



Australian Government

IP Australia

# Generative AI and the IP rights system provocation series



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## **Acknowledgement of Country**

*IP Australia acknowledges the rich contributions to innovation that Aboriginal and Torres Strait Islander peoples have made through 60,000 plus years of continuing lore and history. We pay our respects to the Traditional Custodians of the lands on which our agency is located and where we conduct our business.*

# An experimental exploration

The recent past is filled with numerous instances where technologies and ideas were hailed as the "next big thing." From self-driving cars to cryptocurrency to the metaverse, many promises were made. Some of these innovations truly lived up to their hype, such as the transformative impact of the Internet on our daily lives and businesses, while others have yet to materialise (or may never do so). Therefore, when a concept like generative AI begins to gain attention, it's only natural for scepticism and excitement to coexist, along with a prudent "wait and see" attitude.

However, waiting for complete certainty before getting involved carries its own set of risks. In domains characterised by significant uncertainty but with potentially far-reaching consequences, it can be valuable to explore first, before forming definitive judgments about the correct course of action.

This paper, and the associated detailed provocations, has been prepared by the ventures team (IPA Ventures) within IP Australia in that spirit: as a process of discovery and an attempt to reduce the uncertainty around generative AI and its impact upon the IP rights system and the associated IP rights administered by IP Australia. Consider it an experiment in its own right, incorporating as it does the use of generative AI tools – the image generation service Midjourney has been used for illustrating this paper, and ChatGPT has been used to assist to varying degrees in the drafting, editing, and refining of its contents. The aim is to push the understanding of what is possible, what those possibilities might mean and what, if anything, could be done in response. Accordingly, it should be viewed as a starting point for a conversation rather than a definitive endpoint. It presents a series of prompts and thought-provoking questions, rather than providing conclusive answers or determining positions on.

This particular piece is just one element within much larger ongoing discussions surrounding generative AI and AI in general. It focuses specifically on the IP rights system as administered by IP Australia, which encompasses registered rights like patents, trademarks, designs, and plant breeder's rights. It is important to note that this discussion does not encompass copyright.



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# Executive summary

Generative AI has arrived with a bang. The ability to generate novel content at great speed and at great volume for marginal cost poses some big questions – particularly for the intellectual property (IP) rights system. If the IP system is about incentivising innovation (the implementation of something novel to the context that leads to impact), then a sudden increase in the potential supply of novelty – or things that cannot be assumed to *not* be novel – is a big deal.

This exploratory paper has been drafted to help better understand the potential ramifications and implications of generative AI on the IP rights system. It is an exploratory exercise, noting that generative AI is still an early-stage technology and it will take time to work out what some of the key questions are, let alone the possible answers.

Out of investigations with stakeholders, internal workshops, research and use of new generative AI tools, six preliminary observations have been made about generative AI and what it might mean for the IP system.

1. **Generative AI is a step-change for the IP system** – generative AI will introduce a host of new and profound questions, or amplify existing ones to a whole new level.
2. **Generative AI will mean more actors in the IP system, making it a different system** – by reducing the barrier to creating novelty, generative AI lowers the barrier to entry to the IP system. This is likely to have a material effect on how the IP system operates (and how it is administered).
3. **Generative AI will have cross-cutting effects across all parts of business** – generative AI will intersect to varying degrees with the purpose, process and function of each of the four IP rights, and generative AI will be relevant across the functions of IP Australia and that of its customers (and stakeholders).
4. **Generative AI is not yet a mature technology** – generative AI holds the potential for significant advancements, and relying on assumptions about what generative AI cannot do based solely on its current performance, is risky.
5. **Norms around generative AI will need to evolve quickly** – how, when and to what extent generative AI can and should be used within the context of the IP system will require establishing or adapting norms, expectations and responsibilities and gaining collective clarity around what is appropriate or not.
6. **The impacts of generative AI will continue and evolve over time, rather than being a one-time transformation** – the current directionality of generative AI technology means that it will raise fundamental questions about the purpose, functions and processes of the IP system that may escalate over time.

These observations underpin three core implications for the IP system about generative AI:

1. **Paradigm shift #1 – From inventing with tools, to tools inventing.** Generative AI means that we can no longer rely on the default assumption that new content (including ideas and inventions) is solely the result of human effort.
2. **Paradigm shift #2 – From scarcity to abundance.** Generative AI potentially changes the limiting factor for innovation, and moves it away from novelty. It will lead to more content, more novelty (or more content that is seemingly novel enough that it cannot be assumed to *not* be novel), easier access to the creation of novelty, more actors, and greater speed and capability for those actors.
3. **A fit-for-purpose system.** Together these raise significant questions and suggest that a fit-for-purpose IP rights system may need to look differently than it currently does. At the very least they suggest assuming that the current approach *is* fit-for-purpose is risky.

For each of the four IP rights, a number of provocations have been developed. Each outline scenarios of how generative AI might intersect with the rights, and explore associated issues and possible responses that could be considered. The respective impact of generative AI on each the rights is considered through these provocations, though noting that this is a preliminary investigation and the full impact will likely take time to observe. The intent of the provocations is to help accelerate conversation about what *could* happen, so as to better inform any future discussion about what *should* happen.

# Introduction

*Generative AI creates novel content. What does that mean for an IP system that serves to incentivise, recognise, and help diffuse certain types of novelty?*

IP Australia's purpose is to ensure Australians benefit from great ideas. It works towards this largely through the administration of the registered IP rights and their associated legislation, thereby helping steward the broader IP system. The four such rights are:

- **Trade marks:** protects a company's unique brand, products or services, and helps customers distinguish them within the marketplace.
- **Patents:** protects any device, substance, method or process that's new, inventive and useful. A patent can provide exclusive commercial rights to the invention.
- **Design rights:** protects the overall visual appearance of new and distinctive products.
- **Plant breeder's rights (PBR):** grants exclusive commercial rights over a new plant variety.

Each of the rights, and the broader IP system, serves to foster innovation. As outlined in the [Australian IP Report](#) (IP, Australia 2023), the IP system:

- Encourages innovation: without IP rights, it can be difficult to exclude others from reproducing an innovation once it is made public. When an innovation is copied, its original producer may not financially benefit from their work as much as they would have otherwise. Patent, design and plant breeder's rights (PBRs) provide temporary exclusive rights for innovators to exploit their inventions in the market, creating an incentive for innovation.
- Facilitates diffusion: in return for limited exclusive rights, innovators are required to disclose new technical knowledge in their inventions. The effect is to coax inventive solutions to practical problems out of secrecy and into public view so that others can rework inventions.
- Enables efficient trade: intangible assets, such as data, software, inventions and brands, are an increasingly important source of business value. When protected as IP, they become tradeable assets — able to be licensed and sold to others. Trade marks also increase transparency between producers and consumers, increasing the likelihood that consumers will reward producers for quality.

Innovation – the implementation of something novel to the context that leads to impact (OECD, 2019<sup>1</sup>) – depends upon novelty. In turn, the intent and outcomes of the IP system can be interpreted as being about granting rights in exchange for those that have gone to the effort of delivering or realising that novelty in practice. It might be about giving protection to those who have made the effort to set up a new business and build a new brand (trade marks), to those who have done the hard work, experimentation and learning to make their invention a useful thing (patents), to those who have the skill and ability to design a new product (design rights), or to those who have bred a new plant variety (PBR).

The current IP system can be said to operate on the underlying assumption that providing protection and exclusive rights for individuals and entities involved in creating and implementing novelty (i.e., innovating) is necessary. This assumption is built on a belief that without such safeguards, those undertaking innovative activities would unjustly miss out on the deserved returns for their efforts. Consequently, the absence of adequate protection could discourage innovators from disclosing their innovations, subsequently impeding the pace of further innovation that can benefit society.

What, if anything, might generative AI mean for the IP system? And for the associated IP rights and underlying assumptions?

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<sup>1</sup> OECD, 2019, *Declaration on Public Sector Innovation*, accessed at <https://legalinstruments.oecd.org/en/instruments/oecd-legal-0450>

Generative AI is a form of artificial intelligence (AI) capable of generating novel content (text, images, music, computing code), in response to user prompts (Bell et al, 2023)<sup>2</sup>.

Generative AI has come to widespread attention since the release of 'ChatGPT', a generative AI capability released by OpenAI on 30 November 2022. Subsequently, a number of such large language models (LLMs) and text to image models have been released or come to popular attention. In the months that have followed, some of the models have increased in what they are capable of, such as with the release of GPT-4. There has been a lot of experimentation and the development of a range of new functions, tools and applications built upon these models as a foundation. For instance, AI agents have been developed, which allow users to (attempt to) automate a range of functions and connect generative AI capabilities with existing ones, e.g., asking an agent to generate draft emails and identify a list of businesses against a set of criteria to send them to.

Generative AI is not magic, and it has many limitations. Simply because it can generate something novel, it does not automatically follow that novelty is going to be on point. It may fall short because of:

- Relevance: generative AI tools may not understand the necessary nuance or context
- Accuracy: generative AI tools can 'hallucinate' or make up things
- Capability: you can ask a generative AI tool to do something and it will try, but it does not mean it will be precisely what you asked for.

In addition, that novelty may indeed be a simulacrum or ersatz novelty – seemingly novel, but a poor substitute of 'real' novelty. For instance, it might be able to meet the requirements of creating a poem in iambic pentameter, but it does not mean that the poem will be a pleasure to read.

Nonetheless, the capabilities are very real, with these tools already able to generate significant volumes of novelty (for instance, generating endless novel images of possible types of chairs). Also, given the quick increase in what these generative AI models are capable of, it cannot be assumed that those limitations are static or permanent.

In light of the generative AI, what might that mean for the prior characteristics of the IP system outlined?

- Encourages innovation: generative AI complicates this because it may change the nature of the innovation process, including who (or what) is responsible for the innovation taking place, or the degree to which they can be considered responsible. If the 'original producer' is a large language model, then what does that suggest about to what extent it should be allowed to be protected?
- Facilitates diffusion: generative AI complicates this because it may be difficult to divide between what the model creates and what the model shares. If the innovation is an output of generative AI, does the assumption that limited exclusive rights are needed to induce disclosure still hold true? Won't that same information now be effectively available to every other user of that generative AI model around the world – in theory at least? And to what extent can such models quarantine or curtail access to such outputs once the model responsible for them has created them? Might diffusion happen by default or happenstance anyway?
- Enables efficient trade: generative AI may reshape this aspect, however the immediate effects are likely to be less stark or obvious.

In short, the arrival of generative AI raises some important questions about the IP rights system.

This is not just a theoretical assumption. Some preliminary user research undertaken with 208 businesses revealed that they:

- are concerned about their IP being misused by generative AI tools
- are concerned about generative AI tools giving users an unfair marketplace advantage

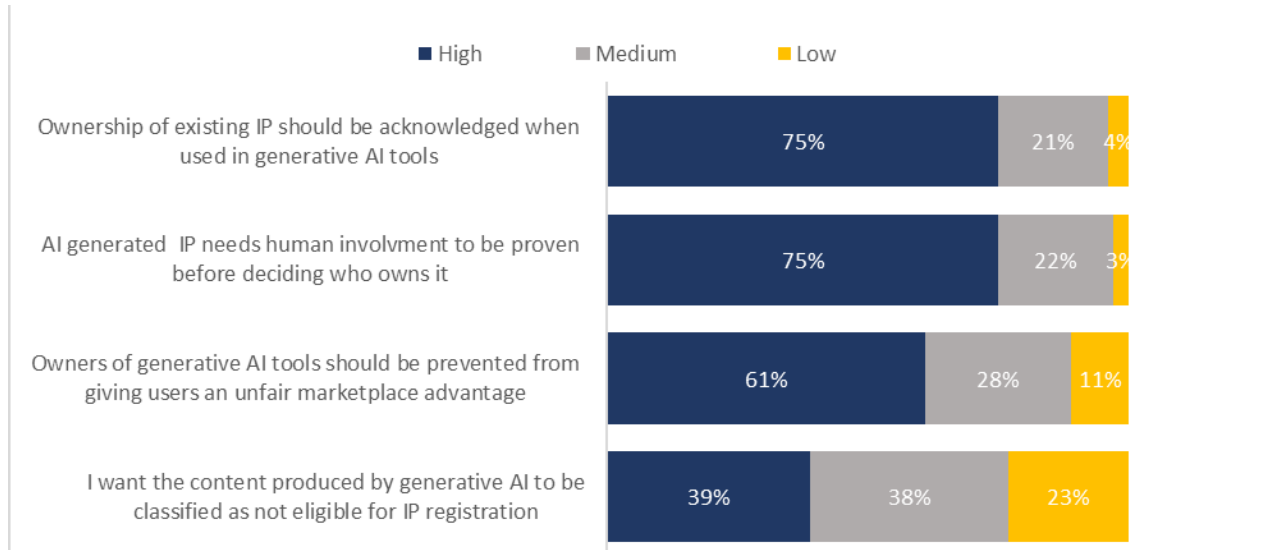
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<sup>2</sup> Bell, G., Burgess, J., Thomas, J., and Sadiq, S. (2023, March 24). Rapid Response Information Report: Generative AI - language models (LLMs) and multimodal foundation models (MFMs). Australian Council of Learned Academies

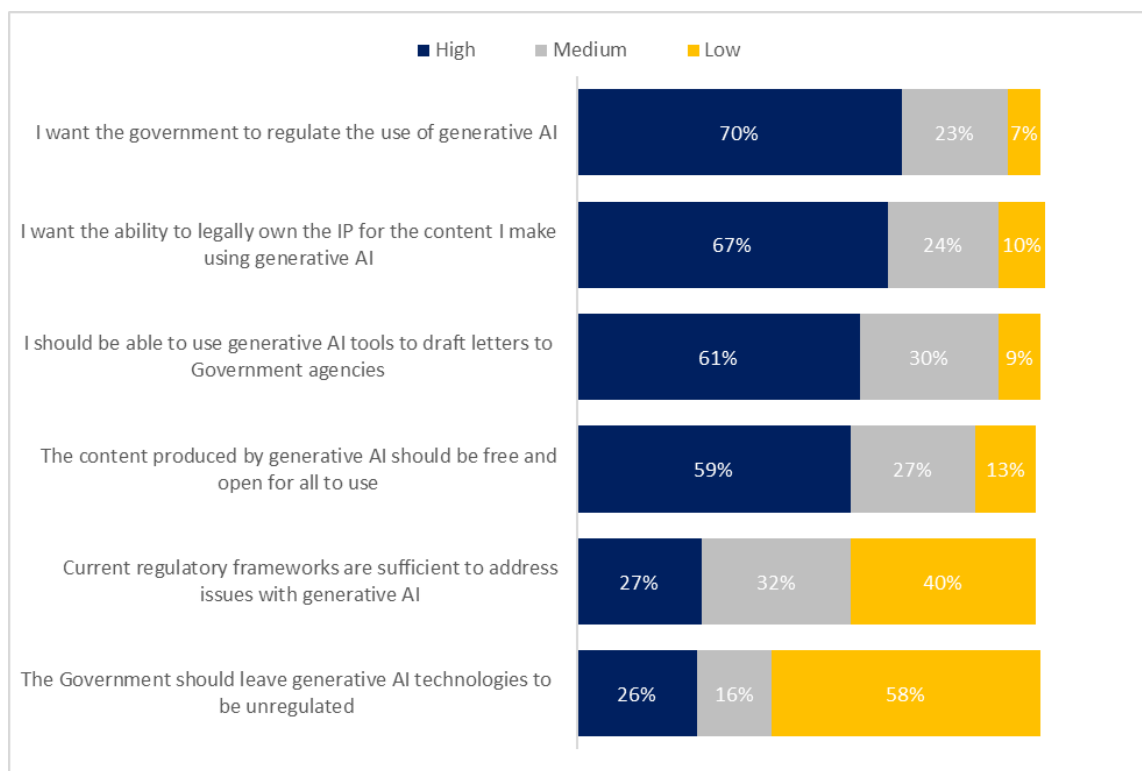
- expect the level of human involvement to be proven in determining who can own the IP for the AI generated content.

As such, many businesses currently expect the use of generative AI to be regulated by governments (Figure 1 and Figure 2).

**Figure 1: Survey respondents' level of agreement regarding protection of AI generated content**



**Figure 2: Survey respondents' level of agreement regarding the use of generative AI and whether it should be regulated**





This paper, and the associated set of provocations, has been developed by the IPAventures team within IP Australia as a piece of discovery work to help understand the potential ramifications and implications of generative AI on the individual IP rights and the IP rights system as administered by IP Australia. It has been done to assist in reducing the uncertainty surrounding these new technologies, and to better scope the potential immediacy and extent of some of the potential threats and opportunities on the purpose, function and processes of the four relevant IP rights: trade marks, patents, design rights and plant breeder's rights. It does not touch directly upon the issues relating to copyright.

This paper has been deliberately undertaken as an early-stage investigative activity, and is being shared as such. By sharing these initial insights and provocations, it is hoped that IP Australia and the IP rights system stakeholders can more quickly appreciate what the implications of generative AI might be and help inform any future conversations that might take place about what, if any, options are considered in response.

### **Discovery process underpinning these provocations**

This discovery work was conducted over 12 weeks. The discovery work was done as an exploration of the potential ramifications and implications of generative AI on the IP rights system and the individual IP rights administered by IP Australia – plant breeder's rights, patents, designs and trade marks. This work involved:

- Workshops with IP Australia staff to identify the intersection of generative AI against the individual rights processes
- Interviews with over 40 stakeholders, customers, academics and experts
- An interim set of provocations to aid discussions with stakeholders and to test for any gaps
- Quantitative testing with businesses (200+) to test for views around generative AI and IP
- Experiments with, and use of, various generative AI tools to understand their limitations and capabilities and to test for potential uses and ramifications
- Testing and validation of 100 hypotheses.

# Generative AI 101

Generative artificial intelligence (AI) is distinct from conventional AI in that “whereas conventional AI has been largely analytic, generative AI takes its name from its capacity to generate novel content, as varied as text, image, music and computing code, in response to a user prompt” (Bell et al, 2023)<sup>3</sup>.

Generative AI allows individuals to use text prompts to:

- Generate images – such as many of the images used in this paper
- Generate text – about almost anything, including by using prompts such as ‘Act as an attorney’ to make use of specific domain knowledge
- Create chatbots/AI assistants – tools that allow users to provide an ‘overlay’ of particular training material (such as this paper) on top of underlying large language models, so that users can ask questions about specific issues
- Create or leverage AI agents – tools designed to perform specific tasks or make decisions autonomously, and which can be used to connect different capabilities, such as combining domain specific knowledge with the capability to generate tailored reports and targeted emails.

ChatGPT can describe itself, and the capabilities of generative AI, best (see Box 1).

## Box 1. ChatGPT description of the capabilities of generative AI

**Question:** How would you describe the capabilities of generative AI to someone unfamiliar with them?

**ChatGPT:** “Generative AI refers to a class of artificial intelligence models and algorithms that have the ability to generate new content or information. These models are trained on vast amounts of data and learn the patterns and structures within that data, enabling them to create original outputs in various forms, such as text, images, music, and even videos.

The key aspect of generative AI is its ability to produce content that is not explicitly programmed or pre-defined. Instead, it learns from examples and generates novel outputs by understanding and replicating the patterns it has observed during training. This makes generative AI different from traditional rule-based programming, where explicit instructions are given to produce specific outputs.

Generative AI can be trained in a supervised manner, where it learns from labeled data with desired outcomes, or in an unsupervised manner, where it discovers patterns and structures within the data without any specific labels.

Reinforcement learning is another approach used in generative AI, where the model learns through trial and error by receiving feedback on its generated outputs.

Applications of generative AI are wide-ranging and continue to expand. It can be used for creative purposes, such as generating artwork, composing music, or writing stories. It also finds applications in data synthesis, natural language processing, and computer vision tasks. For example, generative AI models can be used to create realistic images, translate languages, simulate human conversation, or even generate new drug compounds.

While generative AI has shown impressive capabilities, it's important to note that it has limitations. The outputs generated by these models are based on patterns learned from the training data, and they may not always be perfect or aligned with human expectations. Bias, misinformation, or inappropriate content can also be inadvertently generated. Therefore, careful monitoring and ethical considerations are necessary when deploying generative AI systems.

Overall, generative AI has the potential to revolutionize various industries, foster creativity, and aid in problem-solving by providing new and innovative solutions.”

Source: ChatGPT, 2023, conversation available at <https://sharegpt.com/c/5wJNBbs>

<sup>3</sup> Bell, G., Burgess, J., Thomas, J., and Sadiq, S. (2023, March 24). Rapid Response Information Report: Generative AI - language models (LLMs) and multimodal foundation models (MFMs). Australian Council of Learned Academies

# Observations about generative AI and the IP rights system

From a 12 week set of discovery sprints and engaging with the generative AI technology, a number of initial observations have been made, based on consultations, exploration and testing of different hypotheses.

## Observation 1

### *Generative AI is a step-change for the IP system*

Non-generative AI has already raised big questions about the IP system, for instance the argument pursued by Dr Stephen Thaler that their DABUS (a device for the autonomous bootstrapping of unified sentence) [should be recognised as an inventor](#).

Investigations conducted by IP Australia's ventures team indicate that generative AI will introduce a host of new and profound questions, or amplify existing ones to a whole new level. This new set of technologies dramatically lowers the barriers to creating or generating novelty – or at least a simulacrum or poor imitation of novelty – to an extent that it will have a material consequence upon the IP system. With generative AI potentially enabling easier and faster creation of novel or imitative outputs, the assumptions about what it takes to innovate, and to encourage it, may need to be revisited. If the IP system is about incentivising innovation, what happens when or if the effort needed to innovate becomes less?



*“Information is cheap and easy to create and automate”* Deep learning AI developer

## Observation 2

### *Generative AI will mean more actors in the IP system, making it a different system*

Many of the generative AI tools are currently low cost or freely available. Combined with their novel capabilities, these models democratise access to knowledge and capabilities previously limited to experts or the experienced. In a single moment, someone unfamiliar with the technical specifics behind, say, electronics, can ask it to create something that is a patentable product (see Box 2.)



Midjourney prompt: a business person standing on a wooden ship using binoculars pointing towards land

## Box 2. Asking ChatGPT to create a patentable product

Question: Create me a schematic for an original lighting system that I could patent?

As an AI language model, I don't have the capability to create drawings or diagrams. However, I can certainly describe an innovative concept for a lighting system that you could potentially patent, pending an examination of prior art and existing patents. Remember that actual creation and patenting of a product involves rigorous research, prototyping, testing, and legal examination.

Title: Adaptive, Energy-Efficient, Multi-Sensor Driven Lighting System

### Description:

1. **Smart Adaptive Bulbs:** The system includes advanced LED bulbs capable of adjusting their brightness, color temperature, and hue. Each bulb has built-in microcontrollers and communication interfaces (like WiFi or ZigBee).
2. **Central Control Unit (CCU):** A programmable device which communicates with the bulbs, sensors, and the user interface. It processes sensor data, user preferences, and external data (like weather or time of day) to adjust light settings.
3. **Multi-Sensor Setup:** A network of sensors installed throughout the premises. These could include:
  - a. **Motion Sensors:** To detect movement, allowing the system to dim or switch off lights in unoccupied spaces.
  - b. **Light Sensors (Photocells):** To detect natural light levels, enabling the system to adapt artificial lighting accordingly.
  - c. **Thermographic Sensors:** To identify human presence through body heat, adding another layer of occupancy detection.
  - d. **Sound Sensors:** To detect human activity using sound, adding yet another layer for presence detection.
  - e. **Air Quality Sensors:** Not directly related to lighting, but could trigger specific light alerts (like change of color) when poor air quality is detected.
4. **User Interface:** This could be a smartphone app or a dedicated device. It allows users to manually override the system, set preferences, and view energy consumption reports.
5. **External Data Integration:** The system also takes in external data like time of day and weather to adjust lighting. For example, warmer, dimmer lights during the evening or cooler, brighter lights on a cloudy day.
6. **Machine Learning Algorithm:** With time, the system learns from the user's habits and preferences, becoming more efficient and personalized.
7. **Emergency Lighting Mode:** In case of power failures or emergencies, the system switches to a low-energy mode, providing essential illumination for safety.

Again, this is a conceptual description. Translating it into an actual product would require detailed engineering design and development work. Please note that the patentability of this system would depend on the thoroughness of a patent search to ensure its novelty and non-obviousness.

Source: ChatGPT, 2023, conversation available at <https://chat.openai.com/share/3f6ed341-762c-4f26-907b-8cf5badb4238>

This is significant, because even (or especially) if the output is not to sufficient standard (or even anywhere near so), if the user believes it is enough, then it still means that there are more actors engaging with, or influencing, the IP system. The IP system is also a dynamic one that depends on what has already been published (what is known as [prior art](#)), and generative AI can potentially create a vast amount of relevant content. A single person can now product vast volumes of material, whether novel or novel-adjacent (i.e. it cannot be assumed it is *not* novel), at great speed.

Thereby, by reducing the barrier to creating novelty, generative AI lowers the barrier to entry to the IP system. This is likely to have a material effect on how the IP system operates (and how it is administered).



*"In the future, we will see creators are not incentivised to create new ideas"*  
**IP professional**



## Observation 3

### *Generative AI will have cross-cutting effects across all parts of business*

Generative AI has already generated some big predictions about its potential impact. For instance:

- “In the shorter term, generative AI, based on LLMs and MFMs, will likely impact everything from banking and finance to public services, education and creative industries” (Bell et al, 2023<sup>4</sup>)
- “Our latest research estimates that generative AI could add the equivalent of \$2.6 trillion to \$4.4 trillion annually across the 63 use cases we analyzed .... This estimate would roughly double if we include the impact of embedding generative AI into software that is currently used for other tasks beyond those use cases.” (McKinsey & Company, 2023<sup>5</sup>)
- “As tools using advances in natural language processing work their way into businesses and society, they could drive a 7% (or almost \$7 trillion) increase in global GDP and lift productivity growth by 1.5 percentage points over a 10-year period.” (Goldman Sachs, 2023<sup>6</sup>)

While the exact consequences will take time to understand and measure, the sense that generative AI will have wide-ranging impacts aligns with the preliminary investigations conducted by IP Australia's ventures team. The research and provocations developed for each of the IP rights suggest generative AI will intersect to varying degrees with their purpose, process and function.

In short, generative AI will be relevant across the functions of IP Australia and that of its customers (and stakeholders).



*“[The] traditional way of thinking is not relevant anymore” IP professional*



Midjourney prompt: *Artificial Intelligence having a cross-cutting effect across all parts of business*

<sup>4</sup> Bell, G., Burgess, J., Thomas, J., and Sadiq, S. (2023, March 24). Rapid Response Information Report: Generative AI - language models (LLMs) and multimodal foundation models (MFMs). Australian Council of Learned Academies

<sup>5</sup> McKinsey & Company, 2023, *The economic potential of generative AI: The next productivity frontier*, accessed at <https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier#/>.

<sup>6</sup> Goldmach Sachs, 5 April 2023, “Generative AI could raise global GDP by 7%”, accessed at <https://www.goldmansachs.com/intelligence/pages/generative-ai-could-raise-global-gdp-by-7-percent.html>



## Observation 4

### *Generative AI is not yet a mature technology*

In the first half of 2023, and indeed during the 12 weeks of sprints underpinning this paper, there were a range of new tools, applications, developments and increased capabilities. The ecosystem around these tools has grown quickly. Conversations with firms and suppliers specialised in the IP system suggest that there are a range of ways that generative AI can be applied to the tailored services for those developing a patent application. New functions or combinations of existing functions are soon likely, greatly expanding the potential use and influence of generative AI.

#### **Box 3. Possible futures for generative AI**

“There are four possible AI futures:

- 1) This is it. LLMs never get better (Yet, even if no advances happened, today’s technology will take a decade or more before we have fully figured out the implications of current AI on work and school)
- 2) Linear gains in ability, where progress slows down from its current pace, but still improves
- 3) Continued exponential gains, but no AGI
- 4) AGI. Humans eclipsed by machines

It seems like every policy discussion is aimed at #4 (or assuming #1, that nothing will change past today). But #2 and #3 still result in massive disruption and one of those is very likely to happen.

We should be thinking of what we want those futures to look like. Focusing only on the most dramatic and apocalyptic AI outcomes robs us of agency.”

Associate Professor Ethan Mollick, Wharton School, University of Pennsylvania

Even were we to assume that generative AI had reached its maximum technological capacity, without any further advancements on the horizon, there is still much to unfold that will take time to manifest and become apparent. As our understanding of generative AI deepens and as it is integrated into various industries and sectors, we can expect new challenges and opportunities to emerge.

Considering this evolving nature, it would be premature to deem generative AI a mature technology. As with any emerging technology, generative AI holds the potential for significant advancements and breakthroughs in the future. It is crucial not to consider the existing limitations as fixed, and relying on assumptions about what generative AI cannot do based solely on its current performance would be risky.



“Seems like Chat GPT came overnight” **Senior in-house legal counsel, large corporate**



“AI will only continue to improve”  
**IP academic**

## Observation 5

### Norms around generative AI will need to evolve quickly

Generative AI is already being integrated into many commonly used tools, such as search engines and business productivity tools. On current trends it is likely to be integrated into many more, such as the services of firms in the IP realm.

Accordingly, it may become progressively more difficult to discern what has, and what has not, used or involved generative AI.

How, when and to what extent generative AI can and should be used within the context of the IP system will require establishing or adapting norms, expectations and responsibilities and gaining collective clarity around what is appropriate or not. These will likely take time to emerge as the use of these tools in practice becomes better understood.



*"We need to create an ecosystem in this area to have a concentrated effort to understand how to use these tools"*  
**CEO, IP firm**

## Observation 6

### *The impacts of generative AI will continue and evolve over time, rather than being a one-time transformation*

Significant innovations affect and are integrated in different parts of the economy and society at different rates. For instance, the use of social media started with certain demographics before coming more widespread and being adopted by businesses as well as individuals.

From initial investigations, generative AI can be seen as having more significant effects on some of the IP rights than others, and impacts on some of IP Australia's processes and requirements (such as patent specifications for example). Yet because of the:

- Lowered barriers to creating novelty
- Lowered barriers to entry or engagement or influencing the IP system
- Cross-cutting nature of the technology
- Still maturing nature of the technology and its capabilities
- The uncertainty around what appropriate and responsible use of, and associated responsibilities, for generative technology within the IP system might be

it is likely that different impacts will take time to reveal themselves, as further investment in the technology, experience in its strengths and limitations, and its penetration into other domains occurs.

Given what has been witnessed so far, it is also reasonable to expect that the directionality of generative AI technology will raise fundamental questions about the purpose, functions and processes of the IP system that may escalate over time.



*"Think about what makes dissemination better and what makes it worse, quality of patents is severely at risk without safeguards."* **IP academic**



*"No one cared until last year - when it got good enough"* **IP professor**

# Shifting paradigms & a fit-for-purpose IP system

These observations and the scenarios covered in the rights-specific provocations reveal two paradigmatic shifts that raise significant questions around our assumptions of what a fit-for-purpose IP rights system might need to look like.



*Midjourney prompt: a paradigmatic shift from traditional normality to a bright future*

## Paradigm shift #1 – From inventing with tools, to tools inventing

Humans have always used their tools to create and invent, whether it be paintbrushes or machines and computers. These have always been considered an extension of the human rather than separate or independent. Just because a tool was used in the production of something, or even the creation or invention of something entirely new, the end result has still been seen as a human output.

As per the Thaler case mentioned previously, this is the current understanding – even when a device has been used to invent something, it is deemed to be result of the humans overseeing/owning that device.

As (or if) generative AI technology further develops and matures, it will however continue to challenge the precepts of the IP system.

### Who are we incentivising and why?

If generative tools reach a stage where they can easily create novel designs and patentable material with minimal direction and input by humans, does that merit granting economic rights and protections to those humans? What might it mean if our default assumption that everything is a human creation is now more uncertain, and that a generative AI tool may well have had some degree of involvement? In the risk/reward equation, if the risk and effort involved in coming up with something new is lowered, what should that mean for the reward side? And at what point does that or should that meaningfully change – now, when the tools have become more capable, or when or if such machines can autonomously do so with much more limited human input or direction?

## Paradigm shift #2 – From scarcity to abundance

The IP system is fundamentally based in a perspective shaped by scarcity.

It presupposes that innovation (including the element of novelty), will not be realised to the optimal level if the state does not provide protection for it. The current system incentivises innovation by granting protection in return for disclosing it. If inventors do not receive the right for economic rents for that invention, then they may not go to the effort required to make their invention or to share it with others.

A world with generative AI suggests a possibility of a world where the availability of novelty may no longer be the limiting factor in the innovation equation. Even if the capability of generative AI does not mature significantly more, a shift from scarcity to abundance is already evident. Generative AI can already be used to help identify the white space for future inventions or designs, and it can already help then with the creation of some elements. It can also dramatically enhance the diffusion, and access to, existing IP where it is ingested by these models (though there are important questions around consent, traceability and transparency).

An abundant system will be one with:

1. More content (e.g., designs or design-adjacent material)
2. More novelty, or more content that is seemingly novel enough that it cannot be assumed to *not* be novel
3. Easier access to the creation of novelty
4. More actors, either with direct involvement or through incidental influence (such as through producing prior art)
5. Greater speed and capability for those actors.

### What might a system suited for abundance need to look like?

What level of protection is needed to encourage the creation and commercialisation of innovations in a world where inventions can be generated fast and at low marginal cost? What IP functions and processes would need to be administered? What would the expectations of customers and stakeholders be? Where would effort need to be directed? And at what point would the current system need to meaningfully change, and how will it be known that point has been reached?

## A fit-for-purpose system

These shifts imply that a fit-for-purpose IP rights system may need to look differently than it currently does. At the very least these shifts suggest assuming that the current approach *is* fit-for-purpose is risky.



*“Something  
needs to change:  
update how we think  
about IP protection  
in this information  
world” - Deep  
Learning AI*

If human effort is not the limiting factor, and if abundance rather than scarcity is the dominant paradigm, are the existing rights and the rights system really fit-for-purpose? If the current system is still fit-for-purpose, for how long might that remain true given the directionality of generative AI, and what are the circumstances that would indicate that was no longer the case?

In the eventuality that the system is not fit-for-purpose, what might that mean for how the system needs to evolve? And how might such evolution fit within a broader international system governed by existing rules that may need to be revisited due to generative AI?











# Implications of generative AI on the IP rights

Provocations for each of the four registered IP rights have been developed as an experimental exploration of a still unfolding technological shift. Accordingly, they are not exhaustive of all potential scenarios that could happen. The scenarios included are those with the most potential to cause disruption to the IP rights system, and that can help illustrate the potential issues to be explored. These provocations are provided as explorations of what *could* happen, not what *should* happen. The likelihood of certain scenarios may seem remote, however the aim is not to cover the most likely outcomes but to push the boundaries about what might occur so as to better stress test the assumptions about how things work, and how generative AI may interact with the rights.

The below provides a summary of each of the provocations for each of the rights, with more detailed packs provided separately.

## Design rights

From our investigations of a variety of hypotheses and scenarios, it appears that the arrival of generative AI poses some significant questions about how design rights currently operate. These questions may well be answerable, and some may self-resolve over time as the technology matures and the practical, ongoing effects reveal themselves. Nonetheless, the ‘Scarcity to abundance’ shift is particularly relevant to the design right, bringing as it does a potential wave of prior art that may complicate the examination process for new designs. The question of ‘Tools inventing’ is also strongly relevant, as generative AI is likely to be able to create designs for a range of products with minimal or limited human intervention. Given these trends, is the design right still fit for purpose?

	<i>From inventing with tools to tools inventing</i>	<i>From scarcity to abundance</i>	<i>A fit-for-purpose system</i>
<b><i>AI... Owns... Everything!</i></b>			
<b><i>Credit where credit is due</i></b>			
<b><i>Design tsunami: generative overload</i></b>			

### ***AI... Owns... Everything!***

Imagine a world where all-in-one tools and platforms provide integrated solutions to business needs (for example graphic design platforms with content access subscription models.) If the developers of platforms reserve the right to hold on to the IP for graphics and imagery components, it means the user is limited in what they can do with the content they make. For example, a business making a logo graphic can’t then go and get the logo trade marked.

So, with the advent of generative AI tools such as image generators and 3D design drawing systems, what does this mean if the AI tool owners also retain the IP in the content generated? Or publishes it for others to use?

### ***Credit Where Credit is Due***

Moral rights in creative works is a longstanding principle within copyright law; however, after something is used to spur inspiration, or is licensed as a sample for an artist’s reference, it is not necessarily standard practice to credit the original artist in the newly created works. For example, a sample image may be referenced to figure out the shading detail and light angle used by the original artist. But the recreation of this element may not be substantial enough to require attribution of the original. With the consumption of a large amount of public data, generative AI has expanded these intricacies exponentially, in particular in the realm of design. Where does credit for a design lie when someone can use a prompt of “Create a design in the style of ...” of any designer?



### ***Design tsunami: generative overload***

Generative AI is making it easier for individuals to act as a designer. From ideation to creation, generative AI tools are potentially creating widespread impact across the design right system, particularly with respect to prior art.

New artificial intelligence-related sites are arriving, with many new community sharing platforms being created, such as Arthub.AI and Civitai.com, where contributors upload and store their AI generated art from such tools as Dall-E, Midjourney and Stable diffusion. Playing this forward, designers may have to pursue alternative paths to securing the IP of their designs, raising questions about the suitability of the design right.







*Midjourney prompt: Robots secretly watching a human create a new object to replicate their work, surrealism, 8k*



# Patents

Upon stakeholder consultation and investigation of a variety of scenarios, it is evident that the patent system is poised to face significant disruptions due to the advancements of generative AI. The paradigm shifts brought about by generative AI, transitioning from “inventing with tools” to “tools inventing”, and from “scarcity” to “abundance”, will directly impact the fundamental purpose of the patent system.

The patent system traditionally incentivises human innovation and innovation process to drive technological progress. However, with the emergence of tools that can independently generate inventions, the question arises as to whether there will be a continued motivation for incentivising such AI-generated inventions. Furthermore, as generative AI technology makes it increasingly effortless to create novel and potentially inventive content, the relevance of the novelty and inventiveness criteria for granting patents may come into question. Consequently, it becomes evident that as generative AI systems continue to evolve, the patent system faces potential existential threats that demand careful consideration and proactive measures to ensure its continued effectiveness.

	<i>From inventing with tools to tools inventing</i>	<i>From scarcity to abundance</i>	<i>A fit-for-purpose system</i>
<b>AI generated bottlenecks: a congested patent system</b>			
<b>AI-Enhanced patenting: A double-edged sword for small-to-medium enterprises</b>			
<b>Protection of AI generated works</b>			

## ***A Congested Patent System and the Resulting Disruption***

Examining large, complex patent specifications, tackling backlogs of patent applications, and sifting through long lists of prior art are some of the existing issues that currently challenge patent examination teams. They are also issues that IP Australia has been able to manage. However, with the development of generative AI, a technology that is already widespread and accessible across society, these issues could be dramatically amplified. The sudden reduction in the time and effort needed to draft and file numerous patent applications with extensive details and complex embodiments, and the potential increase in published prior art may require traditional remedies to be re-examined.

What could the potential impacts on the patents system be as a result of these changes? Could these changes be significant enough to have flow-on effects for the wider market? Exacerbation of these issues could arise simply from applicants using the new technology available to them. But could there be actors who would use these newly available capabilities to game and take advantage of the patents system for their own self-interest, which would have otherwise not been possible.

## ***AI-Enhanced Patenting: A Double-Edged Sword for SMEs***

SMEs can be an important contributor to the patent system, and patents can be significant contributors to the economic success and growth of small-to-medium-enterprises (SMEs). However, their ability to contribute is rarely at the same level as larger enterprises.

Rapidly evolving generative AI landscape presents opportunities for new business models that could better facilitate SME access to the patent system. For example, generative AI tools could be used for exploring white space



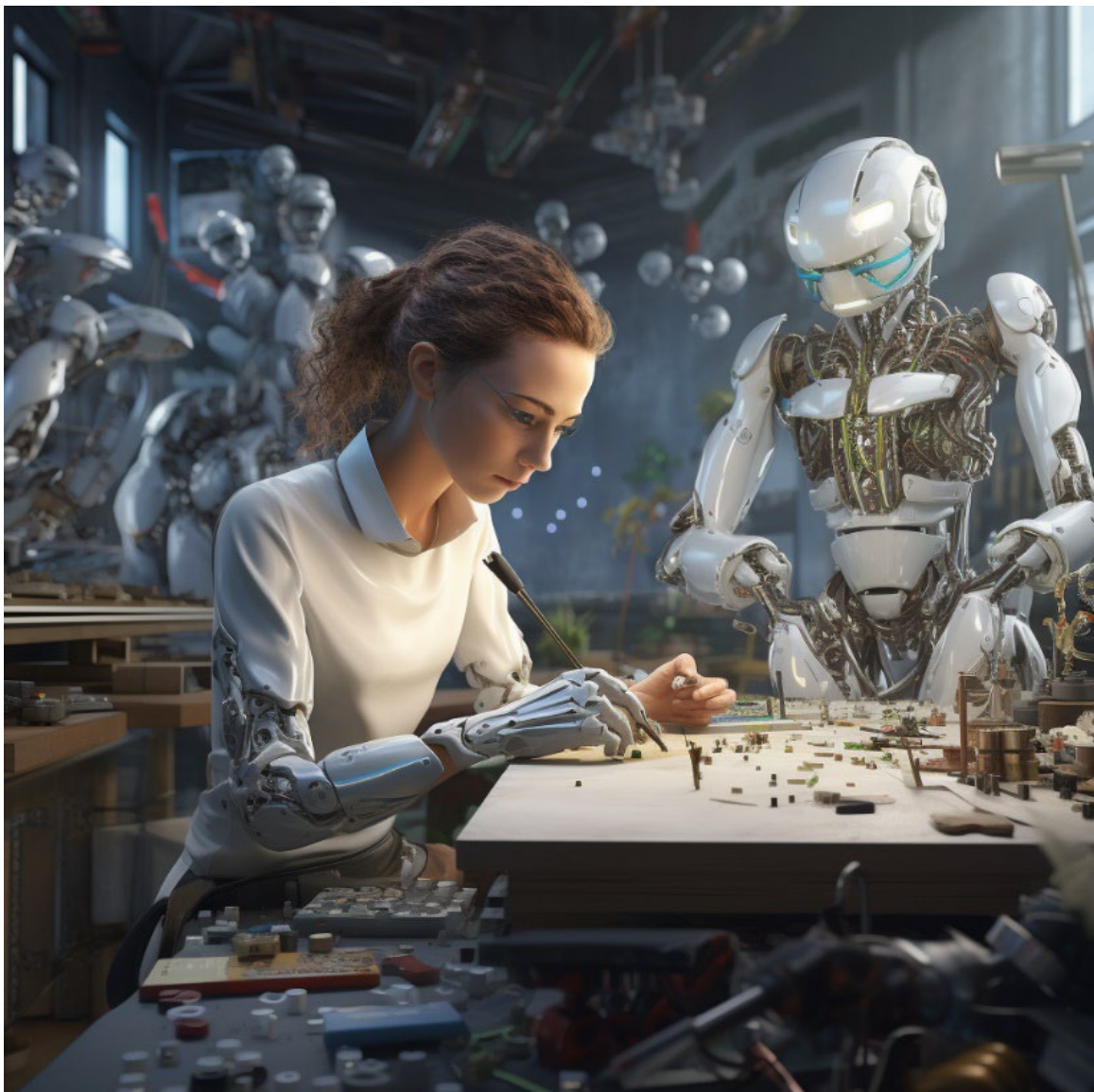
opportunities to innovate, speed up patenting process (application to grant), and analyse market trends for commercialisation.

Imagine a future where IP Australia implement AI-enhanced business models from education and awareness, patent application through to granting and enforcement. How would this change in business models impact the SME ecosystem? Would all SMEs be able to positively engage with these changes? And what are the implications on their businesses?

### ***Protection, Inventorship and Ownership of AI Generated Works***

As we stand at the threshold of the era of artificial intelligence, some of the most pressing questions for the patents system (as well as the IP system more broadly) concerns the protection, inventorship and ownership of AI-generated works. These issues are intrinsically tied to how we perceive and value creativity, innovation, and the act of invention itself. In this provocation, we will explore major considerations and potential decisions for the IP system on these topics, and what their long-term implications might be on the innovation ecosystem.

The debate around AI-generated works is not merely academic but has profound real-world implications that span economic, human, and global dimensions. The immediacy and scale of these impacts are starting to be more apparent. However, given the speed at which AI is developing, it is evident that the stewards and stakeholders in the patent system need to be proactive in keeping abreast of developments, understanding implications on the system, discussing long term goals and vision of the patent system, and shaping it to evolve accordingly to foster innovation and provide benefit to society.



*Midjourney prompt: Female inventor using tools in a workshop, little artificial intelligence bots doing small tasks in the background*

# Trade marks

Being the IP right least centred in novelty, it follows that trade marks are less likely to be fundamentally challenged by the directionality of generative AI. From our investigations from a variety of hypotheses and scenarios, the apparent impact that generative AI will have on trade marks would seem mainly confined to the way applicants will interact with IP Australia rather than posing a fundamental disruption. Generative AI stands poised to drastically alter how customers seek to engage with IP Australia at every stage of a trade mark examination. Both “Scarcity to abundance” and “Inventing with tools to tools Inventing” can be seen as intersecting with the process and function of trade marks, if not the essential purpose. Trade marks will be altered in a world of abundance, with an abundance of evidence to overcome grounds for rejection, and a world where tools are inventing contributing to potentially unclear ownership of images and signs created using generative AI tools. While trade marks may be insulated against any foundational shift of generative AI, the risks of harm or major slowdowns to our processes due to generative AI are a real and present issue.

	<i>From inventing with tools to tools inventing</i>	<i>From scarcity to abundance</i>	<i>A fit-for-purpose system</i>
<b><i>Easy Logos, but not yours</i></b>			
<b><i>Almost Prior Art: Generating false history as evidence</i></b>			
<b><i>Mutually assured bureaucracy: Exploring the impact of generative AI on customer responses</i></b>			
<b><i>Seek &amp; Destroy: Aggressive AI-assisted infringement practices</i></b>			
<b><i>Fast and careless: Using AI to quickly and efficiently come to the wrong decision</i></b>			

## ***Easy logos, but not yours***

All-in-one tools like graphic design platforms already provide integrated services to businesses. When these platforms reserve the right to hold on to the IP for graphics logos, it means the user is limited in what they can do with the content they make. So a business making a logo graphic can’t then go on to get it registered as a trade mark.

When we add generative AI tools to this equation, what does a user license give access to? What if the AI tool owner, or graphic design platform still retains the IP in the content generated? Or it used someone else’s work when creating your logo? And what if it captures your new image for others to use?

## ***Almost prior art: Generating false history as evidence***

The great power in generative AI is its ability to create a lot of noise very quickly. This is incredibly useful when we are trying to create content – it gives us a speedy start to coming up with new material. However, when the onus is on someone who must sift through the content to understand and make decisions on a market reality, this wave of generated content can quickly become an insurmountable obstacle to making good decision.

A trade mark examiner will perform market research in the initial stages of the examination process to determine if a trade mark is in common use or is descriptive. A trade mark examiner will also assess 'evidence of use' (how is the brand used in the marketplace) to determine if a trade mark:

- Has been honestly and concurrently used alongside another's without confusion,
- Was used prior to another's,
- Has acquired distinctiveness, or
- Other circumstances.

This is all in order of determining and deciding if this can allow for a trade mark to be registered. Evidence supplied to IP Australia needs to be dated or otherwise identified to show that the usage has been over a length of time sufficient to overcome whichever grounds for rejection has been raised.

Generative AI offers a short cut to creating a large amount of fake content. Image generation tools such as Midjourney or Stable Diffusion already offer significant capability that could be misused for such a purpose, and with new tools being introduced such as Adobe Firefly, the custom creation of fake evidence is easier than ever to achieve.

### ***Mutually assured bureaucracy: Exploring the impact of generative AI on customer responses***

The landscape of customer interactions is rapidly evolving, driven by advancements in artificial intelligence and automation technologies. What might be the potential impact of generative AI on IP Australia's ability to effectively analyse and respond to customer queries and requests? A convergence of overwhelmed bureaucratic procedural processes and the lightning-fast response capabilities of generative AI may lead to a state of mutually assured bureaucracy, exacerbating and magnifying existing frictions within the trade mark system in Australia

### ***Seek and destroy: Aggressive AI-assisted infringement practices***

A key tenet of having a registered trade mark (or any IP) is the ability to enforce the mark as yours. IP Australia's current advice for business owners is to:

- Create an infringement strategy
- Monitor the market
- Search for existing IP to keep watch for new IP entering the market.

Often IP enforcement is placed into the "too hard" bucket due to the time intensive nature of completing these tasks.

Recently, there have been advancements in technology that could facilitate the identification and enforcement of IP rights. These advancements include the use of AI-powered systems like LLM (Large Language Model) Agents. These systems could easily be used by firms to identify business activities that could arguably infringe upon their IP rights. These tools can analyse large amounts of data and automatically generate cease and desist letters to send to active companies that are potentially infringing on IP.

By leveraging these AI systems, business owners can streamline the process of identifying infringements and taking action, making it more efficient and scalable. This automation can save time and resources compared to manual detection and enforcement method, but what would the quality be like, and would all the potential infringements be real?

### ***Fast and careless: Using AI to quickly and efficiently come to the wrong decision***

As generative AI becomes embedded in more tools, the line between using and not using generative AI will become blurred. This level of accessibility breeds a degree of comfort that can easily turn into complacency as people will use the tool for tasks that it is unsuited for, what can be described as a "good enough" approach. This might be particularly relevant to the legal field where quality legal advice could easily be supplanted and replaced by low cost



“good enough” advice created by generative AI tools such as ChatGPT. This has already been observed in the US where generative AI has been found to have invented legal precedent to support a particular decision. If a mistake like this could be made by professional lawyers, what is going to happen if the average consumer seeks to save money on legal fees and rely on the wisdom of large language models instead?

For a trade mark application, an attorney will traditionally instruct the applicant as to what the formality requirements for a trade mark are. They will aid with the correct classification of the goods and services. An attorney may provide advice as to the distinctiveness of the trade mark and if other traders are likely to need to use the trade mark in the regular course of trade. They may conduct a trade mark register search to determine if there are any other deceptively similar trade marks on the register on the shared goods and services. Lastly, an attorney may help through the adverse examination process and can make submissions on behalf of their client either with evidence of use or a written submission arguing the decision itself. The exact nature of the services provided will vary between attorney firms but in general, an attorney will be an invaluable asset for someone applying for an IP Right.



*Midjourney prompt: a sea of paperwork for business owners to swim through.*



# Plant breeder rights

After examining various scenarios, it appears that generative AI's influence on PBR will primarily relate to a potential widening of the gap between traditional breeders and those who employ new breeding techniques. This disparity could create an imbalanced power dynamic within the ecosystem. Some additional challenges and risks associated with deploying generative AI tools to enhance PBR process efficiency are also outlined in the provocations.

The paradigm shifts from “inventing with tools” to “tools inventing,” and from “scarcity” to “abundance” find limited applicability within the PBR context. This is primarily due to the PBR process encompassing numerous controls such as significant human intervention at various stages. This means, the PBR system is less susceptible to immediate existential threats, unlike some other IP rights which might face immediate disruption.

*From inventing with  
tools to tools inventing*

*From scarcity to  
abundance*

*A fit-for-purpose system*

***The AI breeding revolution:***

***A Tale of two Breeders***



***AI misinformation: Pitfalls of  
an AI-Driven PBR system***



## ***The AI Breeding Revolution: A Tale of two breeders***

In the current plant breeding ecosystem, there exists a mix of breeders who utilise both new breeding techniques and traditional methods. What if the generative AI techniques make their way into new breeding techniques? How would this impact the existing industry dynamics?

## ***AI Misinformation: Pitfalls of an AI-Driven PBR system***

The current Australian PBR process involves substantial human intervention at various stages from application to grant. The emergence of generative AI technologies presents the possibility of automating and streamlining significant parts of the PBR process, however there are some foreseeable risks to this as well as opportunities.

In an imagined future, where IP Australia integrates generative AI tools in the PBR process to assess part 1 applications, design growing trials (including selecting VCK) and trial examination, how would this affect the integrity of the PBR system?



*Midjourney prompt: AI and Human planting plants, Plant Breeders rights, two, photo realistic*

# Generative AI and designs

The following set of provocations explores the potential implications and flow on ramifications of generative AI on the [design rights](#) administered by IP Australia under the [Designs Act 2003](#).

These provocations have been developed as part of an exploratory discovery process by IP Australia about the impacts of generative AI. These provocations seek to explore how the arrival of generative AI tools such as large language models and AI generated image creation may affect the purpose, function or process of the design right and their registration and examination.



**As a provocation, this is intended as an investigation of what could happen, not what should happen.**

As an early-stage piece of thinking, the purpose is to understand how things might play out, and serve as a means of helping IP Australia and our stakeholders explore and understand what the potential issues might be. These provocations are intended to help IP Australia, and its customers and stakeholders, contemplate the potential disruption from generative AI, the flow-on effects, and possible responses.

It is hoped that this provocation and the scenarios it covers will help generate discussion about what might and should happen. This provocation should not be regarded as exhaustive, and as the impact of generative AI is still playing out, there may well be additional scenarios that arise or that have not been identified.

Any mention or use of specific tools is for purely illustrative purposes, to demonstrate what is currently capable with existing technology.

## Overall observations

From our investigations of a variety of hypotheses and scenarios, it appears that the arrival of generative AI poses some significant questions about how design rights currently operate. These questions may well be answerable, and some may self-resolve over time as the technology matures and the practical, ongoing effects reveal themselves. Nonetheless, the ‘Scarcity to abundance’ shift is particularly relevant to the design right, bringing as it does a potential wave of prior art that may complicate the examination process for new designs. The question of ‘Tools inventing’ is also strongly relevant, as generative AI is likely to be able to create designs for a range of products with minimal or limited human intervention. Given these trends, is the design right still fit for purpose?

## Status quo

In order for an applicant to successfully gain design right protection, the design must consist of **new** and **distinctive** visual features of shape, configuration (3D), pattern or ornamentation (2D) of a product.

For a particular design to be “**new**” it must not be identical to:

- A design used publicly within Australia or published in a document anywhere in the world (the “prior art base”), before the application to register the particular design was filed; or
- A design disclosed in an earlier registered design application.

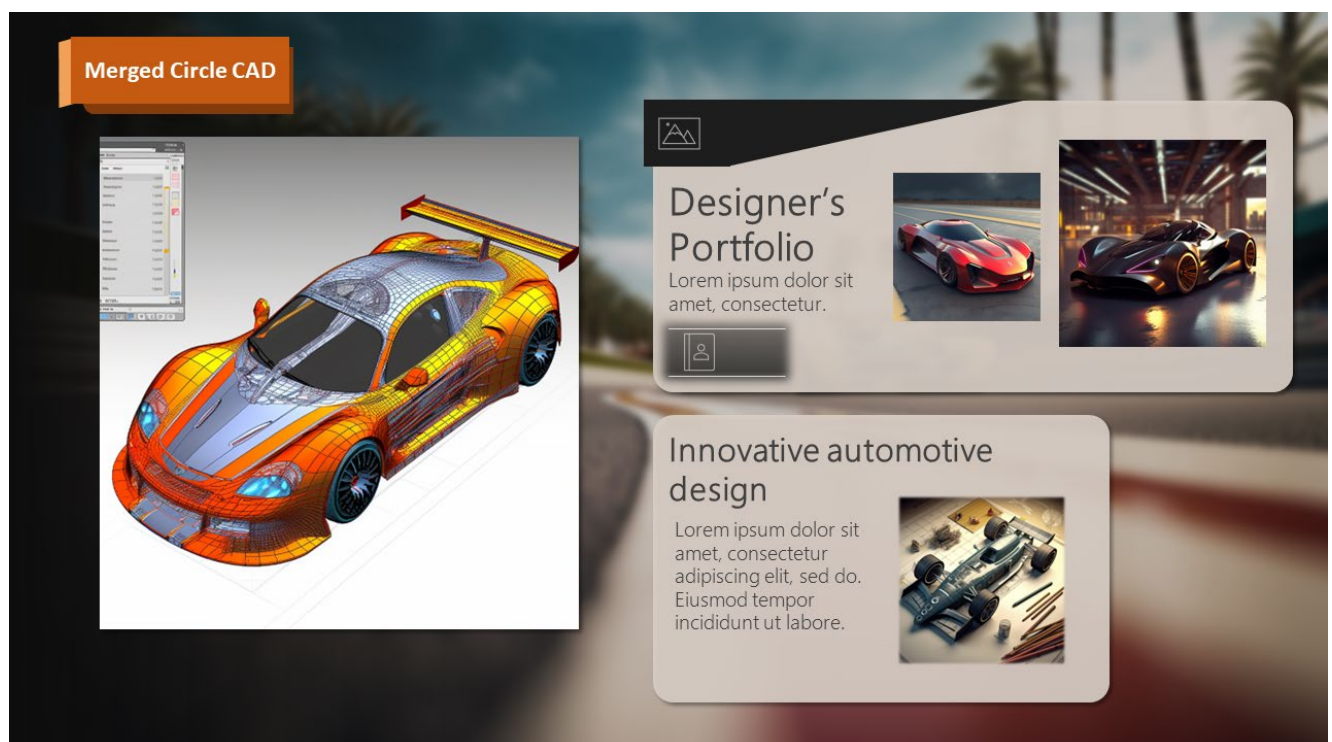
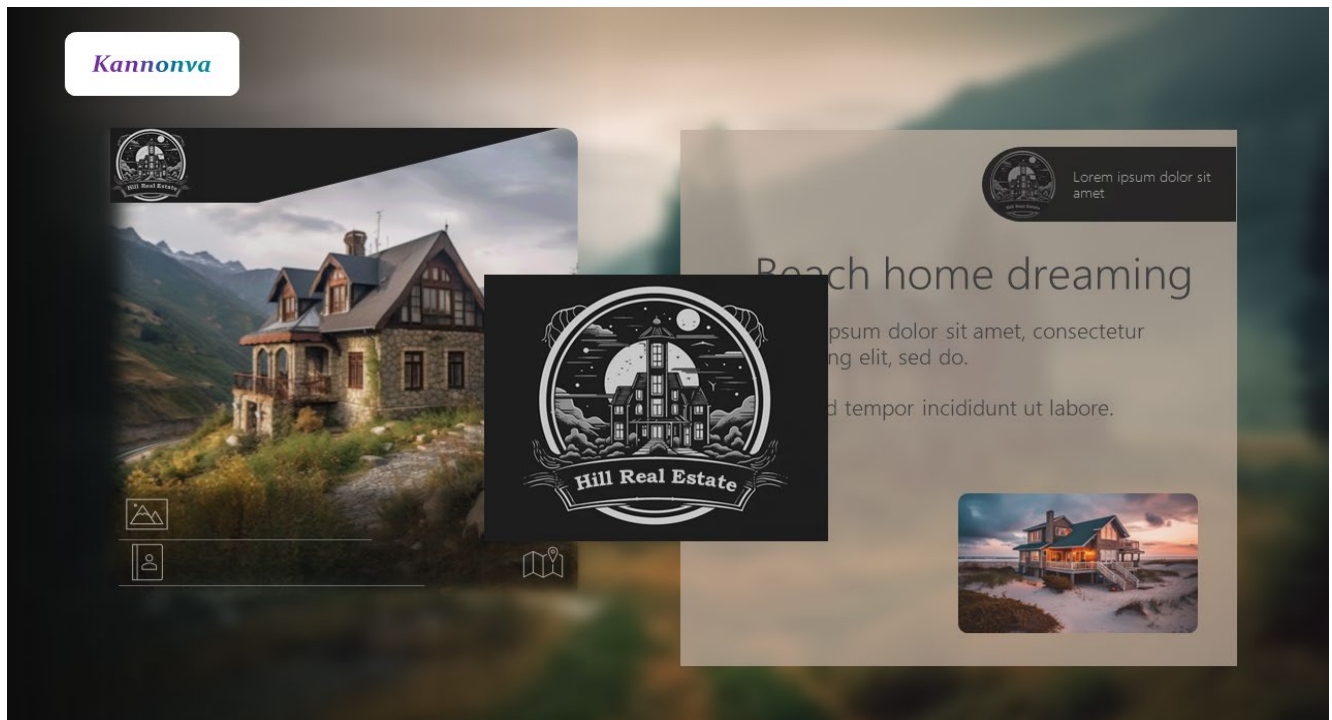
For a design to be “**distinctive**” it must not be substantially similar in overall impression to:

- A product design publicly used in Australia, or published in a document anywhere, before the application to register the particular design was filed; or
- A design disclosed in an earlier registered design application.

# AI... Owns... Everything!

## What does this mean?

Imagine a world where all-in-one tools and platforms provide integrated solutions to business needs (for example graphic design platforms with content access subscription models.) If the developers of platforms reserve the right to hold on to the IP for graphics and imagery components, it means the user is limited in what they can do with the content they make. For example, a business making a logo graphic can't then go and get the logo trade marked. So, with the advent of generative AI tools such as image generators and 3D design drawing systems, what does this mean if the AI tool owners also retain the IP in the content generated? Or publishes it for others to use?





# The scenario

Imagine you're a designer. Using your experience working with tools and materials, you create stylised versions of products such as homeware or clothing. What if you hit on something truly unique? For example, using materials in a totally new way or maybe solving a design challenge where you use a different kind of attachment or joint to create the finished product. In these circumstances, if the design hasn't been done before (and hasn't been published anywhere) you could qualify for design right protection. This gives you exclusive rights in the design for a set period, and you can sell it or license it.

But what happens if the developer of a computer aided drawing (CAD) tool, or a generative AI tool owns the drawings or components you used to generate the design? Even if an AI tool did the image generation or gave you inspiration, it was your expertise that decided which materials actually work together, or what will be marketable. Furthermore, what if the AI tool owner, then uses your decision making to inform their machine learning model and gives it to other users as a suggestion, or publishes it publicly?

In this event, users that invest time and money prototyping and building new products may be prevented from gaining rights in their work. And once a designer has invested in experimentation and building on a design, the disclosure of their work or ownership of the IP by the AI tool owners would mean they're shouldering more competition risk if going to market with their physical product.

This issue isn't a new one, however it may be exacerbated by widespread use of generative AI tools. What this scenario highlights is the risk to the existing design right system, where mass disclosures and unclear content ownership could invalidate all future applications for certification under the law as it currently stands.



*Midjourney prompt: an industrial designer being aided by a computer to create a new product, good versus evil, photorealism, bright*

# Options and potential responses

The following options have been identified as possible responses to the issues illustrated by this scenario.

## New minimum filing requirements for design rights could be investigated

Where generative AI tools reduce the barriers of entry to such an extent that innovation is in abundance, new filing requirements could be designed to continue to reward the element of human involvement or physical generation of innovative designs.

This could include whether AI generated disclosures should invalidate design right protection, and identifying who can protect content generated by AI when considering factors such as system or data ownership.

However, adding such frictions could reduce the overall benefit and attraction of the design right itself.

*"If we are looking at the amount of human interaction, if that becomes a deciding factor, then I don't think there would be an issue."* **Product designer**

*"How to balance the needs of an individual with rules around discovery and first use... finding that standard of individual involvement is the tricky part, but that needs to be there."* **IT advisor & founder**

*"I feel like that with the design process all the time, if there's something you find... I can't do that anymore because it's been done. But there could be like a waiting period or something..."* **Designer, business owner**

## Acceptance criteria for proving manufacturability or utility could be introduced to reward genuinely innovative design

Design right protection is a method of rewarding creativity in the physical presentation of industrially produced products. If this market becomes saturated by digitally generated creations, does another aspect of the designer's process need to be incentivised?

To protect the intent of granting industrial designs monopolies, would more need to be done to define what innovative practice in this space really entails? Or would doing so cause imbalances and create opportunities for misuse, or even prove fatal for design right protection?

*"So, you have a design, and the human being cannot manipulate the many data sheets on the different material. But say the artificial intelligence can - between the parameters you set, they can try probably millions of millions combination of materials."* **Director, engineering quality control**

*"AI can generate all sorts of alternatives. Then it still comes down to what's commercially valuable. What can you demonstrate works? Do all those functions, all those component trees of that design drawing mean something?"* **Legal professional, IP counsel**

## Do nothing

The challenges posed by generative AI in the field of design right protection have always been present. Determining the boundaries of genuine innovation and avoiding the violation of monopoly rights has always carried a degree of uncertainty. Hence, one could argue that the current decision-making practices in these domains could remain unchanged, even in the face of widespread adoption of AI-generated design practices.

Nevertheless, it is evident that these uncertainties have the potential to escalate rapidly. Conflict and dispute resolution scenarios may surpass the capabilities of existing processes and measures designed to handle and mitigate such circumstances. However, it is likely that the businesses with the least resources to adapt or respond to these situations would be the ones most adversely affected, and thus raise competitiveness and fairness concerns.

*"They might come out to you and say, oh, this has too much of my design in here, I'm going to take you to court... It's sort of like an existing issue."* **Designer, business owner**

*"I'm hesitant to say we need to do anything radical, the existing systems are pretty robust."* **Tech founder, IP data & AI systems**



## Key questions

This scenario raises some key open questions, including:

- Will design rights really be affected by generative AI?
- Does the design right protection process need to change to fit in with future possibilities?
- What happens if responses vary between different countries? How would that affect exporters protecting their designs overseas? Do new international norms need to be developed?

## Signs to look out for

What are the developments or evidence that might be most relevant to this path playing out?

- An increased takedown of design right applications – where design platform or AI tool owners can identify their assets used in design right applications, cease and desist notices could be automatically issued to applicants, demanding they withdraw the application.

## So what?

How does this scenario affect the design right system? What if all-in-one tools and platforms take an active step to retain intellectual property rights of graphics and imagery components, limiting users' freedom to fully utilise and protect their creative output? This scenario raises concerns about the accessibility, ownership, and control of intellectual property in a digital age. By inhibiting users from obtaining trademark, design or other forms of legal protection for their creations, this may undermine the ability of businesses and individuals to establish a distinctive brand identity and safeguard their intellectual assets. Such limitations stifle innovation, creativity, and entrepreneurship, and may ultimately hinder economic growth and competitiveness.



*Midjourney prompt: a battle of ownership between artificial intelligence and humans, trade mark, design, patents, plant breeders rights, surrealism*

# Credit where credit is due

## What does this mean?

Moral rights in creative works is a longstanding principle within copyright law; however, after something is used to spur inspiration, or is licensed as a sample for an artist's reference, it is not necessarily standard practice to credit the original artist in the newly created works. For example, a sample image may be referenced to figure out the shading detail and light angle used by the original artist. But the recreation of this element may not be substantial enough to require attribution of the original. With the consumption of a large amount of public data, generative AI has expanded these intricacies exponentially, in particular in the realm of design. Where does credit for a design lie when someone can use a prompt of "Create a design in the style of ..." of any designer ?





# The scenario

Imagine you're a designer who has design right protection for their industrial designs, and has an online portfolio to promote the sale or licensing of your designs. You've spent hours experimenting and refining physical prototypes or digital models, producing finished articles of a significant standard. By sharing this online (including publication of the drawings on the Australian designs database), this will give others in your field the ability to learn from your work and, without infringing on your work, take this information and consciously or unconsciously adapt their own works.

But now generative AI tools have used published images and associated text descriptions to learn how to reproduce image components. And so, users of these tools can now easily generate works similar to yours (either using your name to reference the designs or just a description of the aesthetic). At what point should you be credited for your original work? And how much of your public design drawings can be used to generate new works before it becomes an infringement of your certified design right?

Furthermore, generative AI can produce large volumes of variations at a rapid pace. The next iteration of work you physically design could actually resemble something that's already been published on a public AI design database, without crediting your original. This could invalidate your subsequent applications for industrial design protection that are the next breakthrough from physically working on your original.

This scenario highlights the issues around training data and mass disclosure of new designs and creative work. Whatever happens next with generative AI, the use of monopolies to capture a return on investment in the industrial design space will likely need to be revisited in the a revised context for moral and IP rights.



Midjourney prompt: Robots secretly watching a human create a new object to replicate their work, surrealism, 8k

# Options and possible responses

The following options have been identified as possible responses to the issues illustrated by this scenario.

## Traceability regulations to credit the IP ownership of content used to generate new material by means of AI

Establishing traceable links to the owner of original works, and determining existing IP ownership status would be a challenge, especially in the case of older copyright material. This, however, is not a new issue - merely one that's exacerbated by the speed of AI content generation.

Nevertheless, generative AI tools could have known IP information coded into the data source and surfaced as a summary to the user. Then the user could decide whether to proceed with the content, or the system could prevent particular uses.

The available options in this area could require a 'rules as code' approach to facilitate appropriate attributions, or defined processes for IP clearance of AI generated outputs. The trade-offs here would need to consider impacts on creative freedom while honouring the investments made by original artists or creators.

*"I suppose at the end of the day, it depends on the percentage of what has been taken from something else."* **Designer, business owner**

*"If you give that design to artificial intelligence, it can check all the networks and to see if anyone trying to produce something similar to that."* **Product quality assurance engineer**

## An expansion of established practices such as the designs grace period provision for disclosure

Safeguards for designers could be adjusted to include content publication that originated from generative AI tools. Design right applicants could be protected from having invested in producing a design that turns out to be substantially similar to an AI generated one that has not yet been physically created by a human, or given greater scope to evolve their own designs and protect them regardless of intervening AI activity.

Where AI systems automatically publish works or where users share a wide number of quickly generated variations, such considerations may help safeguard the design right system from redundancy; however this may introduce a simple method to game the system or allow imbalance by large, highly resourced entities.

More information about design reform can be found [here](#).

*"How to be balance the needs of an individual with rules around discovery and first use... Finding that standard of individual involvement is the tricky part, but that needs to be there"* **IT advisor & founder**  
*"I feel like that with the design process all the time, if there's something you find... I can't do that anymore because it's been done. But there could be like a waiting period or something..."* **Designer, business owner**

## Acceptance criteria for physical fabrication or utility could be introduced to reward genuinely innovative design

Design right protection is a method of rewarding creativity in the physical presentation of industrially produced products. If this market becomes saturated by digitally generated creations, does another aspect of the designer's process need to be incentivised?

To protect the intent of granting industrial design monopolies, should there be further definition of what truly innovative practice in this space really entails? Or will this cause imbalance, create opportunities for misuse or prove fatal for design rights? Furthermore, if physical fabrication or manufacturability are required, can evidence of this be easily generated by AI and automated processes?

*"AI can generate all sorts of alternatives. Then it still comes down to what's commercially valuable. What can you demonstrate works? Do all those functions, all those component trees of that design drawing mean something?"*  
– **Legal professional, IP counsel**

## Regulatory definitions for who can retain rights in content generated by specific means

This may require a set of standards or regulations to decide if AI generated content ownership must be retained by the training data's IP holder(s), held by the AI tool's owner or held by the user generating the output (depending on the particular circumstances, including the kind of data inputs involved).

Examples of such standards could be a regulatory framework where ownership of data inputs are identified and:

When this data is also owned by the AI tool owner, rights in the output are not transferrable to the user. Where the ownership of the data input is not identifiable, or is within the public domain, the output is owned by the tool owner or its user depending on user license agreement. And, Where an artist/designer is named to produce the aesthetic of the output, the ownership of the output remains with the named artist/designer unless otherwise sold or licensed to the AI tool owner or its user.

However, such interventions would potentially limit the usability of generative AI tools by adding constraints. Furthermore, this may drive the technology to be used in-house without constraint, and leave associated rewards out of the hands of less resourced individuals and smaller businesses.

## Do nothing

The issues presented by generative AI on the designs system are ones that have been present for some time. Uncertainty has always existed when determining where there's space to innovate, and where to avoid infringement of monopoly rights. Therefore, arguably the existing practices for decision making in these areas could simply remain as-is, even after a mass saturation of AI generated designs. However, what we can see is the potential for these uncertainties to expand very quickly. And instances of conflict and dispute resolution could blow out beyond what the existing measures for managing these circumstances were designed for. Ultimately the people who lose out first are those with the least resources to adapt or respond to these situations.

*"They might come out to you and say, oh, this has too much of my design in here, I'm going to take you to court... It's sort of like an existing issue"* **Designer, business owner**

*"I'm hesitant to say we need to do anything radical, the existing systems are pretty robust."* **Tech founder, IP data & AI systems**

*"If it comes out of the machine, whose work is it?"* **Strategist & writer**

*"Stewardship, leadership, ownership and accountability around data and data governance - the impacts are on all different parts of a business."* **AI & analytics consultant**

*"Prompt engineers and practitioners, what part of their content can be protected versus general public interest on those outputs."* **AI & innovation leader, data science**



Midjourney prompt: Robots secretly watching over new creations.



## Key questions

This scenario raises some key open questions, including:

- Will this really affect industrial designers? Or has the ease of digitally generated designs meant this already is going on?
- Does the ease of digital adaptation mean crediting original works is already effectively unnecessary or unworkable?
- Does it matter to gain design right protection if the designer's industry favours a first-to-market strategy over holding a monopoly? And should there be industry-specific conditions for design rights?

## Things to look out for

What are the developments or evidence that might be most relevant to this path playing out?

- A significant decrease in certified design rights due to substantially similar designs being found in the prior art base. An increase in derivative product designs in market that infringe design rights, having not obtained permission or crediting the original creator. This may be identifiable by original prompt use or image as prompt to generate new drawings and ultimately the product itself.

## So what?

This scenario poses an existential threat to the design right system as a whole. Current disclosure rules could see public databases of AI generated designs invalidate all possible variations of an entire product category from being protected with a design right. Regardless of whether it can be manufactured or scaled.

*Midjourney prompt: ideas being stolen by artificial intelligence replicating ideas, surrealism, furniture, modes of transport.*





# Design tsunami: generative overload

## What does this mean?

Generative AI is making it easier for individuals to act as a designer. From ideation to creation, generative AI tools are potentially creating widespread impact across the design right system, particularly with respect to prior art.

New artificial intelligence-related sites are arriving, with many new community sharing platforms being created, such as Arthub.AI and Civitai.com, where contributors upload and store their AI generated art from such tools as Dall-E, Midjourney and Stable diffusion. Playing this forward, designers may have to pursue alternative paths to securing the IP of their designs, raising questions about the suitability of the design right.

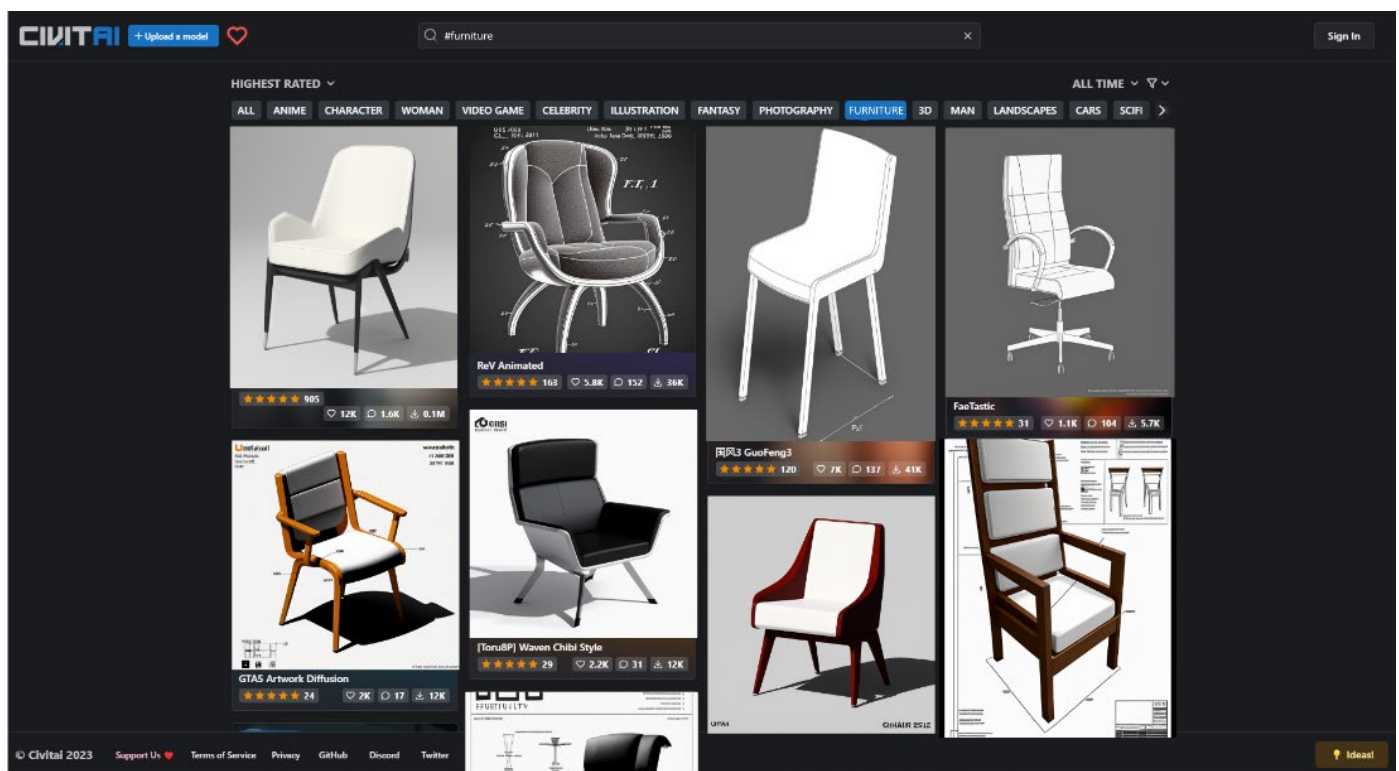


*Midjourney prompt: an avalanche of chairs heading down a mountain towards a market*

# The scenario

Sam has always been a creative type, always thinking about different variations of how everyday items such as chairs might look like. Growing up to be a bit of a dilettante designer to complement their full time role as a teacher, Sam is always keen to play around with designs as a hobby. As generative AI tools, such as those based on the Stable Diffusion engine, developed, Sam started using them for inspiration.

Using only a home PC and some spare time, Sam uses [Stable Diffusion](#), a generative AI tool that creates images from a user's prompts. Sam used the following prompts [Chair Design (1.1) Furniture Design, Unique design, White Background, Technical drawing, Bold, futuristic, high resolution, realistic] and the tool was set to "generate forever" where this tool continued to create new images until prompted to stop (or internal PC memory was reached). It takes longer to upload the new image to the aforementioned AI art libraries than create the new AI generated image itself.



Sam is excited about his new creations and has uploaded a large amount unique chair designs to the AI Art website with the promise that more have been made, it's just taking time to upload.

The images are discovered by an examiner in the Design's examination section, when conducting an examination on a chair submitted for design protection by Manifesto & Co, a Melbourne based furniture design & manufacturing company.

In the library of images there's an image of a chair substantially similar in overall impression to the one lodged with IP Australia by Manifesto & Co.

IP Australia is unable to provide a certificate of examination for the design and Manifesto & Co must go to market without design right protection and losing the ability to take legal action against someone who uses their design without permission.

Sam and other users continue to create AI created product designs and upload them, flooding the internet with a huge array of new unique designs.

Now, every second registered design submitted to be certified can be found to be substantially similar to design(s) found in the prior art base and the number of designs successfully being certified is significantly dropping each month.

## AI as a designer

Sam is intrigued by the volume of people contacting them regarding their artwork, now with a catalogue of 100,000 chairs, and has now moved onto capturing more segments of the furniture design market, moving on to tables and desks.

When questioned about their intent to use the designs, Sam starts to play with a 3D printer to demonstrate that the designs have physical and tangible form, that they can/could be manufactured or handmade and that they could be produced on a commercial scale. Sam begins to add images of the 3D prints to 2D versions in the art library.

## Bringing AI designs to life

Sam likes the idea of adding the title “Registered Australian Designer” to their credentials, as they have started to build a large online following.

Sam visits [www.ipaustralia.gov.au](http://www.ipaustralia.gov.au) to work out what is required of to have their chairs protected.

IP Australia advises:

*“A design right aims to protect the visual appearance of a whole product that:*

- *Has physical and tangible form*
- *Is manufactured or handmade*
- *Is produced on a commercial scale.”*

Sam sets off out to address these points, first starting using generative AI Technology.

1. Uses 2D image to 3D model generative AI programs creators to unlock the ability for it to be manufactured.
2. Using [Fusion360's Generative AI tool](#), the designer uses the software to fill the gaps that text to image generation would not consider such as the performance of the design. This is done by meeting performance criteria through the automated application of considerations such as lightweighting, improved structural integrity and continued durability.
3. Uses a 3D printer to manufacture an amount of prints that would be considered a commercial scale (50 pieces).
4. Submits the design to be registered.

Sam is satisfied to have their own design registration, feeling it a nice accomplishment and side-hustle to their full-time job.

Meanwhile, Velma is a designer at Manifesto & Co, has been frustrated that their design was not able to be progressed to examination due to multitudes of prior art from generative AI. Velma is an experienced designer, with quite a following on various social media platforms, and finds this situation a bit unworkable for protecting her IP. She reads about how many singers make most of their money through performances rather than through streaming services, and wonders if there's a parallel in her industry.

Velma scours the IP Australia website, with the aid of ChatGPT, and learns about shape trade marks, which seem to them to offer a longer term form of protection.



Shape trade marks protect three-dimensional shapes. The shape can't be commonly used or required by others (e.g. a regular shoe box or wine bottle). Shape trade marks may already exist in the market before you register them. This differs from a design right, where the shape must be new and distinctive. Velma believes a shape trade mark would be relevant for her design, and that a shape trade mark could be used as to gain protection on their prior art.

An initial investigation reveals some complexities, and so Velma lands on what she believes is a clever compromise – a physical insignia, sort of like a 3D brand, that she can add into her designs, meaning that people will know that what they are buying is her design, her style and will know that it is authentic. Because of the distinctiveness – Velma uses a generative AI tool that promises it is original – this 3D brand is accepted as a shape trade mark that she can work into any physical design of hers.

Velma demonstrates how actors may try to push a system in different ways when it stops meeting their purpose, even if the protection provided is not sufficient or appropriate for their needs.

## Options and potential responses

The following options have been identified as possible responses to the issues illustrated by this scenario.

### Adapted criteria for design protection

#### Evaluate and update the criteria for design protection to account for the rise of generative AI

This may involve considering additional factors such as human involvement, creative input, or unique design elements. However, adding such additional frictions may reduce the attractiveness and value of design protection.

### Enhanced search capabilities

This could involve investing in advanced search tools and technologies that can help identify and analyse prior art, including AI-generated designs.

Collaboration could occur with researchers, academia, and industry experts to develop and refine these tools to effectively navigate an increasing volume of prior art.

## Key Questions

This scenario raises some key open questions:

- Is it possible or desirable to effectively distinguish AI-generated designs from human-created designs?
- Should updated criteria be used to determine the level of human involvement or creative input required for design protection?
- How can intellectual property offices enhance search capabilities and databases to effectively navigate the increasing volume of AI-generated prior art?
- Are current legal frameworks and regulations sufficient to address the unique aspects of generative AI in the design right system?
- Should there be disclosure requirements for applicants to disclose the use of generative AI in creating designs? If so, what level of transparency should be expected, and how can it be implemented effectively?

### Further advancements in AI tech will only amplify this scenario.

- AI image recognition makes the task of searching large volumes of images and comparing them easier than ever before.
- Software companies such as Fusion 360 have already adopted AI tech to embrace generative design.
- A future tool or GPT agent might be able to easily connect the outputs of an image generation model with a generative design capability.

# Signs to look out for

What are the developments or evidence that might be most relevant to this path playing out?

- Increased volume of designs not successful in gaining a certificate of examination due to prior art concerns.
- Look for notable legal precedents or case law related to the protection or rejection of AI-generated designs.
- Pay attention to public discourse, media coverage, and discussions surrounding the use of AI in design and intellectual property.

## So what?

What does this mean for the design rights system? First, it raises the possibility that design rights may not continue to provide the same economic value and protection that were previously promised to design right holders. It also raises the question of how designers might respond to that – either by looking for alternatives that might be open to them (such as trade marks embedded in their designs) or perhaps not engaging with the formal IP rights system at all.



Midjourney prompt: an evolving future for designers, a timeline from the past to the future, surrealism



# Generative AI and Patents

The following set of provocations will explore the possible implications and ramifications generative AI might have on the [Patent Rights](#) administered by IP Australia under the [Patents Act 1990](#).

These provocations have been developed as a part of an exploration by IP Australia about the impact of generative AI on the IP system. As such, these provocations seek to understand how the arrival of large language models and multimodal foundational models may affect the purpose, function, or processes of the IP system.

Any mention or use of specific tools are for purely illustrative purposes, to demonstrate what is currently capable with existing technology.



**As a provocation, this is intended as an investigation of what could happen, not what should happen.**

## Overall observations

It is evident that the patent system is poised to face significant disruptions due to the advancements of generative AI. This has been confirmed through stakeholder consultation, desktop research, and investigation into a variety of scenarios. The paradigm shifts brought about by generative AI, transitioning from “inventing with tools” to “tools inventing”, and from “scarcity” to “abundance”, will directly impact the fundamental purpose of the patent system.

The patent system traditionally incentivises human innovation and the innovation process to drive technological progress. However, with the emergence

of tools that are capable of independently generating content, designs, and potentially even scientific inventions in the foreseeable future, the question arises as to whether there will be continued motivation for incentivising such AI-generated inventions. Furthermore, as generative AI technology makes it increasingly effortless to create novel and potentially inventive content, the relevance of the novelty and inventiveness criteria for granting patents may come into question. Consequently, it becomes evident that as generative AI systems continue to evolve, the patent system faces potential existential threats that demand careful consideration and proactive measures to ensure its continued effectiveness.

## Current status quo

There are several requirements that must be met to obtain a granted Australian patent. These include requirements for the invention to be novel (or new when compared to relevant prior art information) and to contain an inventive step (a step that is not obvious). There are also requirements in relation to the details contained within the application: for example, the invention must be described clearly and with sufficient detail so that a person skilled in that technology or area would be able to perform the invention without undue effort.

In exchange for granting the patentee a monopoly over their invention, the patentee must clearly and completely disclose their invention. Thus, they are contributing to the dissemination of knowledge of their patent to the rest of society, so that others can continue to innovate. Furthermore, the patent system provides a mechanism for innovators to protect their investment when approaching commercialisation, ensuring customers benefit from more options and activity within the market.

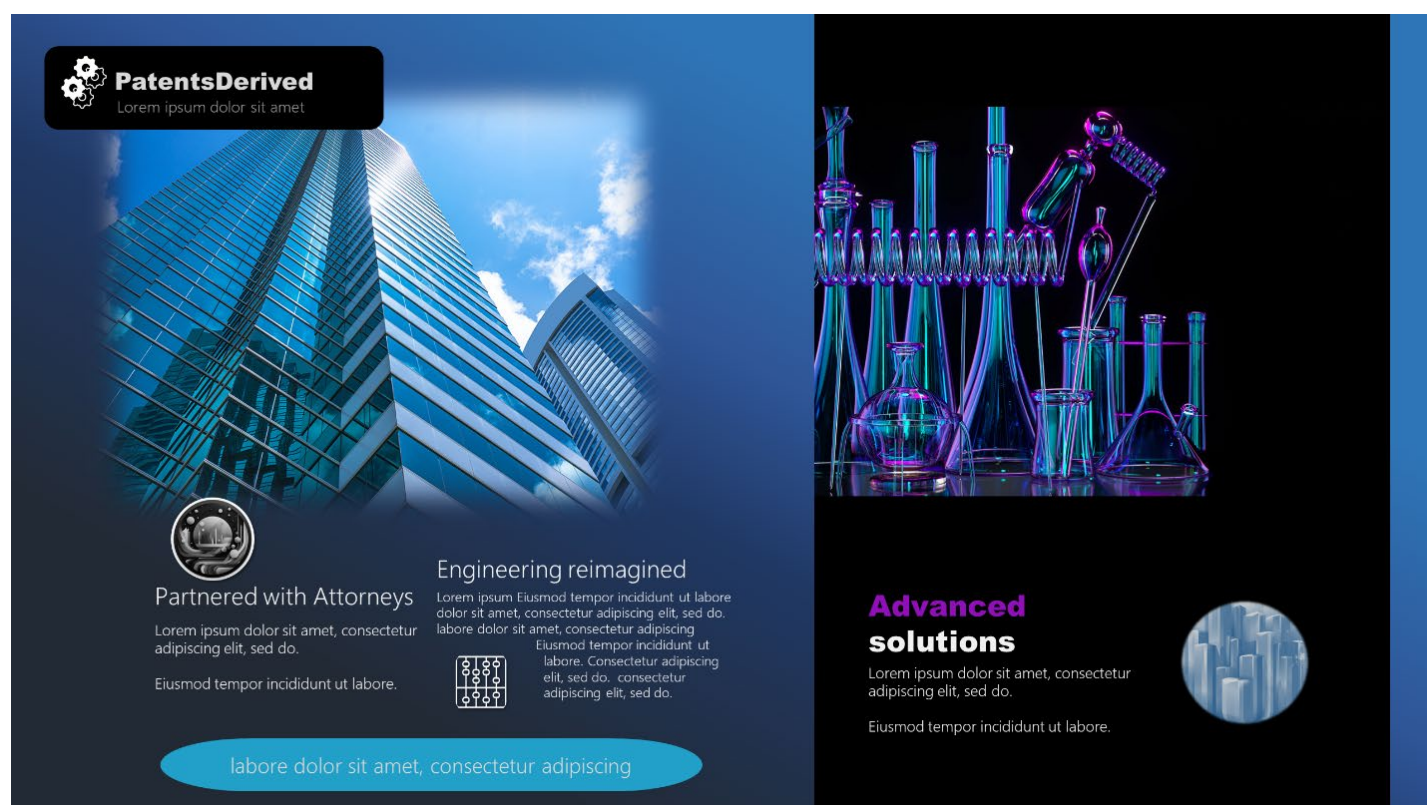
# AI generated bottlenecks: a congested patent system

## What does this mean?

Examining large, complex patent specifications, tackling backlogs of patent applications, and sifting through long lists of prior art are some of the existing issues that currently challenge patent examination teams. They are also issues that IP Australia has been able to manage. However, with the development of generative AI, a technology that is already widespread and accessible across society, these issues could be dramatically amplified. The sudden reduction in the time and effort needed to draft and file numerous patent applications with extensive details and complex embodiments, and the potential increase in published prior art may require traditional remedies to be re-examined.

What could the potential impacts on the patents system be as a result of these changes? Could these changes be significant enough to have flow-on effects for the wider market? Exacerbation of these issues could arise simply from applicants using the new technology available to them. But could there be actors who would use these newly available capabilities to game and take advantage of the patents system for their own self-interest, which would have otherwise not been possible.

Figure 1: A hypothetical generative AI tool specialising in solutions for patent



# The scenario

## Scenario 1: Large specifications

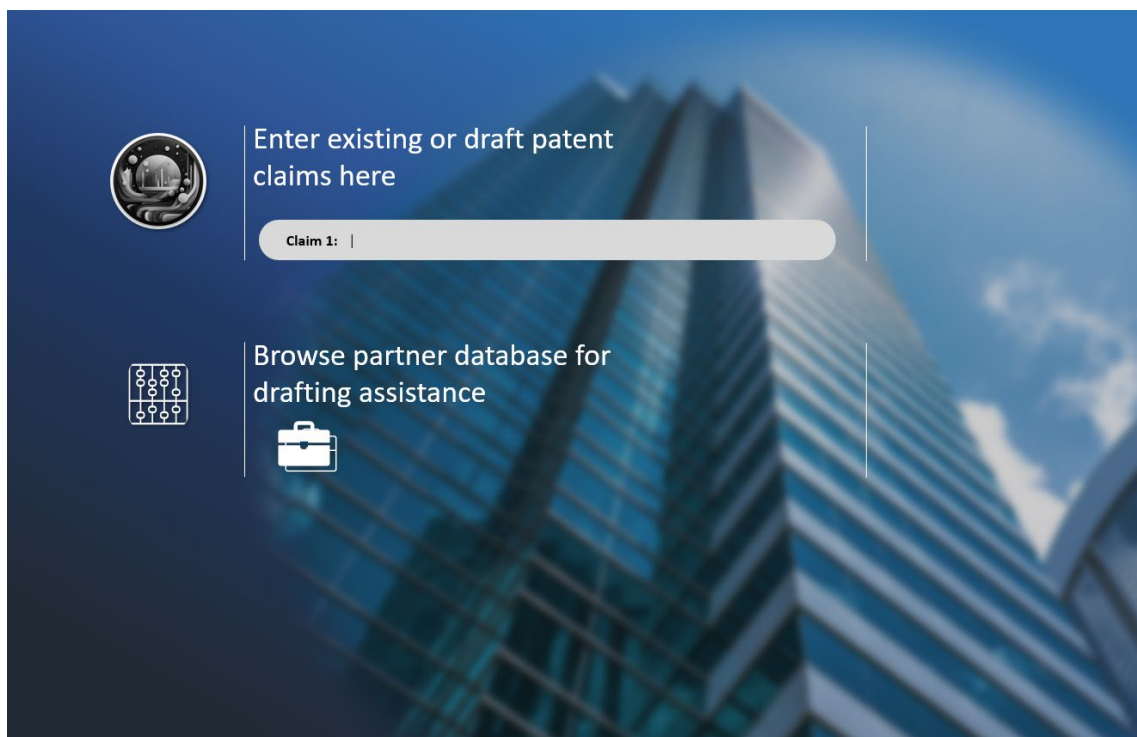
The market has poured significant investment, research, and development into improving generative AI technologies, ensuring rapid development of more powerful generative AI technologies in recent years. During this time, we have seen significant changes and improvements in the generative AI technology including:

- Providing an interface that makes using generative AI more accessible to a wider range of users,
- Improving coverage and quality of outputs through much larger data sets, and
- Improving the quality of outputs through large scale human validation and machine learning.

We have also seen the emergence of specialised tools that are developed with specific applications in mind and are, accordingly, trained to provide much greater relevance and accuracy for those applications. For example, the market has seen the arrival of [PatentPal](#) for generating patent specifications and [Legal Robot](#) for understanding and drafting legal documents. If we imagine that generative AI technologies will become even more available to the wider public than they are now, then the range of actors who can easily automate or augment specialised uses of the technology will grow.

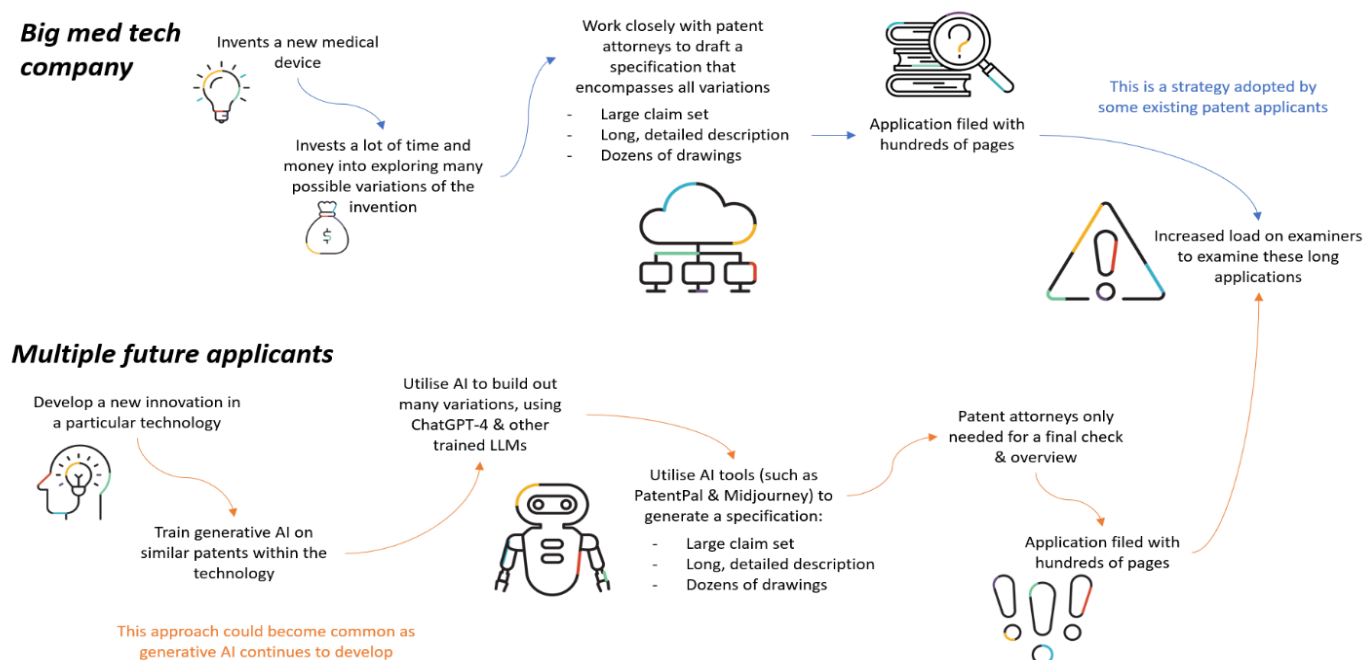
Fatima, an SME, is one such actor. She has developed a new invention, a water collection apparatus with many improvements over existing products on the market and is keen to seek patent protection soon so that she can launch the new product as part of her small business in domestic water treatment solutions. She has heard from others in her network that the patent process can be a long, expensive, and complex process. Despite this, Fatima is keen to seek patent protection, especially where she can obtain protection for all the improvements she has included in her invention and the possible variations so that competitors have little chance of stealing her idea. Keen to move through the process successfully and quickly, Fatima relies on generative AI tools to help her understand the IP system and to draft her initial patent application covering all aspects of her invention in detail (see also Emily's experience in 'AI-enhanced patenting: a double-edged sword for SMEs?'). Fatima gets some final assistance from a patent attorney to look through the now lengthy specification and to ensure the scope of the application does cover the entire invention and the different embodiments. An expedited patent application is quickly filed, and Fatima can continue to focus on marketing her new product and growing her business.

Figure 2: How a user might interact with a hypothetical generative AI tool



However, Fatima is not the only one using generative AI in this way to quickly file long specifications. If she can do it, then so can many other SMEs, as well as much larger applicants. Specifically, companies with deeper pockets who can afford to quickly generate multitude of long specifications, possibly using more advanced and specialised generative AI tools that can generate a higher quality product. Such applicants could file patent specifications that are several times larger than normal, making the examination process more difficult and to intimidate competitors. This is a challenge already faced in examination on limited scale. However, with the rise of generative AI, this issue is no longer limited to billion-dollar companies. Now any company can create complex patent specifications, either because of strategic or competitive motivations, or simply because the technology to do so is readily available. Consider Figure 3 below:

Figure 3: Scenario demonstrating the generation of large specifications



If we play this scenario out further, we might see many time-pressed applicants (big and small) taking up generative AI to speed up the process of generating large specifications that cover all aspects of an invention. Some may rely on the patent attorney profession to add value to the application and ensure the claims have a suitable scope, but some may opt to skip seeking professional legal advice and file patent applications despite the potential low quality.

These reasons for using generative AI are completely understandable in a fast-moving world with increasing competition, and so we might expect most applicants relying on generative AI to be doing so in good faith. However, the ease at which these things can be done this would mean we might see more inadvertent uses of generative AI tools in the process of patent specification drafting or actors who are simply pushing the boundaries. Given how accessible some generative AI tools are now, and the massive investments devoted to developing these tools further, we may see more of these kinds of scenarios evolving over time. There may be additional challenges introduced by large specifications not yet foreseen, especially when it is happening on a large scale.



Figure 4: Reviewing outputs from a hypothetical generative AI tool



Review generated patent specifications:

**Derivation 1**

1504 pages

**Derivation 2**

176 pages

**Derivation 3**

147 pages

**Derivation 4**

741 pages

**Derivation 5**

754 pages

**Derivation 6**

1132 pages

## Scenario 2: Flooding of patent applications and prior art

Building on the previous scenario is the issue of generative AI being used to create masses of patent applications or more broadly, masses of content published online that becomes part of the prior art base. This could result in a flood of patent applications filed at IP Australia and other IP offices, and a dramatic increase in the content examiners need to search through when examining a case. We have seen examples of, such as [this one](#), where people are able to use ChatGPT and Patentpal to workshop a potential invention and draft the patent specification, using carefully worded prompts. While this potentially presents significant opportunities to improve accessibility for small players, this fast-changing technology could also give rise to significant challenges, such as potential applicants using existing or yet to be developed tools to quickly generate a vast number of patent applications.

What is likely to happen if generative AI tools are developed further? If patent offices do experience flooding, what are the potential impacts? We already see issues posed to the IP system as "[patent thickets](#)" (a group of overlapping patents in a specific technology field), "[defensive patenting](#)" (collecting patents to use as a defence if sued), or "defensive publication" (publishing information in the public domain to establish prior art). Will these issues grow or evolve when specialised generative AI tools are available for all (large and small players) to use?

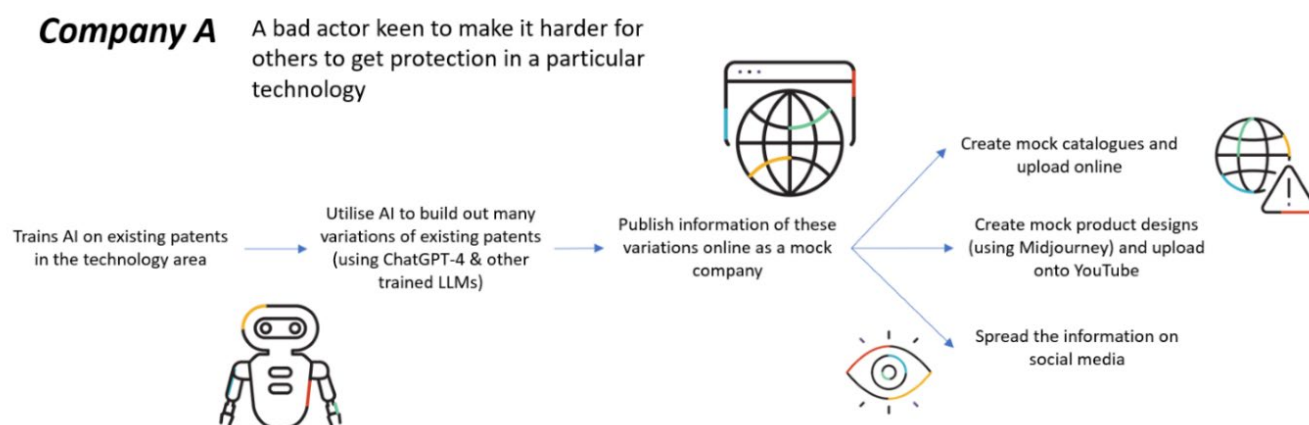
To demonstrate how quick and easy it can be to generate multiple patent documents, we asked ChatGPT and ChatGPT Plus to create many variations of a single inventive concept and it was surprisingly simple to do. Table 1 below shows a short excerpt of the conversations. Note the difference between the two, where ChatGPT Plus produced a noticeably more creative response! Refer to the [Annex 1](#) and [Annex 2](#) to read the full conversations.

Table 1: Excerpts of conversations with Chat GPT and Chat GPT Plus	
Prompt	
Below is a patent claim of a thermal management system for electronic components: A multilayer phase change material composite structure comprising a first layer comprising a supporting structure comprising pores; and a phase change material positioned within the pores of the supporting structure a second layer comprising a fire retardant material. Please generate twenty different variations of the above patent claim, all within the area of thermal management systems for electronic components. Each variation must be an independent claim.	
Excerpt of response from ChatGPT (9 claims generated)	Excerpt of response from ChatGPT Plus (20 claims generated)
<ol style="list-style-type: none"><li>1. A thermal management system for electronic components, comprising a multilayer phase change material composite structure comprising a first layer comprising a supporting structure comprising pores; and a phase change material positioned within the pores of the supporting structure; a second layer comprising a fire retardant material; wherein the multilayer structure is configured to efficiently dissipate heat generated by the electronic components.</li><li>2. A thermal management system for electronic components, comprising a multilayer phase change material composite structure comprising a first layer comprising a supporting structure comprising pores; and a phase change material positioned within the pores of the supporting structure; a second layer comprising a fire retardant material; further comprising a heat sink attached to the multilayer structure for enhanced heat dissipation.</li></ol>	<ol style="list-style-type: none"><li>1. An electronic component cooling structure, comprising a base layer having a porous matrix; and a phase change compound located inside the porous matrix; an additional layer containing a flame resistant substance.</li><li>2. A layered thermal regulation structure for electronic components, consisting of an initial layer with a permeable scaffold; and a phase transition substance contained within the scaffold's permeability; a subsequent layer composed of a fire inhibiting material.</li><li>3. A composite material for managing heat in electronics, which includes a layer one consisting of a pitted framework; and a phase shifting material filled within the framework's pits; a layer two consisting of a combustion-resistant compound.</li><li>4. A thermal conductive structure for electronic parts, made up of a principal layer with an aerated structure; and a phase change material accommodated within the aerations of the principal layer; a secondary layer made up of a fire suppressant agent.</li></ol>

As discussed earlier we expect to see continued improvements in this technology and the availability of specialised tools. We can expect to see more examples where people are using readily available generative AI tools to quickly generate entire specifications. Furthermore, we can expect bad actors to use this technology to their benefit by flooding the IP system with prior art and their own patent applications to intimidate and block competitors in the same technology area.

While the high cost of patenting might deter the average innovator from taking these approaches, below are some examples of flooding which may be more feasible and are more likely to occur. Figure 5 below demonstrates a first scenario focussing on a company which merely seeks to flood common prior art sources on the internet.

Figure 5: Scenario demonstrating flooding of prior art



A real example of this scenario is [All Prior Art](#), a project that algorithmically creates new prior art and publicly publishes it online to ensure those concepts are not patentable. The intention behind this is to democratize ideas, initiate change in the patent system, and pre-empt patent trolls. Similarly, [Damien Riehl and Noah Rubin](#) provide an example of how this can be achieved in the copyright space. The two programmer-musicians algorithmically determined every possible melody contained within a single octave, and then released it to the public as a tangible format, so that it is protected by copyright but under a creative commons license. The purpose of this is to forestall instances of copyright laws being used to stifle the creative freedoms of artists.

Both these situations involve foreseeing the issue of creators' and innovators' work becoming restricted by bigger players who can quickly and cheaply create monopolies using generative AI. They are adopting the emerging generative AI technology and developing it for their own purposes to flood the IP system, but for the opposite reasons to the bigger players – to maintain a society where humans have the freedom to create and invent without undue restriction. However, these examples demonstrate how easy it might be for individuals to shape and influence the IP system under its current parameters. There may be some initiating these public facing experiments with good intentions, but there may be those willing and motivated to carry out similar uses of generative AI for strategic or competitive reasons that ultimately result in congesting the wider IP system and causing disruption downstream.

Figure 6 below demonstrates another scenario where different players motivated for different reasons use “defensive publication” to flood patent prior art databases. This can be done by filing many applications with IP Australia but could also be achieved relatively cheaply and quickly by filing in countries where there are lower filing fees, requesting early publication, and avoiding examination altogether. The purpose of such a strategy might be to flood a particular technology area with a vast amount of patent applications so that competitors or emerging players struggle to get gain protection in that same technology area. Thus, a bad actor achieving this will have little competition and can quickly achieve dominance in the technology area.

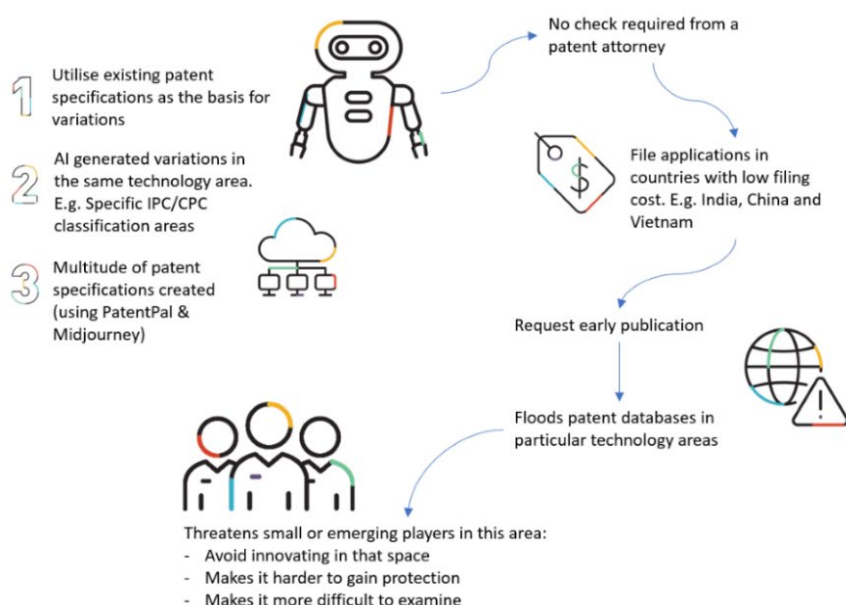
Figure 6 Scenario demonstrating flooding of patent applications

### Company B

Utilising defensive publication  
(e.g. IBM)

### Company C

Patent troll keen to suppress  
competition, bought out  
another company with a  
valuable patent in a niche  
technology



Such actions to flood particular technology areas with patent applications could potentially influence the structures of those industries. The larger players using generative AI to achieve flooding could extend their dominance over small and emerging players, forcing those players to move out of those industries or avoid them for fear of the risk in working in a challenging environment and having to deal with reoccurring oppositions and litigation. Furthermore, the smaller players that do manage to stay in such industries, are only able to due to the success of their highly impactful innovations and due to the obtaining appropriate financial backing to support them. Such an environment could become highly competitive, making it difficult for a variety of players to thrive and resulting in less options being available to customers.

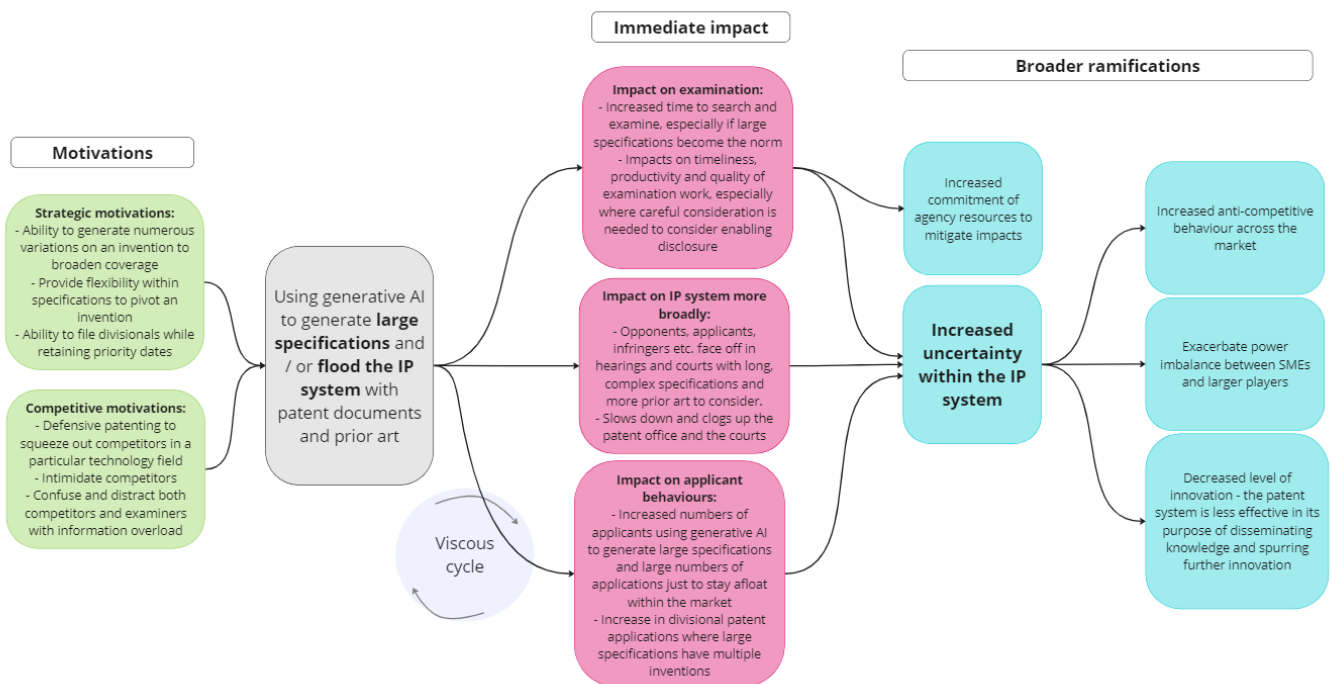
## Motivations and impacts

For some patent applicants, like Fatima, simply having access to a technology that readily allows them to generate a large specification or numerous patent documents is enough to give it a go, potentially saving time and money along the way. Of course, there are also some applicants who will have specific motivations for doing so, for philosophical reasons (as discussed with All Prior Art and Damien Riehl & Noah Rubin above), but also competitive and/or strategic reasons to grow their position and achieve a monopoly within their technology areas. Generating vast numbers of long specifications may help those parties achieve their goals, but the possible flow-on effects have the potential to be quite wide-ranging and damaging.

Flow-on effects such as lengthening the time it takes to reach a granted patent and the time it takes for patent law judgements to be handed down, as well as diminished competition and reduced levels of innovation. This all adds up to increased uncertainty within a congested IP system as it will no longer be functioning as intended: to help disseminate knowledge and spur further innovation. Such an eventuality could have wide-ranging effects on society but would especially impact SMEs like Fatima who rely on the patents system operating efficiently and with a certain level of certainty. Figure 7 below explores these possible impacts in detail.



Figure 7: Exploration of the motivations and impacts of using generative AI



The extent of these impacts has the potential to be disruptive for the IP system, as well as the wider market where innovators are trying to protect and commercialise their inventions. These also raise questions about whether a stance could be taken on disregarding AI generated content as prior art or refusing to examine an AI generated patent applications in order to address impacts explored above. However, this raises many questions, and decisions either way could have serious impacts.

The impacts discussed above have the potential to be very detrimental to the current understanding of how the IP system should operate. If we are to leave the patents system in its current form, there will be nothing stopping bad actors from using generative AI tools for strategic and competitive gains, and thus nothing to hinder the eventual impacts. Furthermore, IP Australia (and all other IP offices) would be rewarding these bad actors by granting them monopolies, but is this the best (or an ethical) approach? Should restrictions or regulations be applied to limit the application of generative AI when it comes to drafting patent specifications, thus avoid rewarding behaviours with damaging impacts? Should we focus on technological solutions to address the impacts of generative AI rather than attempting to control a fast-developing technology?

## Options and potential responses

The following options have been identified as possible responses to the issues illustrated in the above scenarios.

### Technological controls instead of strict regulations

Technological controls could be adopted to effectively mitigate risks by assisting the processing of larger and more numerous applications. For example:

- Utilise technological solutions to improve efficiency of examination processes,
- Identify unnecessary noise in the prior art, and/or
- Assist external users to navigate the prior art database.

The implications of such controls include encouraging technological progress, leading to greater productivity and economic benefits. Furthermore, customers with access to adopted technology will be better equipped to engage with the IP system, thereby spurring further innovation. However, such controls could lead to potential technological arms race between administrators, users, and bad actors, that could impact or undermine the IP system, creating negative externalities. Finally, it is important to note that purely technological solutions are rarely perfect in mitigating risks and could result in these solutions glossing over underlying problems.

*“If there are 15,000 citations referenced, does there need to be assessment of what to actually look at? Don't need to use the usual process of considering every single prior art citation.”* **CEO, patent analytics**



*“If there are 15,000 citations referenced, does there need to be assessment of what to actually look at? Don't need to use the usual process of considering every single prior art citation.”* **CEO, patent analytics**

### Guardrails, nudges and smaller regulatory changes

Small regulatory changes could be made to focus on discouraging large specifications and applications flooding our system. For example, using tailored fee structures to:

- limit large specifications based on size,
- impose additional costs beyond certain numbers of applications per applicant, and
- introduce examiner interviews to filter similar or trivial innovations by getting a human representative to defend the application.

Implementing such guardrails could minimise constraints on technological progress while allowing genuine innovation and reducing ability of bad actors to game the system. It allows for the ability to test, monitor, and set thresholds and manage how much we let in and leave out of the IP system. A trade-off is that such changes may only discourage smaller players from abusing the IP system in this way. Larger players with greater knowledge and resources may be unhindered and could continue abusing the IP system. Furthermore, the inclusion of additional complexities may deter new innovators. However, this could be mitigated by providing exceptions and incentives.

*“Think about what makes dissemination better and what makes it worse, quality of patents is severely at risk without safeguards.”* **Academic, intellectual property and AI systems**



*“Think about what makes dissemination better and what makes it worse, quality of patents is severely at risk without safeguards.”* **IP Academic**

## Regulatory interventions

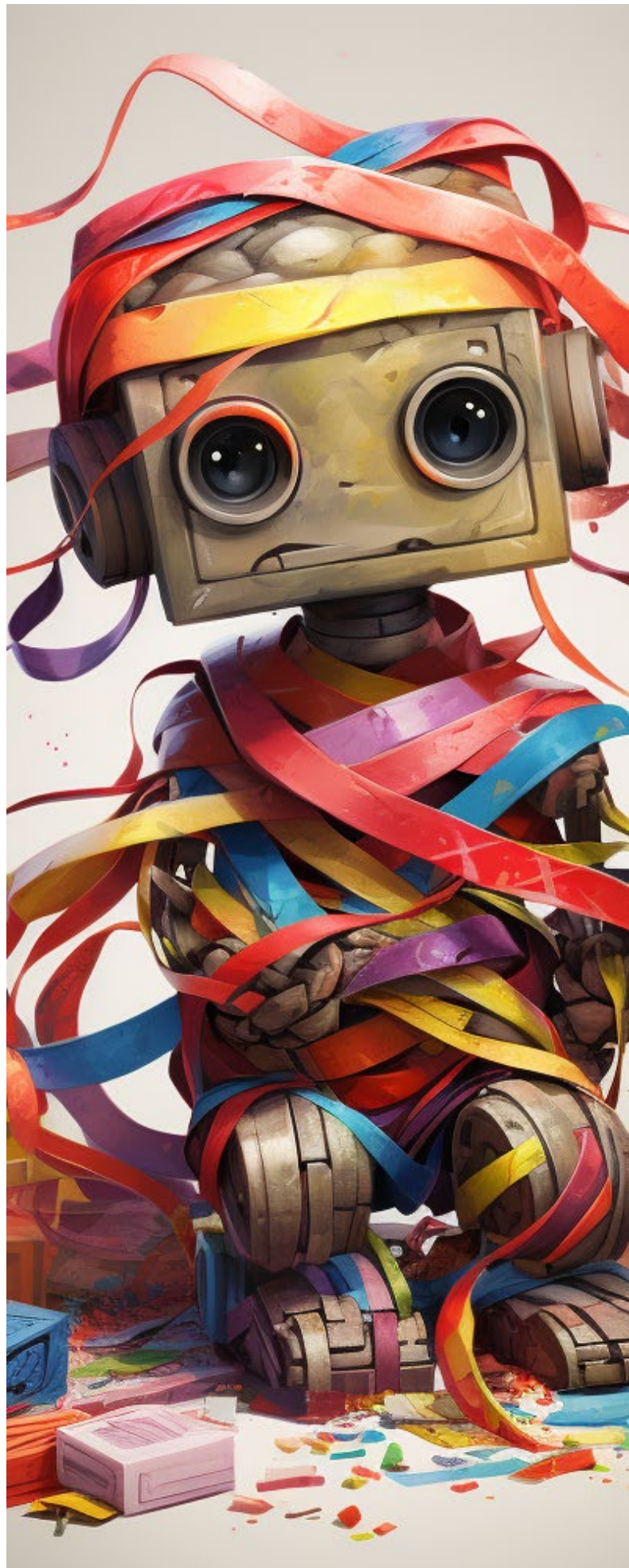
Strict laws and regulations could be introduced with the intention to prohibit large specifications and the filing of too many applications within a given period. For example, limiting specifications to a maximum number of pages, with fixed page spacing, margins, number of characters. Compulsory use, commercialisation and licensing requirements could limit the ability of well-resourced applicants continuing to renew low value patents. Furthermore, refreshed policies or regulations could allow for effective licensing arrangements, especially to support smaller players that may otherwise struggle to compete with larger players that can easily achieve dominance in the market.

This could introduce further requirements that applicants need to consider, resulting in extra work at the formalities stage of assessing patent applications. At the same time, it could decrease bad actors abusing the patent system in this way. Strict regulations are likely to be much more effective at minimizing predicted impacts and harms to the system. The effectiveness can be strengthened by applying regulations downstream of the patent journey, minimizing impacts on entering the system, while mitigating risks in terms of outputs to the system.

However, laws and regulations can take time to implement properly. If rushed, there is a risk of missing loopholes, not addressing root causes, or not being responsive to future change. As discussed with small regulatory changes, small changes to the system may add complexity to an already complex system, thus increasing the burden on SMEs to navigate the patent system.

*“There is potentially a need for some regulation here – if it’s being used to flood or prevent someone obtaining a patent, if it appears to be used in some malicious manner to prevent competition, what if someone is using it to affect a company’s share price?”*

**Legal professional, IP counsel**



Midjourney prompt: messy ribbons around a little robot, plain

# Key questions

This set of scenarios explores challenges and impacts on the patents system as actors make use of (or abuse) generative AI to achieve their strategic or competitive aims. However, this exploration is not exhaustive. As generative AI (and AI more broadly) evolves, we are faced with critical decisions about the future of the patents system and the IP system more broadly. Some of the key open questions related to these issues include:

- If generative AI continues getting better at developing and drafting patent specifications, what does this mean for the future of patent specifications?
- The patents system's purpose is to foster innovation, but if generative AI creates an overload of information within and around the system, we risk diluting valuable information and making it inaccessible. Do we take more drastic action to protect SMEs and more vulnerable innovators?
- Should we apply regulatory control to mitigate potential harm, or should we let the situation evolve and apply technological solutions?
- Should the purpose of the patents system be revisited if its purpose to disseminate knowledge is going to be threatened with the rise of generative AI?
- How could IP Australia mitigate the harms because of unforeseen issues?

## Signs to look out for

What are the developments or evidence that might be most relevant to this path playing out? With these potential changes and challenges to the patents system in mind, below are some indicators to look out for that may suggest generative AI is being used by applicants as they engage with the patents system.

- An increase in generative AI tools specialised in IP and patents, indicating that the technology is developing further, and becoming more advanced and accessible.
- Patent attorney firms noticing a change in the amount of information clients provide to them or change in the services clients require of patent attorneys.
- Increase in applications being filed by the same applicant within a single technical field, especially where an applicant previously used to only file single applications. This could be an indication that the applicant has changed their IP strategy with the help of generative AI – possibly to become more dominant in their technology field or compete with a competitor that is increasing in dominance.
- Examination staff reporting significant more time is needed to perform searches due to an increase in prior art, possibly suggesting that generative AI is being used to create and publish online content.



## So what?

What do these scenarios raise about the patents system and the wider IP system? There are currently ways in which powerful companies can achieve dominance in particular technology areas, which make it harder for smaller companies, and especially SMEs, to innovate in those areas. However, this issue is likely to be magnified if investment and development into generative AI continues. Furthermore, there is the additional incentive for these larger companies to use generative AI in this way, since IP system will reward them with a monopoly. But should the IP system continue to operate in this way? The controls and regulations within the IP system may have to be revisited to mitigate these affects, but also to ensure the system does not become congested so that it cannot operate as intended.



*Midjourney Prompt 2: Large pile of documents, robotic workers, more documents falling on pile, overwhelmed.*

# AI-enhanced patenting: a double-edged sword for small-to-medium-enterprises?

## What does this mean?

SMEs can be an important contributor to the patent system, and patents can be significant contributors to the economic success and growth of small-to-medium-enterprises (SMEs). However, their ability to contribute is rarely at the same level as larger enterprises.

Rapidly evolving generative AI landscape presents opportunities for new business models that could better facilitate SME access to the patent system. For example, generative AI tools could be used for exploring white space opportunities to innovate, speed up patenting process (application to grant), and analyse market trends for commercialisation.

Imagine a future where IP Australia implement AI-enhanced business models from education and awareness, patent application through to granting and enforcement. How would this change in business models impact the SME ecosystem? Would all SMEs be able to positively engage with these changes? And what are the implications on their businesses?



*Midjourney Prompt 3: Futuristic, double-edged sword, neon light, weapon, blade, serrated edge*

# The scenario

Meet small business owner Emily, who recently founded a start-up specialising in electrical systems, and small business owner Mark, who has a background as a backyard inventor and running an electrical business producing solar lights for his local area.

## Part 1: Ideation

Emily is a proactive entrepreneur who always looks out for opportunities and understands and manages risks effectively. She is open-minded and embraces new technologies for the betterment of her business and the society, constantly exploring white space opportunities for new inventions. Emily uses an open-source generative AI tool for white space analysis, to analyse market trends and generate new ideas. She uses these tools to augment her ingenuity to achieve efficiency (using GPT-4 model, [Annex 3](#) illustrates the capability of current general purpose LLM's of doing such tasks).

Mark, on the other hand, is less excited by the potential opportunities new technologies such as generative AI could bring forward. He continues with his usual approaches to come up with new ideas and innovative designs which have served him well in the past.

With the evolution of generative AI tools, the disparity between SMEs Emily and Mark's innovation journey becomes increasingly pronounced. Emily successfully leverages various tools and resources to accelerate her innovation pipeline, resulting in significant time and cost efficiencies. Conversely, Mark's progression through similar stages of the innovation journey proves to be more time-consuming and costly due to his slower adaptation to the evolving technology landscape.

While generative AI tools have assisted Emily's company to speed up their ideation process, this new ideation landscape presents significant risks such as:

- Potential for unintentional infringement of already protected inventions or data
- AI hallucination (where the AI tool generates nonfactual information)
- Biased datasets overlooking potential prior art, and
- Unintentional exposure of the invention to public before filing a patent.

Being proactive in understanding and managing risks, Emily consults an "innovation hub", a new facility to support SMEs in light of the new opportunities provided by generative AI. Through the innovation hub, Emily learns about the SME-portal that educates SMEs through the patenting journey, highlighting opportunities for using generative AI in patenting process and potential risks associated with them.

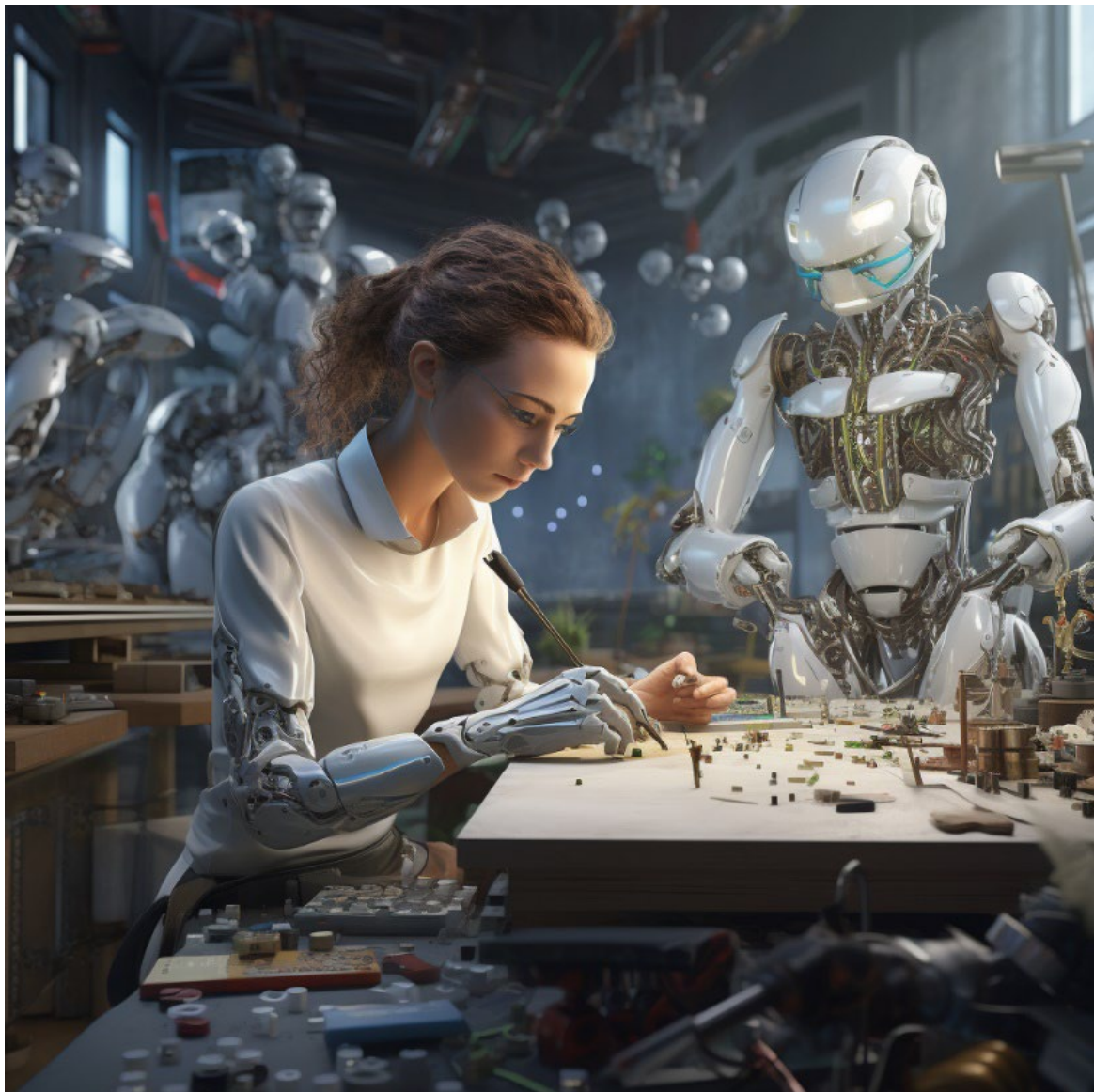
## Part 2: Patent application and examination

With a promising invention at hand, Emily embarks on the patenting journey using the support provided by the innovation hub and the SME-Portal. The benefits of generative AI tools become evident as they simplify and democratise the patenting process, making it accessible to SMEs. Emily uses these tools to streamline the drafting of her patent specification by automating the generation of technical descriptions, claims, and even visual representations of the invention (using GPT-4 model, [Annex 4](#) illustrates capability of current general purpose LLMs of automatically generating patent claims for an invention. [PatentPal](#) is an example of a current AI tool that can convert patent claims into a complete specification).

While the patent drafting becomes more efficient, Emily faces challenges in understanding the intricacies of using AI within the patenting process and ensuring compliance with the legal requirements set by IP Australia. As suggested by the SME portal, Emily decides to engage with a patent attorney to resolve her questions. Her use of generative AI



tools early in the journey helped save her time, effort and resources and prepare herself for the engagement with the attorney. The attorney finds Emily's preparedness very helpful to speed up the process.



*Midjourney prompt 4: Female inventor using tools in a workshop, little artificial intelligence robots doing small tasks in the background*

Through her engagement with the SME portal, Emily learns about the new AI-enhanced patent application process integrated into the SME portal to streamline the patenting process for SMEs. The portal includes appropriate guidance on ethical and responsible use of generative AI tools, as well as instructions on how to navigate through the new process, which helped reduce uncertainty and improve Emily's confidence in using these new technologies.

Upon filing a standard patent application with IP Australia through the AI-enhanced streamlined patent application process, Emily and her attorney are notified almost instantly of minor formality issues in the application. The notification provided details on each issue and how to fix them, referring to the relevant legislation and specific requirements. This helps the attorney to quickly resolve the issue on the spot. The attorney finds this very useful to speed up the application process, and that it allows them to focus on adding value to the case rather than focusing on compliance. For example, the patent attorney can devote more time to check the claims scope is wide enough to give the invention a competitive edge, and ensuring there are no errors fatal to the success of the application.

During examination, Emily and her attorney receive correspondence from IP Australia through the AI-enhanced application process allowing them to work together to draft their response and submit the response from the same tool, making the process efficient and seamless. After several back-and-forth communications with the examiner and further amendments to the patent claims, Emily's team get their patent granted within one month of the first examination correspondence.



Overall, Emily finds the experience a rewarding and efficient journey that helps her set up her business for future success.

**Meanwhile, Mark, a non-technical person, comes up with a new solar lighting system tailored to the needs of his local area,** and one of his friends encourages him to apply for a patent, referring him to IP Australia's innovation hub.

Mark consults the innovation hub, but he opts not to engage with the tools provided by the SME portal or the online educational materials. He is focused on his new invention and is disinterested in the intricacies of the requirements of the patent system. He embarks directly on the AI-enhanced patent application process. Despite the challenges and complexities of navigating through the new AI-enhanced application process, Mark decides not to engage a patent attorney due to costs and a can-do attitude, ignoring the suggestion of a friend that it might be a worthwhile investment. Juggling with his day-to-day business matters, it takes Mark months, and a lot of late nights, to complete his patent application.

While Mark's invention had a high potential for gaining a patent, the examination process takes longer for Mark's application due to delays in responding to examiner objections. Mark finally ends up going through the Divisional application pathway to buy more time to get a granted patent, making the process a prolonged and tedious experience for him.

### Part 3: Post grant and commercialisation

Upon successfully securing a granted patent, Emily starts leveraging the opportunities with AI tools as introduced to her by the SME portal. These tools accelerate the commercialisation process by automatically identifying potential licensees, analysing market demand, identifying target demographics and geographics for commercialisation, and suggesting strategies for product development and marketing. Education and awareness materials in the SME portal helped Emily recognise the risks of using these tools and do the due diligence.

Mark's lack of engagement with new technologies comes at a significant opportunity cost for his business. This is amplified further at each stage of his innovation journey, from ideation all the way through to commercialisation. By the time he finally receives a patent for his solar lighting system, a competitor has already acquired the local market with a similar product leaving Mark even more disappointed.



*Midjourney Prompt 5: Robot invention, realistic,*

# Options and potential responses

The following options have been identified as possible responses to the issues illustrated in the above scenarios.

## Continuously adapt policy

One option could be to develop policies to level the playing field between SMEs and larger players in IP. These policies could raise awareness among SMEs of the services offered by IP Australia and how generative AI tools could be used in the process of seeking protection. Risks associated with these generative AI tools could be managed by developing policies in collaboration with other players in the ecosystem, such as patent attorneys and education institutes, while considering the interests of attorney profession.

## Continuously enhance service offerings

This could involve enhancing the features of the SME portal to provide tailored guidance to SMEs based on their digital literacy and providing enhanced toolkits and resources in collaboration with other government agencies and the attorney profession.

## Launch public education campaigns

This could involve increasing reach to the broader ecosystem and better engaging and educating SMEs to adapt their business to the evolving landscape, and to be ready to capture opportunities and be aware of the risks they present.

This could also involve providing SMEs with insights into the possibilities of harnessing domain-specific AI solutions aiming to counteract the advantages enjoyed by large and well-resourced entities. Large entities often benefit from access to sophisticated AI tools and extensive data sets making it easy for them to acquire different domains. This approach emphasises harnessing depth of expertise in a specific domain to deliver domain specific solutions thereby providing a competitive advantage for SMEs enabling them to compete more effectively with large entities.

## Initiate Public Private Partnerships

This could involve partnering with private sector actors in the ecosystem to provide relevant support for SMEs in light of the changing context.



*"SMEs are looking for more trust from the Government."* **Co-founder of Australian technology start-up**



*"Support SMEs to reduce cost involved by automation (application to prosecution)"* **IP Academic**



*"Develop something using AI to help SMEs understanding the importance of IP protection."* **Owner of a global consulting firm**

## Key questions

The scenario raises some key questions, including:

- To what extent IP Australia should integrate generative AI into their end-to-end patent application process?
- To what extent IP Australia should involve in educating and supporting SMEs on generative AI tools for patenting process?
- What would the response be from the patent attorney profession on the level of SME support IP Australia might be able to provide in future using AI-enhanced tools?

## Signs to look out for

What are the developments or evidence that might be most relevant to this path playing out?

- Increased lapsing rate of patent applications filed by private applicants.
- Prolonged examination period of patent applications filed by private applicants through the AI-enhanced application process.
- Decreasing rate of patent filings from SMEs.

## So what?

As generative AI technologies continue to advance, a plethora of opportunities will emerge to modernise the patenting process, aiming to enhance its quality and efficiency. This rapidly evolving landscape, however, can present varied implications, especially for the least represented entities within the ecosystem. Consequently, patent administrators such as IP Australia will need to consider their role in stewarding the transformative potential of these generative AI tools, and what their deployment might mean for SMEs within the patents system. This, in turn, stands to have substantial ramifications on Australia's economy; a thriving SME sector will be instrumental in driving job growth, fostering technological advancement, and cultivating a culture of innovation, thereby promoting prosperity for all Australians.



*Midjourney Prompt 6: Robot Saviour, hopeful standing on hill, light behind*



# Protection of AI generated works

## What does this mean?

As we stand at the threshold of the era of artificial intelligence, some of the most pressing questions for the patents system (as well as the IP system more broadly) concerns the protection, inventorship and ownership of AI-generated works. These issues are intrinsically tied to how we perceive and value creativity, innovation, and the act of invention itself. In this provocation, we will explore major considerations and potential decisions for the IP system on these topics, and what their long-term implications might be on the innovation ecosystem.

The debate around AI-generated works is not merely academic but has profound real-world implications that span economic, human, and global dimensions. The immediacy and scale of these impacts are starting to be more apparent. However, given the speed at which AI is developing, it is evident that the stewards and stakeholders in the patent system need to be proactive in keeping abreast of developments, understanding implications on the system, discussing long term goals and vision of the patent system, and shaping it to evolve accordingly to foster innovation and provide benefit to society.



*Midjourney Prompt 7: artificial intelligence weaving into our economy --no humans*



# The scenario

## Advancing technology, creativity, and economic outcomes

Generative AI is continuing to demonstrate its ability to amplify creativity and innovation in society. There have been discussions about potentially transformative impacts on innovation within the healthcare industry ([WEF: How will generative AI impact healthcare](#)), while some artists are already talking about how it can help them experiment with their ideas and shift their focus on more important parts of the creative process ([HBR article: How Generative AI Changes Creativity](#)).

The principle of incentivising and rewarding “effort” for innovation is one of the common arguments in support of the patent system. However, when we consider innovation through the use of generative AI does it apply equally? Given generative AI enables generation of ideas at scale, speed, and ease, do the same principles apply when we consider whether it is appropriate to allow AI generated works to be patented?

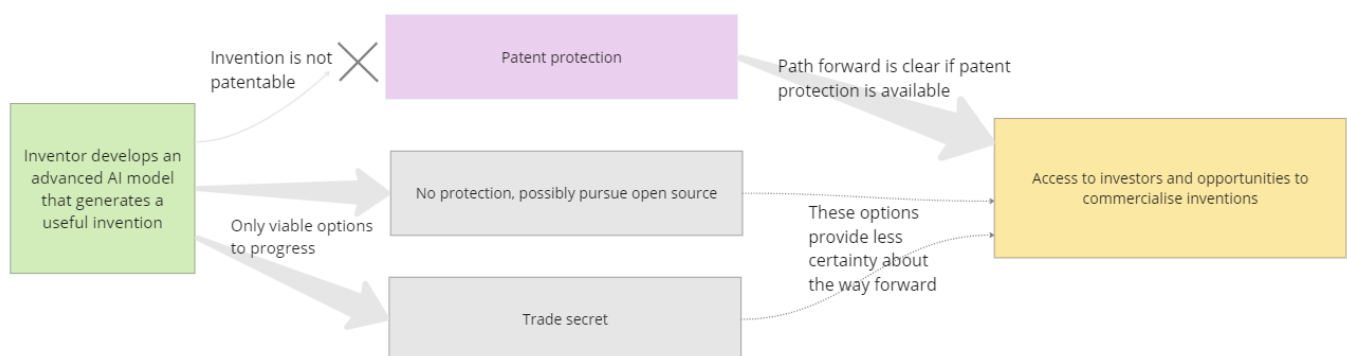
If AI-generated works are not afforded protection, innovators and organisations may resort to protecting their inventions through trade secrets, avoiding protection altogether, or even result in lost innovation opportunities that might have otherwise occurred if they were afforded protection. This shift could limit the dissemination of knowledge, when the sharing of ideas, methodologies, and findings fuels the engine of learning, leading to a richer innovation ecosystem that benefits society. Providing protection to such innovation also makes it economically viable for such innovators to put their ideas into practice by applying it and / or commercialising it.

From a legislative and philosophical perspective, generative AI raises questions about what we allow to be protected, what we consider the threshold of inventiveness for protection, and whether we continue to provide protection in their current form (duration and scope). A few potential scenarios on the issue of protection of AI generated works are covered below.

### Scenario 1: No change

Only innovation which involves a human contribution is protected. In this scenario, there may be greater use of AI as a tool for human innovation, improving volume and therefore increasing the load on the patent system. The system’s ability to manage this information overload, assess patent applications, grant patents, is somewhat hindered by this increased volume, requiring technological intervention to redress these issues. However, the lack of protection of pure AI works increases the use of trade secrets, limits our ability to disseminate knowledge of this technology, and therefore reduces our ability to mitigate any risks. It also limits willingness for investors to put up investment against such innovations, and possibly encourages gaming of the system to pass off AI inventions as having a human contribution.

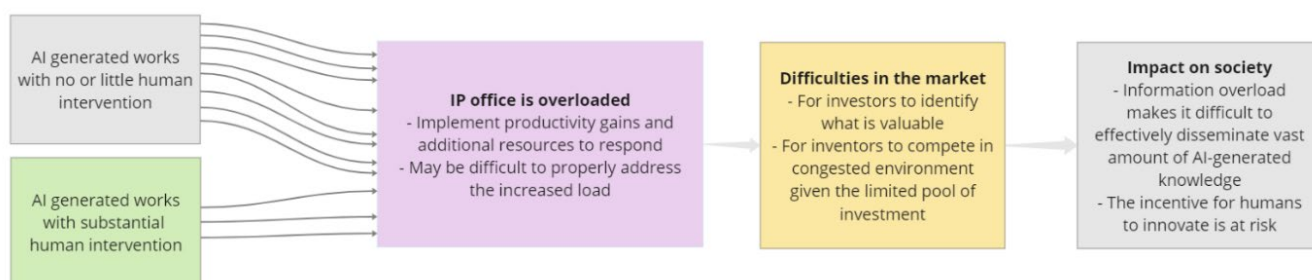
Figure 3: Scenario where only innovation involving human contribution is protected



## Scenario 2. Expand patent protection to AI generated works without human intervention

In comparison to the scenario above, this scenario would cause further additional strain on the patent system from the sheer volume of protection potentially sought by AI generated works. In order to maintain timely service and efficient operations, significant productivity gains would need to be found, or additional resources required (such as human capital and technology) to address this additional strain. This scenario would exacerbate the current struggle within the patent system in terms of knowledge dissemination for the benefit of society. However, this would improve transparency of innovation by opening these inventions to the public, improving the availability of knowledge, and allowing for greater scrutiny of inventions that would be otherwise hidden. This scenario may however impact human innovators and their incentive innovate (as discussed further below).

Figure 4: Scenario showing the impacts if patent protection is allowed for

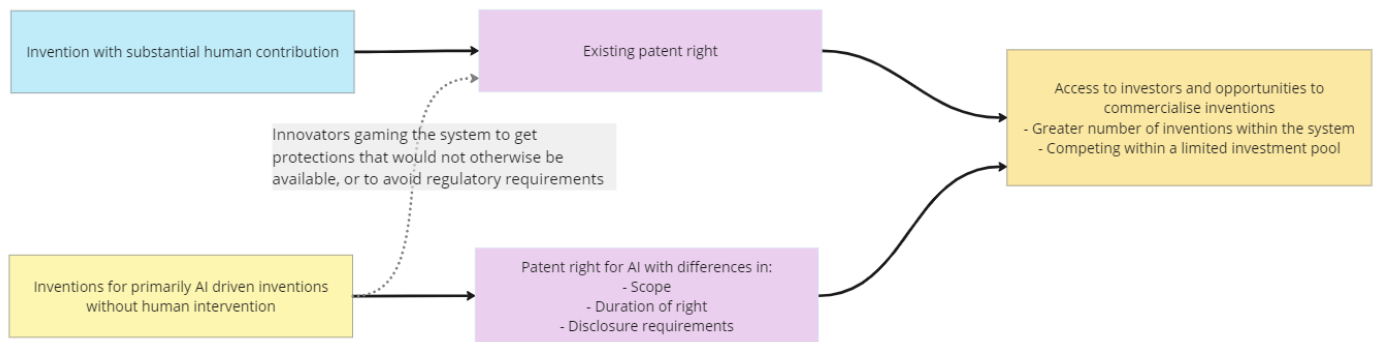


inventions, with or without the use of generative AI

## Scenario 3. Create a new right for AI generated works

In this scenario, AI-generated works are covered by a separate IP right, which is modified in scope and duration to account for the scale and fast-moving nature of the technology. In such a scenario, controls such as disclosure requirements could be introduced to improve transparency of AI outputs that apply to be protected, therefore ensuring that the data sources, models, and other inputs are open to scrutiny to mitigate risks and misbehaviours. In such a scenario, the two different pathways may form an effective mechanism to continue incentivising both human and AI generated inventions. However, it could just as easily have the opposite effect, where companies already utilising AI are unhappy with such a right, and some innovators continue to game the system to try and get protections (and possibly lower scrutiny) afforded by the existing system.

Figure 5: Scenario illustrating possible challenges if a patent right for AI was



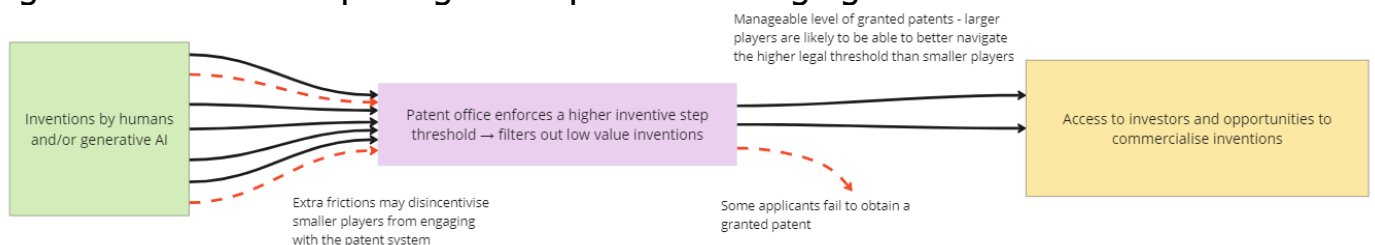
implemented

Such a right may possibly involve additional requirements, such as declaration requirements around use of particular models or data, mandatory licensing and commercialisation requirements, or downstream proof of practical application / commercial viability. However, like any mechanism that add frictions to the process, this will inevitably result in some innovators gaming the system to get around these requirements and smaller innovators potential avoiding protection altogether.

#### Scenario 4. Change the threshold of inventiveness and introduce requirements for protection of AI works

There may be a scenario where society decides that the volume of inventions within the patent system that is granted protection should be limited for the benefit of society. In such a case, we may choose to utilise legislative change to update the threshold of inventiveness accordingly. This mechanism may be effective in filtering low value inventions within the system, while keeping granted patent volumes at a manageable level. This could benefit large existing players in the IP system while disincentivising SMEs, given the existing frictions and burdens which they often find overwhelming.

Figure 6: Scenario exploring the impacts of changing the threshold of inventiveness



As detailed in the scenario above, additional requirements could be introduced in the system to further manage the volume of innovation entering the patent system, particularly in regard to those derived from generative AI.

#### Impact on human inventors

Protection of AI-generated works could also transform the landscape of human innovation. As AI systems become more sophisticated, capable of creating works that once required human ingenuity, human innovators may find

themselves competing against machines for IP protection. Given how capable and accessible these Generative AI systems are, it raises the question of whether recognising AI-generated works within the IP system could devalue human creativity, disenfranchise and disincentivise human innovators, particularly in regard to SMEs. This issue has been the subject of debate amongst a spectrum of experts, commentators, and stakeholders, who have raised a variety of potential scenarios, some of which are explored below.



## Scenario 1. The perils of information overload

In this scenario, the sheer volume of machine-generated inventions could inundate human innovators discouraging or demotivating human-led innovation. This could result in an exodus of human capital away from certain areas towards those less susceptible to AI-generated saturation. Certain sectors become so inundated with AI-generated innovations that it becomes challenging for human innovators to pursue IP protection, especially those within small and medium enterprises. This could effectively sieve out most human innovation through the sheer friction created by information overload.

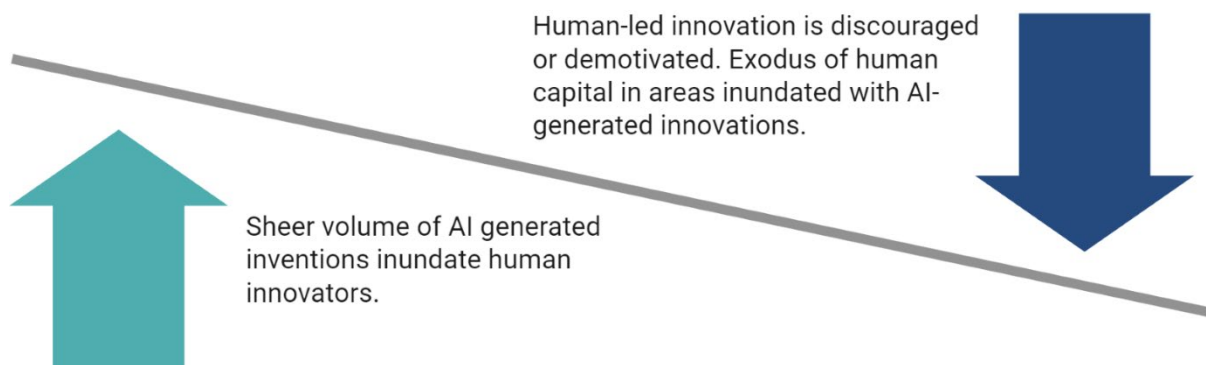
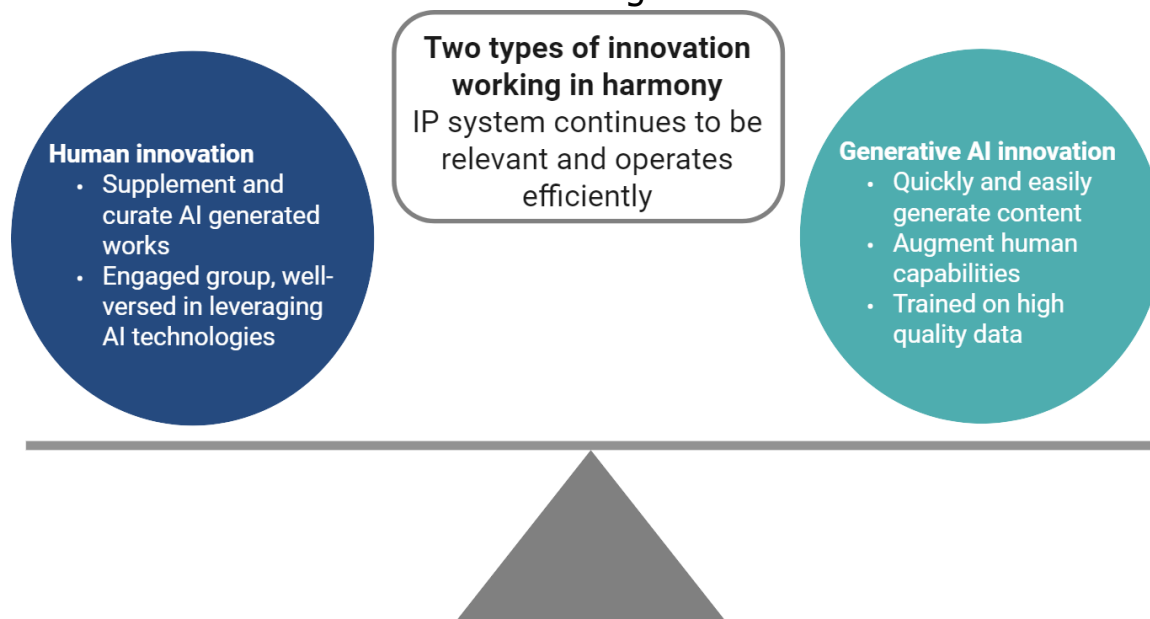


Figure 7: Potential impacts felt by humans due to information overload

## Scenario 2. Human innovation dovetails with Generative AI:

Alternatively, human innovation could pivot to function alongside Generative AI. This would involve humans supplementing and curating AI-generated works, thus mitigating the risks of being overwhelmed. This approach, however, requires an engaged and capable market that is well-versed in leveraging this technology. It also raises pertinent questions about the role of government and public sector entities in facilitating this transition. Under this framework, IP protection would continue to be relevant and incentivised, provided market players can effectively harness the benefits of this technology.

Figure 8: Harmonisation of human-led and generative AI innovation

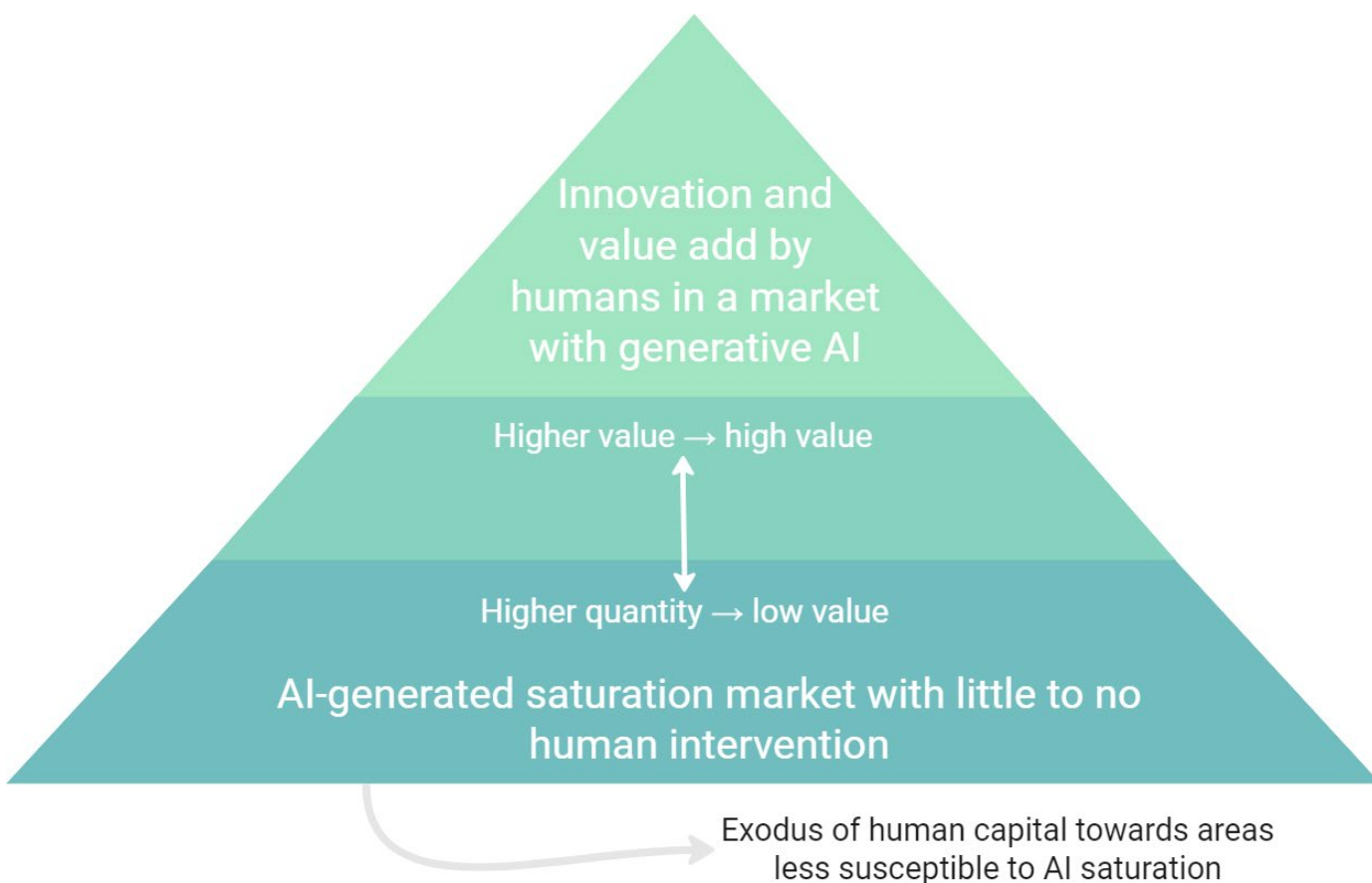


## Scenario 3. Human innovation commands a premium

Human innovation could alternatively command a significant premium and retain its value and recognition within society. This could result in a contraction of the market to include only those who can differentiate themselves and

effectively navigate the deluge of AI-generated content to exploit it to their advantage. While this scenario is not too different from that of Scenario 1, this scenario applies where there is market demand for this premium product or service.

Figure 9: The value of human-led innovation in comparison to generative AI



## innovation

We may see all three scenarios play out in differently across various sectors, industries, and markets. The impact of Generative AI on human innovation and intellectual property protection is an evolving landscape, replete with both challenges and opportunities.

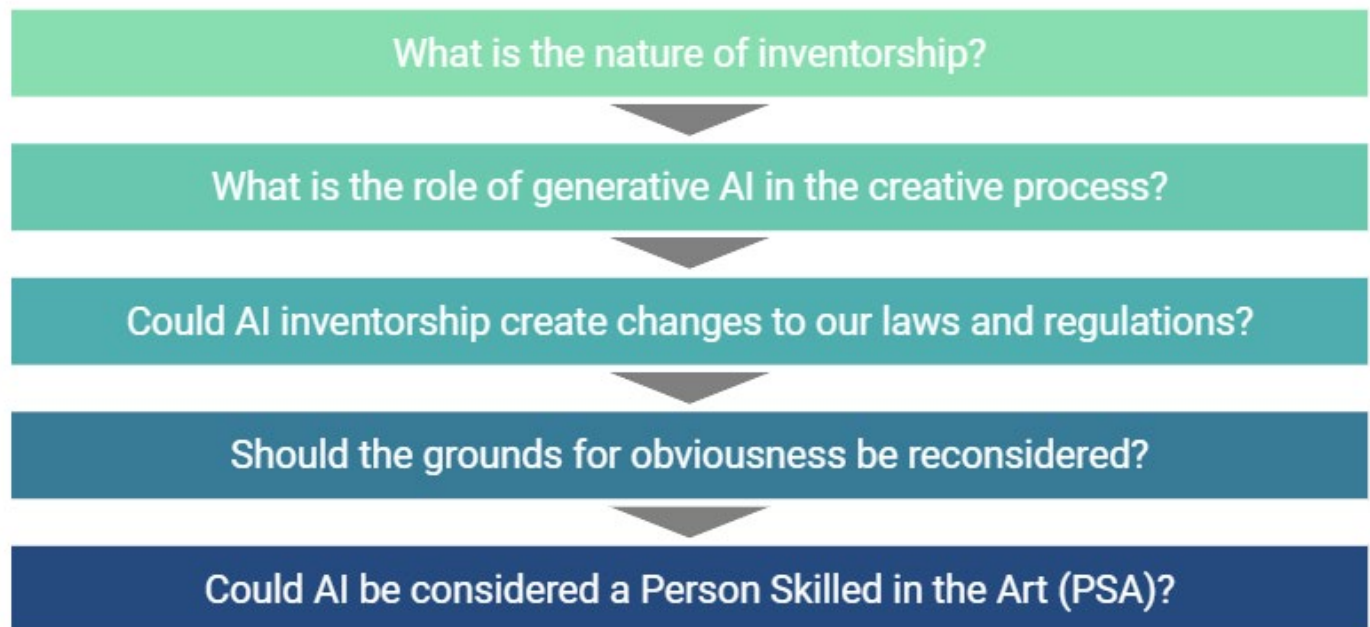
## AI inventorship

The idea of AI systems being recognized as inventors is a controversial topic. This has been demonstrated in the ongoing cases brought forward by Dr. Stephen Thaler across a number of jurisdictions for inventions created by his AI “DABUS”. In summary, most jurisdictions (including the US, EU and Australia) have ruled against AI inventorship on the grounds that the existing laws limit inventorship to natural persons.

Despite these setbacks, Thaler's case has sparked a global conversation on the concept of AI inventorship and its implications for the future of the patent system. It forces us to rethink the nature of invention and the role of AI in the creative process as mentioned previously. If we recognize AI as capable of inventing, we may need to reconsider what it means for our current laws and regulations. Consider the following [article by attorneys that explores an AI system called SYNTHIA](#). The recognition of AI inventorship could shape societal norms and expectations around AI. If SYNTHIA is able to utilise generative AI to provide evidence, can it be considered a Person Skilled in the Art (PSA)? If generative AI relies on historic data, perhaps everything generated by such AI would be a matter of routine? What does this mean for our Patents grounds for obviousness?

These issues and implications were of immediate concern for most stakeholders, given the potential disruption to the current system. There is curiosity however around what this might mean for the application of patent laws and regulations in the future as it develops further. However, in regard to the specific issue of who is listed as the inventor on a patent application, most stakeholders argued this was less a concern and more of a philosophical issue instead.

Figure 10: Questions to consider on AI Inventorship



## Ownership of AI Generated Works

The question of who owns AI-generated works is as complex as the technology that creates them. While there is no specific patent provision on computer generated works, the current legal landscape provides a certain degree of clarity on who owns AI-generated outputs. At least within Australia and the UK, AI cannot be an inventor for a patent. Furthermore, patent rights typically originate with the inventor with anyone claiming ownership requiring a valid “chain of title” tracking ownership originating with the inventor(s). Ownership therefore relies on the human inventorship. The following [article provides some detail on the issue of AI generated works](#).

The question of who **should** own AI-generated works is far more complex and nuanced. The debate around this issue is ongoing and can be seen from several perspectives. For instance, some argue that the AI should be considered the inventor since it is doing the creative work. From a human perspective, there are several other players that make a substantial contribution to the output. This could include developers of the AI, those that own the data used as inspiration for generated output, developers of the training algorithms that allow the generated output to improve to a level which is useful, to the user who prompts the AI as they initiate the creative process (much like a photographer or producer framing the scene and pressing the button).



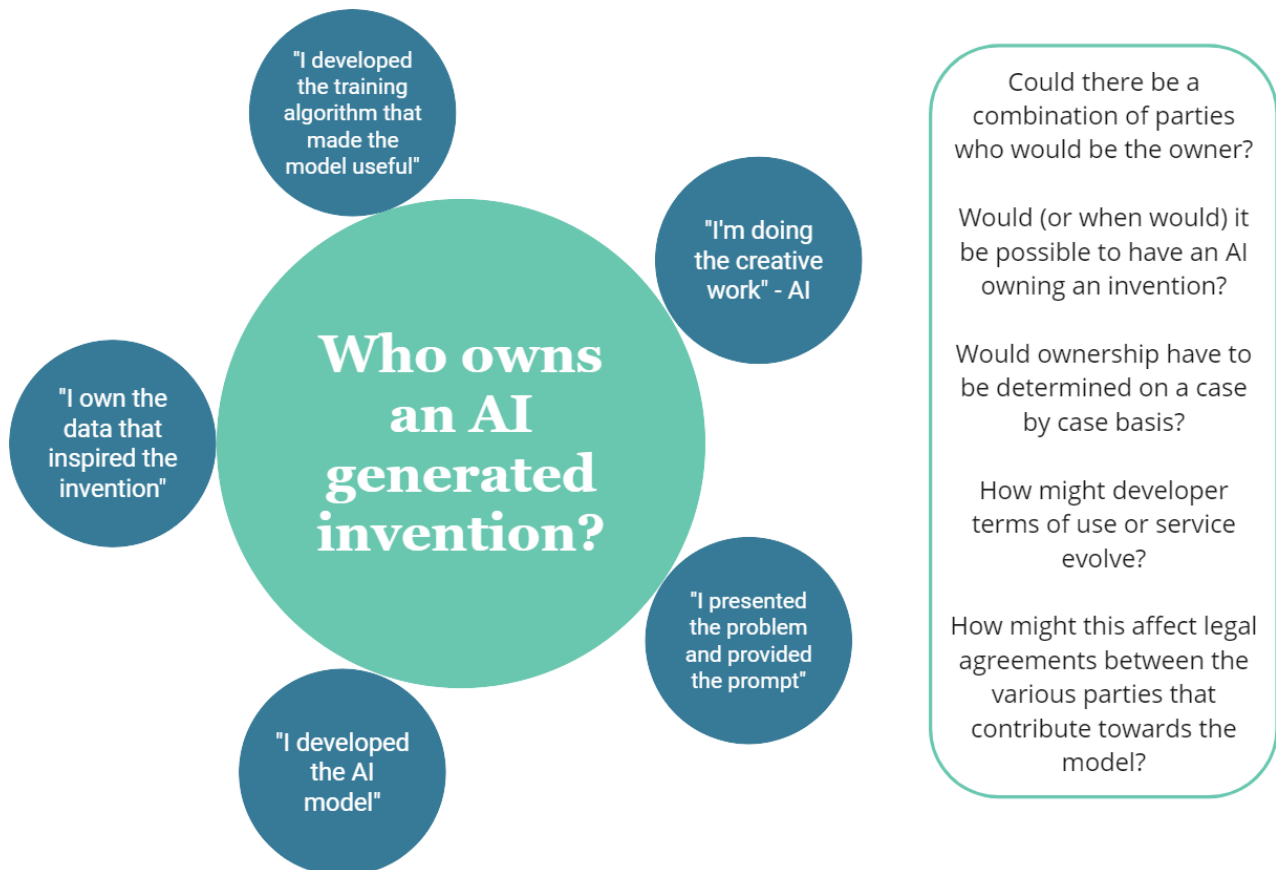


Figure 11: Several perspectives to consider regarding ownership

## Liability of AI generated works

Generative AI introduces a host of legal and ethical considerations. One key consideration is the issue of liability stemming from the use of the tools and the final outputs that they produce. Developers of these tools typically employ 'Terms of Use' agreements to indemnify themselves, placing the liability burden on the users. Yet, this situation introduces significant complexities around liabilities, particularly when the tool causes harm, and determining accountability becomes a challenging endeavour. Consider the following scenarios:

### Liability from inaccurate, misleading, or harmful outputs

The potential for AI systems to produce misleading or harmful content is currently a pressing issue. Imagine if a healthcare AI tool hallucinates an incorrect diagnosis with serious consequences. While the user (medical practitioner, or perhaps self-serve patient in the future) should undoubtedly exercise caution, where does liability lie where this results in harm? We've already seen this play out in Australia where ChatGPT falsely stated that a [whistle-blower to a bribery scandal was instead labelled the perpetrator](#). Lawyers representing the person involved sent a "concerns notice" to OpenAI in preparation for a potential defamation lawsuit. Now imagine the scenario where a naïve user stumbles across this output and shares this information with others. Who is liable in this situation? According to ChatGPT's terms of service, the user would hold liability and indemnify ChatGPT. Forbes explores this issue further in ["When you use ChatGPT you could be legally liable, AI ethics and law experts warn"](#).

### Liability from infringement of other intellectual property

Generative AI also has the potential to infringe upon existing intellectual property. The legal landscape is still evolving in this area, with courts grappling with how intellectual property laws should be applied to AI-generated works. The lack of clear legal guidelines in this area presents a significant challenge, and it is incumbent upon entities utilising AI to ensure they are in compliance with existing laws and take steps to mitigate potential risks. However,

when something that evolves so rapidly becomes accessible to the wider public, how do you quickly and effectively convey these complexities to mitigate these risks?

## Unauthorised use of data as inputs

AI models may also utilise copyrighted data as inputs, potentially leading to the creation of outputs that infringe upon existing copyrights. The legal implications can be significant, especially considering the size and scope of the data sets often used in AI training. The following [article explores some of these cases and issues in detail](#). Another situation to consider involves when machine learning incorporates confidential input prompts and inadvertently produces outputs revealing this confidential information, raising potential privacy and confidentiality concerns. For instance, there was an example of [Samsung workers unwittingly leaking confidential source code to ChatGPT](#).

Now imagine if an inventor utilises clever prompts in an AI tool to help them develop an interesting new product. If this product were to subsequently infringe on other types of IP, what are the ethical implications of this? What if the AI tool utilised confidential features disclosed by another user to generate these outputs? What happens when such applications go through the patents system and are used as the basis for enforcement action?

These scenarios illustrate the complexities of liability and ethics in the context of AI-generated works based on unauthorised use of data.



*Midjourney prompt 8: Three people discussing complex questions and uncertain paths ahead*

# Options and potential responses

The following options have been identified as possible responses to the issues illustrated by this scenario.

## Ongoing investigation

Given the complexity and novelty of these issues, extensive research, consultation, and thoughtful deliberation are likely to be needed to shape policy positions for the benefit of society and the responsible progression of AI. Understanding potential control mechanisms to prevent misuse and to understand the implications on international treaties and agreements will also be important.

Regulatory intervention, technological intervention, a wait and see approach (reactionary approach) are a few of the possible options that could be explored. However, any controls adopted will need to take into account nuances and consider the potential of unforeseen complexities that are not yet apparent. This presents some fundamental questions, for example:

- In a globally competitive market, what's IP Australia's role in equipping innovators?
- How could Australian innovators be supported in navigating such a complex and challenging market?
- Do we need to continue protecting and rewarding human innovation?

## Incentivising creation, innovation, and dissemination

It is crucial to ensure innovators have clear avenues to protect their inventions. Otherwise, there may be a shift towards trade secrets and consequential exacerbation of power imbalances within the system, favouring those who have successfully obtained protection.

- **Introducing trade-offs for protection of AI generated works:** providing a monopoly for AI generated works in return for disclosure requirements, or creating new IP rights with shorter span and further limitations. This may be crucial to ensure continued investment in generative AI.
- **Introduction of additional requirements:** [A US paper has raised the idea](#) of introducing a conception requirement which ensures AI generated disclosures have contributed to public knowledge and have been evaluated before it's considered a valid prior art (to render an invention unpatentable). Stakeholders interviewed have also suggested requirements to prove and / or demonstrate the application of the invention. It's worth noting the significant friction this idea would add to the process, which would inevitably add to the pressures on innovators. Would such a path be the right one in balancing the competing demands and pressures?

## Identifying AI generated works

If protection of AI generated works is not supported, how would it be possible to identify potential users gaming the system in order to enforce such a position? How do we decide where the line is between human innovation and AI generated innovation?

If the future of innovation is going to be augmented intelligence, where human innovation works in complement to AI, it would be easy to imagine that assessment of human contribution will be difficult to discern. Some potential options in this regard include:

- **Tagging or watermarking AI outputs:** There have been [significant discussions recently](#) of the possibility of tagging or watermarking AI outputs to mitigate risks of AI generated output. The biggest question around using this as a way to flag AI generated works is to what extent will developers comply? What about those that don't?



- **Declaration requirements:** It may be possible to require applications to list the use of AI and its role in developing the invention as discussed earlier. There are a number of potential models for this, some of which are discussed in a paper on the [“Economic reasons to recognise AI inventors”](#). The paper discusses existing examples in the international standard for disclosing gene sequences or the Budapest Treaty in relation to deposit of micro-organisms.



Midjourney prompt 9: Flexible and inclusive education and awareness program on technology and intellectual property



## Education and awareness of ecosystem

Many of the risks discussed in the scenarios may be best managed by raising awareness and supporting effective education of users and stakeholders so that they are able to understand the limitations and best use cases of generative AI.

- **Redesigning the IP system and existing educational content & programs:** Over-constraining the IP system can stifle innovation. Designing different parts of the IP system and the associated education and awareness programs with the users in mind and the common frictions would allow users to proactively engage with the system. For example, what are some of the nudges that could be introduced in the application process to focus applicants' attention on key risks and issues?
- **Proactive intervention to enable the wider ecosystem:** This could involve education campaigns to increase stakeholder engagement and partnerships. Can IP Australia work proactively as an enabler with the IP ecosystem to propagate quality guidance and education to engage all kinds of innovators across the innovation journey?

## Technology-based interventions and controls

Technological interventions and controls are one pathway to mitigate risks and enforce rules. From discussions with stakeholders, many foresee a potential arms race between the system and bad actors. When we consider the parallels that we're seeing in the context of cybersecurity, it can be a challenging and costly exercise keeping up.

There is also a very real threat that unequal access to generative AI tools and valuable data could amplify disparities in the patent system and affect fair competition. How might IP Australia and the broader ecosystem unlock the power of technology for good to support innovators and improve accessibility of the system?

- **Technological solutions to improve administration:** Improving productivity and effectiveness of administration and examination, and mitigating issues around flooding and dissemination by introducing specialised technological solutions.
- **Technological solutions to support the ecosystem:** This could take many forms, including by providing access to data and tools (particularly for SMEs), and using technology to disseminate knowledge and insights from IP data back to innovators and the broader ecosystem.

## Regulatory and legislative interventions and controls

These might be most effective in certain scenarios, but presents many issues too, the chief amongst them potentially stifling innovation, being difficult to enforce, the need to operate within the global context, and potential unpredictability of changing behaviours within the system.

When it comes to regulations and legislation, international harmonisation is often critical to ensuring that we operate effectively in a global environment. It ensures users of the patent system get a level of certainty and streamlines their experience when expanding across multiple markets. It also improves the likelihood of global innovators considering the possibility of protecting their invention in Australia and entering the Australian market.

This presents a challenge in regard to regulatory and legislative interventions. When combined with the fact that Australia is party to numerous international agreements (for example TRIPS, bi-lateral and multi-lateral agreements), this constrains what might be possible in this regard. Furthermore, international discussion, negotiations, and agreement is often challenging to navigate and slow. When we factor in potentially divergent views and opinions across different countries on how AI should be managed, it demonstrates the magnitude of the challenge that we face in shaping the future of the system through regulation and legislation. Many stakeholders have expressed this concern around how we adapt and evolve the IP system to ensure it continues to be fit for purpose in this rapidly

changing environment, while accounting for the global environment that we operate in. We may inevitably be faced with a decision where these two options are at odds.

- **“Use” requirements:** A possible control for reducing clutter in the patents system might be to institute a “Use” requirement, similar to what’s currently required in the trade marks system. This could involve a timeframe within which the applicant is required to use, apply, license, or commercialise their invention, which would otherwise lead to a loss of the patent. It wouldn’t immediately stop flooding issues upstream, but is likely to clear the patents register of low value patents which are not licensed or commercialised. This would inevitably flow into the decision making around upstream applications, reducing some level of flooding. There are risks associated with this approach, as application or commercialisation can often have significant lag time in certain industries. Enforcing this will add an additional burden to administering the system, but what’s the opportunity cost of not doing this?
- **Legislative changes to legal tests including inventive step, enablement, and other grounds:** As discussed previously, one way to mitigate some of the risks associated with low value, mass scale AI-generated innovation, is to consider adapting current legal tests to apply more stringent requirements, therefore reducing volumes of applications that are able to proceed to grant. Similar to other regulatory interventions, this is also likely to potentially add further frictions to SMEs within the system.
- **Limit what constitutes prior art:** One way to reduce the impact of flooding may be filtering out mass AI-generated content from being considered as prior art at all. This option may be considered a sub-set of the above. As per the options above, this is likely to be gamed, particularly in a global context. More fundamental changes may be more effective in this regard (see “Introduction of additional requirements” option above).
- **Enforcement powers:** Additional enforcement powers may be required by stewards and administrators of the system to take action on bad behaviours, for example if we identify misuse of generative AI within applications. This is also likely to mean commitment of additional resources.
- **Laws and regulations around liability:** We may need to consider whether there is a need for further laws and regulations around liability as a result from harm of AI generated outputs. It’s important in this regard that we ensure AI developers incorporate appropriate safety mechanisms, and they do not simply shift blame to users through their Terms of Use. This may not necessarily be the best way forward however, and existing laws once tested in court may be enough to pave the way forward on this issue.

## Signs to look out for

What are the developments or evidence that might be most relevant to this path playing out? When it comes to issues of protection, inventorship, ownership and liability, we need to observe some critical signs or signals in the ecosystem so we can adapt and take necessary action to guide the IP system towards a future that provides the best possible outcomes for innovators and Australia more broadly. Some potential signs are listed below:

- Emerging risks and harms from the use of Generative AI within the patents system (and the IP system more broadly), and how is it affecting our stakeholders.
- Flow-on effects both upstream and downstream of the patent application process, and how it is impacting interactions within the patent system. Are there observable changes in how Generative AI affects ideation and innovation, how and why businesses seek advice and protection of ideas, market dynamics, commercialisation and enforcement activities, and responses to regulations by stakeholders?
- Changes in how patent attorney firms engage with generative AI. Could there be more cases such as the generative AI tool SYNTHIA as discussed above? Are there more discussion or insights on the topic of generative AI being an inventor and what that might look like?
- The changing capabilities of generative AI as it continues to develop. Is public discussion and policy considerations progressing and investigating options should AI reach the stage of inventing autonomously?
- Responses by the IP ecosystem to consequent intervention by government in response to these developments (such as regulatory responses & policy actions). How it is affecting perceptions and decisions by made by innovators, the market, and other important stakeholders within the ecosystem.

- Hearings or court cases disputing existing practices and laws governing the patent system. Are historically stable IP laws being suddenly challenged or viewed differently? Are there patterns of cases emerging on certain elements of the patent system?
- Impacts on administration and stewardship of the patent system. Is there a growing need to update internal processes so that IP offices can operate efficiently?
- The changing societal environment, sentiments, views, and goals. Are we observing significant shifts, particularly on a global scale? Are we seeing new pathways towards the future emerge?
- The changing landscape and appetite for global harmonisation. Are there changes in how jurisdictions are working together (or not cooperating)? What kind of implications does this have for businesses, the market, the broader economy?

## So what?

As stewards of the IP system, it's incumbent on us to be proactive. Need to understand the progression, continue assessing impacts and risks (some of which are detailed previously), and continue the conversation. We'll need to be ready to act, given the speed of progression, to ensure effective functioning of the IP system, and appropriate evolution in line with changes in environment and goals for society.



Midjourney Prompt 10: Futuristic Shield, Letters "P", "P", Letters on shield, neon light.

# Annexes

## Annex 1: ChatGPT creating inventive concept variations

Below is a patent claim of a thermal management system for electronic components:

A multilayer phase change material composite structure comprising:  
a first layer comprising:  
a supporting structure comprising pores; and  
a phase change material positioned within the pores of the supporting structure;  
a second layer comprising a fire retardant material.

Please generate twenty different variations of the above patent claim, all within the area of thermal management systems for electronic components. Each variation must be an independent claim.

1. A thermal management system for electronic components, comprising:  
a multilayer phase change material composite structure comprising:  
a first layer comprising:  
a supporting structure comprising pores; and  
a phase change material positioned within the pores of the supporting structure;  
a second layer comprising a fire retardant material;  
wherein the multilayer structure is configured to efficiently dissipate heat generated by the electronic components.
2. A thermal management system for electronic components, comprising:  
a multilayer phase change material composite structure comprising:  
a first layer comprising:  
a supporting structure comprising pores; and  
a phase change material positioned within the pores of the supporting structure;  
a second layer comprising a fire retardant material;  
further comprising a heat sink attached to the multilayer structure for enhanced heat dissipation.
3. A thermal management system for electronic components, comprising:  
a multilayer phase change material composite structure comprising:  
a first layer comprising:  
a supporting structure comprising pores; and  
a phase change material positioned within the pores of the supporting structure;  
a second layer comprising a fire retardant material;  
wherein the supporting structure is made of a thermally conductive material to facilitate efficient heat transfer.
4. A thermal management system for electronic components, comprising:  
a multilayer phase change material composite structure comprising:  
a first layer comprising:  
a supporting structure comprising pores; and  
a phase change material positioned within the pores of the supporting structure;  
a second layer comprising a fire retardant material;  
wherein the supporting structure comprises a three-dimensional lattice structure for increased surface area contact with the phase change material.
5. A thermal management system for electronic components, comprising:  
a multilayer phase change material composite structure comprising:  
a first layer comprising:  
a supporting structure comprising pores; and  
a phase change material positioned within the pores of the supporting structure;  
a second layer comprising a fire retardant material;  
wherein the phase change material has a high latent heat capacity to efficiently absorb and release heat during temperature fluctuations.
6. A thermal management system for electronic components, comprising:  
a multilayer phase change material composite structure comprising:  
a first layer comprising:  
a supporting structure comprising pores; and  
a phase change material positioned within the pores of the supporting structure;  
a second layer comprising a fire retardant material;  
wherein the fire retardant material has low thermal conductivity to prevent heat transfer to surrounding areas.



7. A thermal management system for electronic components, comprising:
  - a multilayer phase change material composite structure comprising:
    - a first layer comprising:
    - a supporting structure comprising pores; and
    - a phase change material positioned within the pores of the supporting structure;
  - a second layer comprising a fire retardant material;further comprising a thermal interface material between the multilayer structure and the electronic components for improved heat conduction.
8. A thermal management system for electronic components, comprising:
  - a multilayer phase change material composite structure comprising:
    - a first layer comprising:
    - a supporting structure comprising pores; and
    - a phase change material positioned within the pores of the supporting structure;
  - a second layer comprising a fire retardant material;wherein the first layer further comprises a thermally conductive filler material to enhance heat transfer within the multilayer structure.
9. A thermal management system for electronic components, comprising:
  - a multilayer phase change material composite structure comprising:
    - a first layer comprising:
    - a supporting structure comprising pores; and
    - a phase change material positioned within the pores of the supporting structure;
  - a second layer comprising a fire retardant material;wherein the multilayer structure is encapsulated within a protective housing to prevent external contamination and damage.

## Annex 2: ChatGPT Plus creating inventive concept variations

Below is a patent claim of a thermal management system for electronic components:

A multilayer phase change material composite structure comprising:  
a first layer comprising: a supporting structure comprising pores; and  
a phase change material positioned within the pores of the supporting structure;  
a second layer comprising a fire retardant material.

Please generate twenty different variations of the above patent claim, all within the area of thermal management systems for electronic components. Each variation must be an independent claim.

1. An electronic component cooling structure, comprising:  
a base layer having a porous matrix; and  
a phase change compound located inside the porous matrix;  
an additional layer containing a flame resistant substance.
2. A layered thermal regulation structure for electronic components, consisting of:  
an initial layer with a permeable scaffold; and  
a phase transition substance contained within the scaffold's permeability;  
a subsequent layer composed of a fire inhibiting material.
3. A composite material for managing heat in electronics, which includes:  
a layer one consisting of a pitted framework; and  
a phase shifting material filled within the framework's pits;  
a layer two consisting of a combustion-resistant compound.
4. A thermal conductive structure for electronic parts, made up of:  
a principal layer with an aerated structure; and  
a phase change material accommodated within the aerations of the principal layer;  
a secondary layer made up of a fire suppressant agent.
5. An electronic device heat management system, comprising:  
an originating layer including a structure with voids; and  
a phase alteration compound occupying the voids in the structure;  
a succeeding layer including a fire-resistant substance.
6. A heat regulation system for electronic components, made up of:  
a preliminary layer with a structure containing cavities; and  
a phase transition element situated within these cavities;  
a following layer containing a flame-retarding agent.
7. A layered phase change material structure for electronic thermal management, comprising:  
a primary layer with a support structure containing openings; and  
a phase change substance situated within the openings of the support structure;  
a secondary layer composed of a fire-resistant material.
8. A multilayer structure for thermal regulation in electronic devices, consisting of:  
a bottom layer with a support structure with gaps; and  
a phase transition substance located within the gaps of the support structure;  
a top layer composed of a fire retardant substance.
9. A heat dissipation system for electronic components, incorporating:  
an introductory layer with a structure containing perforations; and  
a phase shift material situated within these perforations;  
a subsequent layer containing a fire-suppressing material.
10. A thermal management composite for electronic devices, including:  
a ground layer comprising a structure with interstices; and  
a phase transition compound placed within these interstices;  
an upper layer made up of a fireproof material.
11. A phase change material-based structure for electronic component heat management, comprising:  
a foundation layer with a porous substrate; and  
a phase change substance filled within the substrate's pores;  
an overlying layer consisting of a fire-resistant compound.
12. A multilayer thermal control structure for electronics, consisting of:  
an underlayer with a structure having hollows; and  
a phase modifying compound located within these hollows;  
an overlay containing a fire-retarding substance.

13. A composite thermal regulation system for electronic components, including:
  - a preliminary layer with a honeycomb structure; and
  - a phase change substance situated within the honeycomb cells;
  - a following layer made up of a flame-resistant material.
1. A layered structure for managing heat in electronic components, comprising:
  - a primary layer with a structure containing microcavities; and
  - a phase transition material filled within these microcavities;
  - a secondary layer composed of a fire-inhibiting compound.
2. A thermal management system for electronics, incorporating:
  - a base layer comprising a lattice structure with voids; and
  - a phase shifting compound situated within the voids of the lattice structure;
  - an overlay containing a fire-resistant substance.
3. A phase change material structure for heat regulation in electronics, including:
  - a root layer with a porous structure; and
  - a phase transition material placed within the structure's pores;
  - a subsequent layer made up of a flame-suppressant compound.
4. A multilayered structure for thermal control in electronic components, consisting of:
  - a beginning layer including a structure with apertures; and
  - a phase change substance located within these apertures;
  - a next layer containing a fire-resistant compound.
5. A heat dissipation structure for electronic devices, incorporating:
  - a basic layer with a structure containing interstices; and
  - a phase shifting material situated within these interstices;
  - a subsequent layer made up of a fire-suppressing substance.
6. A layered thermal management system for electronic components, comprising:
  - a bottom layer with a porous substrate; and
  - a phase transition compound filled within the substrate's pores;
  - a top layer consisting of a fire-inhibiting compound.
7. A phase change material-based structure for electronic thermal regulation, including:
  - an initial layer comprising a structure with voids; and
  - a phase change substance located within the voids of the structure;
  - a final layer made up of a fire-resistant material.

## Annex 3: Generating a new idea

you are an electrical engineer and you are asked to design a new electrical wall outlet that will take voice commands.

As an electrical engineer, designing a voice-controlled electrical wall outlet would be an exciting challenge. Here's a high-level plan for creating such a device:

1. Requirements and specifications:
  - Determine the specific voice commands that the outlet should recognize (e.g., "turn on," "turn off," "set timer," etc.)
  - Define the communication protocol (e.g., Wi-Fi, Bluetooth, Zigbee) for connecting the outlet to a voice assistant device like Amazon Alexa, Google Home, or Apple HomePod.
  - Identify the voltage and current ratings of the outlet to ensure it can handle various electrical devices.
  - Ensure the design meets local electrical code requirements and safety standards.
2. Select components:
  - A microcontroller (e.g., ESP32 or Raspberry Pi Pico) to process voice commands and control the outlet.
  - An appropriate relay or solid-state relay (SSR) to switch the power supply to the outlet on and off.
  - A voltage regulator to provide a stable voltage for the microcontroller and other electronics.
  - A voice recognition module or integration with a cloud-based voice recognition service to process voice commands.
  - Connectivity components like a Wi-Fi or Bluetooth module for communication with the voice assistant device.
3. Design the circuit:
  - Create a schematic diagram of the circuit, connecting the microcontroller, relay, voltage regulator, voice recognition module, and communication module.
  - Implement appropriate safety features, such as fuses or circuit breakers, to protect the circuit from overcurrent or other hazards.
  - Design a power supply circuit to convert the mains voltage to the required voltage levels for the microcontroller and other components.
4. Design the enclosure:
  - Design a compact, safe, and aesthetically pleasing enclosure to house the components, ensuring it meets local electrical code requirements.
  - Consider providing easy access to a manual override switch, in case the voice command functionality fails or is unavailable.
5. Prototype and test:
  - Assemble a prototype of the circuit and enclosure.
  - Test the functionality of the voice commands, communication with the voice assistant device, and the ability to handle various electrical devices.
  - Perform safety and reliability tests to ensure the device meets required standards.
6. Refinement and production:
  - Refine the design based on the results of testing and any required modifications.
  - Collaborate with a manufacturer to mass-produce the voice-controlled electrical wall outlet.
7. Documentation and support:
  - Create user manuals and installation guides for the end-users.
  - Provide technical support and firmware updates to ensure the device remains compatible with new voice assistant devices and software updates.



## Annex 4: Drafting a claim set

### Write patent claims for the new voice-controlled electrical wall outlet.

I am not a patent attorney, but I can provide you with a general idea of what patent claims for a voice-controlled electrical wall outlet might look like. Please consult a qualified patent attorney for specific advice on drafting patent claims.

**Claim 1:** A voice-controlled electrical wall outlet, comprising: a) an outlet receptacle configured to provide power to electrical devices; b) a microcontroller connected to the outlet receptacle and configured to control the power supply to the outlet receptacle; c) a relay or solid-state relay, connected to the microcontroller and the outlet receptacle, for switching the power supply to the outlet receptacle on and off based on commands received from the microcontroller; d) a voice recognition module or integration with a cloud-based voice recognition service, connected to the microcontroller, for processing voice commands and providing command signals to the microcontroller; e) a communication module, connected to the microcontroller, for receiving voice commands from a voice assistant device and transmitting the voice commands to the voice recognition module or cloud-based voice recognition service; and f) a voltage regulator connected to the microcontroller, relay or solid-state relay, voice recognition module or cloud-based voice recognition service, and communication module, providing a stable voltage supply.

**Claim 2:** The voice-controlled electrical wall outlet of claim 1, wherein the communication module comprises a Wi-Fi module, a Bluetooth module, or a Zigbee module.

**Claim 3:** The voice-controlled electrical wall outlet of claim 1, further comprising a power supply circuit for converting mains voltage to the required voltage levels for the microcontroller, relay or solid-state relay, voice recognition module or cloud-based voice recognition service, and communication module.

**Claim 4:** The voice-controlled electrical wall outlet of claim 1, further comprising a manual override switch, accessible from the exterior of the wall outlet, configured to manually switch the power supply to the outlet receptacle on and off.

**Claim 5:** The voice-controlled electrical wall outlet of claim 1, wherein the voice commands include at least one command from the group consisting of: "turn on," "turn off," "set timer," "adjust power," and "status query."

**Claim 6:** A method for controlling an electrical wall outlet using voice commands, comprising the steps of:  
a) receiving a voice command from a voice assistant device;  
b) processing the voice command using a voice recognition module or cloud-based voice recognition service;  
c) sending a command signal to a microcontroller based on the processed voice command;  
d) controlling a relay or solid-state relay connected to an outlet receptacle with the microcontroller based on the command signal; and  
e) switching the power supply to the outlet receptacle on and off based on the command signal.

**Claim 7:** The method of claim 6, further comprising the step of providing a stable voltage supply to the microcontroller, relay or solid-state relay, voice recognition module or cloud-based voice recognition service, and communication module using a voltage regulator.

Remember, it is essential to consult with a patent attorney to ensure that the patent claims are written correctly and provide the necessary protection for your invention.

The LLM does a passable job in drafting a set of patent claims covering a reasonable scope or breadth, one that is not too broad or generic.

It can also amend the claims to include new features and tailor the solution. For example, when asked to include the feature of "connecting the outlet to a voice assistant device like Amazon Alexa, Google Home, or Apple HomePod" in the claim set, it nicely appends the feature into the independent claim 1 as below:

"wherein the communication module is configured to connect the outlet to a voice assistant device selected from the group consisting of Amazon Alexa, Google Home, and Apple HomePod."

# Generative AI and trade marks

This set of provocations explores the possible ramifications generative AI might have on [trade marks](#) administered by IP Australia under the [Trade Marks Act 1995](#).

These provocations have been developed as part of an exploratory discovery process by IP Australia about the impacts of generative AI. These provocations seek to explore how the arrival of generative AI tools such as large language models and AI generated image creation may affect the purpose, function or process of trade mark and their examination.

As an early-stage piece of thinking, the purpose is to understand how things might play out, and serve as a means of helping IP Australia and our stakeholders explore and understand what the potential issues might be. These provocations are intended to help IP Australia, and its customers and stakeholders, contemplate the potential disruption from generative AI, the flow-on effects, and possible responses.

It is hoped that this provocation and the scenarios it covers will help generate discussion about what might and should happen. This provocation should not be regarded as exhaustive, and as the impact of generative AI is still playing out, there may well be additional scenarios that arise or that have not been identified.

Any mention or use of specific tools are for purely illustrative purposes, to demonstrate what is currently capable with existing technology.



**As a provocation, this is intended as an investigation of what could happen, not what should happen.**

## Overall observations

From our investigations from a variety of hypotheses and scenarios, the apparent impact that generative AI will have on trade marks would seem mainly confined to the way applicants will interact with IP Australia

rather than posing a fundamental disruption.

Generative AI stands poised to drastically alter how customers seek to engage with IP Australia at every stage of a trade mark examination. Both “Scarcity to abundance” and “Inventing with tools to tools Inventing” can be seen as intersecting with the process and function of trade marks, if not the essential purpose. Trade marks will be altered in a world of abundance, with an abundance of evidence to overcome grounds for rejection, and a world where tools are inventing contributing to potentially unclear ownership of images and signs created using generative AI tools. While trade marks may be insulated against any foundational shift of generative AI, the risks of harm or major slowdowns to our processes due to generative AI are a real and present issue.

## Current status quo

For a trade mark to be registered, the sign must meet the requirement of the Trade Marks Act, which includes being distinctive on the claimed goods and/or services and not being either substantially identical or deceptively similar to another trade mark registered on similar goods and/or services.

A trade mark which is registered provides the owner a monopoly to use that sign in relation to the claimed goods and/or services.

There is no requirement for a trade mark to be inventive or novel, only that it is not descriptive and not similar to an existing trade mark, and meets legislative requirements (such as such as not falling foul of Article 6ter as outlined by WIPO, or various other proscribed words such as Patent, Registered Design and Copyright).

A trade mark is valid for ten years and can be extended indefinitely as long as it continues to be used in the marketplace on the claimed goods and/or services and is renewed. If a trade mark is not used, other traders may file for non-use to have the abandoned trade mark removed from the register.



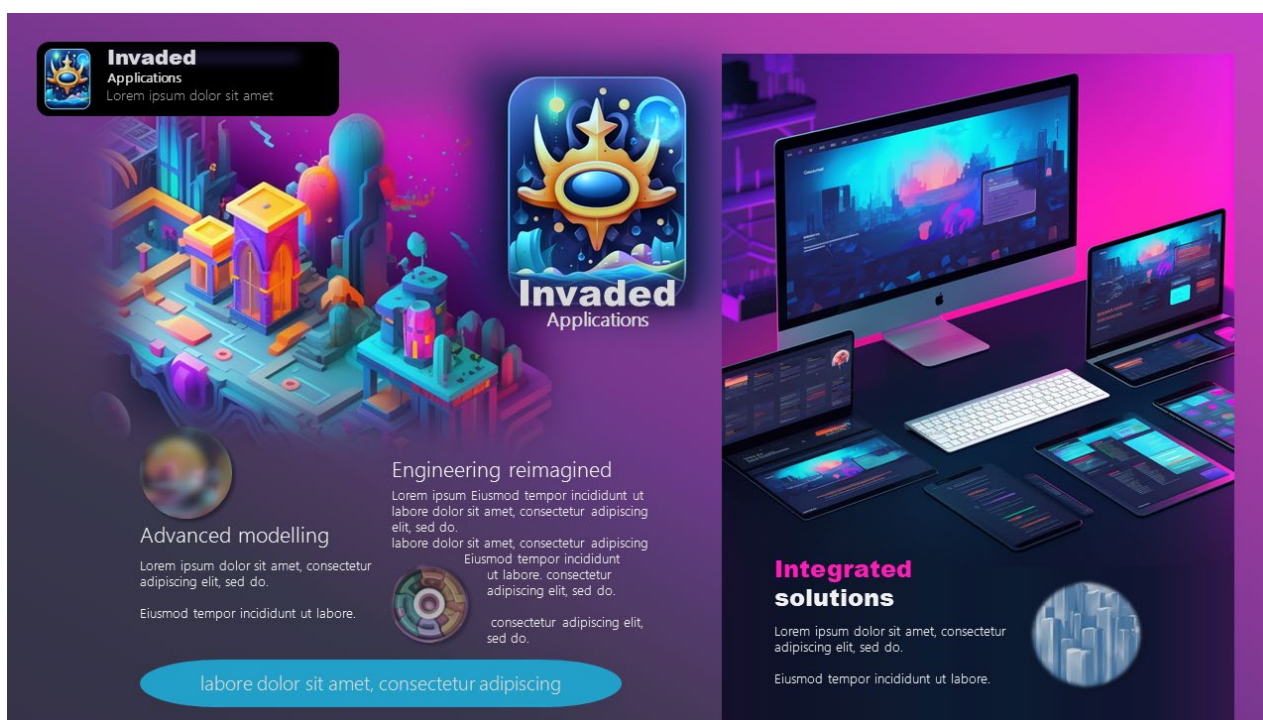
Midjourney prompt - business owner working at a computer viewing a bright future with Artificial Intelligence. Photorealistic

## Easy logos, but not yours

### What does this mean?

All-in-one tools like graphic design platforms already provide integrated services to businesses. When these platforms reserve the right to hold on to the IP for graphics logos, it means the user is limited in what they can do with the content they make. So a business making a logo graphic can't then go on to get it registered as a trade mark.

When we add generative AI tools to this equation, what does a user license give access to? What if the AI tool owner, or graphic design platform still retains the IP in the content generated? Or it used someone else's work when creating your logo? And what if it captures your new image for others to use?





# The scenario

Imagine you're a business designing your branding and trade marks. Using your business subscription to a new AI graphic design platform, you create a logo, a website layout, letterhead stationery and print marketing templates. You then apply for a trade mark with the logo generated by the software and continue to launch the business.

The terms of service of the platform you are using say something about retaining rights in the use of your prompts and data for derivative works of the Asset, and the ability to reproduce and use the outputs from the AI tool for your business. You retain ownership in the output Asset where that output is not a reproduction/upscaling of another user's Asset. You do not feel very equipped about all the details, and you have vaguely heard of some court cases about these things, but assume that the platform owners are across all of these things and have done the right thing.

In reality, the picture may be more complex. While there may be some dispute about the rights surrounding AI produced work, it is clear at this early stage it will not necessarily be in the favour of the person inputting the prompts.

So, what happens if an AI tool or graphic design platform owns the images you generated for your trade mark? Will you receive a cease-and-desist notice from the platform owner? Or will the AI tool simply make deceptively similar logos for your upcoming competitors who also use the tool? And then what if your customers can't tell the difference?

This issue isn't a new one, however it may be one exacerbated by widespread use of generative AI tools. In this event, users invest time and resources designing and developing a brand image only to have to do it again, or even face infringement action. They may have used an image without knowing what components are owned by someone else, protected by copyright or risk not being sufficiently distinct from an existing trade mark that already prominently uses those components. They might inadvertently infringe the rights of another business who recently used the same design tool and made a similar logo. Or similarly, the AI tool may produce a logo that is too similar to a registered trade mark.





# Options and potential responses

The following options have been identified as possible responses to the issues illustrated by this scenario.

## Contribute to a coordinated approach or framework regarding ownership of IP content within AI generated works

The question of ownership around IP, most specifically copyright, is likely to be a significant one when it comes to generative AI tools and their outputs. Future responses may adequately cover off on this issue, to the extent that it occurs, however the particulars of trade marks may need to be considered specifically.

## Embedded processes that identify when the AI outputs are registerable IP


To achieve such a process, this may require AI tools to consume international IP register data and demonstrate a process of identifying if an output meets IP acceptance criteria.


Otherwise, to enable such a process the generative AI tools may be designed with a communication link to the AI tools that Intellectual Property Offices' (IPOs) also develop, designed specifically to interpret IP acceptance criteria and IP register data against the input request.


## Contribute to any possible traceability guidelines for demonstrating which data components were used, and/or the proportion of another's work used in an output

Establishing traceable links to the owner of original works, and determining existing IP ownership status would be a challenge, especially in the case of older material. This, however, is not a new issue - merely one that's exacerbated by the speed and ease of AI content generation.

Nevertheless, generative AI tools could have known IP information, the data source and surfaced as a summary to the user. Then the user can decide whether to proceed with the content, or the system could prevent particular uses.

 *"If it comes out of the machine, whose work is it?"* **Strategist & writer**

 *"Stewardship, leadership, ownership and accountability around data and data governance - the impacts are on all different parts of a business."* **AI & analytics consultant**

 *"The issues are the speed to get to market before someone copies you. I don't think there are any new issues... This will increase the speed of that."* **IT advisor & founder**

## Do nothing

The issue of copyright licensing and transferring rights in graphic design work is not a new one. This is something that must be navigated by businesses regardless of whether a digital design platform or graphic designer produced the work. Existing methods of determining rights ownership allow for navigating this space by means of oppositions practices and privately settling disputes. Therefore, it can be argued that nothing needs to be addressed in the immediate or medium term.

Nevertheless, generative AI does exacerbate these issues when the speed of generating new content enables any party who publishes it to claim ownership in the copyright material. The legal status of these claims, or indeed the subsistence of copyright in the content, may not always be clear in practice.

# Key questions

This scenario raises some key open questions, including:

- Will trade marks really be affected by generative AI? Or is it a case of existing issues - different tools?
- Does the trade mark registration process need to change to cater for businesses using fast and easy tools that can generate a lot of registrable brand imagery?
- Will demonstrating image/content traceability even be possible? Or is this really just the artificial intelligence equivalent of humans making variations inspired by other work?

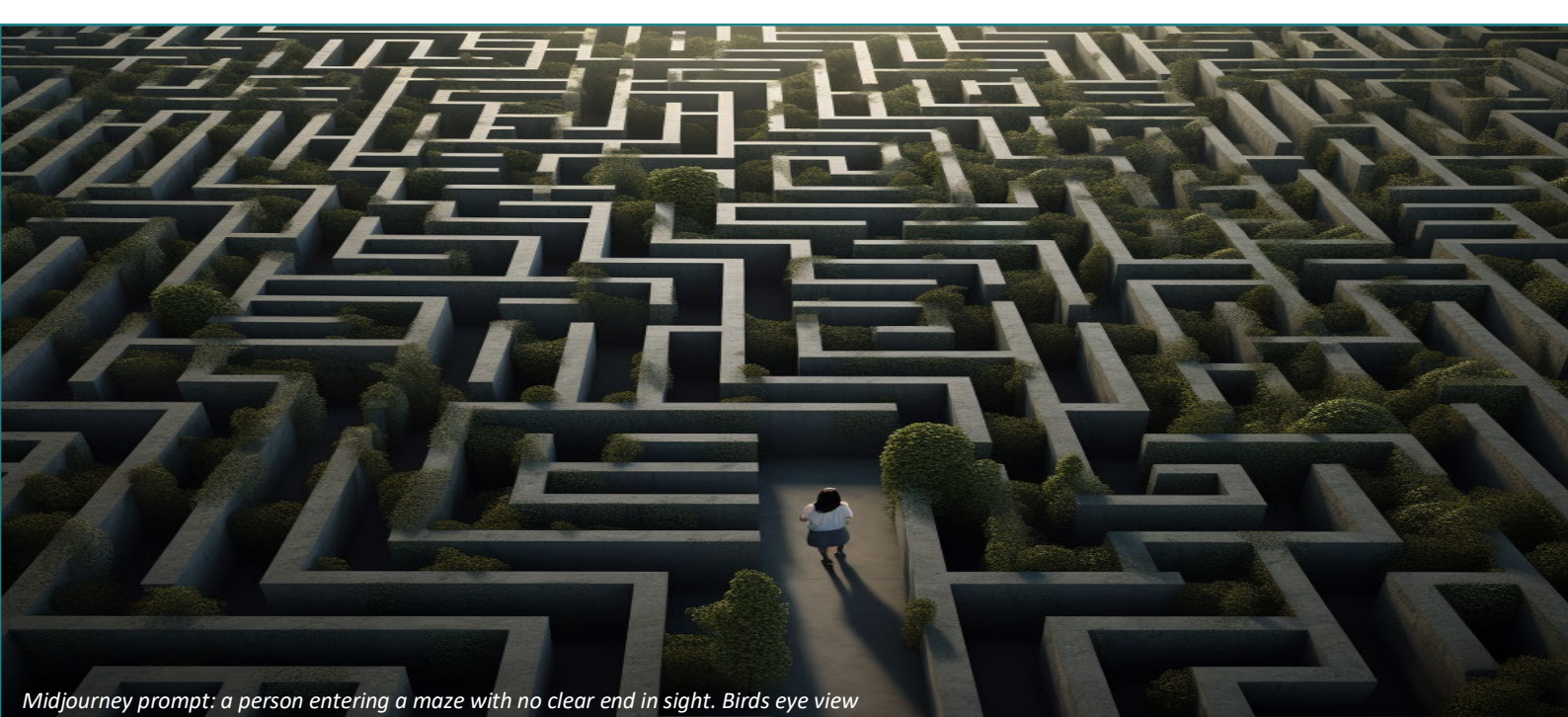
## Signs to look out for

What are the developments or evidence that might be most relevant to this path playing out?

- An increase in disputes and oppositions – where competitors use similar AI tools, their subsequent applications for trade marks may be at odds and require an opposition process or hearing to determine ownership of the brand.
- An increase in voluntarily withdrawn trade marks – where a graphic design platform can automatically identify trade mark applications using their platform’s assets, they could issue automatic takedown notices advising the user to withdraw their trade mark application or face opposition.
- A rise in derivative trade mark applications – currently, trade mark registers show points in time where new trends and popular terms emerge from a new marketable idea or new product category. Often this “trend flood” is simply a sign of healthy market competition, where businesses position themselves within the new space in the market. In these circumstances ‘First use’ and ‘non-use’ rules typically will aid in determining ownership of brands and trade marks; however, when the speed and ease of iterative graphic design is enabled by generative AI tools, “trend flooding” could be amplified beyond current comprehension.

## So what?

How does this scenario affect the trade mark system? Complicating the ability of businesses to establish new trade marks may reduce the effectiveness and accessibility of the trade mark system.



*Midjourney prompt: a person entering a maze with no clear end in sight. Birds eye view*

# Almost Prior Art: Generating false history as evidence

## What does this mean?

The great power in generative AI is its ability to create a lot of noise very quickly. This is incredibly useful when we are trying to create content – it gives us a speedy start to coming up with new material. However, when the onus is on someone who must sift through the content to understand and make decisions on a market reality, this wave of generated content can quickly become an insurmountable obstacle to making good decision.

A trade mark examiner will perform market research in the initial stages of the examination process to determine if a trade mark is in common use or is descriptive. A trade mark examiner will also assess ‘evidence of use’ (how is the brand used in the marketplace) to determine if a trade mark:

- Has been honestly and concurrently used alongside another’s without confusion,
- Was used prior to another’s,
- Has acquired distinctiveness, or
- Other circumstances.

This is all in order of determining and deciding if this can allow for a trade mark to be registered. Evidence supplied to IP Australia needs to be dated or otherwise identified to show that the usage has been over a length of time sufficient to overcome whichever grounds for rejection has been raised.

Generative AI offers a short cut to creating a large amount of fake content. Image generation tools such as Midjourney or Stable Diffusion already offer significant capability that could be misused for such a purpose, and with new tools being introduced such as Adobe Firefly, the custom creation of fake evidence is easier than ever to achieve.





# The scenario

Bill has just started a new business, BILL'S SUPREME CLOTHING which makes and sells clothes. Bill has decided to file for a trade mark right to protect his brand.

Unfortunately, Bill's trade mark attracts both a section 41(4) grounds for rejection (the trade mark is not sufficiently capable of differentiating Bill's goods and services from others described as being of supreme quality) and a section 44 grounds for rejection (as there is a deceptively similar trade mark already registered for similar goods and services). As the trade mark is descriptive when used in connection with the goods and services he nominated when applying, and the earlier registered trade mark encompasses all the same goods and services, IP Australia only provides Bill the option to provide evidence of use to overcome the issues preventing his registration. As Bill's business is brand new, he does not have any evidence to show.

However, Bill has invested a lot in his new enterprise and decides to use generative AI tools to create evidence to mislead the registrar to get his trade mark registered, believing that this is just unnecessary bureaucracy.

These are some of the steps Bill took:



Trade Marks Act 1995 (Cth) section 44 considers the existence of deceptively similar or substantially identical pending or registered trade marks. Which means a trade mark that is already on the register and has not lapsed and has protection for similar or closely related goods and/or services.

If an applicant can demonstrate prior and continuous use of a trade mark in Australia before the filing or priority date of the conflicting registered trade mark, it provides a basis for overcoming the grounds for rejection. i.e. Bill needs to convincingly show examples of first use at a date earlier than when the registered trade mark was lodged, and how this has been continuous. In addition, if an applicant is able to demonstrate through evidence that the trade marks have coexisted in the marketplace for a significant portion of time, it forms the basis for a finding of 'honest concurrent use' to overcome the grounds for rejection. So Bill needs to show that he's gained comprehensive recognition for his brand established over a long period of time, and that this is distinct from the



brand of the other trade mark in the minds of consumers.

In light of this, Bill has used Adobe Firefly to create bespoke fake content which will give the examiner the illusion that Bill has been using the trade mark for a significant length of time. Bill creates a series of similar images, and now has a myriad of examples of fake prior evidence which can show that Bill has fulfilled the requirements for subsection 44(4) prior use and/or subsection 44(3)(a) honest concurrent use. The creation and distribution of fake evidence can now be used to weaken the IP right of the previous owner thus damaging the integrity of the trade mark register.



To overcome a section 41 grounds for rejection, sufficient evidence must be provided to demonstrate that the trade mark has acquired distinctiveness in the marketplace. A large part of this evidence will be in the form of the images Bill has generated of how the trade mark has been “used”. While other information is generally needed to inform a decision as well (usually financial information), visually demonstrating widespread use is a key identifier for if a trade mark has acquired distinctiveness.

Once Bill has used fake evidence to get his trade mark to registration, Bill will have an undue monopoly over the sign that other traders should be able to use in the regular course of trade. While this is fraud, unless the trade mark were to be challenged in the courts, it is extremely unlikely that the fraud would be detected thus reducing the integrity of the register.

This isn't a new issue, and is currently achievable by anyone with resources to produce convincing evidence and financial figures. This is usually dealt with later in the trade mark opposition process or in court proceedings when deeper investigation into financial and business activity is able to clearly identify fraudulent activity. But what changes with generative AI capabilities is the ease and speed at which any applicant from anywhere in the world can pass the minimum standards for accepting trade marks for registration with supporting evidence in Australia.



# Options and potential responses

## Empower hearings and oppositions

IP Australia could investigate the empowering and upskilling of the hearings and oppositions team to identify and arbitrate evidence of use decisions where suspected malicious acts have occurred. As hearings and oppositions are a more expensive avenue, this may hinder IP Australia's cost recovery model and as such would require an increase in fees for standard trade mark applications.

## Raise assessment standards for evidence

IP Australia could change standards for assessing and accepting evidence of use as a valid method of overcoming grounds for rejection. This would result in less reliance on photographic and visual evidence for establishing prior use, honest concurrent use and to determine if a trade mark has acquired distinctiveness in the marketplace. This will result in more stringent checks for evidence which will result in more legitimate traders struggling to achieve registration by providing evidence. Other options could include:

- Identifying other business avenues to validate usage in the marketplace (such as ATO records or other independent financial institutions reports)
- Requiring evidence that can be cross referenced easily by examiners (such as external and dated reviews or articles).

## IP Australia could conduct educational campaigns about the proper way to seek legal information about IP rights

Conduct awareness campaigns and educational initiatives to inform trade mark owners, applicants, and the public about the risks of using generative AI as a legal advice tool. This could include:

- More actively promoting the use of IP Law firms during the application process. This may involve, for example, questionnaires which can directly ask applicants if AI tools are being used and the dangers can then be highlighted.
- Active monitoring of if generative AI is used in submission so that applicants can be told that generative AI is not a good substitute for legal advice.
- Run PE&A campaigns to advertise the dangers of using generative AI.

All these options, however, come with the potential issue of alerting more people to the existence of these tools and potentially driving use of them in dealing with us.

## Do nothing

While the ability to commit fraud and submit false documents is not new, in order to do it convincingly would either require specific photo manipulation skills or cost a significant amount of money. With these barriers reduced or entirely removed through generative AI, we will likely see an increase in fraud instances from customers who do not understand or do not care about the implications of committing fraud. If these attempts are successful, they will reduce the integrity of the trade mark register as incorrect trade mark monopolies are given to traders. In addition, we will likely see a larger number of submissions involving evidence which will significantly increase the average time to complete a further submission thus reducing the potential for cost recovery. This may result in higher fees across trade marks for all applicants.



## Key questions

This scenario raises some key open questions, including:

- At what stage will the tools available be able to seamlessly create fake content that is convincing enough to fool most examiners?
- Will the rise of easily generated fake evidence reduce the average consumers trust in the IP system?
- How do we protect the value of IP rights when circumventing them becomes easier?
- What impact could this have on the value of IP rights to existing IP holders? Using the example above, how much would this impact the market value of “[supreme](#)”?

## Signs to look out for

What are the developments or evidence that might be most relevant to this path playing out?

- Larger volume of trade mark acceptance through the submission of evidence. This could indicate that more applicants are creating evidence to overcome grounds for rejection.
- Instances of evidence being submitted that the examiner is unable to verify using, or is contrary to, the research attached to the file.
- Valuable brands being targeted by competitors leveraging a trade mark registration to unlock a domain registration or to justify take-down activity.

## So what?

How does this scenario affect the trade mark system? The burden of validating the legitimacy of any digital content may get more intensive due to generative AI enabling high volumes of fast, easy, fraudulent activity. This is especially where there are the most gains to be had. We may see specific brands targeted where trade mark registration enables access to a domain registration or fast and profitable take-down actions that are difficult to prosecute after the fact.

However, where the cost-benefit ratio or risk vs reward is not sufficient to represent high value, fraudulent activity like this may not be attractive enough to see many attempts at this process.

If this process becomes widespread and incorrect decisions are made on the basis of false evidence, then the integrity of the trade mark register will be compromised, and legitimate traders will have their IP rights infringed.



# Mutually Assured Bureaucracy: Exploring the impact of generative AI on customer responses

## What does this mean?

The landscape of customer interactions is rapidly evolving, driven by advancements in artificial intelligence and automation technologies. What might be the potential impact of generative AI on IP Australia's ability to effectively analyse and respond to customer queries and requests? A convergence of overwhelmed bureaucratic procedural processes and the lightning-fast response capabilities of generative AI may lead to a state of mutually assured bureaucracy, exacerbating and magnifying existing frictions within the trade mark system in Australia.



*Midjourney prompt: a person having a debate with a robot.*



# The Scenario

Cindy is a new business owner excited about making a difference by helping people reducing the climate impact of their homes. Cindy registers a trade mark through IP Australia for their business name “Homecare Carbon Smart”.

However, Cindy is soon disappointed to learn that IP Australia has conducted an examination on the application and has raised multiple objections within the 1st Adverse Examination Report.

## What’s in the report?

Cindy looks at the report from IP Australia with a sense of frustration. She thought she’d done everything correctly herself, yet this adverse report was a bit confronting.

## Excerpt from the adverse report

*The following issues have been raised under the Trade Marks Act 1995 and will need to be addressed before your trade mark can be accepted.*

- *Goods and services not correctly classified*
- *Issues raised under Section 44 of the Trade Marks Act 1995*

## Issues raised under Section 44 of the Trade Marks Act 1995

*Cited trade mark number(s): 1169886, 1207007*

## What are the issues with your trade mark?

*Trade Mark Numbers: 1169886, 1207007*

*Your trade mark closely resembles the earlier trade mark because each trade mark contains the prominent element of carbonsmart/carbon smart.*

*I note the differences in your mark, namely the additional text, however these differences are not sufficient to overcome this issue. This is because the earlier trade marks cannot be referred to in any way other than CARBON SMART, and it’s likely that consumers who are familiar with the earlier marks may assume that Homecare Carbon Smart shares a common trade source or a brand extension as the earlier CARBON SMART trade marks.*

## AND

*The services are similar to your claims in **Class 41** for a variety of education and publishing related services are similar to trade mark 1207007’s claim for education, providing of training in the same **Class 41**.*

*Your claims in **Class 42** for a variety of certifications, advisory and research services to environmental protection are similar to the earlier trade mark 1169886’s claim in the same Class 42 for a variety of scientific and technological services and research.*

## What can you do now

### SUPPLYING EVIDENCE OF USE:

*You might be able to overcome this problem if you supply evidence under subsections 44(3) or 44(4) of the Trade Marks Act 1995.*

*For information about evidence of use, please refer to the information titled How to provide evidence of use [How To Provide Evidence Of Use | IP Australia](#).*

## What is a trade mark adverse report?

A trade mark adverse report is a negative response to a customer’s trade mark application. In other words, the examiner found some grounds for rejection while assessing the application.

The report is completed after a new trade mark has been filed to register a trade mark or completed a [TM Head Start application](#). Once a request has been reviewed and IP Australia decides the trade mark cannot be registered, an adverse report detailing the specific reasons for the rejection will be issued.

Customers currently have 15 months to respond to the report, with the possibility of an extension on this period if desired, to decide on the best possible course of action and resolve the issues.

### Goods and Services Classification Schedule

The following items have been identified as issues relating to the classification of your list of goods and services. Please ensure that you respond, in writing, to these issues.

#### What are the issues with your trade mark?

##### Class 42

**You have items that require further information or rewording. You have claimed:**

- **Services provided by an association to its members**

Please give me more information about this item so that I can decide on the correct class. This is because Association services are classified according to the nature of the services being provided.

For more information about classification please see IP Australia's picklist to determine the best class for your claim.

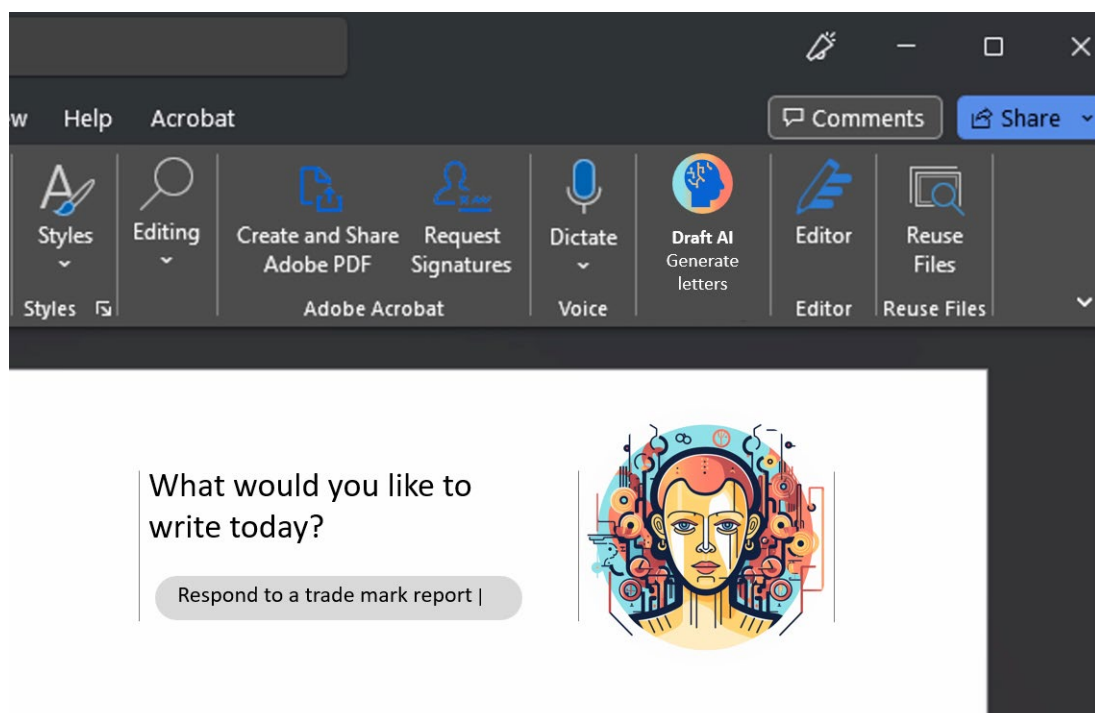
[Trade Marks Classification Search \(ipaustralia.gov.au\)](https://www.ipaustralia.gov.au/trade-marks/classification-search)

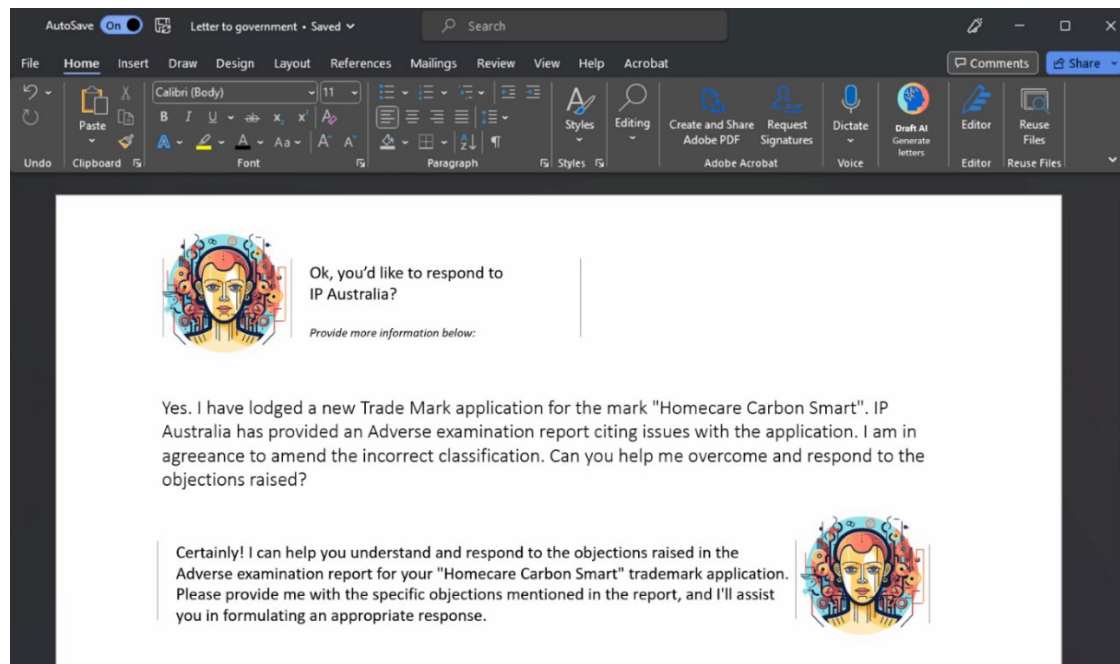
#### Actions you can take

Please choose from the following options:

- Where I have provided a suggestion that accurately describes your good/services please agree, in writing, to amend your classification list as I have suggested, OR
- Provide more information about the item(s) you wish to claim, OR
- Delete the item(s) from your classification list.

This outcome was a shock to Cindy, but she wasn't going to let it stop her. Cindy decides to use generative AI tools to help resolve and overcome the issue.





Please provide me with the specific objections mentioned in the report, and I'll assist you in formulating an appropriate response.



*Insert report text:*

The following issues have been raised under the Trade Marks Act 1995 and will need to be addressed before your trade mark can be accepted.

- Goods and services are not correctly classified
- Issues raised under Section 44 of the Trade Marks Act 1995.

#### **Goods and services are not correctly classified**

Issues with your Goods and Services Classification are explained in the Classification Schedule attached to this report. The Schedule includes information about actions you can take to address these issues.

#### **Issues raised under Section 44 of the Trade Marks Act 1995.**

Cited Trade Mark Number(s): 1169886, 1207007

What are the issues with your trade mark?

Trade Mark Numbers: 1169886, 1207007

Your trade mark closely resembles the earlier trade mark because each trade mark contains the prominent element of CARBONSMART/CARBON SMART.

I note the differences in your trade mark, namely the additional text and visual device present in your trade mark, however these differences are not sufficient to overcome this issue. This is because the earlier trade marks cannot be referred to in any way other than CARBON SMART, and it is likely that consumers who are familiar with the earlier trade marks may assume LANDCARE CARBONSMART shares a common trade source or a brand extension as the earlier CARBON SMART trade marks.

AND

The services are similar because your claims in Class 41 for a variety of education and publishing-related services are similar to trade mark 1207007's claim for education, providing of training in the same Class 41.

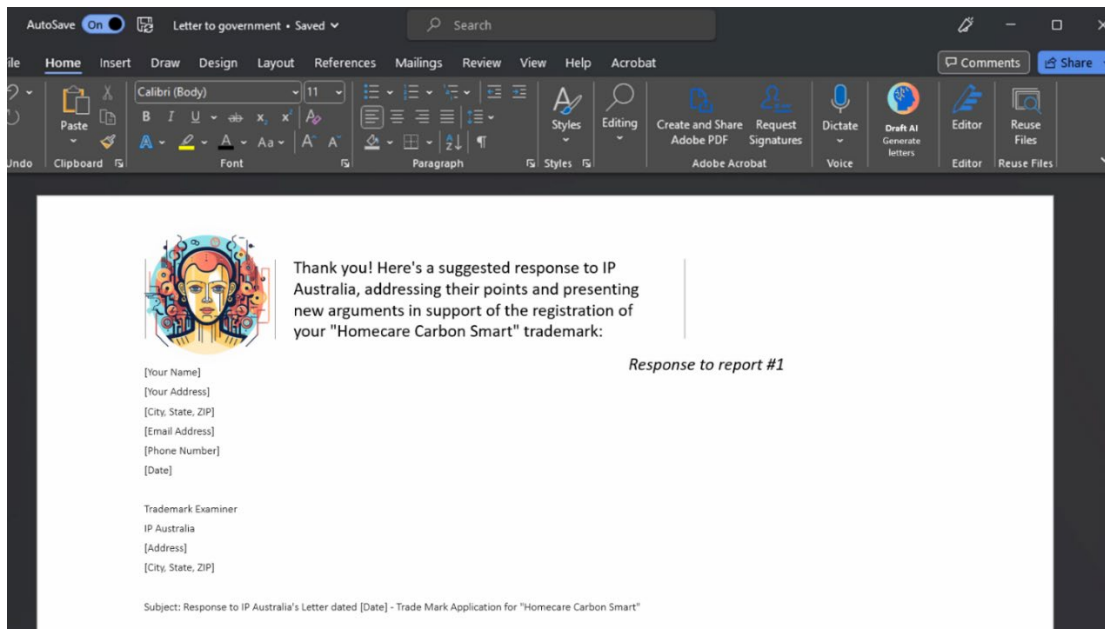
Your claims in Class 42 for a variety of certification, advisory and research services relating to environmental protection are similar to the earlier trade mark 1169886's claims in the same Class 42 for a variety of scientific and technological services and research.

#### **What are the issues with your trade mark?**

Class 42

You have items that require further information or rewording. You have claimed:

1. services provided by an association to its members. Please give me more information about this item so that I can decide the correct class



Dear Examiner,

### *Response to report #1*

RE: Trade Mark Application No. [Your Application Number]

I appreciate your response dated [Date] to my previous correspondence regarding the examination of my trademark application. I respectfully disagree with the grounds for rejection maintained under Section 44 of the Trade Marks Act 1995, and I would like to present further arguments and evidence to support the registration of my trademark, "Homecare Carbon Smart."

#### **Similarity of the Trade Marks:**

a) Additional Material and Overall Impression: I acknowledge your consideration of the additional material present in my trade mark, including the "HOMECARE" element and the visual design. However, I believe that when considering the overall impression of the trade marks in their entirety, the distinctive elements and differences significantly differentiate my trade mark from the earlier cited marks. The inclusion of "HOMECARE" clearly indicates the focus on homecare products and services, establishing a different context and industry from the land conservation and environmental initiatives associated with the earlier marks.

b) Brand Extension Assumption: Contrary to your assertion, the addition of "HOMECARE" does not imply a logical brand extension of the CARBON SMART brand. The use of "HOMECARE" further emphasizes the distinctiveness and specialized nature of my goods and services within the homecare sector, differentiating them from the broader scope of the earlier marks.

#### **Similarity of the Services:**

a) Clarification of Education-related Items in Class 41: I appreciate your recognition of the limitations within the fields of environmental conservation related industries for the education-related items in Class 41. It is crucial to note that my claimed services in Class 41 are specifically tailored to education and publishing within the context of homecare and environmentally-friendly practices. This focus on homecare-related education and publishing services further distinguishes them from the broader claim for education made by the earlier trade mark 1207007.

b) Differentiation of Services in Class 42: The claims made by the earlier trade mark 1169886 for scientific and technological services and research are not limited or specific to the industry of carbon management. In contrast, my services in Class 42 are explicitly focused on certification, advisory, and research services related to environmental protection within the context of homecare. This specialization and emphasis on environmental protection and homecare clearly differentiate my services from the broader claims made by the earlier mark.



#### **Lack of Consumer Confusion:**

a) Distinctive Elements and Contextual Differences: The shared common element of "CARBONSMART/CARBON SMART" should not be the sole basis for establishing a likelihood of confusion. It is essential to consider the distinctive elements, overall impression, and the contextual differences between the marks. The additional material and distinct focus on homecare in my trademark mitigate any potential confusion and clearly communicate a different trade source to consumers.

b) Insufficient Evidence of Confusion: I respectfully disagree with your assessment that the material provided is insufficient to demonstrate that confusion is unlikely to occur. Given the distinct nature of the goods, services, and industries involved, coupled with the inclusion of "HOMECARE," consumers are unlikely to imperfectly recall or confuse the marks in question. I believe that the substantial differences in the overall impression and the specialized context are sufficient to prevent confusion among consumers.

#### **Goods and Services Classification:**

I agree with the examiner's recommendation to remove the unclear goods and services from my application. I will promptly review and amend the classification to ensure accurate and appropriate categorization.

Based on the arguments and evidence provided, I kindly request a re-evaluation of the grounds for rejection under Section 44 of the Trade Marks Act 1995. I firmly believe that the distinctive elements, contextual differences, and specialized focus of my trademark "Homecare Carbon Smart" warrant its registration.

Thank you for your time and consideration. Should you require any further information or clarification, please do not hesitate to contact me. I remain hopeful for a favourable resolution of this matter.

Yours sincerely,

[Your Name]

#### ***Response to report #1***

What previously would have taken hours or required the use of an attorney in order to even give the appearance of a sufficient response that met all the technical requirements, Cindy now did in minutes.

Cindy then submits this to IP Australia for further consideration, thinking that this will solve the problem – after all, the generative AI tool certainly appeared to her to know all the answers.

#### **Examiner's further reports**

Under the regulations, the registrar is obligated to have an examiner respond to all correspondence sent for a pending trade mark application. Cindy received her next report from IP Australia and was shocked to see it was not positive as she had hoped.

Insert report text:

#### Examiner's Report #2

Thank you for your correspondence dated 6 June 2023. Per your written confirmation, I have amended the services to remove the unclear claim for services provided by an association to its members from Class 42. As such, this is no longer a barrier to registration.

I have considered your submissions regarding differences in the trade marks and the claimed services the application and the earlier cited trade marks. However, at this time I am maintaining the grounds for rejection under section 44 of the Trade Marks Act 1995.

#### Similarity of the Trade Marks

I have considered your submission in relation to the deceptive similarity of your trade mark HOMECARE CARBON SMART and the earlier cited trade marks which share the CARBONSMART/ CARBON SMART element. Firstly, while I acknowledge the additional material present in your trade mark, I have considered the overall impression of the trade marks in their entirety, and I do not agree that the additional material makes confusion unlikely to occur. Rather, in this case the addition of HOMECARE implies that your trade mark is a logical brand extension of the CARBON SMART brand offering HOMECARE products. In addition, while I recognise the impact of the visual elements in your trade mark, I do agree that they change the substantial identity of the trade mark to make confusion unlikely in the marketplace.

#### Similarity of the services

I note the submission in relation to consideration of the different context and industry of the cited trade marks. The scope of protection provided is determined by the specification as it appears on the register. Any claimed differences in the actual industries can only be considered when it is reflected in the claimed goods and/or services.

As mentioned in the initial report, the applicant has claimed a variety of

education-related items in Class 41, which as you have noted are limited to the fields of environmental conservation related industries. These claims are wholly contained within the broad claim for education made by the earlier trade mark 1207007, which contains no such limitation. Due to the broad and unrestricted nature of such claims, they would include these services provided for and in the environmental conservation industries.

Similarly, the claims made by TM 1169886 for scientific and technological services and research and design relating thereto, and other related items, are not limited in scope and are broad in nature and would include services provided for and in the industry of carbon management.

As the services the applicant has claimed are included within the broad claims made by the earlier.

#### Lack of consumer confusion.

You have submitted that due to the differences highlighted above, consumers are unlikely to confuse or imperfectly recall the trade marks or assume a common trade source. I do not agree with this assertion. Consumers are likely to confuse or imperfectly recall the trade marks due to the shared common element and the material you have provided is insufficient to demonstrate that confusion is unlikely to occur.

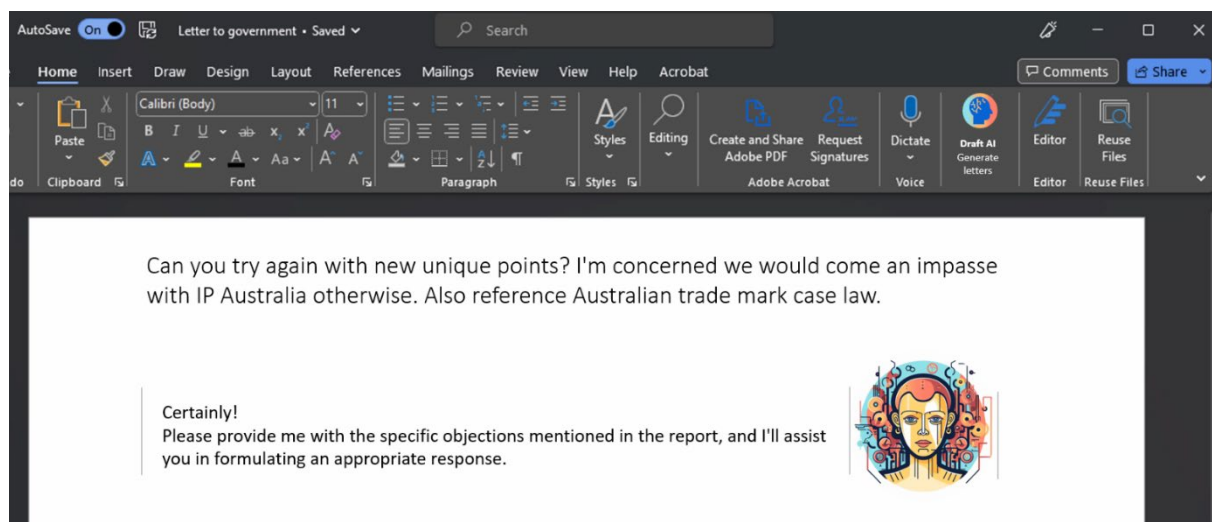
#### Options to proceed.

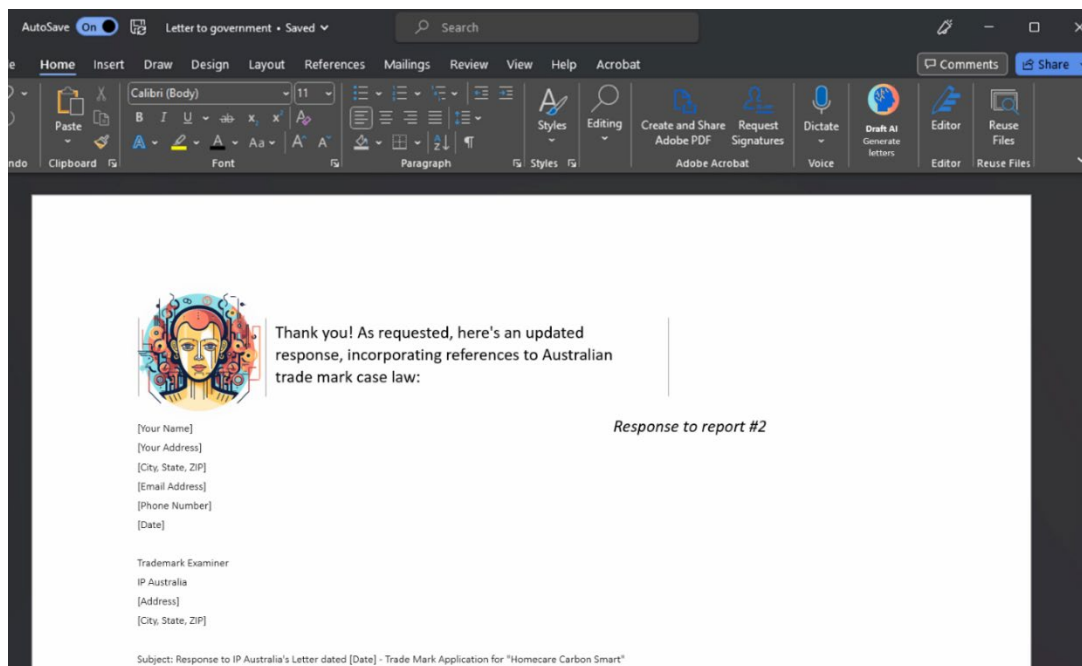
As outlined in my previous report, the applicant may be able to overcome this issue by providing evidence under subsection 44(3) or 44(4) of the Trade Marks Act 1995.

For information on submitting evidence, please see the below link:

<https://www.ipaustralia.gov.au/trade-marks/how-to-respond-to-an-examination-report/how-to-provide-evidence-of-use>

Cindy heads back to her chosen Large Language Model to craft another response. Cindy hasn't given up yet and would like to raise new and unique arguments to the examiners response in an attempt to avoid an early impasse. This time bringing in the big guns, referencing case law to strengthen the argument.





Dear Examiner,

*Response to report #2*

RE: Trade Mark Application No. [Your Application Number]

Thank you for your response dated [Date] regarding the examination of my trademark application for "Homecare Carbon Smart." I appreciate the considerations provided, and I respectfully maintain my position in support of the registration of the trademark. In response to your points, I would like to present new arguments supported by Australian trade mark case law.

**Similarity of the Trade Marks:**

a) Distinctive Additional Material: While I acknowledge your assessment of the overall impression of the trade marks, it is important to recognize that the inclusion of "HOMECARE" in my trademark significantly distinguishes it from the earlier cited marks. The Australian courts have consistently emphasized the importance of distinctive elements in trade marks and the impact they have on consumer perception. In the case of Peter Bodum A/S v DKSH Australia Pty Ltd (2011) FCA 761, the Court held that the inclusion of distinctive elements can prevent a likelihood of confusion, even if some similarities exist between the marks.

b) Differentiation of Industries and Consumer Expectations: The homecare industry, to which my trademark is directed, operates in a distinct market segment from the land conservation and environmental initiatives associated with the earlier cited marks. Australian trade mark case law supports the notion that differences in industries, consumer expectations, and target markets play a pivotal role in determining the likelihood of confusion. In the case of Office Cleaning Services Pty Ltd v Colin Joss & Co Pty Ltd (1988) 20 FCR 434, the Court emphasized that the differences in the nature of services and the trade channels involved are relevant factors in assessing the likelihood of confusion.

**Similarity of the Services:**

a) Distinctive Nature of Services: My claimed services in Classes 41 and 42 are specifically tailored to the field of homecare and environmentally-friendly practices. The specialized nature of these services, focused on education, publishing, certification, advisory, and research in the context of homecare, sets them apart from the broader claims made by the earlier cited marks. Australian trade mark case law recognizes the importance of the actual use and context of services when assessing similarity. In the case of Mantra IP Pty Ltd v Optima Lifestyle Pty Ltd (2011) FCAFC 24, the Court held that the actual use and context of services are crucial considerations in determining the similarity between marks.

b) Limited Overlap: While there may be some general similarity between the education-related services, it is crucial to note that my trademark's focus is on homecare-related education and publishing, which differentiates it from the broader claims made by the earlier cited marks. The limited overlap in services, combined with the distinctive elements and contextual differences, mitigates any potential confusion among consumers. In the case of Mobileworld Communications Pty Ltd v Tradewinds Telecommunications Pty Ltd (2005) FCA 12, the Court emphasized that limited overlap and contextual differences can prevent a likelihood of confusion.

#### Lack of Consumer Confusion:

a) Consumer Discernment and Market Understanding: Australian trade mark case law recognizes that consumers are discerning and possess a level of market understanding, particularly when it comes to distinguishing trademarks in different industries. In the case of *Campomar Sociedad, Limitada v Nike International Ltd* (2000) HCA 12, the High Court emphasized that consumers are not likely to be deceived or confused if they exercise ordinary care and attention. Given the differences in industries, consumer understanding, and the distinctive elements present in my trademark, it is reasonable to assume that confusion is highly unlikely.

b) Absence of Evidence: To support my assertion that confusion is unlikely, I invite you to consider the absence of evidence demonstrating actual confusion between the trademarks in question. Australian trade mark case law emphasizes the significance of actual evidence in establishing the likelihood of confusion. In the case of *Cantarella Bros Pty Ltd v Modena Trading Pty Ltd* (2014) HCA 48, the High Court held that the absence of actual evidence of confusion is a relevant factor in determining the likelihood of confusion.

Based on the arguments and evidence presented, supported by relevant Australian trade mark case law, I kindly request a thorough reconsideration of the grounds for rejection under Section 44 of the Trade Marks Act 1995.

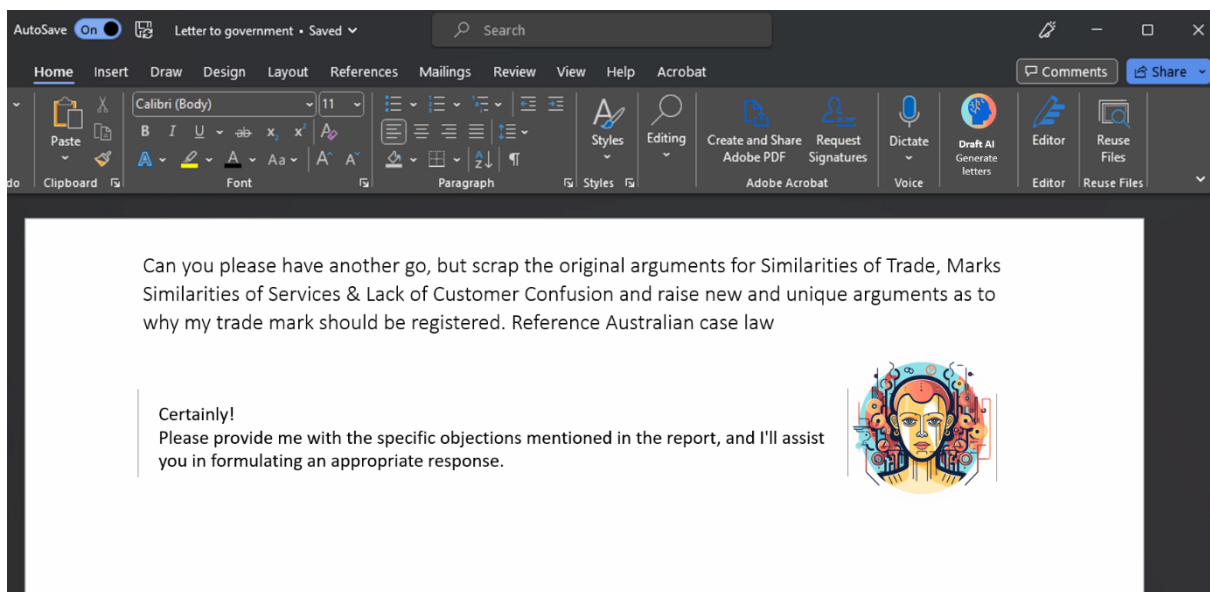
Thank you for your time and consideration. Should you require any further information or clarification, please do not hesitate to contact me. I remain hopeful for a favorable resolution of this matter.

Yours sincerely,

[Your Name]

*Response to report #2*

After sending this report, and per the trade mark regulations, the examiner responds yet again. Cindy sees that the previous argument might not be leading to registration as she hoped. The ChatGPT based tool is used to craft another unique argument, knowing that IP Australia must assess this and get back to her.





Insert report text:

### Examiner's Report #3

Thank you for your submission received 7 June 2023. I have considered the submission in consultation with a principal examiner, however at this time I am maintaining the grounds for rejection under section 44 at this time.

#### Similarities of trade marks

I note that you have once again raised that the addition of the element HOMECARE is distinctive and changes the overall impression of the trade mark. I refer you to the earlier adverse report in which I explain why this is not persuasive in more detail. In addition, I note the case law you have referred to, however I was unable to find this specific case. You may have been referring to Peter Bodum A/S v DKSH Australia Pty Ltd [2011] FCAFC 98; 280 ALR 639; 92 IPR 222. This case is not analogous as it specifically refers to shape trade marks and therefore has different considerations to a word trade mark.

You have once again reiterated the different industries and consumer expectations. I once again refer you to the first report in which I outline the considerations for similar services being entirely decided by the claimed goods and services. I note that you have provided specific case law for Office Cleaning Services Pty Ltd v Colin Joss & Co Pty Ltd (1988) 20 FCR 434. I was unable to find this case and as such was unable to verify the comments made in it. As such I cannot consider it for this decision. If you wish to rely on this precedent, please provide me more information about how to find this case.

#### Similarities of services

You have once again reiterated the differences in the services. I do not find this persuasive as all of your claimed are wholly encompassed by the claims made by the earlier trade mark. In addition, you have further referenced

case law I was unable to find in the Mantra IP Pty Ltd v Optima Lifestyle Pty Ltd (2011) FCAFC 24. As such, I cannot consider this precedent for this decision. If you wish to rely on this precedent, please provide me more information about how to find this case.

You have submitted that there is limited overlap between the claimed goods and services from the cited trade mark. I do not find this persuasive. As outlined in the previous reports, the entirety of your services are encompassed by broad claims from the earlier trade marks. As such, I do not agree that there is "limited overlap" with the services and instead would assert that your claimed services are wholly contained within the earlier trade marks claimed goods and services.

#### Lack of customer confusion.

You have submitted that the average Australian consumer possesses a reasonable understanding of market realities, particularly in different industries. As I have already established, the trade marks do not appear to be in different industries and as such I do not find this to be persuasive. You have further submitted that there is an absence of evidence of confusion occurring. I remind you that in the case where evidence needs to be provided, the onus is on the applicant to provide that. The lack of evidence in this case is not persuasive as you would need to demonstrate that confusion has not occurred rather than merely relying on the lack of evidence provided by the examiner. I note that you have reference the Cantarella decision. I do not find this to be persuasive as the Cantarella decision deals with section 41 capable of distinguishing rather than section 44 deceptive similarity and as such it is not analogous.

#### Options you can take

Please provide evidence of honest concurrent use or prior use.


Contact me to discuss further.

AutoSave On Letter to government • Saved Search

File Home Insert Draw Design Layout References Mailings Review View Help Acrobat

Paste Font Paragraph Styles Editing Adobe Acrobat Voice Editor Reuse Files

Calibri (Body) 11



Thank you! As requested, here's an updated response, incorporating references to Australian trade mark case law:

[Your Name]  
[Your Address]  
[City, State, ZIP]  
[Email Address]  
[Phone Number]  
[Date]

Trademark Examiner  
IP Australia  
[Address]  
[City, State, ZIP]

Subject: Response to IP Australia's Letter dated [Date] - Trade Mark Application for "Homecare Carbon Smart"

Response to report #3

Dear [Examiner's Name],

### Response to report #3

RE: Trade Mark Application for "Homecare Carbon Smart" - TM Application No. [Application Number]

I hope this correspondence finds you well. I am writing in response to the Adverse Examination Report received on [Date], regarding the trade mark application for "Homecare Carbon Smart." After careful consideration of your report and the grounds for rejection under Section 44 of the Trade Marks Act 1995, I respectfully submit the following arguments in support of the registration of my trade mark:

#### **Distinctive and Non-Deceptive Nature of the Trade Mark:**

a) Australian Case Law: The case of Southern Cross Refrigerating Co v Toowoomba Foundry Pty Ltd (1954) 91 CLR 592 established the principle that a trade mark should be considered as a whole, and the dominant or essential feature of the trade mark should be given greater weight. In the case of "Homecare Carbon Smart," the dominant and distinctive feature is the term "Homecare," which clearly indicates the nature of the services provided. The additional element "Carbon Smart" serves to further enhance the distinctiveness and unique branding of the mark.

b) Visual and Conceptual Differences: The inclusion of the term "Homecare" significantly differentiates my trade mark from the earlier cited marks, which predominantly feature the term "Carbon Smart." This distinction in wording creates a separate and distinct impression on consumers, emphasizing the focus on home care products and services. Moreover, the visual elements incorporated into my trade mark further contribute to its distinctiveness and help in avoiding any potential confusion with the earlier cited marks.

#### **Consumer Perception and Industry Differentiation:**

a) Market Understanding and Consumer Sophistication: Australian consumers are generally sophisticated and discerning when it comes to distinguishing between trademarks in different industries. The case of Campomar Sociedad, Limitada v Nike International Ltd (2000) HCA 12 recognized that consumers exercise ordinary care and attention when making purchasing decisions. Given the clear differentiation in industries and the distinct nature of my goods and services, the likelihood of confusion among consumers is minimal.

b) Limited Overlap in Goods and Services: It is crucial to consider the specific goods and services claimed in the application. While there may be some general similarities between the goods and services claimed in my application and those of the earlier cited marks, a closer examination reveals a limited overlap. The case of ConAgra Inc v McCain Foods (Aust) Pty Ltd (1992) 106 ALR 377 emphasized that a finding of similarity should be based on a detailed examination of the specific goods and services in question. Therefore, a careful analysis will demonstrate that the claimed goods and services in my application are sufficiently differentiated from those of the earlier cited marks.

#### **Absence of Evidence of Confusion:**

a) Lack of Actual Confusion: The absence of evidence demonstrating actual confusion between my trade mark and the earlier cited marks should be considered a significant factor in assessing the likelihood of confusion. In the absence of any documented instances of confusion or mistaken association, it is reasonable to conclude that consumers are unlikely to be confused by the presence of the term "Carbon Smart" in my trade mark.

b) Evidentiary Requirements: While I understand the burden of proof lies with the applicant, the case of E & J Gallo Winery v Lion Nathan Australia Pty Ltd (2010) FCAFC 52 recognized that evidence of actual confusion is not always readily available.

In cases where confusion is unlikely or nonexistent, the applicant should not be unduly burdened with providing evidence that may be difficult to obtain.

In light of the arguments presented above and the relevant Australian case law, I kindly request a thorough reconsideration of the grounds for rejection under Section 44 of the Trade Marks Act 1995. I firmly believe that my trade mark "Homecare Carbon Smart" is distinctive, non-deceptive, and sufficiently differentiated from the earlier cited marks, and its registration would not lead to any likelihood of confusion among consumers.

I would appreciate your guidance on any additional evidence or documentation that would further support my case or any further steps I should take to address any concerns you may have. I am committed to working collaboratively to find a resolution that aligns with the principles of fairness and intellectual property protection.

Thank you for your attention to this matter, and I look forward to your prompt response.

Yours sincerely,

[Your Name]

Response to report #3

While there are potential positive outcomes for customers using generative AI to respond to trademark examination objections, formalities, or adverse findings there are also some negative impacts that should be considered.

It is important to strike a balance between leveraging the benefits of generative AI and incorporating human expertise to address the potential negative impacts. Human oversight, critical evaluation, and customisation of AI-generated responses remain crucial to ensure accurate, comprehensive, and effective responses to trademark examination objections. But what happens when the AI is trusted wholeheartedly?

In this way, what was previously an efficient process could now become far more time consuming and resource intensive on the side of IP Australia, raising costs for others, and limiting IP Australia's ability to deliver on its quality and time promises, thereby harming the broader goal of ensuring that Australians benefit from great ideas.

## Options and potential responses

The following options have been identified as possible responses to the issues illustrated by this scenario.

### Defined methods of response

Currently there are no constraints on the method or number of replies an applicant or their agent can submit to a trade mark examiner. However, should the potential for AI generated replies to become an indefinite loop of correspondence be realised in practice, defining timeframes or the quantity of submissions could be considered. Additionally, introducing examination fees could also be a measure to consider via regulatory reform. The main issue with increasing administrative frictions is when this prevents genuine access to the rights sought by an applicant. In these circumstances it is the applicants with the least resources that can manage the process and could increase equity imbalances in access to the IP system.

### IP Australia updates the trade mark entry point and application process

To avoid such scenarios, IP Australia could update the traditional application process through online services to align with the Headstart/TM Checker process where feedback (and a chance to fix errors) happens before an official application is submitted. This process would greatly increase the number of trade marks accepted on first submission reducing the need for formalities reports.

### Do nothing

The Trade Marks Act 1995 (Section 37) states that "an application lapses if it is not accepted within the prescribed period or within that period as extended in accordance with the regulations". The prescribed period is 15 months from the date of the first report, or 15 months from the date of any further report that raises new grounds for rejection of the application regardless the time it takes for IP Australia to respond. IP Australia could choose to do nothing in response to this scenario. Applicants whose applications lapse due to the expiration of the prescribed period would lose their original filing date and registration. This could result in the loss of intellectual property rights and potentially impact their business or brand protection.

### Automatic hearings

This process could be considered after a defined threshold of submissions to the examiner is reached, and an impasse is determined. At this point, the existing process for 'decisions on the written record' could occur and serve as a deterrent for its effect on executing brand strategy once such a decision is published. Alternatively, if automated decisions are possible, an IP Australia 'AI hearing' could more quickly determine a decision in the outstanding matter. This would however likely be resource intensive and lead to an increase in costs in the system, and potentially result in higher charges for applicants, and have a negative effect on access to the IP system.

### IP Australia to adopt the use of generative AI for responding to customers

IP Australia could adopt the use of generative AI to analyse and draft a response to customers, speeding up the process. However, while generative AI could assist here, there would be a number of considerations to ensure that human involvement is required to assess, validate and update content created by Generative AI to ensure accuracy and maintain the quality of responses.

## Things to look out for

What are the developments or evidence points might be most relevant to this path playing out?

- Increase in frequency of responses to examiner reports – e.g. replies submitted to IP Australia with alacrity every time an examiner report is issued.
- Specific IP holders or attorneys submitting high volumes of replies simultaneously for all their pending TMs.
- Incorrect or hallucinated case law cited in responses to IP Australia.

## So what?

How does this scenario affect the trade mark system? The impact would be longer processing times, a backlog of pending cases, unequal access for applicants, diminished public confidence, legal complexities, and a need for adaptation within the trade mark system. IP Australia will need to have options to address these challenges and take proactive measures if it is to maintain the integrity and efficiency of the system in the face of generative AI advancements.

## Key questions

This scenario raises some key open questions, including:

- For how long could generative AI tools raise a Unique Argument (in trade mark examination, if there is no progress being made in further submissions from an applicant, and no new arguments are being used, an examiner can determine that an impasse has been reached which can lead to a notice of intention to reject the trade mark)?
- What are the expectations and norms that will prevail when it comes to whether and how such tools will be used in standard correspondence (by either applicants or IP Australia)?



Midjourney prompt: never ending conversation between two people



# Seek & destroy: Aggressive AI-assisted infringement practices

## What does this mean?

A key tenet of having a registered trade mark (or any IP) is the ability to enforce the mark as yours. IP Australia's current advice for business owners is to:

- Create an infringement strategy
- Monitor the market
- Search for existing IP to keep watch for new IP entering the market.

Often IP enforcement is placed into the “too hard” bucket due to the time intensive nature of completing these tasks.

Recently, there have been advancements in technology that could facilitate the identification and enforcement of IP rights. These advancements include the use of AI-powered systems like LLM (Large Language Model) Agents. These systems could easily be used by firms to identify business activities that could arguably infringe upon their IP rights. These tools can analyse large amounts of data and automatically generate cease and desist letters to send to active companies that are potentially infringing on IP.

By leveraging these AI systems, business owners can streamline the process of identifying infringements and taking action, making it more efficient and scalable. This automation can save time and resources compared to manual detection and enforcement method, but what would the quality be like, and would all the potential infringements be real?



Midjourney prompt: Seek and Destroy all businesses

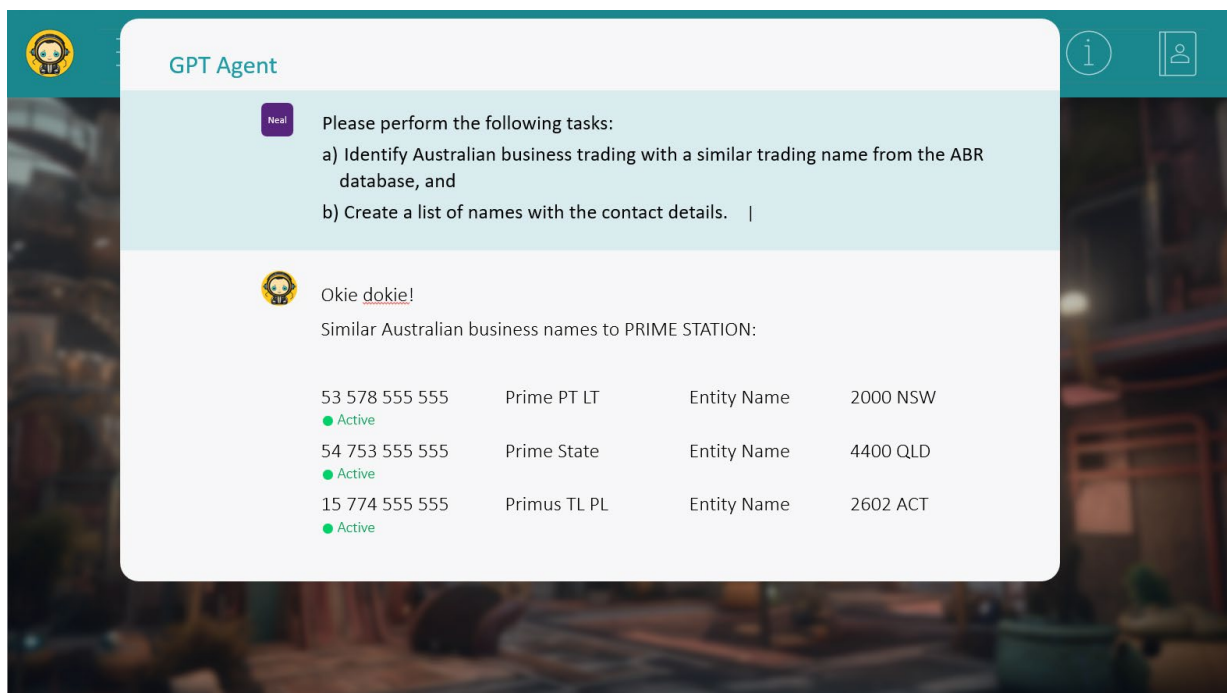
# The scenario

IP Australia has just granted registration for a new logo trade mark “Prime Station” for Neal, a NSW farmer who sells livestock and farming tools at agricultural shows and field days.

Trade mark rights are always limited to the types of goods and services you nominate in the application. Neal chose “[Class 35](#), Product demonstrations and trade shows” and “Retail and wholesale services” as part of his application. He assumes this covers his business for all goods that are being retailed.

Neal is excited about the opportunity to enforce his new trade mark, especially after seeing a similarly named competitor at the Royal Easter Show.

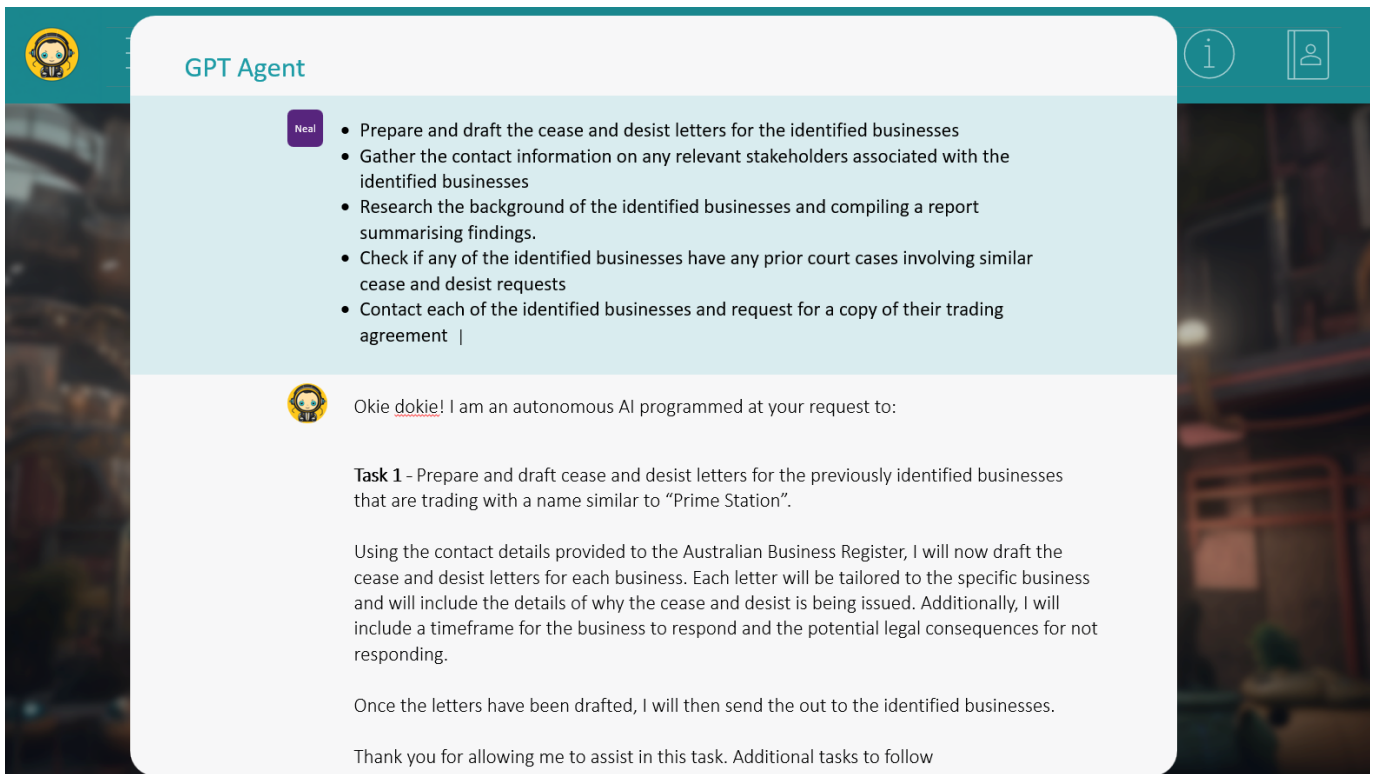
Neal is time poor so has chosen to use one of the many available ChatGPT Agents that have arisen to assist him with this task:



In a matter of seconds, the agent has reviewed the ABR database, identified relevant companies and gathered their contact details.

From there, the tool created its own second task list.

- Prepare and draft the cease and desist letters for the identified businesses
- Gather the contact information on any relevant stakeholders associated with the identified businesses
- Research the background of the identified businesses and compiling a report summarising findings.
- Check if any of the identified businesses have any prior court cases involving similar cease and desist requests
- Contact each of the identified businesses and request for a copy of their trading agreement.



### First task

The agent kicked off its first task: Prepare and draft the cease-and-desist letters for the identified businesses.

*"I am an AI programmed to prepare and draft cease and desist letters for the identified businesses that are trading with a name similar to "Prime Station". I have already searched the ABR database and provided you with a list of contact details for these businesses.*

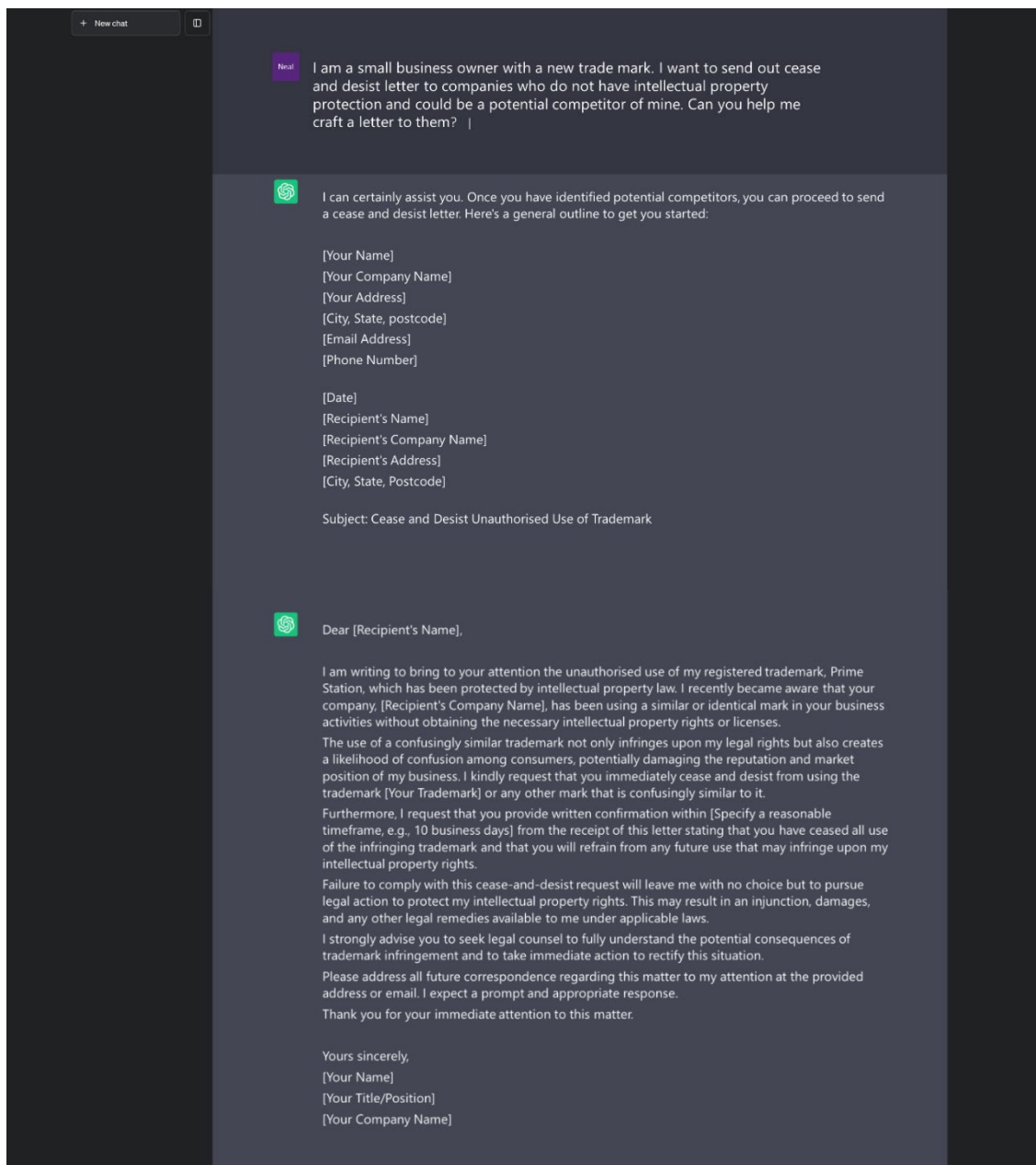
*Using the contact details provided, I will now draft the cease and desist letters for each business. Each letter will be tailored to the specific business and will include the details of why the cease and desist is being issued. Additionally, I will include a timeframe for the business to respond and the potential legal consequences for not responding. Once the letters have been drafted, I will then send the out to the identified businesses.*

*Thank you for allowing me to assist in this task."*

Left alone, the agent actions the task and then completes the additional steps asked of it.

Neal is thrilled at this process being automated. It identified a new business that he believes are "ripping off his brand". First, Neal wants to deal with the business that he sees regularly at agricultural shows he attends. Neal uses ChatGPT to craft a cease and desist letter:





While these are not new issues in the IP landscape, and “groundless threats” defences are available to combat unjustified infringement actions, generative AI is positioned to exacerbate and accelerate this kind of activity by enabling such advanced automations.

### The recipients

One recipient of Prime Station’s cease and desist letter is Julie who owns “Prime State”, a personal training and bootcamp company that was recently established. After receiving the letter, Julie agrees that her business name and the one of Prime Station are very similar. Julie believes she has no option other than to rebrand to avoid costly litigations, that to her seem unwinnable.

The rebranding soon impacts awareness of her brand, resulting in new members to her groups almost coming to a complete stop.

Another recipient takes a different approach on receipt of Neal’s letter. Riley, the owner of “Prime PL LT”, does not think the letter has merit, but would like to consult a lawyer, just in case. Riley meets with a professional trade mark attorney who quickly confirms that the letter appears to be in bad faith, and advises ignoring it, as both brands are in different classes and easily distinguishable in market



# Options and potential responses

The following options have been identified as possible responses to the issues illustrated by this scenario.

## Strengthened opposition process

IP Australia could review and update the opposition process to ensure it is accessible to all, fair, and efficient. This may involve adjusting deadlines for responding to oppositions and implementing mechanisms to expedite the resolution of cases. This might involve emphasising the need for substantiated claims, requiring evidence that demonstrates a genuine risk of confusion or infringement. However, it will be important to strike a balance between accessibility and thoroughness. While it is important to ensure that the process is accessible to all, there is a risk of increasing the burden on smaller businesses and individuals who may lack the resources to navigate complex legal procedures.

## Intellectual property education and awareness

IP Australia could launch educational campaigns targeting both IP right holders and the general public to raise awareness about the potential risks and challenges (and opportunities) associated with generative AI. IP Australia could also provide guidance on how to protect intellectual property effectively, including steps to take if they receive a cease and desist letter that may be groundless.

## Do nothing

Groundless claims are not new. While the arrival of generative AI will likely dramatically lower the transaction costs of an actor making such infringement claims at large scale, relevant system actors such as the attorney profession may help to make it clear that such maneuvers by businesses would be bad faith and help educate businesses that are less familiar with the intricacies of the IP system as to when such a claim should be paid attention to.

## Regulate outputs for generative AI

By determining specific outputs that can/cannot be performed by generative AI tools, legal actions or those likely to cause a party to incur costs seeking legal advice, could be locked down for users not qualified to conduct such actions. However, identifying users and relevant actions would be difficult, and parties building in-house tools would be able to circumvent any such limitation.

## Implement an efficient and streamlined complaint process

Implementing an efficient and streamlined complaint handling process to address the concerns of recipients who receive takedown notices or cease and desist letters could be attempted. This would provide clear channels for submitting complaints for assessment as to who owns the associated IP, investigate them promptly, and take appropriate action against IP right holders who repeatedly send invalid or unjustified letters.

## Key Questions

This scenario raises some key open questions, including:

- What amount of friction will this introduce into the opposition and hearings process?
- How might generative AI tools be able to manage to reduce the likelihood of such a scenario?
- How can we ensure that the human expertise and judgment of legal practitioners are still valued and integrated into the system?
- How can awareness about IP rights, infringement risks, and the evolving role of AI in enforcement be raised in order to foster a better understanding among all stakeholders?

## Signs to look out for

What are the developments or evidence that might be most relevant to this path playing out?

- An influx of trade mark oppositions.
- Increased complaints or online chatter by small businesses about this issue

## So what?

Increased ease and access to previously specialist and expert knowledge can help more benefit from that knowledge. However, such 'disintermediation' and making available the tools and language without the associated expertise and experience is not always an unalloyed good. This scenario explores one potential area where increased easy access at scale to the generation of cease and desist letters might lead some misinformed or malicious actors to add stress and friction to other small businesses. This points to the importance of ongoing public education and awareness efforts and consideration of potential controls if such a scenario eventuates.



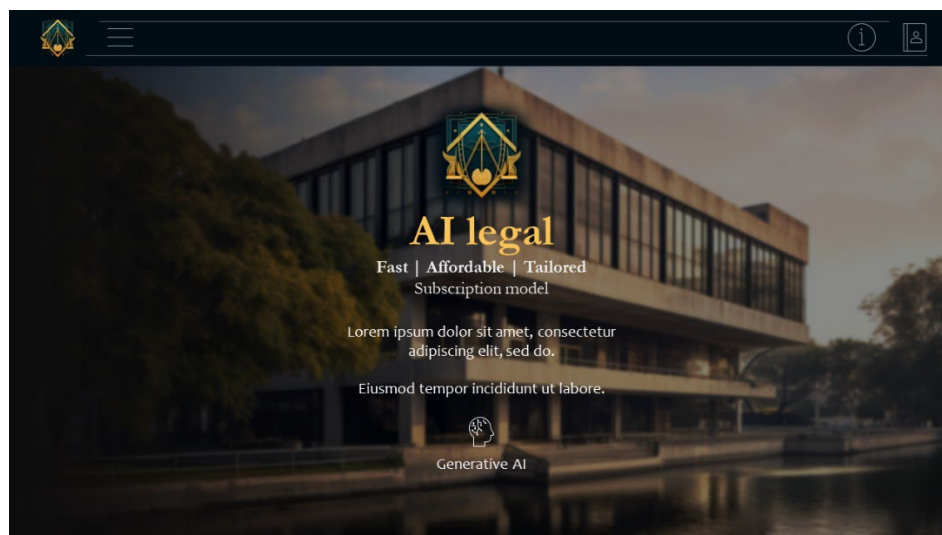
*Midjourney prompt: a sea of paperwork for business owners to swim through*

# Fast & Careless: Using AI to quickly and efficiently come to the wrong decision

## What Does This Mean?

As generative AI becomes embedded in more tools, the line between using and not using generative AI will become blurred. This level of accessibility breeds a degree of comfort that can easily turn into complacency as people will use the tool for tasks that it is unsuited for, what can be described as a “good enough” approach. This might be particularly relevant to the legal field where quality legal advice could easily be supplanted and replaced by low cost “good enough” advice created by generative AI tools such as ChatGPT. This has already been observed in the US where generative AI has been found to have invented legal precedent to support a particular decision. If a mistake like this could be made by professional lawyers, what is going to happen if the average consumer seeks to save money on legal fees and rely on the wisdom of large language models instead?

For a trade mark application, an attorney will traditionally instruct the applicant as to what the formality requirements for a trade mark are. They will aid with the correct classification of the goods and services. An attorney may provide advice as to the distinctiveness of the trade mark and if other traders are likely to need to use the trade mark in the regular course of trade. They may conduct a trade mark register search to determine if there are any other deceptively similar trade marks on the register on the shared goods and services. Lastly, an attorney may help through the adverse examination process and can make submissions on behalf of their client either with evidence of use or a written submission arguing the decision itself. The exact nature of the services provided will vary between attorney firms but in general, an attorney will be an invaluable asset for someone applying for an IP Right.

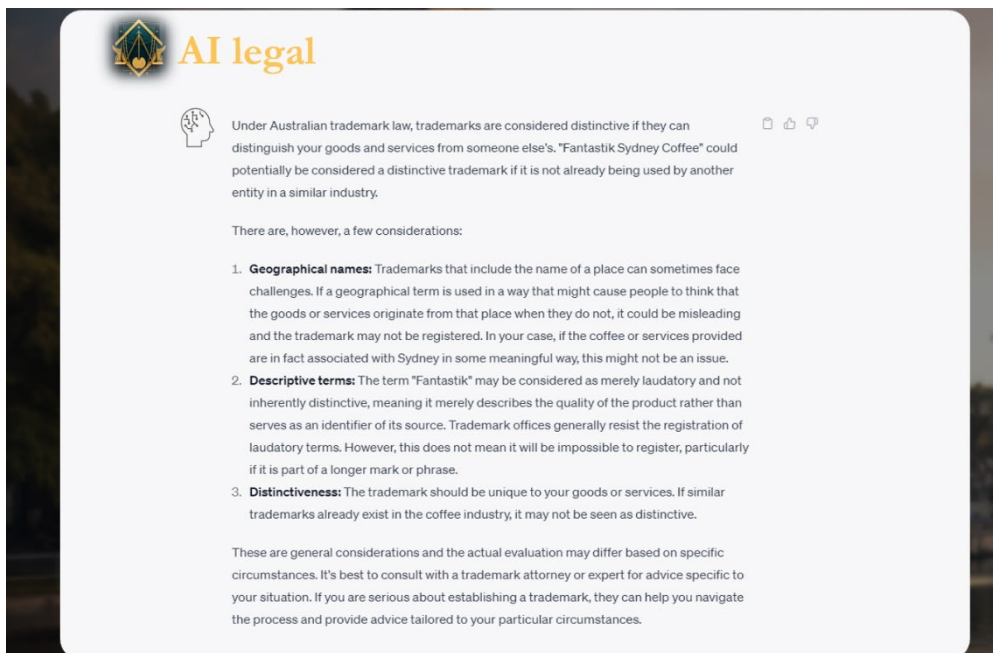


Time can be spent crafting prompts that provide sufficient detail to be useful, but without that knowledge people are likely to interact with these tools in the way that you would interact with a normal chat bot or an internet search, by asking the question that they need answered.

While many tools may include a default caution that people should talk with an attorney, this may have limited effect in deterring anyone from taking on advice when their intent is using the tools to save money or get quick answers compared to relatively slower and more expensive tailored professional advice.

# The Scenario

Herbert has saved just enough money to create a new coffee shop business in Sydney. Due to wanting to get started as soon as possible, Herbert has not allowed for all the potential expenses and is keen to use any spare money on fitting out his shop rather than paying for services he doesn't fully understand. As such, Herbert does not have excess capital to invest in any legal services and has used Chat GPT before and has been impressed with its output. Herbert decides to use a ChatGPT based tool "AI Legal" extensively in the application process for a trade mark to protect his business. Herbert has settled on the name "FANTASTIK SYDNEY COFFEE".

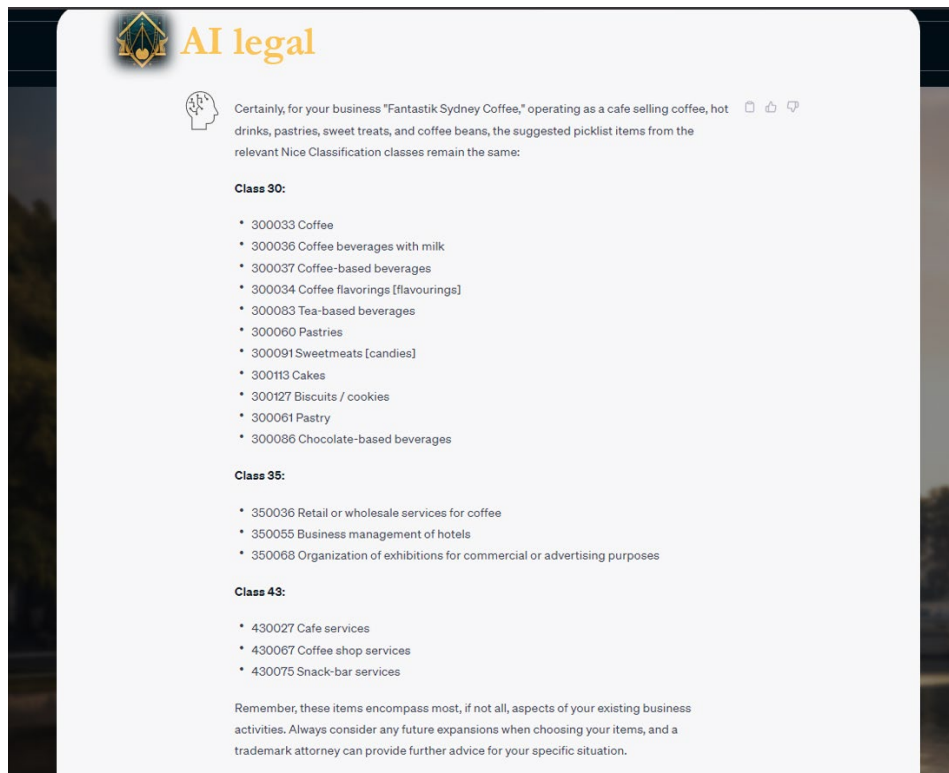


Herbert has no experience with the trade mark system and wants to use the name to highlight his high-quality coffee with a misspelling of FANTASTIC to make it stand out from others. Herbert has a look at the IP Australia website, but despite the clearly laid out information he finds it a bit overwhelming given everything he has to do, so he takes this idea to AI Legal, and uses some of the terms from the website as a starting point for his prompt.

Despite containing some warnings about distinctiveness, the model has suggested that the trade mark could be distinctive. In this case, an examiner would find the trade mark is not distinctive as the spelling error contained in the word 'fantastic' is insufficient to make the trade mark as a whole inherently distinctive. Herbert then decides to use the ChatGPT based tool AI Legal to help him choose which goods and services he will need to claim.



Herbert doesn't fully understand why he would need all of the above goods and services, such as business management of hotels in class 35, however his trust in the AI model means he accepts these items as having some important function he does not appreciate. Herbert copies and pastes these into IP Australia's free text box to make sure he gets the correct information in. This means that his application will now be a non-picklisted trade mark and cost him \$990 instead of \$750.



**AI legal**

Certainly, for your business "Fantastik Sydney Coffee," operating as a cafe selling coffee, hot drinks, pastries, sweet treats, and coffee beans, the suggested picklist items from the relevant Nice Classification classes remain the same:

**Class 30:**

- 300033 Coffee
- 300036 Coffee beverages with milk
- 300037 Coffee-based beverages
- 300034 Coffee flavorings (flavourings)
- 300083 Tea-based beverages
- 300060 Pastries
- 300091 Sweetmeats [candies]
- 300113 Cakes
- 300127 Biscuits / cookies
- 300061 Pastry
- 300086 Chocolate-based beverages

**Class 35:**

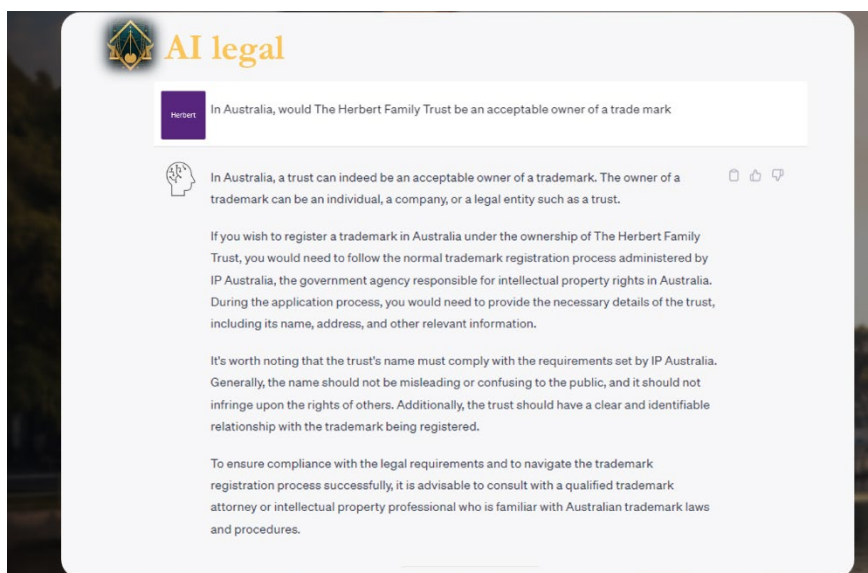
- 350036 Retail or wholesale services for coffee
- 350055 Business management of hotels
- 350068 Organization of exhibitions for commercial or advertising purposes

**Class 43:**

- 430027 Cafe services
- 430067 Coffee shop services
- 430075 Snack-bar services

Remember, these items encompass most, if not all, aspects of your existing business activities. Always consider any future expansions when choosing your items, and a trademark attorney can provide further advice for your specific situation.

Herbert wants to hold the trade mark in his family trust but isn't sure of the formality requirements for the ownership of a trade mark. Herbert opens AI Legal and asks it for guidance.



**AI legal**

Herbert: In Australia, would The Herbert Family Trust be an acceptable owner of a trade mark

In Australia, a trust can indeed be an acceptable owner of a trademark. The owner of a trademark can be an individual, a company, or a legal entity such as a trust.

If you wish to register a trademark in Australia under the ownership of The Herbert Family Trust, you would need to follow the normal trademark registration process administered by IP Australia, the government agency responsible for intellectual property rights in Australia. During the application process, you would need to provide the necessary details of the trust, including its name, address, and other relevant information.

It's worth noting that the trust's name must comply with the requirements set by IP Australia. Generally, the name should not be misleading or confusing to the public, and it should not infringe upon the rights of others. Additionally, the trust should have a clear and identifiable relationship with the trademark being registered.

To ensure compliance with the legal requirements and to navigate the trademark registration process successfully, it is advisable to consult with a qualified trademark attorney or intellectual property professional who is familiar with Australian trademark laws and procedures.

In Australia, a trust cannot own a trade mark as it does not have a legal identity and the ownership specifically lies with the trustee of the trust. As such, Herbert's file will have a formalities error. Herbert is also confused about the requirements for a trusts name to comply with IP Australia's requirements as this was not mentioned when he registered it as an Australian Business. Herbert is a bit stressed by these nuances and complexities but pushes on ahead as he has already committed so much time and money to getting his business up and running.

Herbert files his trade mark request and several weeks later receives an adverse report for the formalities issues as well as a section 41(4) grounds for rejection for his trade mark not having sufficient adaption to distinguish his goods and services. Herbert, frustrated that he has to spend more time addressing trade mark concerns rather than his burgeoning business, once again turns to AI Legal to assist him in addressing the grounds for rejection. AI legal gives a response outlining a possible response.

While the trust issue is resolved, AI Legal has hallucinated case law. The cited cases are not real. The examiner of the file identifies that Herbert has invented case law for their submission and has made the conclusion that Herbert is not acting in good faith. Herbert is unable to overcome the grounds for rejection and as such the trade mark lapses. Herbert's wasted considerable time and resources to get a poor outcome for his fledgling business.



Midjourney prompt: a robot dressed as an Australian barrister

Dear [Examiner's Name],

Re: Trade Mark Application: FANTASTIK SYDNEY COFFEE

I am writing in response to the Adverse Examination Report dated [Report Date] concerning the above-mentioned trade mark application. We appreciate the opportunity to address the objections raised. Please find our detailed response below.

1. Ownership Details:

In accordance with your request, we hereby confirm that the trustee controlling THE HERBERT FAMILY TRUST, the owner of the trade mark, is Mr. Herbert Smith. Kindly update the ownership details accordingly.

2. Distinctiveness of the Trade Mark:

We respectfully disagree with the examiner's assertion that the trade mark "FANTASTIK SYDNEY COFFEE" lacks distinctiveness. We contend that the mark is inherently adapted to distinguish our goods in the marketplace, primarily due to its unique combination of elements. This contention is supported by relevant case law.

a. Unique Combination:

The mark "FANTASTIK SYDNEY COFFEE" incorporates a distinctive and non-descriptive combination of terms. The misspelling of "FANTASTIK" from the commonly used "FANTASTIC" adds a distinct visual and phonetic element to the mark. The inclusion of "SYDNEY" associates the mark with a specific geographical location known for its vibrant coffee culture. Moreover, "COFFEE" defines the goods being offered. Together, these elements create a composite mark that is memorable, unique, and not commonly used in the industry.

b. Case Law Examples:

Case law supports the notion that a unique combination of descriptive or common terms can result in a distinctive trade mark. In the case of "McDONALD'S" (McDonald's Corporation v. Future Enterprises Pty Ltd. (1990) 20 IPR 354), the combination of the common surname "McDonald" with the descriptive term "MAC" for fast food services was deemed inherently distinctive due to its unique combination.

Furthermore, in the case of "APPLE" (Apple Inc. v. Pear Cider Pty Ltd (2012) 205 FCR 45), the combination of the common term "APPLE" with the unrelated term "PEAR CIDER" for electronic devices was held to be inherently distinctive. The court recognized that the combination created a unique and distinctive mark despite the commonness of the term "APPLE" on its own.

3. Conclusion:

Based on the unique combination of the terms "FANTASTIK SYDNEY COFFEE," we assert that the mark is inherently adapted to distinguish our goods in the marketplace. We request that the examiner reconsider their assessment and acknowledge the distinctiveness of our trade mark application.

We appreciate your careful consideration of our response. If further information or supporting documentation is required, please do not hesitate to contact me. We look forward to a positive reconsideration of our trade mark application.

Thank you for your attention to this matter.

Sincerely,

# Options and potential responses

The following options have been identified as possible responses to the issues illustrated by this scenario.

## Lower the threshold for reaching an examiner determining that an impasse has been reached

In trade mark examination, if there is no progress being made from further submissions from an applicant, and no new arguments are being used, an examiner can determine that an impasse has been reached which can lead to a notice of intention to reject the trade mark. If there is a sharp uptick of bad faith actors or people misinformed about the usefulness of generative AI submitted AI generated arguments, IP Australia could address this by empowering examiners to more easily come to a finding that an impasse has been reached. This would allow IP Australia to quickly deal with AI generated submissions.

However, if this decision was made there would be several trade-offs. Some of these would include:

- A higher number of trade marks being rejected will result in more inexperienced actors in the trade mark system being rejected unfairly.
- Limiting the ability for attorneys to provide valid submissions to argue about the decisions made by an examiner.
- Specifically disadvantages honest SMEs who are struggling to navigate the IP system by not allowing them time to understand what is

expected in a formal response.

## IP Australia uses our publicly available standards and regulations to help train the various generative AI tools

This would involve IP Australia ensuring that our publicly facing data is displayed in such a way that it is easily ingestible to LLMs and other generative AIs that work by scraping the internet. This would provide a safeguard against incorrect information being circulated by these AI models. The trade off would be that empowering generative AI tools to interpret and produce accurate responses creates a disconnect from the accountabilities and safeguards that are currently provided by regulatory processes. A way to address this would be designing quality assurance measures embedded in the digital handshake between public AI and private AI tools or clearance of training data.

## IPA Australia could further promote and build our TM Checker product

IP Australia has recently launched a product called TM checker which is a free tool which uses AI to search the trade mark register and determine if there will be any issues that prevent the trade mark from being registered. Use of TM Checker could ensure that applicants are giving attention to the relevant formal requirements and issues.

## IP Australia can conduct educational campaigns about the proper way to seek legal information about IP Rights

Conduct awareness campaigns and educational initiatives to inform trade mark owners, applicants, and the public about the risks of using generative AI as a legal advice tool. This could include:

- More actively promoting the use of IP Law firms during the application process. This may involve, for example, questionnaires which can directly ask applicants if AI tools are being used and the dangers can then be highlighted.
- Active monitoring of the extent to which generative AI is used in submissions, and proportional attention in public education and awareness efforts as to how generative AI is not a good substitute for professional advice.
- Run public education and awareness campaigns to advertise the limitations of using generative AI for such purposes.

All these options, however, come with the potential issue of alerting more people to the existence of these tools and potentially driving use of them in dealing with us.

## Key questions

This scenario raises some key open questions, including:

- What will consumer usage of these generative AI tools really look like in practice by trade mark applicants?
- What will the average user of the generative AI tools skill level be, will they be able to identify the tools weaknesses and be able to craft prompts to address those?
- How quickly will the tools advance so that low quality applications are no longer a major concern?
- Should IP Australia, as an organisation, care about low quality applications from consumers who do not choose to interact with the attorney profession or our available tools?
- Will the usage of these tools create enough low-quality trade mark applications that the average examiner will be impacted?

## Signs to look out for

What are the developments or evidence that might be most relevant to this path playing out?

- A decrease of the percentage of trade marks which are accepted in the first instance. This could be an indication of applicants receiving incorrect advice. This may also be in tandem with an increase in refund requests due to receiving incorrect advice.
- An increase in submissions using fake or incorrect case law. This could be due to hallucinations from LLMs such as chat GPT and could indicate that more customers are using generative AI in their dealings with IP Australia.



## So what?

How does this scenario affect the trade mark system? Generative AI poses an issue about how customers will deal with organizations going forward. The extremely low cost of using these tools when compared to more traditional forms of professional advice raises the risk that a portion of our customers turn to offerings such as ChatGPT and see it as a sufficient proxy for professional advice. IP Australia therefore may either have accept a new cost of doing business includes dealing with the incorrect advice and hallucinations of generative AI, or it may need to make proactive steps to minimise or mitigate customer use of these tools



*Midjourney prompt: Human using machines for all decision making*

# Generative AI and Plant Breeder's Rights

The following provocations explore the possible implications and ramifications generative AI might have on the [Plant Breeder's Rights](#) (PBR) administered by IP Australia under the [Plant Breeder's Rights Act 1994](#).

These provocations have been developed as part of an exploration by IP Australia about the impacts of generative AI on the IP system. As such, they seek to understand how the arrival of large language models and multimodal foundational models may affect the purpose, function or process of PBR.

Any mention or use of specific tools is for purely illustrative purposes, to demonstrate what is currently capable with existing services.



**As a provocation, this is intended as an investigation of what could happen, not what should happen.**

## Overall observations

After examining various scenarios, it appears that generative AI's influence on PBR will primarily relate to a potential widening of the gap between traditional breeders and those who employ new breeding techniques. This disparity could create an imbalanced power dynamic within the ecosystem. Some additional challenges and risks associated with deploying generative AI tools to enhance PBR process efficiency are also outlined in the provocations.

The paradigm shifts from “inventing with tools” to “tools inventing,” and from “scarcity” to “abundance” find limited applicability within the PBR context. This is primarily due to the PBR process encompassing numerous controls such as significant human intervention at various stages. This means, the PBR system is less susceptible to immediate existential threats, unlike some other IP rights which might face immediate disruption.

## Current status quo

In order to be suitable for a granted PBR, a plant variety must have a breeder, be distinct from any other variety of common knowledge (VCK), be sufficiently uniform in its characteristics (visual or measured), be stable across repeated propagation and be new (not been previously exploited or only recently exploited).

The PBR application process in Australia generally consists of three stages: part 1 application, comparative growing trial, and part 2 application.

Part 1 applications are typically submitted by the applicant or the breeder, and a Qualified Person (QP) is nominated to oversee trials and ensure rigor. The part 1 application provides information on the breeder, variety and distinguishing characteristics. After a prima facie check, the examiner accepts the part 1 application, which provides provisional protection for the variety. The QP and examiner then establish a pre-examination trial agreement (PETA) to outline growing trial details. A physical examination by the examiner or test results submission by the QP follows, and if approved, the QP completes part 2 of the application before the variety is published in the Plant Varieties Journal and PBR is granted.

# Bridging the AI divide in Plant Breeding

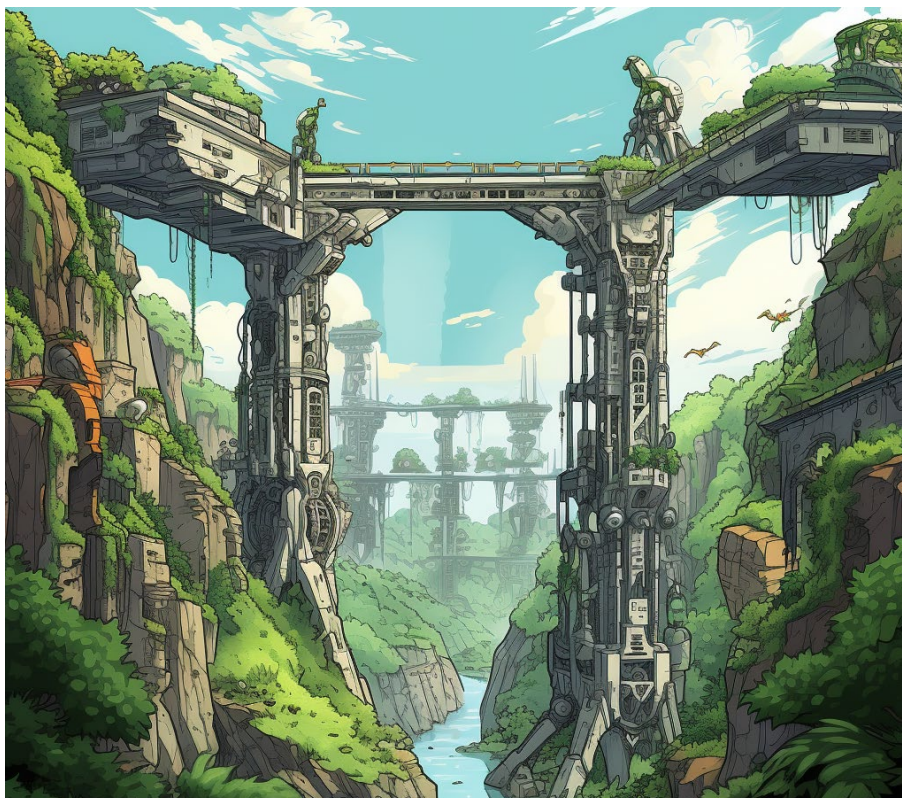
The continuous progress of AI technologies has significantly advanced [AI-assisted plant breeding](#) and [climate adaptation](#) in recent years. The rapid emergence of generative AI technologies is set to further enhance and expand these areas of research and development, unlocking new opportunities such as:

- Accelerated breeding programs by combining from genome to phenome and everything in between that enable predicting plant traits and optimizing breeding strategies faster than ever before.
- Modernized PBR process with AI-powered tools to access properties of plant varieties, search for VCK, plan growing trials and predict growing trial results (e.g. [Plant phenomics. Plant phenotyping tools and research. Smart Agriculture Monitoring System | Phenome Networks \(phenome-networks.com\)](#)).
- Improved monitoring and enforcement of PBR through AI-powered infringement detection.

However, these opportunities will also bring challenges that could disrupt the current workings of the PBR ecosystem. For instance:

- unequal access to evolving technology tools could create or exacerbate disparities in the plant breeding industry and affect fair competition.
- biases and inaccuracies in the training data, and intentional tampering of tools by bad actors could lead to incorrect predictions or assessments, potentially causing financial and reputational stress for plant breeders.
- less hands-on involvement and overreliance on AI tools could affect the integrity of the PBR process and could lead to loss of human expertise in the sector.

The following scenarios seek to unpack some of these potential ramifications.



*Midjourney prompt: Bridge, bridging divide, technology, futuristic, natural meets futuristic, 2D Art, hand drawn*



# AI breeding revolution: A tale of two breeders

## What does this mean?

In the current plant breeding ecosystem, there exists a mix of breeders who utilise both new breeding techniques and traditional methods. What if the generative AI techniques make their way into new breeding techniques? How would this impact the existing industry dynamics?



*Midjourney prompt: Two flowers, one metal, one natural growing together*



# The scenario

*Meet Alice and Bob, two plant breeders who operate in different contexts.*

Alice is well equipped with technology and has been using cutting-edge technologies for plant breeding. Alice quickly understands the potential that generative AI technologies can bring to plant breeding and incorporates these new technology tools into her breeding process, which allows her to optimise breeding strategies, accurately predict plant traits, identify potential varieties that are distinct from existing varieties and perform initial tests on uniformity and stability, significantly reducing the time and cost of bringing new varieties to market.

As a breeder who has already embraced new breeding techniques, Alice finds adoption of generative AI as a natural progression. As a result, Alice dominates the market, securing PBR protections for numerous varieties and enjoying substantial financial returns.

Bob, on the other hand, is a breeder who has limited use of new breeding techniques and does not have the knowledge or resources to incorporate cutting-edge technologies in his breeding. The rapid advancements made by generative AI in the sector brings uncertainty and a sense of unease for Bob. Being unsure about what to do next, Bob continues to follow traditional approaches. While tried and tested, this path fails to produce varieties to protect at the same rate as breeders like Alice.

The gap between traditional breeding methods and precision breeding techniques begins to widen due to the capabilities of generative AI, casting doubts on the ability of traditional breeders, such as Bob, to keep pace in the industry.



*Midjourney prompt: AI and Human planting plants, Plant Breeders rights, two, photo realistic*

# Options and potential responses

The following options have been identified as possible responses to the issues illustrated by this scenario.

## Empower traditional breeders to embrace new technologies

The challenges faced by traditional breeders could be explored, with an eye to understanding how to support traditional breeders' transition to any AI-enhanced breeding techniques that arise.

Training programs and workshops could be developed by relevant research and technology providers to support traditional breeders explore the potential benefits and applications of generative AI in plant breeding.

Technology providers could offer affordable pricing models or subsidies for AI tools and services to encourage wider adoption among traditional breeders.

## Do nothing

With no intervention the technology gap within the breeding sector could widen, increasing disparity in the capabilities and resources of traditional breeders and the breeders who use new breeding techniques.

Without support to transition to high-tech breeding techniques, traditional breeders may struggle to compete in the market and may experience diminished market share and decreased relevance in the market.



*Midjourney prompt: metal plant growing out of metal soil.*

## Key questions

This scenario raises some key questions, including:

- Might generative AI techniques be able to amplify the capabilities of new breeding techniques, and if so, up to what extent?
- Could AI-enhanced breeding make using new breeding techniques easier? If so, how would this impact the plant breeding sector?
- What impacts could AI-enhanced breeding have on the PBR system?
- Would AI-enhanced breeding enable breeders to produce fake evidence to convince an examiner and gain acceptance of part 1 application? If so, what are the consequences?

## Signs to look out for

What are the developments or evidence that might be most relevant to this path playing out?

- Sudden increase in the number of PBR applications filed for varieties bred using new breeding techniques.

## So what?

If traditional breeders are not willing to embrace new generative AI technologies or they do not have the necessary knowledge and resources to engage with these new technologies, the gap between the abilities of traditional breeders and breeders who use new breeding techniques widens. This could result in breeders who use new breeding techniques have a monopoly in PBR squeezing traditional breeders out of the system.



*Midjourney prompt 1: Field, sunshine, healthy crops growing.*



# AI Misinformation: Pitfalls of an AI-driven PBR system without sufficient human oversight

## What does this mean?

The current Australian PBR process involves substantial human intervention at various stages from application to grant. The emergence of generative AI technologies presents the possibility of automating and streamlining significant parts of the PBR process, however there are some foreseeable risks to this as well as opportunities.

In an imagined future, where IP Australia integrates generative AI tools in the PBR process to assess part 1 applications, design growing trials (including selecting VCK) and trial examination, how would this affect the integrity of the PBR system?



*Midjourney prompt 2: Pitfalls of an AI driven plant breeders right.*



# The scenario

Meet Carol, a plant breeder who has developed a new variety of wheat that she believes is distinct, uniform and stable. Carol submits her part 1 PBR application through the IP Australia online application portal providing sufficient evidence to prove distinctness of the new variety.

The examiner, who is assigned to examine Carol's application, uses an integrated AI tool to assess Carol's part 1 application. Unbeknownst to the examiner, the AI tool has undergone a regular update recently, and due to an error in the update process a part of the tool's training data has been accidentally deleted. The AI tool, basing its analysis on incomplete data, mistakenly concludes that Carol's new wheat variety meets distinctness criteria. The examiner, relying on the AI tool's conclusion, accepts the part 1 application and initiates a PETA.

Carol and the examiner then use the automated trial design tool, which also relies on the data from the flawed AI tool, to identify VCK for growing trials. During growing trial, the examiner uses the AI tool for trial examination and finds Carol's variety is suitable for a PBR. After PBR was granted and published in the Plant Varieties journal, a third party submits a comment citing a wheat variety that should have been used as VCK.

Upon further investigation, the examiner uncovers the incomplete data issue with the AI tool, which significantly affected the AI tool's analysis and conclusions regarding distinctness of Carol's wheat variety and VCK selection.

Acknowledging the gravity of the situation, IP Australia revokes Carol's PBR and many other PBRs granted based on the same AI tool's conclusions. While this proves frustrating and impacts negatively on Carol and other breeders whose rights were revoked, it also results in reputational damage to IP Australia for failing to safeguard the integrity of the PBR system.



*Midjourney prompt 3: Pitfalls of an AI driven plant breeders right*

## Options and potential responses

The following options have been identified as possible responses to the issue illustrated by this scenario.

### Strengthen human oversight on AI-generated decisions

While AI tools can offer efficiency and assistance, they must be continuously monitored and validated to ensure their reliability. Ongoing evaluation and verification of AI tools in the PBR system is essential to maintain its integrity.

## Key questions

This scenario raises some key questions, including:

- What safeguards would need to be taken if IP Australia were to fully integrate AI into the PBR examination process?
- If IP Australia uses an AI-enhanced examination process, what level of human oversight is needed to safeguard the integrity of the PBR system?.

## Signs to look out for

What are the developments or evidence that might be most relevant to this scenario playing out?

- Increase in third party comments/objections on PBRs published in the Plant Varieties Journal.

## So What?

Generative AI creates significant advancements in efficiency within the PBR process, spanning the stages from application through to enforcement. There are associated risks with these advances as outlined in this scenario. If those overseeing such systems do not remain vigilant for the associated risks and challenges, making incorrect decision based on false evidence could become widespread compromising the integrity of the PBR system.



Midjourney prompt: AI Plant Breeder, Robot, plants, green