborate on, cross-cutting issues and activities involving the regulation of digital platforms. This includes consideration of how competition, consumer protection, privacy, online safety and data issues intersect. The structure, purpose and goals of DP-REG are outlined in our Terms of Reference.

2.3. This forum is similar to bodies set up in other jurisdictions such as the Digital Regulation Cooperation Forum (DRCF) in the United Kingdom[1] and the Digital Regulation Cooperation Platform in the Netherlands.[2]

2.4. DP-REG's strategic priorities for 2023-24, as outlined in our July 2023 communique, include assessing the impact of algorithms, seeking to improve transparency of digital platforms' activities and how they are protecting users from potential harm; increased collaboration and capacity building between the four members; and a new focus on understanding and assessing the benefits, risks and harms of generative AI.

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2.5. Working groups progress the key priorities, projects and activities of DP-REG. Currently, DP-REG has three standing working groups:

- **Digital Technology Working Group** to jointly explore relevant digital platform technologies (including algorithms) and their regulatory implications
- **Codes & Regulation Working Group** to undertake activities that promote a consistent and coordinated approach to regulatory frameworks and common regulatory issues, and to build regulatory capability across DP-REG members
- **Data & Research Working Group** to undertake activities that support the collection and sharing of relevant data, research and information across DP-REG members.

2.6. DP-REG's Digital Technology Working Group conducts joint work, such as a project evaluating the risk posed by algorithms and a 'technology examination' working paper on Large Language Models (LLMs). We expect this work will inform broader government processes, including this consultation and work underway by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts, and the Department of Home Affairs in response to recommendations 13 and 14 of the House of Representatives Select Committee on Social Media and Online Safety. Each DP-REG member is also separately considering more specific harms stemming from AI relevant to their respective mandates.

3. Developing an approach to AI governance

3.1. The increasing adoption of AI – in particular, generative AI – could have broad-ranging benefits and risks for Australia's economy and society. As discussed below, immediate impacts of this technology include risks to consumer protection, competition, media and the information environment, privacy and online safety.

3.2. The Discussion Paper notes that any regulatory and governance response to address the risks associated with AI should start by considering the extent to which Australia's existing regulatory frameworks provide appropriate safeguards.

3.3. We support this approach and, where gaps are identified, the Government should consider how existing frameworks may be strengthened and enhanced (including through existing regulatory reform proposals) before consideration is given to creating a separate regime specific to this technology.

3.4. The effective coordination between DP-REG members, as well as other arms of Government, will therefore be crucial to the development of effective regulatory approaches to AI. Through DP-REG, its members engage in ongoing collaboration, information sharing and coordination on matters relating to digital platforms regulation, including engagement with Government counterparts, academic experts, and industry stakeholders. By continuing this work, the forum will be able to make a valuable contribution to whole-of-Government discussions about Australia's response to AI.

3.5. The section below sets out how the existing laws and regulatory powers of DP-REG members, and other ongoing law reform processes, may operate to address current or emerging risks associated with AI, and where potential gaps may lie.

4. Application of the existing regulatory frameworks to AI

4.1. The use of AI by digital platforms has impacts on users, businesses, and government. Many of these impacts may exacerbate existing, already widespread risks that digital platform regulators are already working to address.

4.2. We also note that the emergence and popular use of AI technology may pose issues that more broadly affect the ability of Australian regulators to exercise their responsibilities. For example, more widespread use of AI by regulated entities may highlight challenges regulators already experience in using their investigative powers to access algorithms, code and other technical material, which may be stored in other jurisdictions. Further, the ability of generative AI to produce large bodies of unique text may be misused to frustrate public submission processes run by regulators and other government agencies, putting a strain on staff time and resources, and making it difficult to accept and consider public submissions made in good faith.[3]

Consumer protection

4.3. The ACCC's consumer protection role includes enforcement of the Australian Consumer Law (ACL) to ensure that consumers and small businesses are protected from misleading and deceptive conduct, unconscionable conduct, unfair terms and conditions and unsafe products, and to promote fair trading. The ACCC also operates the National Anti-Scam Centre (NASC) and Scamwatch website which helps Australians learn how to recognise, report, and protect themselves from scams.

4.4. The ACCC has been considering the consumer impacts of digital platforms for a number of years, including in the 2019 Digital Platforms Inquiry (2019 DPI), and the interim reports of the Digital Platform Services Inquiry (DPSI). There have been 6 published reports to date, with two further reports underway.

4.5. While new products and services powered by generative AI have significant potential to benefit consumers and support productivity, this technology may also present new risks, or exacerbate existing risks to consumers online.[4]

Fake reviews, scams and harmful applications

4.6. As noted in the ACCC's DPSI reports and 2019 DPI Final Report, poor experiences online – due to scams, fake reviews and harmful applications – can harm individual consumers and broadly erode consumer trust in the digital economy.

4.7. While generative AI may help identify online scams quickly and assist with scam disruption,[5] it also has the potential to increase the volume, sophistication, and impact of scam activity and allow better targeting of scams across communication channels – including digital platforms, phone and SMS.[6] Generative AI may also

[3] GW Regulatory Studies Center, Will ChatGPT Break Notice and Comment for Regulations?, 13 January 2023.

[4] For example, the US Fair Trade Commission is investigating whether OpenAI engaged in unfair or deceptive practices, resulting in reputational harm to consumers, through data collection and the publication of false – see Washington Post, The FTC is investigating whether ChatGPT harms consumers, 13 July 2023.

[5] ACS, AI can detect scam calls in real time, 10 May 2022.

[6] For example, scammers can use generative AI to feed genuine messages into models to create text that convincingly impersonates trusted organisations (see Norton, Special Issue Norton Cyber Safety Pulse Report – The Cyber Risks of ChatGPT, 2 March 2023), or to generate emails targeted at specific groups or individuals using relevant keywords (see New York Times, Lina Khan: We Must Regulate A.I. Here's How, 3 May 2023). Scammers can also use bulk aggregation and analysis of scam data to help scammers write more convincing scams, and better target their scams.

be used to increase the volume and sophistication of fake reviews online, which can frustrate consumer choice and distort competition.[7]

4.8. There are currently no specific laws to identify and block scams perpetrated over digital platforms or 'over-the-top' online services. The ACMA's actions are currently limited to services regulated under the *Telecommunications Act 1997.*

4.9. The ACMA has powers to combat scams delivered by phone and SMS. For example, the ACMA has registered and enforces the Reducing Scam Calls and Scam SMS industry code,[8] which requires telecommunications providers to identify, trace and block scam calls and text messages. These rules can assist to identify and prevent phone and SMS scams that utilise generative AI.

4.10. The Government is currently considering the ACCC's September 2022 interim report of the DPSI, which recommends addressing the prevalence of scams, fake reviews and harmful applications through new mandatory processes including notice-and-action processes, reporting processes, verification of certain business users, and dispute resolution processes. It also recommended a new independent ombuds scheme to resolve disputes between digital platforms and consumers, including small businesses.[9]

4.11. The implementation of these recommendations would complement the recently-established NASC within the ACCC, and any potential code/s for banks, telecommunications providers and digital platforms involved in the scam supply chain.

4.12. The NASC will work together with government and other regulators, industry, law enforcement bodies and community organisations to improve information sharing and disrupt scam activity, including in relation to generative AI scams. The NASC builds on the work of the ACCC's Scamwatch service and will raise consumer awareness about harmful scams, making it easier to report scams and support the work of law enforcement and government agencies such as ACMA and the Australian Security Investments Commission (ASIC). The ACMA is a member of the Regulator Steering Group set up to support the planning of the NASC.

Product safety, misleading and deceptive conduct and unfair trading practices

4.13. While AI has the potential to enhance product safety outcomes for consumers – such as by detecting potential safety issues – it also raises new safety risks.

4.14. The ACCC is actively involved in discussions in international fora on how to promote safe AI design and the potential use of AI by consumer regulators. Discussions have also included challenges AI poses to allocating liability – for example, when products such as smart home systems are made unsafe by software updates.

4.15. LLMs can provide false but authoritative-sounding statements that could mislead users, including when consumers are making purchasing decisions. Additionally, the increasing popularity and 'hype' surrounding LLMs may incentivise spurious

[7] See, for example, ACCC, Digital platform services inquiry – September 2022 interim report – Regulatory reform, September 2022, p 8.

[8] ACMA, Action on scams, spam and telemarketing: January to March 2023, accessed 26 June 2023.

[9] ACCC, Digital platform services inquiry – September 2022 interim report – Regulatory reform, September 2022, chapter 4.

and misleading claims about the capabilities (or existence of) of AI technology in a wide range of products.[10]

4.16. The ACL applies to all products or services (except financial products and services), and contains prohibitions on misleading or deceptive conduct, and false or misleading representations. Similar prohibitions apply to financial products and services and are enforced by ASIC under the *ASIC Act 2001* (Cth).

4.17. However, as noted in the ACCC's September 2022 DPSI interim report, existing laws do not always adequately address online harms. As such, the report recommends a range of reforms to address these harms, including the introduction of an economy-wide prohibition on unfair trading practices (which would also address similar offline harms). We understand consideration of this possible reform is currently being progressed by the Government.

4.18. With the growing use of AI in consumer products, the ACCC also notes the application of the ACL to digital products (including AI products, and products using AI in their design and/or supply) could be set out more clearly.

4.19. The ACCC also continues to recommend including an explicit legal obligation in the ACL requiring businesses to supply safe consumer products and services (irrespective of whether AI is involved in their design or supply).

Competition

4.20. The other key mandate of the ACCC is to promote competition by enforcing the *Competition and Consumer Act 2010* (Cth), regulating national infrastructure (such as telecommunications infrastructure), implementing the Consumer Data Right, and undertaking market studies as directed by the Treasurer, including in relation to digital platforms services.

4.21. Effective competition in markets encourages firms to innovate and improve the value of their offerings to consumers, leading to more choice, lower prices, and higher quality products and services. The ACCC has extensively considered the competition issues in markets for digital platform services in the 2019 DPI, the Digital Advertising Services Inquiry and the interim reports of the DPSI.

4.22. Technological changes, such as the integration of generative AI into digital platform services, can lead to innovative new products and services. For example, the incorporation of ChatGPT into Microsoft's Bing search service enables AI-assisted answers in response to a user's search queries.[11] A key challenge is to ensure the field of generative AI remains innovation intensive.

4.23. However, the development and supply of generative AI systems, and their integration into digital platform services, can also raise many of the same barriers to entry and expansion that make some digital platforms tend towards concentration and could in fact magnify the potential for these effects to occur.

4.24. In particular, while open-source training data for general LLMs is available through digital libraries, firms with control over valuable or unique data may have an incentive to create or entrench a 'data advantage' by actively restricting access to that data. For example, Reddit recently announced new charges for Application Programming Interface (API) access to prevent firms training LLM models on its

[10] FTC, Keep your AI claims in check, 27 February 2023.

[11] Microsoft, Confirmed: the new Bing runs on Open AI's GPT-4, 14 March 2023.

library of public posts.[12] Twitter also recently removed public access to its content for internet users without a Twitter account, and ended existing arrangements with Open AI to provide access to Twitter data due to insufficient compensation.[13]

4.25. Generative AI systems could also enable large digital platforms to further entrench and extend their market power by leveraging their substantial user bases and engaging in more effective and difficult-to-detect forms of anti-competitive conduct, such as anti-competitive self-preferencing and tying. In the September 2022 DPSI interim report, the ACCC recommends service-specific codes of conduct with targeted competition obligations, which would apply to designated platforms with the ability and incentive to engage in anti-competitive conduct to address such conduct.[14]

Algorithmic collusion

4.26. The use of AI algorithms also provides a way for two or more different firms to engage in anti-competitive conduct, such as in relation to setting prices, determining bids, or market sharing.[15] Collusion assisted by algorithms may make it easier for firms to avoid detection, or to effectively coordinate, where doing so may otherwise be too complicated (such as in relation to two large sets of pricing data), resulting in higher prices for customers.

4.27. One challenge for regulators is that some forms of potentially harmful algorithmic collusion are likely to be legal under current regulatory settings, including where ‘competing’ algorithms simultaneously learn to set higher prices collectively to maximise profit.

Media and the information environment

4.28. The ACMA is the independent statutory authority responsible for the regulation of broadcasting, and some aspects of regulation of online content delivered by digital platform services in Australia. The ACMA currently oversees the voluntary Australian Code of Practice on Disinformation and Misinformation.

4.29. Algorithms and generative AI have the potential to significantly impact the production of news and the discoverability and consumption of content and information online.

Disinformation and misinformation can be spread using AI and recommender systems

4.30. Generative AI could be used by bad actors to create and disseminate disinformation and misinformation at scale. LLMs can produce – at a very low cost – significant amounts of false information that may appear to be reliable or trustworthy. In May 2023, NewsGuard found that AI-generated sites that produced false and misleading articles, reached hundreds of thousands of followers on social media.[16]

4.31. Australians are also starting to use LLMs more regularly, and are starting to rely on LLM chatbots such as ChatGPT for authoritative answers to questions, or for

[12] Platformer, Reddit goes dark, 13 June 2023.

[13] Business Insider, Elon Musk cut off OpenAI’s access to Twitter data, 29 April 2023.

[14] ACCC, Digital platform services inquiry – September 2022 interim report – Regulatory reform, September 2022.

[15] OECD, Algorithmic Competition, 2023, chapter 3.

[16] NewsGuard, Rise of the Newsbots: Ai-Generated News Websites Proliferating Online, 5 May 2023.

advice. As these services often generate authoritative but inaccurate responses, this can lead to Australians being given false or incomplete information.

4.32. Recommender systems that work to support user engagement on digital platforms may also contribute to the promotion of controversial, false or misleading stories, partly because these stories spread faster, and keep users engaged. In 2018, the MIT Media Lab found that false news stories spread at six times the rate of factual stories on Twitter.[17] False stories that spread quickly may include 'fringe' content that users may not have otherwise seen.

4.33. Nevertheless, algorithms can play a key role in the detection and moderation of disinformation and misinformation. While not perfect, algorithms can be employed by platforms to filter false and misleading information before it starts to spread. Platforms can support the use of algorithms for content moderation while also retaining guardrails, such as human-based content moderation, to make decisions about complex content based on local, cultural and political contexts.[18]

4.34. The voluntary *Australian Code of Practice on Disinformation and Misinformation* (the code), which is managed by the Digital Industry Group Inc (DIGI), requires signatories to provide safeguards against harms that may arise from disinformation and misinformation. It also may help to improve transparency around how recommender systems are used by platforms to address and moderate disinformation and misinformation (through outcome 1e of the code). Additionally, the Government is currently consulting on new regulatory powers to combat misinformation.

The news sector is increasingly relying on AI and recommender systems

4.35. Recommender systems are commonplace in the online news environment. While the systems can help deliver the most relevant news stories to a user based on their past behaviours, personal characteristics and interests, there can have a range of unintended negative consequences. Recommender systems may show users more sensationalist 'clickbait' articles in their news feeds, designed to elicit strong emotions and generate reactions, eroding perceptions of credibility and quality in news media.[19]

4.36. Generative AI tools draw information from a wide variety of sources, including news and media platforms. Industry stakeholders have asserted that generative AI companies should remunerate media companies for the use of their content.[20]

4.37. Generative AI is playing an increasingly important role within legitimate media organisations – supporting the creation and distribution of original journalism. While many news organisations recognise current limitations around the reliability and accuracy of these tools,[21] deploying the technology with appropriate transparency and editorial oversight may help news organisations – at lower cost – generate ideas for articles, research or interrogate large data sets, identify errors

[17] Dizike P, Study: On Twitter, false news travels faster than true stories, *MIT news,* 8 March 2018, accessed 3 July 2023.

[18] Caplan R, Content or Context Moderation? Artisanal, community-reliant, and industrial approaches, Data & Society Research Institute, 14 November 2018.

[19] Molyneux L and Coddington M (2020), 'Aggregation, Clickbait and Their Effect on Perceptions of Journalistic Credibility and Quality', *Journalism Practice*, 14(4):429-446.

[20] Shteyman J, 2023, 'News Corp calls for 'fair share' of AI revenue', *The Canberra Times,* 12 May 2023.

[21] See, for example, Viner K and Bateson A, The Guardian's approach to generative AI, 16 June 2023.

or suggest corrections, and reduce time spent on business processes and administration.

4.38. Existing arrangements through broadcasting codes of practice that place obligations on factual content in news and current affairs programming can also be used to hold the broadcasting industry to account for providing accurate information to audiences.

Privacy

4.39. The OAIC regulates the *Privacy Act 1988* (Cth) (the Privacy Act), which applies to the handling of personal information. Privacy obligations will apply where personal information is used to train, test or deploy algorithms within an AI system.

4.40. AI can have significant impacts on privacy. For example, the information handling practices associated with this technology are often complex and opaque which challenges the ability of individuals to meaningfully understand how their personal information is being handled. Outputs from AI systems may also contain misleading or inaccurate information about an individual.[22] In addition, the use and retention of large data sets to develop and deploy this technology increases the risk of a data breach and the risk of harm to individuals.[23]

4.41. The Discussion Paper recognises the potential for individuals' data to be used in AI in ways that raise privacy concerns. Given these concerns, strong and effective privacy protections are essential to promote the use of AI in ways that are aligned with community expectations and to foster public trust and confidence in the use of these systems.

4.42. To this end, the Privacy Act contains the Australian Privacy Principles (APPs), which apply to Australian Government agencies and private sector organisations with an annual turnover of more than $3 million, subject to some exceptions (collectively referred to as 'APP entities').[24] The APPs outline how APP entities are permitted to handle personal information and are structured to reflect the information lifecycle, from collection, through to use and disclosure, storage and destruction.

4.43. The APPs include obligations to notify individuals about the handling of their personal information, limitations on collecting personal information (including where the personal information is collected through being created by an algorithm), limitations on use and disclosure of personal information, and providing mechanisms for individuals to access and correct their personal information. This sets clear requirements for the handling of personal information.

4.44. The Privacy Act is principles-based and technology neutral, which has a number of advantages in the context of AI.

4.45. The principles-based nature of the APPs provides APP entities with the flexibility to take a risk-based approach to the protection of individuals' privacy, having regard to their particular circumstances, including size, resources and business model. This enables the APPs to be scalable and adaptable to the different acts, practices and technologies of APP entities while, importantly, allowing APP entities to

[22] See OAIC, Guide to data analytics and the Australian Privacy Principles, 21 March 2018, in relation to analytics processes.

[23] See, for example, Bell G, Burgess J, Thomas J., and Sadiq S, Rapid Response Information Report: Generative AI - language models (LLMs) and multimodal foundation models (MFMs), 24 March 2023; National Cyber Security Centre (UK), ChatGPT and large language models: what's the risk?,14 March 2023.

[24] *Privacy Act 1988* (Cth) s 6C and 6D (definition of 'APP entity').

simultaneously innovate and carry out their functions and activities. It also allows the Privacy Act to complement other legislation or regulatory frameworks that may deal with related issues.

4.46. The technology neutral application of the APPs enables them to apply to the handling of personal information across a diverse range of technologies, including AI. This allows for greater 'future-proofing', which preserves the relevance and applicability of the APPs in a context of continually changing and emerging technologies.[25] For example, the OAIC's Guide to data analytics and the Australian Privacy Principles provides guidance on the application of the APPs to modern data analytics despite significant advances in the generation and treatment of data since the APPs commenced nearly a decade ago. Given the 'speed of innovation in recent AI models', this future-proofing is essential to effective regulation.[26]

4.47. By contrast, detailed rules-based and technology-specific regulation is comparatively rigid. It may impose requirements that are not always appropriate for all entities regulated by the scheme, and may inadvertently result in regulatory gaps, for example, by not covering all entities intended to be regulated.

4.48. The Privacy Act contains mechanisms that allow the APPs to be supplemented by more specific rules in regulations or other legislative instruments in appropriate circumstances. For example, APP codes can adapt and particularise the APPs where appropriate, providing greater clarity on obligations where that is warranted by the entity's particular circumstances.[27]

4.49. As the Discussion Paper notes, the Attorney-General's Department's Privacy Act Review report has proposed the introduction of several new measures to enhance the current privacy regime. Box 1 of the Discussion Paper identifies proposals made in the Privacy Act Review which aim to enhance transparency and individual self-management where AI systems and algorithms are used.[28] These proposals and others are discussed in more detail in the OAIC's submission to this Discussion Paper. Many of the proposals made through the Privacy Act Review will assist to mitigate the potential privacy risks of AI systems.

Online safety

4.50. AI poses various benefits and risks to the online safety of Australians. In particular, generative AI technologies can be misused to create:

- highly realistic synthetic imagery depicting child sexual exploitation and abuse
- deepfake videos depicting individuals in sexually explicit contexts without their consent[29] or engaging in other activities that never happened
- large amounts of authentic-seeming content at scale for the purpose of bullying, abusing, or manipulating a target – including, but not limited to, grooming children for exploitation or causing people to 'pile on' a victim.

[25] OAIC, Australian Privacy Principles guidelines, July 2019, accessed 26 November 2020.

[26] Discussion Paper, p 3.

[27] *Privacy Act 1988* (Cth) Part IIIB.

[28] Specifically, the Discussion Paper notes proposals to enhance privacy policies by including information about whether personal information will be used in ADM which has a legal, or similarly significant effect on an individual's rights, and how APP entity may target users (including through algorithms and profiling). The Discussion Paper also notes proposals to introduce an individual right to request information about how ADM decisions are made and to opt-out of targeted advertising.

[29] Farid H., *Creating, Using, Misusing, and Detecting Deep Fakes*., Journal of Online Trust and Safety, Vol. 1, No. 4, 2022.

4.51. The *Online Safety Act 2021* (Cth) (Online Safety Act) provides eSafety with a range of regulatory functions to mitigate these and other risks.

Complaints-based investigations schemes

4.52. eSafety's four complaints-based investigations schemes capture AI-generated images, text, audio, and other content which meets the legislative definitions of:

- class 1 material (such as child sexual exploitation material and terrorist and violent extremism content) and class 2 material (such as pornography)
- intimate images produced or shared without consent (sometimes referred to as 'revenge porn')
- cyberbullying material targeted at a child
- cyber abuse material targeted at an adult.

4.53. Under these schemes, eSafety can provide support to complainants, including assisting in the removal of certain content and providing guidance to minimise the risk of further harm.

Industry regulatory schemes

4.54. The Online Safety Act also regulates online services' systems and processes through two regulatory schemes.

Basic Online Safety Expectations

4.55. eSafety can require a range of online services including social media services, messaging services and other apps and websites to report on the reasonable steps they are taking to comply with the Government's Basic Online Safety Expectations (BOSE). This is intended to enhance transparency and accountability, and to ensure people can use their services in a safe manner.

4.56. eSafety has issued 13 reporting notices since August 2022, requiring companies to report on the steps they are taking to implement the BOSE. Each notice has included questions about the use of AI tools to detect illegal and harmful content and activity, such as child sexual exploitation and abuse. A report summarising the responses from the first seven notices was published in December 2022.[30] In the future, eSafety could require other service providers to report on the reasonable steps they are taking to ensure the safety of their generative AI functionalities.

4.57. Service providers are required to respond to the notices and non-compliance with the expectations could result in a published statement of non-compliance.

Mandatory Industry Codes or Standards

4.58. In June 2023, eSafety registered five new industry codes which will take effect on 16 December 2023.[31] They require certain online service providers to take adequate steps to reduce the availability of illegal and seriously harmful online content, such as child sexual abuse and pro-terror material. AI is one of the means service providers could utilise to automatically detect known (i.e. pre-identified and verified) child sexual abuse material and pro-terror material (see social media service code).

[30] eSafety, Responses to transparency notices, accessed July 2023.

[31] eSafety, eSafety Commissioner makes final decision on world-first industry codes, 1 June 2023.

4.59. eSafety will determine industry standards for relevant electronic services and designated internet services, as draft codes for these services were found not to provide appropriate community safeguards. In preparing industry standards for these sections of the online industry, eSafety will consider how proposed requirements can address risks of class 1 content, including AI generated content such as deep fake child sexual abuse.

4.60. A decision to register the code for internet search engine services is yet to be made. eSafety has asked the relevant industry associations to re-draft the code to capture recently proposed changes to search engines to incorporate generative AI features, and to address the risks associated with this new technology.

Other eSafety initiatives to support responsible AI

Tech Trends and Challenges

4.61. eSafety conducts horizon scanning and engages with subject matter experts through its Tech Trends work program. This allows us to identify the online safety risks and benefits of emerging technologies, as well as the regulatory opportunities and challenges they may present. In December 2022, eSafety published a position statement on algorithms and recommender systems, and is currently drafting a forthcoming paper on generative AI, examining LLMs and multimodal models.

Safety by Design

4.62. eSafety's Safety by Design (SbD) initiative encourages industry to anticipate potential harms and implement risk-mitigating and transparency measures throughout the design, development and deployment of a product or service. This includes providing free risk assessment tools and good practice guidance to help companies build in safety features and provide positive online experiences.

4.63. SbD should be applied to all AI products and services from the earliest stages of design and throughout their lifecycle. Based on eSafety's recent expert consultations, this could include ensuring:

- generative systems are sourcing high-quality data and information which has been cleaned of illegal, exploitative, and otherwise harmful material
- policies and processes to prevent users from generating harmful content
- watermarks and detection tools are used to identify AI-generated materials
- features are evaluated to identify and mitigate risks for diverse user groups
- clear reporting mechanisms and well-defined triage and escalation processes
- system and model cards are used to promote the improvement of models and the enhancement of their understanding by regulators, researchers, and the public.

4.64. SbD is a voluntary initiative promoted by eSafety; it is not enforceable through eSafety's legislative powers. Accordingly, eSafety has somewhat limited ability to require companies to build in risk mitigation measures at the development phase when many important safety decisions are made, as its regulatory options generally only apply after a technology has been made available to Australians. Consideration should be given to the need for ex ante regulatory oversight to apply earlier in the process to ensure effective guardrails are established before technology is publicly released.

Education and Awareness Raising

4.65. eSafety's research team is developing questions on algorithmic literacy to include in its 2024 youth survey. Findings from this research will inform eSafety's ongoing online safety programs for children and young people, their parents and carers, and educators. eSafety's education programs are underpinned by the core concepts of respect, resilience, responsibility and reasoning. These concepts continue to be of relevance to AI literacy. The research will also contribute to the international evidence base on children and young people's digital literacy.

Upcoming review of the Online Safety Act

4.66. The Australian Government has announced that the Online Safety Act will be independently reviewed in the coming year, providing an opportunity to consider its suitability to address online safety issues pertaining to AI and related issues.

5. Conclusion

5.1. We trust this submission provides DISR with information about how DP-REG promotes collaboration and coordination between regulators to understand the impacts of AI and its intersection with our regulatory frameworks. We look forward to working closely with DISR and other relevant areas of the Australian government, both individually and as part of DP-REG, in developing a response that allows Australians to safely harness the benefits of this technology.

5.2. We welcome further engagement with DISR in response to our submission.

Yours sincerely

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26 July 2023