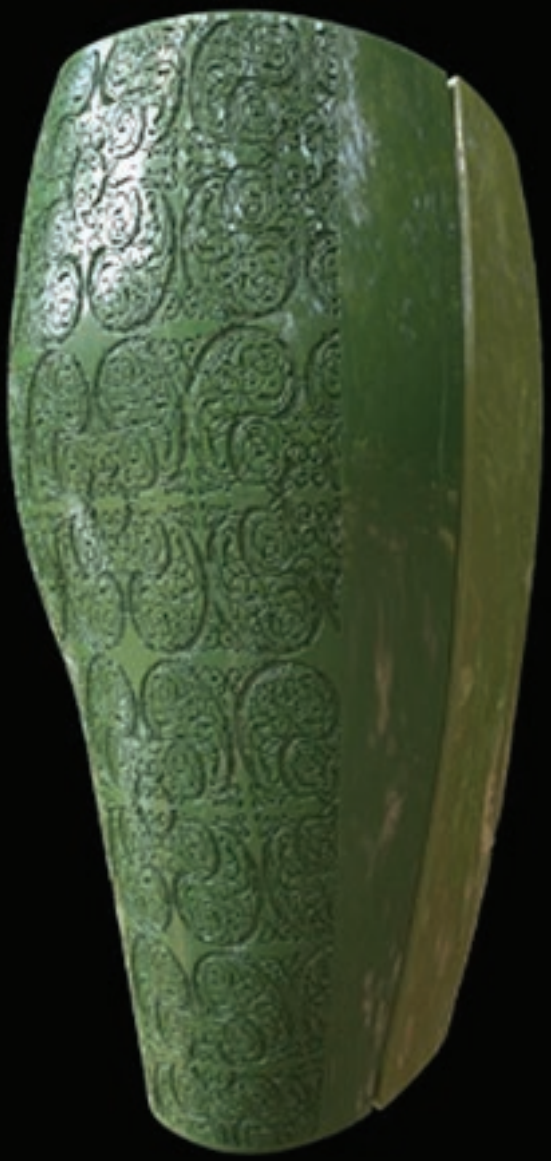
Manatū Taonga
Ministry for Culture & Heritage



One Day, a digital rendering of 3D printed prosthetic cover. Neil Wallace © 2025

Culture in the Digital Age
Long-term Insights Briefing 2025

Te Ahurea i te Ao Matihiko
He Whakamāramatanga mō ngā Tirohanga Wā Roa 2025

SEPTEMBER 2025

Cover artwork: *One Day* by Neil Wallace © 2025

One Day emerges from my experience as a double below-knee amputee and my desire to reclaim the silhouette of my legs. The prosthetic covers I can access commercially feel impersonal, mass-produced, and prohibitively expensive. This work imagines a future where prostheses are not generic but bespoke, tailored to the individual, able to be mixed and matched to outfit and personality, and freely shared as designs anyone with a 3D resin printer could access.

The patterning connects this vision with my ancestral whakapapa. My ancestor, Anders Sørensen Vedel, historian to the Danish king, was tasked with gathering Denmark's folklore before it was lost to Christianisation, publishing it in the *Hundredvisebogen*. Vedel, or those working alongside him, carved illuminated initials in woodblock prints to begin each chapter. The carver cut away what was not needed to reveal form and meaning. In my own life, I too have had to cut away, my legs removed, and this work seeks to transform that loss into pattern and reflection.

I have reinterpreted the illuminated initials digitally, arranging them in symmetrical patterns as an expression of *wairua*. In te reo Māori, *wai* means 'water' and *rua* means 'two'. Together, *wairua* conveys the idea of duality: the reflected self and the spiritual self, the whole self. By patterning these initials in symmetry, the work reflects this layered understanding: water as a mirror, identity as both physical and spiritual, and the search for balance between loss and renewal.

In this synthesis of personal loss, ancestral narrative, and digital creation, *One Day* seeks both a spiritual reconnection to Papatūānuku, from whom I can no longer place my own feet, and a vision of prosthetic design as a space of creativity, dignity, and belonging.

– Neil Wallace

Use of Artificial Intelligence (AI) in this document:
Manatū Taonga Ministry for Culture and Heritage has used AI to develop aspects of this document in line with the *Government Chief Digital Officer's Responsible AI Guidance for the Public Service: GenAI* (Digital Govt), including with human oversight of any generated material. AI was used specifically to generate images for the future scenarios (Annex 3), and during the content development process to test ideas and summarise source material in some cases. AI was not used to write content for this briefing.

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Ngā kupu whakamihi

Manatū Taonga Ministry for Culture and Heritage would like to acknowledge all those who have been so generous with their time, experiences and insights in helping us to develop *Culture in the Digital Age: Long-term Insights Briefing 2025*.

In particular, we acknowledge those who have engaged in the consultations and content development process. Your contributions have been invaluable in shaping this document and ensuring it reflects the diverse perspectives and expertise within New Zealand's cultural and creative sectors and across government.

As surfaced through our stakeholder workshops, public submissions and wider engagement, digital technology—particularly AI—can be a polarising topic. We have heard conflicting views and perspectives about the balance of risks and opportunities, as well as the relative importance of different priorities across commercial, civic and cultural spheres. We acknowledge that these competing priorities will entail navigating a range of policy tensions and trade-offs for future decision makers.

Foreword **Takamua**

As Secretary for Culture and Heritage, it is my privilege to present *Culture in the Digital Age: Long-term Insights Briefing 2025* ("LTIB 2025"). This document represents a significant milestone in our ongoing efforts to navigate the profound changes that digital technologies bring to New Zealand's cultural landscape.

By 2040, our cultural system will be deeply intertwined with artificial intelligence (AI) and other emerging technologies. These advancements offer unprecedented opportunities for creating, sharing and protecting our stories. However, they also introduce significant ethical, legal, cultural and governance challenges that we must address thoughtfully and collaboratively.

This briefing builds on the insights from our first LTIB (2022), which highlighted the transformative impact of digital technology on how people engage with, create and experience arts, culture and heritage. LTIB 2025 delves deeper into these themes, focusing on the future implications of digital technology through the lens of storytelling. It explores key trends, risks and opportunities, and presents policy options to ensure that our cultural system remains vibrant, inclusive and resilient in the digital age.

I extend my thanks to everyone who contributed to this briefing. Your insights and feedback have been invaluable in shaping our understanding of the challenges and opportunities ahead. Special thanks go to the individuals and organisations who participated in our consultations and workshops, shared their expertise and provided thoughtful feedback. Your contributions have enriched this document and will help guide our future actions.

As the steward of New Zealand's cultural system, Manatū Taonga Ministry for Culture and Heritage is committed to ensuring that culture can thrive. This LTIB is a crucial tool in this endeavour, providing a long-term view that helps us plan and adapt our activities to meet the evolving needs of our society. It aligns with our strategic intentions to foster an inclusive and reflective cultural system, increase access and participation, and build a resilient and sustainable cultural sector.

The insights and policy options presented in this briefing can guide efforts to grow and harness the potential of digital technologies while safeguarding the values and traditions that define us. We will continue to work closely with our partners across government, the cultural and creative industries, and the wider community to ensure that our cultural system remains a source of pride and inspiration for all New Zealanders.

Ngā mihi nui,

Leauanae Laulu Mac Leauanae
Tumu Whakarae
Secretary for Culture and Heritage

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Executive Summary
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The Long-term Insights Briefing (LTIB) is a think piece that helps us to plan for the future. It looks beyond our current context to consider important long-term issues and trends that may affect New Zealand society, the related risks and opportunities, and policy options to respond to these matters. Given this future focus, the LTIB does not recommend which actions should be taken, or allocate responsibilities based on existing government portfolios or structures.

Informed by evidence from research, subject matter experts and stakeholders across the cultural system, this LTIB explores **how digital technology will change the way New Zealanders create, share and protect their stories in 2040 and beyond**. It provides strategic foresight to inform future creative and cultural policy, grounded in Te Tiriti o Waitangi the Treaty of Waitangi and focused on stewardship of a cultural system that is inclusive, sustainable and resilient in the digital age.

Looking to 2040 and beyond

To contemplate the future, this LTIB reviews a set of transformative emerging digital technologies including generative and agentic artificial intelligence (AI), virtual and extended reality, and decentralised platforms. It also looks at external drivers likely to reshape New Zealand's cultural system such as demographic shifts, declining institutional trust, widening digital divides and accelerating cyber and data risks.

Throughout, this LTIB recognises the importance of mātauranga Māori, te reo Māori and indigenous governance in shaping how cultural stories are created, managed and protected in New Zealand by New Zealanders. Throughout this analysis, Māori-led innovation, kaitiakitanga and data sovereignty are critical principles when considering the use of emerging technologies.

Overall, this LTIB highlights that by 2040, New Zealand's cultural system will be deeply intertwined with AI and other emerging technologies. While these technologies bring unprecedented opportunities for creating, sharing and protecting stories, they also introduce significant ethical, legal, cultural and governance challenges.

These issues are unpacked through a series of insights grouped into three sections:

Create—examines how new digital tools will expand opportunities for cultural endeavours, reshape the creative workforce and redefine what creativity means.

Share—analyses the changing dynamics of content distribution, algorithmic curation and digital inclusion, while highlighting risks relating to misinformation and loss of trust.

Protect—considers how we can preserve and safeguard New Zealand's stories, taonga and cultural heritage, including issues of digital storage, data sovereignty, authenticity and environmental impact.

For each of these three sections, this LTIB identifies a wide range of potential government levers to guide future policy responses. These include public-private partnerships, workforce transformation and digital literacy initiatives, international cooperation and cultural diplomacy, digital infrastructure and data innovation enablers, and legislative and regulatory actions, among others.

Within these levers, this LTIB presents ideas for future policy options or tools, such as innovation sandboxes, inclusive digital storytelling platforms, a sovereign New Zealand AI system, future technology apprenticeship programmes, education, sustainability and transparency measures, and rights-based frameworks for personalisation and provenance. Each option is assessed for its effectiveness, equity, feasibility, cost-benefit and risk profile. The options aim to address both risks and opportunities, recognising there will be inevitable policy trade-offs into the future.

Conclusion

Based on the insights analysis presented, this LTIB concludes by suggesting that, regardless of which future scenario emerges, any policy approach to address the risks and opportunities of digital technology in New Zealand's arts, heritage, media and sport sectors will need to consider some key factors, including:

- **Enabling innovation and discovery while protecting rights and reducing harm**—supporting effective AI and digital technology oversight without stifling culture, creativity and the pursuit of new possibilities.
- **Increasing equity and inclusion**—investing in reaching underrepresented or vulnerable communities (e.g., youth, older people, disabled people, Māori, Pacific peoples, migrants, rural and LGBTQ+ communities) to ensure all parts of society benefit from technology-driven opportunities and tools.
- **Leveraging private investment**—using government investment to attract industry co-investment and enable limited public funds to be maximised and meet New Zealand's emerging technology aspirations.
- **Strengthening cyber and privacy protections**—safeguarding New Zealand's digital cultural knowledge systems, data, infrastructure and taonga.
- **Future-proofing the workforce**—helping AI and digital technologies to enhance (not replace) cultural, creative and sports professionals and practitioners.
- **Building on Māori digital innovation and leadership**—ensuring that digital transformation reflects New Zealand's unique cultural foundations and protects cultural intellectual property while guiding ethical innovation for all communities.

This LTIB is intended to stimulate public discussion; inform long-term policy development considering medium- and long-term trends, risks and opportunities; and support future decision-making about how New Zealand's arts, heritage, media, and sport sectors can thrive in a fast-evolving digital world. This briefing strengthens our cultural system evidence base, providing a foundation for future analysis and decision-making.

Introduction
He kupu whakataki

About this LTIB

Manatū Taonga Ministry for Culture and Heritage ("the Ministry") is the steward of Aotearoa New Zealand's cultural system, supporting the arts, heritage, media and sport sectors. Under the Public Service Act 2020, the Ministry must produce a Long-term Insights Briefing (LTIB) every three years. The LTIB is a think piece that helps us to plan for the future. It looks beyond our current context, to consider important medium to long-term issues and trends that may affect New Zealand society, the related risks and opportunities, and policy options for responding to these matters. Given this future focus, the LTIB does not prioritise or recommend which actions the current or future government should take, or allocate responsibilities based on existing government portfolios or structures.

Building on the insights from the Ministry's first LTIB (2022) and guided by feedback from topic consultation, this LTIB examines the future of **culture in the digital age** with a focus on the creative process, knowledge systems and te ao Māori. Supporting this LTIB are **three annexes**, available on the Ministry's website. Annex 1 details the methodology taken to date, policy strategic framework and evaluation criteria, and limitations. Annex 2 provides additional information on the technological trends and key drivers of change highlighted in this LTIB. Annex 3 presents four future scenarios, which were created during the futures thinking process.

LTIB 2025 annexes (Manatū Taonga)

The topic: How will technology change the way New Zealanders create, share and protect their stories in 2040 and beyond?

Stories are an essential part of people's everyday lives, and the cultural and creative sectors play a vital role in creating, sharing and protecting New Zealanders' stories. In this LTIB, the term 'stories' takes on diverse meanings, providing an entry point to consider how people preserve and share knowledge, information and content. Stories are a way to express creativity, cultures and identities—in words, images, sounds and symbols—across time, place and technology. They are vital for building relationships and connections and establishing societal norms and values.

> "The current period of technological acceleration we are living in is transformative, impacting every aspect of human life in ways never seen before. Pivotal technologies including the Internet, software and AI, cloud computing, spatial computing, biotechnology, nanotechnology, 3D printing, robotics, renewable energy and aerospace, are all rapidly redefining what it will be like to be human in the future. Ready or not."
> – Ben Reid (2024, p. 11)

Throughout history, changes in technology have had a profound impact on New Zealanders' stories. Consider, for example, the radical transformations brought about the printing press, telephone, airplane, radio, television, cassette, mp3, mobile phone and the internet. Recent developments—and the pace at which these developments are now occurring—have raised new possibilities for technology to further transform New Zealanders' lives, with the promise to increase productivity, learning, communication and participation. However, new challenges and risks are emerging relating to privacy, ethics and security. Questions persist about how to harness the opportunities provided by these technologies while safeguarding knowledge, culture and creativity for future generations. This LTIB considers how these issues might impact New Zealand's future in 2040 and beyond.

Considerations for analysis

This LTIB draws upon evidence and insights from national and international research and subject matter experts, and feedback from stakeholders across government and the cultural system from public consultation on the topic and draft briefing.

The policy analysis is informed by New Zealand's constitutional and legislative context including: Te Tiriti o Waitangi the Treaty of Waitangi 1840, the New Zealand Bill of Rights Act 1990, the Human Rights Act 1993, the Copyright Act 1994, the Public Records Act 2005, and the Privacy Act 2020. The analysis also considers New Zealand's international obligations under the United Nations (UN) Convention on the Protection and Promotion of the Diversity of Cultural Expressions, the UN Convention on the Rights of Persons with Disabilities and the UN Declaration on the Rights of Indigenous People. These conventions affirm the rights to cultural participation, accessibility, protection of indigenous [1]knowledge systems and the promotion of diverse cultural expressions.

The policy analysis has been further guided by a strategic framework consisting of two components. First, the OECD AI Principles (n.d.-a), agreed by 42 countries, provide a robust basis for assessing whether potential policies are ethical, inclusive, internationally aligned and adaptable to future technological advancements. As noted in the Government's *Strategy for Artificial Intelligence: Investing with Confidence* (2025), New Zealand is a signatory to the OECD AI Principles as the foundational international framework for AI governance.

Figure 1. OECD AI Principles

Inclusive growth, sustainable development and well-being	Human rights and democratic values, including fairness and privacy	Transparency and explainability	Robustness, security and safety	Accountability

1 The term 'indigenous' is used throughout this briefing when referring broadly to communities who identify as such, including Māori and First Nations peoples. Some cultural considerations discussed may be relevant for other groups, including Pacific peoples.

Second, the Ministry's strategic outcomes and priorities for the cultural system, outlined in *Strategic Intentions Koromakinga Rautaki 2025–29* (2024), provide a high-level, values-driven framework for policy analysis, helping to ensure future policies protect New Zealand's cultural identity, creative economy and social cohesion, while balancing global best practice with New Zealand's unique cultural context.

Figure 2. The Ministry's strategic outcomes and priorities for the cultural system

Strategic priority	Strategic outcome
Strengthening the cultural system	The cultural system is sustainable and resilient
Increasing understanding of our unique identity	Inclusive and reflective cultural system
Increasing active participation	Higher cultural participation rates in targeted communities

Contemplating the future
Te whai whakaaro ki te anamata

Futures thinking, often called strategic foresight, is a "structured and systematic approach of exploring plausible futures to anticipate and better prepare for change" (OECD, n.d.-b). To develop this briefing, the Ministry engaged in a range of futures thinking activities (see Annex 1) to think about how New Zealand society may change in 2040 and beyond, including developing future scenarios (see Annex 3). The following sections highlight key technological trends and drivers of change, which are presented more fully in Annex 2.

Trends in digital technology

Digital technology is rapidly changing the cultural and creative landscape, assisting in the creation and automation of artistic works and content, increasing productivity and efficiency, and providing new tools for people to create, share and protect their stories. And these changes are only beginning. Some experts anticipate that within a few years, the amount of internet content that is at least partially generated or translated by AI will grow to as much as 90 percent (Nicoletti & Bass, 2023). By 2030, virtual spaces like extended reality (XR) could reshape human interactions, with some people spending "more physical conscious time in the metaverse than the real world" (KPMG, 2022). By the early 2030s, 6G is expected to be commercially available along with implantable devices like brain-computer interfaces (StartUS Insights, 2024), and by 2045, some predict that AI will have surpassed human intelligence (Corbyn, 2024).

> "By 2040 AI will be more refined and accommodating, funnelling our desires and living inside almost everything—our light switches, vehicles, devices, classrooms and offices. […] In the next 15 years one of the things most likely to be lost due to our fascination with deploying AI is oversight, our meta perspective."
>
> – Barry Chudakov (in Rainie & Anderson, 2024, p. 60)

Key technological advancements that have been identified as being highly relevant by subject matter experts[2] for this LTIB include:

Generative AI (GenAI)—GenAI refers to AI that can create new content (e.g., text, images, music, video or code) based on patterns in existing data. While GenAI offers new tools for creative expression, translation and content production, and increasing accessibility, it also raises critical issues around originality, copyright, cultural appropriation and trust in the authenticity of stories.

Robotic process automation (RPA) and agentic AI—RPA automates routine digital tasks, while agentic AI can independently make decisions, take actions and interact with other systems. These technologies are likely to streamline behind-the-scenes operations in cultural institutions, media production and sports analytics, but may also reshape workforce roles and accountability in content creation and curation.

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2 Parts of this section include input from members of the AI Forum of New Zealand which was received during stakeholder engagement activities.

Web3 decentralised platforms—Web3 refers to an emerging version of the internet that uses blockchain and decentralised systems to shift ownership and control away from centralised platforms. Web3 can enable more equitable distribution of revenue, improved attribution of indigenous intellectual property (IP), and new models for cultural governance and participation in digital environments.

Extended reality and immersive technology—Extended reality (XR), including augmented reality (AR), virtual reality (VR) and mixed reality (MR), enables immersive digital experiences that blend physical and virtual worlds. These technologies are opening up new frontiers in storytelling, offering innovative ways to experience and share culture across generations and locations.

Wearable technology—Wearable devices (e.g., smartwatches, biometric trackers and AR glasses) collect data and enable interactive experiences on the move. Wearables are increasingly used in live performance tracking and cultural experiences, raising questions about data ownership and ethical use. Implantable devices (e.g., brain-computer interfaces) aim to integrate technology directly with the body to enhance human capabilities and overcome limitations.

Enhanced connectivity—The rollout of faster and more reliable internet through 5G and future 6G networks, alongside edge computing that processes data closer to users, will enable real-time, high-quality digital interactions. This enhanced connectivity may increase rural inclusion, live-streaming cultural events, immersive experiences and equitable access to digital heritage.

Quantum computing—Quantum computing harnesses quantum mechanics to solve complex problems. These systems could be commercially available in future, allowing users to model large datasets, optimise creative processes or develop new forms of encryption to protect knowledge securely while supporting data sovereignty.

Digital twins—Digital twins are virtual replicas of a physical object, environment or system updated in real time. Digital twins may be used to preserve heritage sites and taonga, simulate sports performance, or enable remote access to museums and archives. This requires careful governance to ensure authenticity and integrity.

Other key drivers of change

In futures thinking, the term ‘drivers’ refers to factors or forces that will create change. Below, eight broad drivers are briefly highlighted that are highly likely to affect New Zealanders’ future stories and their relationship with digital technology.

Shifting demographics towards a more diverse and aged population—New Zealand’s total population (currently 5.27 million) will increase to just over 6 million people by 2040. The population will age and growth will slow, though some groups (i.e., Māori, Pacific peoples) will continue to have younger age structures (Stats NZ, 2022b). The population will become more ethnically diverse, with higher proportions of Māori, Asian, Pacific and multi-ethnic people (Stats NZ, 2022a). This may create pressure on resources for different groups.

Increasing geopolitical instability and economic shocks—Heightened geopolitical tensions can disrupt international trade, weaken domestic demand and lead to market volatility (Reserve Bank of New Zealand, 2024). The need to reprioritise government investment to respond to economic shocks may require resources to become more focused on critical services and infrastructure.

More frequent and intense weather events—By 2040, large amounts of people and buildings will be at risk from extreme weather events (NIWA, n.d.). Heritage sites are particularly vulnerable, with 80 percent of marae, for example, built on low-lying coastal land or flood prone rivers (Kowhai, 2022). Weather events may disproportionally affect digital and physical connectivity for some communities, particularly those geographically isolated. More broadly, climate-induced human migration may increase, including among Pacific Island nations, heightening New Zealand's role as a holder of wider Pacific knowledge, history and culture. AI models and digital infrastructure can be both exacerbators of climate change (e.g., due to the high energy needs of data centres) and vulnerable to climate impacts.

Increasing challenges to social cohesion and declining trust in institutions—Declining social cohesion and trust in institutions pose a threat to New Zealand's social fabric and democracy. While social cohesion remains relatively high, food and financial insecurity and loneliness are increasing, while trust and safety in local communities are decreasing (The Helen Clark Foundation, 2025). The proliferation of mis- and disinformation—accelerated by GenAI—further threaten to undermine trust.

Widening digital divide—While AI and other novel and emerging digital technologies have the potential to generate policy interventions to address difficult societal problems, they may also exacerbate existing digital inequalities particularly in relation to workplaces and productivity, education and healthcare and cultural participation. Benefits (and costs) are likely to be unevenly distributed across businesses, economic sectors and population groups. Barriers to accessing digital cultural experiences could increase as the divide widens.

Rapid expansion of 'Big Tech'—The expansion and dominance of a few large technology companies or 'Big Tech' has led to a concentration of influence over global digital technology, infrastructure and markets, and consumer data. Ongoing regulatory scrutiny and policy action are working to address issues such as data privacy, social harm and security, and monopolising digital media platforms.

Increasing cybersecurity risks—Cybersecurity is a critical concern among governments, businesses and communities. Despite protective measures, the landscape of cyber-attacks is evolving quickly and becoming more complex. As cybercrime increases, new approaches are needed to improve New Zealand's cyber resilience and ensure adequate protections are in place to safeguard important repositories of information and digital assets, including digital taonga and archives.

Accelerating pace of digital innovation—It is likely the pace of change will continue to increase, with AI a significant driver in how quickly innovation will occur. This is making it harder for policy and legislation to stay current, and for data, digital infrastructure and assets to keep up to date.

Te ao Māori and New Zealand's unique cultural context
Te ao Māori me te horopaki ahurea ahurei o Aotearoa

Considering the future impacts of digital technology on how New Zealanders create, share and protect their stories begins with an acknowledgment of New Zealand's unique constitutional landscape, as established by Te Tiriti o Waitangi the Treaty of Waitangi. This section reflects on the intersection between the topic of this LTIB and te ao Māori and provides essential background for the broader insights and policy options presented in the Create, Share and Protect sections that follow.

"My data is a living essence, it tells the story genetically about where I've come from, who I am – that's telling a story of me, a story about my whakapapa, right down to my belief."
– Dickie Farrar (in Te Mana Raraunga, 2025)

Te Tiriti and culture in the digital age

Te Tiriti o Waitangi the Treaty of Waitangi, signed in 1840, is a foundational document for New Zealand, establishing a partnership between Māori and the British Crown. In the digital age, Te Tiriti remains crucial in framing issues related to culture, creativity and te ao Māori. It provides a framework for addressing historical grievances and ensuring Māori perspectives and rights are respected in digital spaces. This includes the protection of Māori data sovereignty, the promotion of te reo Māori online, and the integration of Māori cultural values into digital policies and practices. Te Tiriti continues to guide the evolution of a bicultural digital landscape, and the unique partnership between Māori and the Crown, in a multicultural New Zealand society.

Protecting cultural intellectual property

Global trends reflect a growing recognition of the importance of protecting indigenous traditional knowledge and traditional cultural expressions as intellectual property (IP), with efforts focused on ensuring fair use, preserving cultural heritage and balancing various interests. In the digital space, work has been underway internationally for over two decades. For example, India's Traditional Knowledge Digital Library (established in 2001; Council of Scientific and Industrial Research, 2025) and, more recently, the global Local Contexts (2025) and New Zealand-based Digitaonga (n.d.) initiatives offer different approaches which, collectively, aim to establish the ownership and attribution of digital information, knowledge and taonga as a means to combat misappropriation and commercial exploitation, and support data sovereignty.

The World Intellectual Property Organisation (WIPO) Intergovernmental Committee, a specialised agency of the United Nations, is one of the key international forums to focus on establishing an inclusive, balanced and effective intellectual property system. The WIPO Intergovernmental

Committee is undertaking text-based negotiations to finalise one or more international legal instruments that would ensure the balanced and effective protection of indigenous peoples' traditional knowledge and traditional cultural expressions as intellectual property. The WIPO Treaty on Intellectual Property, Genetic Resources and Associated Traditional Knowledge, the world's first treaty of this nature, was adopted in May 2024. Once in force, the WIPO Treaty will require patent applicants to disclose the country of origin of the genetic resources and/or the indigenous peoples or local community providing the associated traditional knowledge, if the claimed inventions are based on genetic resources and/or associated traditional knowledge.

In New Zealand, Te Puni Kōkiri the Ministry of Māori Development is developing bespoke domestic and international settings to address regulatory barriers that hinder the appropriate use of cultural IP and protect from commercial misappropriation. Addressing the regulatory barriers to cultural IP protection would support artists and creatives to obtain premiums from their work, particularly through the export of authentic goods and services. This work feeds into the government's economic and trade-related priorities. Research, including by the Ministry of Primary Industries Manatū Ahu Matua, shows that there is a strong international demand for cultural-based products. These settings will also support industry in the domestic economy by strengthening accessibility and market share, and enable New Zealand to leverage demand and emerging trends relating to willingness to pay premiums for authentic goods and services. To meet this demand, New Zealand will need to enable businesses to appropriately use cultural IP.

Māori digital innovation and leadership

It is well established that "Te Ao Māori has a history of innovation and embracing technology" (Aiko, 2024, p. 37). Examples abound of Māori leading the way in harnessing digital technology to support cultural aspirations and needs, including:

- Using social media such as TikTok to revitalise language, share Māori culture with diasporic and global audiences, and foster social connections (Bailey-McDowell, 2024)
- Digitising sound and visual taonga, using 3D scanning and streaming cultural performances to support intergenerational knowledge transmission (Aiko, 2024)
- Working with Big Tech to develop tools like the Microsoft Māori keyboard, Google search in Māori and Māori features in Apple Maps, to ensure digital tools include and accurately represent Māori language, place names and cultural sites (Whareaitu, 2025; Yates, 2023)
- Creating bespoke education apps such as Ngā Motu, a Minecraft: Education Edition game, immersed completely within te ao Māori to increase all students' cultural capability (Microsoft, 2021)
- Using instrumentation, computational modelling and machine learning to record and analyse large collections of cultural artefacts (Opengov, 2021)
- Developing trustworthy AI tools such as Te Hiku Media's automatic speech recognition model and Rongo app to preserve, transcribe and improve the pronunciation of te reo Māori (Lee, 2024; Smale, 2023).

Taken together, these tools are offering new opportunities to support the transmission, revitalisation, repatriation and preservation of mātauranga and taonga, as well as te reo and tikanga Māori, while increasing access to Māori content, both for Māori communities as well as local and international audiences.

At the same time, it is important to acknowledge the limitations of digital representations as being disconnected from time and space. Some people working in heritage and the performing arts have highlighted the importance of physical presence, and how the unique connection to place, community, whakapapa and wairua embedded in Māori taonga cannot be fully achieved in the digital world (Aiko, 2024).

Ongoing risks in the digital age

The advent of GenAI, and specifically large language models has created new risks in the misappropriation and exploitation of Māori cultural IP. Māori academic Te Taka Keegan notes that AI tools like ChatGPT are already learning from data they should not necessarily have access to, enabling it to engage in cultural activities such as speaking te reo Māori, composing waiata and writing karakia (Yates, 2023). The rise of AI-generated or synthetic content has taken long-standing issues around misappropriation, representation and the need and ability to maintain cultural authenticity into new realms, raising questions around how communities can preserve and verify their cultural content. One byproduct of this is a renewed focus on process, or how things are created.

Many people are not aware of the terms and conditions they agree to when signing up to social media platforms, enabling their content to be scraped by AI without informed consent. People may be similarly unaware of the personal data retained through other online services such as whakapapa and DNA information held in the databases of genealogy companies (Yates, 2023).

Reliance on tools like ChatGPT to support te reo language learning could lead to a shift in te reo over time, homogenising te reo and erasing differences in dialects between iwi and hapū (Yates, 2023). The same could happen with other aspects of cultural knowledge, including the mātauranga contained and transmitted through storytelling.

> "As Māori, we run with different stories, right? For us from Waikato and Maniapoto, Tāwhaki went up to the heavens to get the baskets of knowledge, but in other iwi, it was Tāne who went up. No one's ever gonna get up and say: 'You're wrong', because that's the uniqueness and the beauty of being Māori. Being able to be different, have different stories. But Chat GPT says: 'Nah, this is the one right answer.' And that's a colonising and very Pākehā perspective."
> – Te Taka Keegan (in Yates, 2023)

Globally, there are further concerns that AI tools will perpetuate or reinforce inequities more broadly experienced in society—because they are learning from content that has been shaped by human bias and reflects the overrepresentation of certain populations in negative socioeconomic conditions, for example in the criminal justice system. In New Zealand, this could create risks that AI-generated forecasts or facial recognition tools could be inherently biased against Māori, making assumptions based on historical trend data that assumes the same overrepresentation should continue into the future.

There are also some concerns around the potential for digital harm and that digital environments such as social media may be creating new intergenerational trauma. As Fala et al. (2023, p. 6) says, "this includes whānau Māori, and their tamariki and rangatahi, exposure to discrimination and racism, misinformation and the lack of protection of personal and collective mātauranga generated on [social media] platforms. Whānau Māori are grappling with historic and compounding issues […] that increases their vulnerability to these challenges and hinders access to the benefits of digitisation".

Māori data sovereignty and governance

The landmark findings and recommendations of *Ko Aotearoa Tēnei* by the Waitangi Tribunal (2011) underscored the importance of a partnership model in the governance of Māori cultural IP, and the need for Māori to retain tino rangatiratanga or self-determination over their taonga. Here, looking towards 2040 and beyond, Māori data sovereignty and governance frameworks provide a way forward.

Māori data sovereignty "recognises that Māori data should be subject to Māori governance," supporting "tribal sovereignty and the realisation of Māori and Iwi aspirations" (Te Mana Raraunga, 2025). As highlighted in the submissions received during public consultation for this LTIB, in order to ensure New Zealanders' stories are protected, it is crucial that future AI and data-driven technologies support Māori data sovereignty principles.

Technologies such as AI need to be carefully managed, deployed and regulated in partnership with Māori. This could include, for example, developing a sovereign government-owned AI platform that serves as a national innovation tool, preserves and revitalises te reo Māori, and supports the intergenerational transmission of cultural heritage with Māori serving as guardians of their taonga (Taiuru in Windelov et al., 2025).

> "Māori voices and perspectives (and all other parts of our society) must be integral to every stage of AI development and implementation, while advocating for robust regulatory frameworks that protect and promote Māori interests."
>
> – Karaitiana Taiuru (in Public Service Association, 2025, p. 24)

For government agencies, the Māori Data Governance Model, developed by Te Kāhui Raraunga in collaboration with iwi and Crown stakeholders, provides "a framework to guide the system-wide governance of Māori data, consistent with the government's responsibilities under Te Tiriti o Waitangi" (Kukutai et al., 2023, p. vi), and provides leadership to consider how data governance can follow a values-based approach for all communities. This model can help guide consideration of the insights and policy options ahead.

Create—Evolving creative tools and cultural expression
Waihanga—Ngā utauta auaha me te whakapuaki ahurea e kukune ana

"Can artificial intelligence be creative? And can it make us more creative? Already AI is changing the landscape of innovation and artistic expression."
– Sachin Dev Duggal (2024)

New Zealanders are increasingly using digital tools to create stories across the cultural system, while tools like GenAI are scraping New Zealand content to learn. Concerns over the lack of regulation, potential negative impacts and the lack of technological skills may be preventing creators from harnessing technologies like GenAI more fully. While creativity and technology have always been linked throughout history, in an era where AI is creating with growing autonomy, technological development is calling into question what it means to be creative, and who has the power to create.

Insights for the future

Insight 1: Digital technology will continue to shape New Zealanders' future stories

Within the cultural system, creators are actively using emerging digital technologies to advance their work. For example, research on AI and the music industry in Australia and New Zealand found that 68 percent and 50 percent of companies, respectively, have already implemented AI technologies, with around AU$7 billion invested in AI technologies in both countries (AU$6.4b in Australia and AU$600m in New Zealand; APRA AMCOS, 2024). In the United Kingdom, 84 percent of all content creators are already leveraging AI-powered tools and applications in their content creation process (Epidemic Sound, 2024). Within the screen industry, it is estimated that AI could be creating blockbuster films entirely using text-to-video prompts by 2030 (Nicoletti & Bass, 2023). More broadly, across the New Zealand economy, a recent survey found 90 percent of businesses and their staff expect to be using GenAI tools within the next five years (Pelletier, 2024).

Internationally, government policy and investment underscore the important relationship between digital technology and the cultural and creative industries. The United Kingdom and Northern Ireland have both developed programmes to financially support the integration of AI within their creative industries, and Canada, Finland, the United Kingdom, France and Germany have also developed specific industry policies around the adoption of AI. The Australian Government's *Revive: A National Cultural Policy* (2023) includes significant investment in digital technologies to enhance the discoverability, access, distribution and consumption of Australian creative content. In New Zealand, the Government's recent *Strategy for Artificial Intelligence: Investing with Confidence* (2025) emphasises AI adoption and application, with a focus on leveraging AI science, innovation and technology strengths. *Amplify: A Creative and Cultural Strategy for New Zealand 2025–2030* (Manatū Taonga Ministry for Culture and Heritage, 2025)

further outlines how the Government plans to prioritise support for the creative and cultural sectors, including the use of digital tools to amplify creativity and culture.

In addition to AI, in 2040 and beyond, other emerging and future digital technologies could radically alter how New Zealanders stories are created. Immersive storytelling could transform the experience of history and culture but also risks commercialising or distorting cultural heritage in unintended ways (e.g., ways that are contrary to tikanga Māori). Virtual reality (VR) could enable fans to 'participate' in historic matches or train alongside their favourite athletes or performers. These new opportunities could enhance engagement but also raise ethical concerns about commercialisation and data privacy.

Creative expression could extend beyond traditional media, with direct brain-to-digital interfaces enabling new forms of performance yet raising bioethical concerns. Advances in genetic and biological computing could enable living art, which breaks the boundary between human and machine. Athletes could potentially be enhanced to exhibit superior physical abilities. For instance, gene-editing tools such as clustered regularly interspaced short palindromic repeats (CRISPR) technology might be used to enhance physical biological characteristics relating to muscle growth, endurance and recovery. This could lead to athletes who not only perform at unprecedented levels but also embody a form of living art, showcasing the seamless integration of biological enhancements and human capabilities. Such advancements could revolutionise sport, creating performances that are both awe-inspiring and ethically complex (Psatha et al., 2025). The futures scenarios in Annex 3 explore these possibilities further.

Insight 2: New Zealanders' stories will continue to shape our future digital tools

Globally, and within New Zealand, cultural and creative content is being used to train AI. GenAI services require large volumes of third-party content to learn, which is 'scraped' en masse from publicly available sources (i.e., the internet), repositories of commercially owned user data (e.g., social media platforms) and other purchased or licensed datasets. This includes creative, cultural, media and heritage content—the primary vehicles for New Zealanders' stories. Globally, the AI training dataset market is anticipated to reach US$18.5 billion by 2034 (Globe Newswire, 2025).

Many creators are against this kind of content scraping due to the harm they are experiencing, including reputational damage, economic loss, plagiarism and copyright infringement (Jiang et al., 2023). This conversation is becoming more overt: in February 2025, for example, over 1,000 musicians released the 'silent album' *Is This What We Want?* to protest the United Kingdom government's proposed reform to copyright law, which the artists believe would make it easier for AI companies to scrape copyrighted content without a license (Various Artists, 2025).

Some businesses argue that using data to train AI fits within exceptions to copyright protections, often through 'fair use' principles, though legalities vary between territories and most legislation is not yet equipped to address this kind of use (Farrer & Co, 2024). Others argue that content scraping is needed to ensure AI can continue to evolve and innovate. This is a live issue—a number of lawsuits are currently in progress relating to copyright and creative content that could shape the future development of AI. In June 2025, for example, two separate landmark court cases ruled in favour of Anthropic and Meta, respectively, finding the companies had not violated copyright when training their large language models on copyrighted books without permission (Heaven, 2025). In another case, still in progress, Disney and Universal are suing AI start-up Midjourney for seeking to "reap the rewards" of their creative work by producing unauthorised AI-generated copies of copyrighted works (Hunter, 2025).

There is a risk that AI could privilege certain groups over others due to biases inherent in its training data. Data used by AI systems reflects the cultural, linguistic and social biases of its creators. For example, AI models trained primarily on Western data may fail to accurately represent indigenous cultures or other diverse perspectives. As a result, AI could contribute to the erasure of these cultures, further reinforcing historical inequalities. AI is also used to digitise and catalogue cultural heritage artefacts. If the training data represents artefacts from certain cultures, it could similarly lead to biased digitisation efforts. This means that artefacts from underrepresented cultures might not be accurately or comprehensively digitised, leading to a skewed representation of cultural history (Foka & Griffin, 2024).

There are also concerns among New Zealand music creators that AI could lead to cultural appropriation and the marginalisation of Māori and Pacific music (APRA AMCOS, 2024). This could result in Māori and Pacific artists being overshadowed by more mainstream genres, perpetuating existing inequalities in the music industry.

AI algorithms used in newsrooms for content creation and curation may also reflect biases present in their training data. For example, if AI systems are trained on data that predominantly features certain viewpoints or demographics, they might prioritise similar content, marginalising diverse perspectives. Some New Zealand news publications have already faced criticism for using AI to create editorials, raising concerns about the potential for biased and homogenised news content (Peacock, 2024).

At the same time, by using targeted prompts, AI can also help to mitigate existing human bias particularly in written material. For example, a creator could prompt AI to help them reflect on subconscious bias and challenged preconceived perspectives. Future technological developments, such as the use of synthetic data, may also help address bias in training data, reducing these risks over time.

Insight 3: The use of digital technology will significantly impact the cultural and creative workforce

Creators have mixed views on the rise of AI within the cultural and creative industries. A recent study found that while over half of music creators surveyed agree that AI technology can assist in the human creative process, 82 percent are concerned they will lose the ability to make a living from their work due to AI (APRA AMCOS, 2024). The use of AI-generated content is already disrupting creatives' ability to earn a living wage, with creatives from marginalised communities disproportionately impacted. In the United Kingdom, 58 percent of creators have recently faced challenges monetising their content (Epidemic Sound, 2024). By 2028, it is projected that in the music industry alone, 23 percent of music creators' revenues will be at risk in Australia and New Zealand due to GenAI, an estimated cumulative total damage of AU$519 million (APRA AMCOS, 2024).

These impacts are likely to occur across the breadth of the cultural system. AI has diverse applications across the cultural and creative industries, and creative roles are transforming in response (A New Approach, 2024). GenAI can have positive impacts through increasing productivity, for example, of formatting, editing, creating virtual environments, model generation, or other business or administration tasks (APRA AMCOS, 2024; Duggal, 2024). In future, AI-driven storytelling could automate sports and cultural reporting, as well as live captioning, description and sign language interpretation, potentially replacing human practitioners and altering the depth and nuance of storytelling. In media, as AI-generated content increases, legacy media (radio, newspapers and television) may struggle to reach audiences and remain relevant, leading to reduced public interest journalism and local storytelling.

New skills are required to harness the power of emerging digital technology and maximise the opportunities of a changing workforce. Creators currently have varying degrees of technological capability. According to research on the creative workforce in Australia, more than half of organisations in the performing arts, visual arts, music and publishing report increased needs for skills relating to digitalisation, social media, digital marketing, web development, data analytics and cybersecurity, privacy and data handling. In contrast, "in the digital games sector, where technology is central to business, three quarters of businesses surveyed reported that they do not have a need for new skills relating to digitalisation or AI (75 percent)" (Creative Australia & Service and Creative Skills Australia, 2025, p. 67). As such, there is a widening gap between workers with and without AI skills, with a recent report finding New Zealanders who fully harness AI in their work can expect, on average, 30 percent higher salaries (Access Partnership, 2024).

One aspect of this skills development relates to navigating financial, legal and business relationships with Big Tech, which influences the creative market in several ways. Big Tech influences can include access to the market, pricing, the distribution of revenues generated, ownership of consumer data, and control over terms and conditions, for example relating to confidentiality and intellectual property. It can be challenging for creators to navigate complex agreements, which may be non-negotiable, to ensure their rights are upheld and relationships and mutually beneficial.

New skills are required for supporting young New Zealanders in particular. Notably, many of the routine tasks that are increasingly being delegated to AI are those that have traditionally been deemed entry level and allocated to early career professionals as they develop skills and learn the industry. While tasks requiring creative decision-making and management are, at least for now, largely remaining human-centred (and allocated to more senior professionals), in future, this too could change. This change calls into question what creative learning and career pathways will look like in 2040, what career and skills development will be required to succeed in the digital age, and how to support younger workers to develop the critical thinking skills required to moderate and create innovative AI-generated content from the outset.

Programmes such as Digital Passport (2025) and Tech 23 (n.d.) are providing experiences and training in digital technologies, preparing students for future careers in technology. The integration of AI and digital storytelling tools in education could help students develop the skills needed to navigate and contribute to a decentralised storytelling landscape. Emerging challenges include ensuring equitable access to these technologies and fostering creativity, critical thinking and digital ethics among young New Zealanders.

AI is disrupting news media by diverting traffic, replicating journalistic content and accelerating the decline of an already fragile industry. Traditional news media business models are under intense pressure as GenAI tools and search engines increasingly summarise news directly within search results, reducing click-throughs to original news sites. The use of these tools is emerging, with approximately 7 percent of people using AI tools for news each week, but this is more than double (15 percent) for people under the age of 25 (Newman, 2025). For example, Google's AI Overviews and other large language models like ChatGPT are now providing instant, paraphrased answers drawn from journalistic content, often without adequate attribution or revenue sharing. This shift has contributed to a sharp drop in site traffic and advertising income for news outlets. Industry leaders and press freedom advocates have warned that this pattern amounts to systemic content appropriation, undermining the economic sustainability of public interest journalism (Spyridou & Ioannou, 2025).

During engagement with sector stakeholders for this LTIB, one New Zealand news publication noted it had lost 200,000 website hits per day over an eight-week period in early 2025 as internet search

engines such as Google started providing AI-generated answers to search questions. This has seen people no longer clicking through links to content and accepting the AI-generated answer at face value. The same publication anticipates losing all website and social media traffic directed from internet search queries in the next six to 18 months, while at the same time large language models continue to learn from scraping their content.

Insight 4: By 2040, the concept of creativity will have changed

Digital tools are changing access to the creative process, enabling high quality independent content creation and production. These tools can help individuals and communities to assert control over their cultural narratives, knowledge and artistic expressions (Handzic & Ismajloska, 2019; Shepherd, 2024). Over time, these tools have become more accessible, at lower costs and requiring fewer specialised skills to operate. By enabling creatives to complete business, design and production tasks that traditionally would have required collaboration with other specialist professionals, digital tools have democratised the production process, and supported the rise of self-publishing in music, literature and audiovisual content. However, some people also argue that rather than democratising the creative industries, digital technology is 'plutocratising' them—creating an imbalance of power and widening digital disparities.

GenAI offers even greater opportunities, further making the concept of creativity accessible by enabling people who have not previously viewed themselves as 'creative' to generate creative works by harnessing technological as opposed to technical skills. In other applications, GenAI tools could allow fans to create personalised sports highlights or fictionalised accounts of famous games, gigs or cultural performances. While this facilitates storytelling, it risks blurring the lines between fact and fiction, potentially undermining trust in official sports and cultural narratives.

While GenAI offers new opportunities, it is also calling into question what it means to be a creator. Projects like The Last Screenwriter, the first feature film written entirely by AI (Luisi, 2024), and the commercial success of artworks by Ai-Da, the world's first ultra-realistic humanoid robot artist (Pope, 2024), are calling into question what it means to be a creator, and the boundaries between human and technological creativity. Some argue that art is a uniquely human activity that requires the capacity for human emotion and experience, and that "at best, the output of image generators is aesthetic, in that it can be appreciated or enjoyed, but it is not artistic or art itself" (Jiang et al., 2023, p. 365). On the other hand, in Ai-Da's case for example, her creators argue Ai-Da's work is art, reflecting the integration of technology in today's society, and 'creative' under academic definitions which require works to be "new, surprising and of cultural value" (University of Plymouth, n.d., para 13).

Down the road, it is possible that this redefinition or reidentification of the practitioner may extend to other arenas, for example sport and recreation. In June 2025, in advance of the upcoming World Humanoid Robot Games held in August 2025, China's first humanoid robot 3-on-3 football match was held, with all robots operating fully autonomously using AI-driven strategies without any human intervention or supervision—albeit to varying degrees of success ("Watch: Humanoid robots", 2025).

Potential policy levers

To address the risks and opportunities explored above, future policy professionals may want to consider a range of policy levers and approaches including: digital infrastructure and data innovation enablers, workforce transformation initiatives, legislative and regulatory actions, funding and incentives, public-private partnerships and industry collaboration, and international cooperation and cultural diplomacy.

The following section provides a range of ideas for potential options or tools within these levers, along with their strengths and weaknesses based on the evaluation criteria (see Annex 1), and current international examples. In keeping with guidance for the LTIB, this section does not prioritise or recommend which actions the current or future government should take, or allocate responsibilities based on existing government portfolios or structures.

Digital infrastructure and data innovation enablers

Option 1: Creative and cultural data sandboxes where creators, technologists, iwi, archivists and cultural institutions could safely access and experiment with curated cultural, heritage and creative data to develop, test and prototype AI, immersive and interactive tools

- Could create a network of secure, ethical sandbox environments (exploratory spaces where people could test and experiment in a controlled and low-risk way). This could enable the ethical development of AI and digital tools using real cultural datasets, while safeguarding rights and encouraging innovation.
- If co-designed with Māori, Pacific peoples, disability advocates and underrepresented communities, it would empower those groups to shape how their unique stories and data are used and promote new opportunities.
- Moderate feasibility—would require technical infrastructure, cross-agency coordination and strong governance frameworks, but would align well with existing digital archiving efforts.
- High cost—initial investment in infrastructure and data stewardship would be significant but yield long-term gains in innovation, trust and sector capacity-building.
- Risk of cultural misappropriation or data misuse—requires careful consideration of who has access, which cultural data is included and who decides this; could be mitigated through early and ongoing collaboration with diverse communities, adoption of Māori data sovereignty principles and robust access controls.
- Scotland—Creative Informatics Data-Driven Innovation Hubs are a Scottish Government and University of Edinburgh initiative to provide sandboxes and funding for creatives to access datasets from cultural institutions and experiment with AI, machine learning and immersive technologies.

  Europe—Europeana is a digital research and development community that allows technologists, developers and researchers to access cultural heritage data (images, metadata, documents, audiovisual material) from across Europe to experiment, prototype and build digital tools.

Legend

Effectiveness | Feasibility | Risks & Mitigation

Equity | Cost vs. Benefit | International examples

Option 2: A sovereign New Zealand AI system could provide publicly governed digital infrastructure designed to serve national innovation goals while embedding equity, Te Tiriti obligations and cultural values at its core

- Could support inclusive digital innovation, strengthen national capacity and help counter harmful biases in imported systems. Could be integrated into public services, cultural institutions and education, helping to create equitable digital systems by design.
- Could support the preservation and revitalisation of te reo Māori through high-quality, Māori-led natural language processing models. Would provide a trusted national AI foundation model as an alternative to extractive or inappropriate foreign technologies.
- Moderate feasibility—technically complex and resource intensive, requiring sustained investment, capability building and access to infrastructure. May need development, curation and retention of an offline repository of cultural data and taonga.
- $ High up-front costs but long-term national value through AI sovereignty, capability development, cultural transmission and trusted public services. Would also require considering wider costs and impacts including increased energy and resource demands of data usage and storage associated with development of New Zealand-based AI infrastructure.
- Risk of under-delivery without clear leadership or Māori collaboration; could mitigate through Te Tiriti-based governance, staged implementation and partnerships with local AI talent.
- Norway's Sámi Language Technology Programme (Giellatekno) at the University of Tromsø is a long-standing project creating AI-supported tools to support Sámi autonomy in digital systems.

  Finland has invested in developing sovereign, open-source language models such as FinBERT and FinGPT to ensure that Finnish and Swedish languages—and culturally specific nuances—are represented in digital systems. These models are publicly funded and used in government, research and education.

  Taiwan has invested in building its own AI cloud infrastructure to support sovereign, ethical AI development. In 2023, the government initiated the Trustworthy AI Dialogue Engine (TAIDE) project to produce a GenAI chatbot with Taiwanese features and traditional Chinese character support.

Legend					
	Effectiveness		Feasibility		Risks & Mitigation
	Equity	$	Cost vs. Benefit		International examples

Workforce transformation and innovation initiatives

Option 3: A future technology apprenticeship programme could invest in hands-on AI, blockchain and Web3 training, including for young creatives, game developers, media and sports professionals

- Could serve to futureproof the workforce in AI-driven and emerging technology-impacted industries, boosting skills development and fostering innovation.
- Apprenticeships can help provide equitable access to high-demand technology skills, especially for underrepresented groups, and paid training could reduce the financial barriers to education. May help to expand access to digital careers, particularly for young and emerging talent.
- High feasibility with industry and education partnerships. Apprenticeship programmes have been successfully implemented in various industries and could be adapted for technology. Existing frameworks and support from industry partners could facilitate their establishment. Co-designed frameworks between industry bodies and qualifications authorities could include micro-credentials, project-based assessment and work-integrated learning.
- $ High initial cost, but long-term economic and social gains. Investing in apprenticeships could lead to a highly skilled workforce, reducing long-term recruitment and training costs for employers, and stimulating economic growth.
- Risk of exclusion of small businesses, and rapid changes in technology could render some skills obsolete quickly; could mitigate by ensuring funding support for subject matter experts and regional hubs and regularly updating the curriculum to reflect the latest technological advancements.
- Germany's AI workforce development strategy includes AI training programmes for creative and media professionals.

  The Republic of Korea's approach to future technology apprenticeships combines university and industry collaboration, vocational training and government support to prepare the workforce for the digital age.

Option 4: A national 'connecting creators and coders' innovation initiative could match creatives and cultural practitioners with AI researchers, technologists and data scientists to develop culturally and commercially valuable digital and AI tools

- Would directly support creative innovation using AI, build cross-sector capability and generate culturally resonant tools that reflect New Zealand's unique identity. A programme could grow short-term, high-impact collaborations (e.g., three to 12 months), support Māori-led digital innovation, and incubate scalable prototypes, with potential public benefit and/or commercial applications.
- Has the potential to empower Māori, Pacific peoples and underrepresented creatives if programme design includes culturally driven practices and targeted outreach.

Legend					
	Effectiveness		Feasibility		Risks & Mitigation
	Equity	$	Cost vs. Benefit		International examples

✓ Moderate feasibility—would require strong cross-sector coordination, but could leverage existing institutions (e.g., universities, creative technology incubators, Crown entities).

$ High cost—moderate public investment could yield valuable IP, cultural tools and new business models for the creative sector plus attract private funding.

⚠ Risk of extractive dynamics or loss of cultural IP; could mitigate through robust governance frameworks, Te Tiriti compliance and data sovereignty policies.

🌐 Singapore's AI Singapore 100 Experiments (100E) programme is a national initiative that funds and supports collaborations between industry and AI researchers to co-develop AI-powered solutions for real-world problems, accelerating innovation and commercialisation across sectors.

Option 5: A national information campaign on AI and cultural storytelling could educate artists, media professionals and communities on digital rights, privacy and ethical AI use, and build awareness of environmental impacts of emerging technologies

◎ Would enhance digital literacy and support informed participation in AI-driven cultural production. Could also help normalise experimentation and creative control and showcase safe and ethical uses of AI.

⚖ Would benefit all creatives, especially those unaware of AI risks and rights. Co-design with sector representatives could help increase access and relevance.

✓ High feasibility—could be integrated into existing media and arts funding and education programmes.

$ Low-cost relative to long-term benefits in AI ethics awareness, sustainability and digital literacy.

⚠ Risk of low engagement; could mitigate by using interactive formats and partnering with iwi and local media for targeted outreach. Engaging with representatives from interdisciplinary creative sectors, such as games development, could help boost geographical reach and appeal to a broad range of learners—this would serve to increase equitable access to digital education and cultural opportunities.

🌐 Canada's Digital Literacy and Indigenous Storytelling Initiatives—the Canadian Government has funded multiple digital literacy and indigenous cultural projects e.g., initiatives under Canada's Digital Technology Cluster, Digital Literacy Exchange Program and Indigenous media program.

Australia's Artificial Intelligence: Australia's Ethics Framework provides guidance on public communication and ethical use of AI.

Legend					
	◎ Effectiveness	✓ Feasibility	⚠ Risks & Mitigation
	⚖ Equity	$ Cost vs. Benefit	🌐 International examples

Legislative and regulatory actions

Option 6: A new regulatory regime could explicitly regulate AI-generated cultural and creative content, Web3-authenticated creative works and cultural IP protection in virtual environments

- Could protect cultural creators in the AI-driven digital economy, enabling authorship attribution and fair use protections. The Tiaki AI Quality Mark has been proposed by the AI Forum as a way for AI-enabled creators to show AI has been used in a way that is trusted, ethical and reflective of the New Zealand context.
- May help facilitate fair compensation for artists and creatives, and that creative and cultural professionals retain rights over AI-generated adaptations of their work. Could also include mechanisms for revoking existing permissions and obligations to prevent third parties from using data in harmful ways.
- Moderate to complex feasibility—while some legislative amendments may be manageable, updating copyright and IP law to address AI and decentralised content attribution would require significant legal reform and cross-sector coordination.
- $ Medium to high cost—would require ongoing investment in regulatory infrastructure, technology systems (e.g., smart contract-based copyright tracking), and public engagement. Long-term benefits include economic protection for creators, cultural integrity, and public trust in digital content ecosystems.
- Risk of enforcement challenges and industry resistance; could be mitigated by co-designing licensing models and transparency standards that balance innovation with creator rights.
- United States—U.S. Copyright Office is considering new regulations for AI-generated content and digital likeness protections.

  Republic of Korea's Cultural Korea 2035 establishes new copyright protection and utilisation standards for AI-generated works and guarantees fair compensation for original creators.

  Canada is moving towards recognising indigenous data and cultural IP under co-developed laws.

  WIPO (World Intellectual Property Organisation) is actively exploring models for AI and traditional knowledge protection.

Option 7: Expanding privacy regulation could cover quantum-safe encryption for digital assets, AI-driven fraud and deepfake detection systems

- Expanded provisions could strengthen digital resilience of cultural and sports data, increasing long-term security.
- Would protect individuals and cultural institutions from cyber threats. By addressing AI-driven fraud and deepfake detection, the measure may protect vulnerable groups from exploitation.

Legend					
	Effectiveness		Feasibility		Risks & Mitigation
	Equity	$	Cost vs. Benefit		International examples

✓ Moderate feasibility—quantum encryption is emerging but expensive. AI-driven fraud detection is rapidly advancing, promoting feasibility.

$ High cost, but important for cybersecurity in the digital age. May prevent costly data breaches and fraud incidents, leading to long-term savings.

⚠ Risk of slow adoption and resistance from digital platforms; could mitigate through mandating compliance for government contracts or provide incentives for early adoption.

United States regulators have been looking at developing stronger protections against AI-driven fraud and deepfake misinformation.

The United Kingdom is preparing quantum-safe encryption protocols to protect digital assets.

Denmark has recently proposed copyright laws to protect against deepfakes.

Funding and incentives

Option 8: A cultural technology investment fund could prioritise community-led technology projects, new and emerging storytelling platforms and uptake of digital tools

◎ Would stimulate cultural technology innovation and community-led projects. Prioritising locally led initiatives could increase relevance for local communities. Experimentation with off-the-shelf tools could be enabled through professional subscriptions for under-resourced cultural and creative organisations.

⚖ Could benefit local, regional and small creative enterprises by building technological capability and empowering communities to take charge of their cultural and creative narratives.

✓ High feasibility—aligns with global trends in creative technology funding. Strong community interest could facilitate the establishment and success of the fund.

$ High potential return on investment but would require long-term funding commitments. Successful projects may stimulate local economies, create job opportunities and increase tourism and cultural participation. A levy on commercial AI Services could be used to help fund this initiative.

⚠ Risk of corporate capture, or that some projects may fail to achieve their objectives, leading to wasted resources; could mitigate by setting quotas for regional and small-scale participation, and implementing a rigorous evaluation process for project proposals to support funding viable and impactful projects.

Singapore's AI & Digital Innovation Grants fund digital innovation projects across sectors, including for projects that demonstrate adoption of AI.

The European Union—European Institute of Innovation and Technology (EIT) Culture and Creativity co-finances long-term innovation projects with the aim of accelerating competitive and resilient entrepreneurship in the Cultural and Creative Sectors and Industries.

Legend ◎ Effectiveness ✓ Feasibility ⚠ Risks & Mitigation ⚖ Equity $ Cost vs. Benefit International examples

Option 9: Tax incentives for private investment in sustainable technology, including AI-assisted sports analytics, immersive museum experiences and virtual and augmented reality-based arts and cultural exhibitions could encourage growth and innovation

- Would encourage AI innovation in creative and sports industries while supporting sustainability.
- Would benefit investors and industry players; may not directly benefit grassroots creatives or small businesses.
- High feasibility—tax incentives are a common policy tool with broad political support.
- $ Reduces government tax revenue but may attract private investment and economic growth.
- Risk of large corporations dominating the funding; could mitigate by ensuring tax incentives prioritise locally owned and/or small and diverse businesses.
- The United Kingdom's Creative Industry Tax Reliefs provide tax incentives for film, TV, theatre and games, and is often cited as a model for supporting creative technology investment.

  Singapore's Government Grants for Digital Innovation—Singapore has an active policy environment for AI and digital innovation, with tax incentives and grants that support sustainable technology in culture and sports.

Public-private partnerships and industry collaboration

Option 10: Public-private partnerships for smart cities and districts could integrate wireless connectivity, digital innovation hubs and blockchain-secured public records for digital heritage

- Would create digital hubs for cultural innovation and immersive storytelling. Public-private partnerships would leverage private sector expertise and resources to develop advanced infrastructure.
- Would help to ensure urban and rural communities benefit from digital infrastructure. Engaging local communities in the development process would help projects to meet diverse needs and priorities.
- High feasibility with private sector backing. Public-private partnerships have been successfully implemented in various cities worldwide, providing a feasible model for smart city development. Balance of commercial and cultural considerations would be required.
- $ Requires investment but could attract tourism and technology partnerships. Would allow for the sharing of costs between public and private entities, reducing the financial burden on the public sector.

Legend					
	Effectiveness		Feasibility		Risks & Mitigation
	Equity	$	Cost vs. Benefit		International examples

⚠ Unequal access and privacy risks; could mitigate by ensuring regional distribution of funding and transparent data handling practices.

🌐 Public–private partnerships are used to develop smart urban districts with advanced digital infrastructure in various jurisdictions including Finland, the United States and Canada.

Option 11: An 'AI for success' initiative could fund ethical AI applications (for example in audience engagement and performance analytics) in line with human rights and privacy laws

◎ Could encourage responsible AI adoption in sport and the performing arts and provide guidance on ethical safeguards.

⚖ Would benefit elite athletes and performers but may not immediately benefit community-level sports and cultural groups.

✓ High feasibility with government and industry collaboration.

$ High research and development costs but long-term benefits in sports and performing arts innovation.

⚠ Privacy risks with AI-driven athlete and performer tracking; could mitigate by mandating athlete and artist consent and transparency in AI analytics.

🌐 The European Union AI Act establishes a comprehensive regulatory framework across sectors, including provisions relevant to sports analytics and performance monitoring.

United States Senate hearings have featured discussions on AI, biometric data and privacy.

International cooperation and creative exports

Option 12: A creative export strategy could guide investment in creative trade and help to forge cooperation agreements with global partners and platforms to boost New Zealand's creative exports

◎ Would support innovation across the creative sector; a focus on "weightless" digital exports may help to grow the economy and international trade.

⚖ Investment in cultural and creative exports would showcase the uniqueness and global appeal of New Zealand culture, and particularly the contribution of Māori culture.

✓ High feasibility—boosting exports could generate inward investment, increasing international recognition and soft power.

$ The creative sector already attracts some private investment; government co-ordination in investment could unlock a range of additional creative exports.

Legend					
	◎ Effectiveness	✓ Feasibility	⚠ Risks & Mitigation
	⚖ Equity	$ Cost vs. Benefit	🌐 International examples

⚠ Risks of some firms not developing viable creative products; global downturn would lead to fewer buyers for creative exports; could mitigate by a multi-year commitment to investment in the creative sector that is periodically reviewed against success criteria. Could learn from sectors that are already a significant contributor to digital exports, such as New Zealand's game development sector.

The United Kingdom has developed an International Strategy for the Creative Industries—Putting the United Kingdom's Creative Industries Centre Stage.

Republic of Korea—the Ministry of Culture, Sports and Tourism coordinated government bodies working in the creative industries and invested several trillion won to ensure their success, leading to the worldwide popularity of Korean pop (K-pop) bands such as BTS, TV shows like Squid Game and the Oscar-winning film Parasite.

Legend					
	Effectiveness	✓	Feasibility	⚠	Risks & Mitigation
	Equity	$	Cost vs. Benefit		International examples

Share—Transforming content distribution and engagement
Tiri—Te whakaumu i te tuaritanga ihirangi me te whai wāhi

New Zealand stands at a pivotal moment as digital technologies transform how stories are shared. While the opportunities for immersive, personalised and widely accessible narratives are immense, the evolving landscape of emerging technologies also poses challenges such as mis- and disinformation, cultural misrepresentation and inequitable access.

By addressing these challenges head-on, New Zealanders can help enable their unique stories to be shared in ways that are both innovative and true to their cultural identity—leading to a vibrant digital future in 2040 and beyond.

Insights for the future

Insight 5: New Zealanders' future stories will be shared faster and more widely

New technologies for content distribution and engagement are reshaping how stories are shared and consumed, ushering in a new era of digital distribution. For example, the proliferation of portable devices are making diverse content available at speed and Web3 platforms are redefining how digital cultural and creative content is shared, and who owns and monetises that content. Sports events, concerts and theatre performances may increasingly shift to digital spaces, creating new possibilities for cultural connection. AI bots and virtual influencers may displace human interaction, altering the nature of fan communities and engagement.

On the other hand, AI-enhanced storytelling could expand reach, making local New Zealand stories more accessible to global audiences. Next-generation digital infrastructure could also broaden participation in cultural and sports activities, reaching rural and remote communities. In New Zealand, the adoption of smart streaming devices is on the rise, including video game consoles, smart monitors and projectors. These devices are increasingly being used to access local content, reflecting a growing demand for user-friendly interfaces and high-quality local programming. For instance, platforms like TVNZ OnDemand and Māori Television have developed apps that are compatible with these devices, allowing users to stream local shows, movies and cultural content directly to their screens (Statista Market Insights, 2024).

As digital technologies revolutionise content distribution and engagement, the importance of training AI with data that reflects New Zealand's unique culture and stories becomes paramount. However, this task is fraught with complexities and sensitivities. AI models trained on global datasets may not adequately capture the nuances of New Zealand's diverse cultural heritage, including Māori and Pacific narratives. To address this, fine-tuning existing AI models with locally sourced data—with appropriate consideration of data ownership and sovereignty issues—could help AI systems better reflect and respect New Zealand's cultural context. This process involves curating datasets that accurately represent the country's rich cultural tapestry and continuously updating the models to incorporate new cultural insights (Barnes et al., 2024; Kulesz, 2024).

Insight 6: New Zealanders' ability to share and consume stories in the future will be determined by their access to digital technology

"If people or communities cannot join in digitally, they can lose access to opportunities and services. This can contribute to cycles of exclusion from the economy and society.."

– Te Rautaki Matihiko mō Aotearoa The Digital Strategy for Aotearoa (2022, p. 12)

As digital platforms become the primary medium for storytelling, those without adequate access to these technologies risk being left behind. New Zealanders' varying levels of access to shared content and stories is influenced by factors such as distribution and availability of affordable, high-speed internet, devices and digital literacy. The inclusion and visibility of underrepresented cultures and languages in digital platforms—including te reo Māori and New Zealand Sign Language (NZSL)— also impacts access and engagement in digital knowledge production and global participation (UNESCO, 2024).

Digital literacy and access to technology is essential in ensuring that all New Zealanders can participate in and benefit from these new forms of storytelling, and for preserving and promoting diverse cultural heritage. Initiatives like Digital Story Telling Aotearoa support educators to use digital tools to bring local curricula to life, offering a means to share New Zealand's rich cultural narratives (Education Gazette, 2022).

Without access to digital technology, many communities—particularly those who have traditionally lacked access, including people in rural or underserved areas, Māori and disabled people—may struggle to maintain and share their cultural stories, leading to a loss of cultural identity and heritage over time.

Insight 7: Algorithms are becoming the content curators of the future

"Today, algorithms influence everything from the news and entertainment we consume on social media to more significant life decisions like job selections and loan approvals. Their reach has extended into every corner of our lives, silently but powerfully shaping our choices, opportunities, and perceptions. The decisions made by these algorithms can determine the information we see online, influence our purchasing behaviours, and even affect our social interactions. The algorithms behind these systems are not mere lines of code but powerful arbiters of content and opportunities."

– Devan J. Walton (2024, p. 134–135)

In an era where an unprecedented amount of content is being generated, AI algorithms play a key role in navigating the digital world. Algorithmic tools are being used to help users navigate digital content online, including news and social media, by filtering and recommending content based on past behaviour. While this can improve user experience by helping cut through vast quantities of content for example in video on demand services, the use of algorithms requires consideration, especially where there is a greater chance of harm from mis- and disinformation, such as on social media.

There are a wide range of applications for algorithmic tools. For example, AI software is now being used to forecast 'hits' in the music industry, with companies arguing that human brains respond to particular sound patterns. 'Music Digital Nuance Analysis DNA' tools claim AI can learn what has succeeded or failed in the past to forecast successful music for the future (APRA AMCOS, 2024, p. 47). There is a risk that these tools could lead to further cultural homogeneity, domination by corporations paying for featured spots in users' feeds, and the perpetuation of biases against particular groups, including women, who have been traditionally marginalised in the music industry.

Algorithmic tools are also increasingly deployed to moderate content at scale by the major platforms, including to identify copyright infringement and instances of online harm, and to identify or remove content that could be controversial to online advertisers (and thus not commercially viable). People have differing levels of awareness and attitudes towards algorithms, and many do not understand how their choices are being further shaped (Zarouali et al., 2021).

Audiences now encounter news, advertisements and branded content as part of an overwhelming digital mix. The sheer volume of AI-generated content makes it challenging to distinguish between fact and fabrication, undermining trust in media. This constant 'noise' complicates the verification of information and is a key factor in the proliferation of mis- and disinformation, which can create harm. It also affects the ability for stories to break through and be seen. In some cases, people are responding to this overwhelm by seeking out opportunities to deliberately disconnect from the digital world and engage in the non-digital space. For example, there is a growing interest in 'digital detox' or 'unplugging' movements, especially within Gen Z and Gen Alpha.

AI-driven recommendation systems may narrow the diversity of content exposure, prioritising mainstream trends over niche stories. Globally, the proportion of people who use social media and video networks as their main sources of news is growing, with this trend most prevalent among younger age groups: "44% of 18- to 24-year-olds and 38% of 25- to 34-year-olds say these are their main sources of news" (Elliott, 2025). On social media platforms, algorithms may reduce access to content that is not prioritised by the provider and/or not as commercially appealing. This means that what is discovered may not be what is most important, diverse or locally relevant, but what best serves the platform's engagement goals.

There is a risk that even national-level stories may not be seen, let alone regional or local stories, given New Zealand's size and scale. AI algorithms tend to prioritise content that generates the most engagement, which often means that smaller, local stories are overshadowed by more sensational or widely appealing content (Caro, 2024; Simon, 2024). With advancements in AI, audiences can now choose their storytellers, such as AI bots, virtual influencers or commentators. This personalisation allows users to consistently hear from preferred sources, but it also risks creating echo chambers where only certain perspectives are amplified (Du, 2024).

Within New Zealand, the narratives of groups who have traditionally faced exclusion, including Māori, ethnic minorities and disabled people, may be misrepresented or lost amid AI-generated and moderated content. There is a need to balance commercial pressures with the preservation of diverse cultural narratives, ensuring that New Zealand local content is prominent and accessible, and independent creators are not overshadowed by corporate interests or generic content algorithms.

Ensuring transparency in how content is produced and curated is crucial for building trust in the stories being shared. A range of digital and AI-driven tools are currently being harnessed to improve algorithmic transparency and combat mis- and disinformation, including AI content

labels, disclaimers and explainability audits; and watermarking, provenance and blockchain-backed metadata. Targeted interventions, including to improve digital literacy and support local content development, may further help to ensure that the stories that shape public life are reliable.

Insight 8: By 2040, we won't be able to tell which stories are real

"What happens when someone, somewhere, for some reason, chooses to decide what's real and what isn't? Who controls the truth? Who owns reality?"
– Guido Melo (2025)

Applications such as deepfake technology and the increasing use of AI-generated content in mis- and disinformation are making it harder for people to tell what is real and exacerbating existing socioeconomic inequalities (Capraro et al., 2024). At a talk in June 2024, tech billionaire and founder of Twitter Jack Dorsey warned that in the next five to 10 years, people will be unable to distinguish what's real and what's fake (Shibu, 2024). Already, recent evidence has shown that people can no longer distinguish AI-generated faces from human faces (Miller et al., 2023).

Deepfakes are also an issue within the creative industries and performing arts, including music and screen production. There are concerns about AI creators using voice and image cloning to replicate performers for financial gain, which puts the actual performers at financial and reputational risk (APRA AMCOS, 2024). Some artists worry that they could be displaced by unauthorised, AI-generated digital replicas.

Trusting New Zealanders' stories is vital to social cohesion and democracy. As the 'glue' that binds societies together, trust is an important component of social cohesion in that it provides solidarity and a common shared identity within social, work, community and national networks. A strong cultural identity fosters social cohesion and trust within communities. This social capital can lead to more robust economic networks and opportunities for collaboration and innovation.

Public media institutions play a central role in telling stories about the values and connections within society, especially in a democracy. They also provide a platform for diverse voices, ensuring that national, regional and local stories are heard and valued. By offering unbiased and comprehensive coverage, public media help to build public confidence and trust in democratic institutions (Farrel & James, 2024). This is particularly important in the digital age, where the sheer volume of AI-generated content can make it challenging to distinguish between fact and fabrication. Public media institutions can act as a counterbalance to this 'noise', providing verified information and fostering an informed citizenry.

Trusting New Zealand stories also has economic implications. At an international level, New Zealand's cultural identity is central to its global brand. This identity is communicated through arts, heritage, media and sport. New Zealand's cultural identity not only shapes its national character but also drives economic growth and development. A unique cultural identity, including Te Tiriti partnership and te reo and tikanga Māori, and the ability for people to trust New Zealand's brand, drive tourism and associated employment opportunities, and make New Zealand products and services more attractive on the international market. This can lead to increased exports, foreign investment and soft power. Genuine, diverse narratives will need to prevail over homogenised, algorithm-driven content to maintain a trusted Brand NZ. However, there is a risk that New Zealand's culture could be diluted by more powerful countries and interests. Determining whether

New Zealand stories are authentically from New Zealand and reflect its unique cultural heritage will be an ongoing challenge for both producers and consumers.

The credibility of digital narratives involves the interplay between public institutions and private technology companies. In some jurisdictions, approaches that promote fair revenue sharing and digital literacy have been introduced as an attempt to help the digital media ecosystem remain innovative and trustworthy. For example, California's recent journalism funding initiative allocated US$250 million to support news organisations and launch an AI research programme. Originally intended to force Big Tech to share advertising revenues with media companies, the plan evolved into a state-supported model following significant pushback. While some critics argue for tax incentives to bolster full-time journalism, this initiative demonstrates efforts to preserve media integrity amid AI-driven disruption (Nguyễn, 2024).

Potential policy levers

To address the risks and opportunities explored above, future policy professionals may want to consider a range of policy levers and approaches, such as: emerging technology literacy and upskilling, public awareness initiatives, digital rights and consumer empowerment, legislative and regulatory actions, funding and incentives, and international cooperation and cultural diplomacy.

The following section provides a range of ideas for potential options or tools within these levers, along with their strengths and weaknesses based on the evaluation criteria (see Annex 1), and current international examples. In keeping with guidance for the LTIB, this section does not prioritise or recommend which actions the current or future government should take, or allocate responsibilities based on existing government portfolios or structures.

Emerging technology literacy and upskilling

Option 13: Expanded media and digital literacy education in schools and tertiary education providers could equip the next generation with skills to navigate AI-generated media, deepfake detection and Web3 technologies

- Would build digital resilience and practical technology capability for emerging creatives, while also optimising opportunities for innovation and leadership in storytelling, journalism and cultural expression through new technologies.
- Media and digital literacy education would help to bridge the digital divide by equipping all students, regardless of their background, with essential digital skills to navigate the complexities of AI and participate meaningfully in the evolving digital landscape.
- ✓ Moderate/high feasibility—could be integrated into existing education frameworks, with targeted support for educators to stay current with emerging tools and foster creative experimentation and ethical engagement with technology.
- $ Moderate cost, but long-term gains in digital security, literacy and creative innovation, alongside reduced costs associated with misinformation and digital exclusion.

Legend					
	Effectiveness	✓	Feasibility	⚠	Risks & Mitigation
	Equity	$	Cost vs. Benefit		International examples

⚠ Risk of outdated curricula and resistance from educators and institutions to changing existing frameworks; could be mitigated through co-design with tech and creative sectors, regular curriculum updates and engagement with educators, parents and policymakers.

Estonia is often referred to as a leader in digital literacy, creative experimentation and e-education.

The United Kingdom's AI in Schools & Digital Literacy Strategy includes AI literacy modules in schools, deepfake awareness education and media verification training.

The European Commission's Digital Education Action Plan includes deepfake detection training and digital resilience education for youth.

Option 14: Intergenerational digital storytelling programmes could strengthen community connectedness by linking older generations with younger people through digital media to preserve cultural heritage and foster intergenerational bonds

◎ Would help to preserve and share New Zealand's cultural heritage, enhance social cohesion and bridge generational divides. High scalability and strong alignment with New Zealand's cultural and Te Tiriti obligations. Could also be used as a tool to showcase New Zealand cultural heritage to wider audiences.

⚖ Would create a sense of belonging and shared identity while empowering communities to take ownership of their narratives. Could support marginalised groups by highlighting their unique stories and promoting cultural pride.

✓ Moderate feasibility—depends on availability of technical expertise, partnerships with schools, libraries and cultural organisations, and availability of user-friendly technology platforms. Would rely on leveraging emerging technologies (e.g., AI for transcription, virtual reality (VR) for immersive storytelling) while allowing room for future innovation.

$ Initial setup costs for technology, training and programme facilitation. However, social and cultural benefits would make the investment cost effective long-term. Leveraging existing community spaces (e.g., marae, libraries) could reduce operational costs.

⚠ Low digital literacy, particularly among older adults, and potential technological barriers (e.g., software or platform usability issues); could mitigate through comprehensive training and support to participants and collaboration with trusted community leaders and organisations to increase participation, and securing long-term funding to ensure programme continuity.

There are related initiatives operating internationally, for example StoryCenter (United Sates), Memory Lab (European Union), Generations Working Together (Scotland), and a range of indigenous intergenerational digital storytelling projects in Canada (see Option 5).

Option 15: AI and digital technology initiatives could support equitable access to digital transformation opportunities for all New Zealanders

- Would help people to adapt to AI-driven cultural production and address the digital skills and literacy gap, preparing professionals in traditionally non-technology-driven sectors to incorporate emerging technologies as well as the next generation.
- Could benefit traditional artists, journalists, and heritage and cultural professionals at all career stages, and their wider industries and promote equitable access to digital transformation. Investment in online learning, regional delivery partnerships, and initiatives to support groups who experience barriers, as well as pathways for young people interested in digital and creative careers, would help increase engagement.
- ✓ High feasibility—could be integrated into existing workforce development programmes. Training could be piloted and scaled based on demand and outcomes. In some instances, low-barrier experimentation, access to ethical examples and adopting a creative mindset could be prioritised over expensive or formal training.
- $ High initial cost but long-term workforce sustainability. Upskilling professionals in emerging technologies may lead to new job creation, digital exports and cultural innovation.
- ⚠ Low uptake and limited reach to rural communities; could mitigate by including regional funding streams. Collaboration with universities, creative industry bodies, polytechnics, iwi and cultural institutions could also enhance feasibility and reach. Involving target communities in programme design could help ensure relevance and buy-in.
- Canadian Media & Digital Skills Funding—initiatives include funds for training indigenous arts and media professionals in digital technologies.

  Oman's National Program for AI and advanced digital technologies aims to promote the adoption and localisation of AI, and advance digital technologies with a human-centred vision.

Public awareness and trust-building initiatives

Option 16: A digital technology transparency index could track the role of AI, blockchain and quantum computing, including in arts, media and sport

- A transparency index could track AI's role in shaping cultural and sports narratives, enhance accountability and inform policy adjustments in AI use. It may also uncover opportunities for innovation and local economic development by identifying underutilised technologies and supporting more strategic uptake in creative and community sectors.
- Would provide insights on technology's impacts across different communities. Could highlight disparities in technology access and usage, promoting more equitable distribution and application. A targeted, context-specific approach could help reduce potential for harm while also identifying areas where emerging technologies could be leveraged to support community-led innovation and digital inclusion.
- ✓ Moderate feasibility—would require coordination between regulators and industry, including partnerships with AI firms. Existing transparency indices and frameworks could be adapted for this purpose, providing a foundation to build upon and optimise for local relevance.

$ High cost for data collection, but strong benefits for governance, public trust and strategic investment. The benefits of increased transparency (i.e., improved decision-making, trust and more efficient resource allocation) may outweigh the initial development costs.

⚠ Risks of limited enforcement and non-compliance, and collecting and publishing data on technology use could raise privacy concerns. These could be mitigated by incentivising participation via funding access, implementing strong data privacy measures and anonymising sensitive information. Additionally, framing the index as a tool for opportunity mapping—not just risk monitoring—could encourage broader engagement.

🌏 Australia has introduced a transparency framework for AI with mandatory AI transparency statements for all non-corporate Commonwealth entities.

Nine cities collaborating through the Eurocities network have set standards for the transparent use of AI, via an open-source data schema for algorithm registers.

Digital rights and consumer empowerment

Option 17: A 'right to reset or retrain algorithms' could allow New Zealanders to understand, influence and adjust the way AI-driven content recommendation systems shape the information, media and cultural content they receive

◎ Would empower people to exercise agency in algorithmic environments, enhancing their ability to discover diverse, trusted and relevant content. Inspired by principles in the Consumer Data Right and international developments in AI transparency, this right could include tools to:

- View how personalisation algorithms are influencing content delivery.
- Reset or retrain the algorithm to reflect updated user preferences.
- Opt into alternative recommendation models (e.g., chronological, community-curated or culturally anchored feeds).
- Require platforms to explain in plain terms how personalisation decisions are made.

In addition to reducing harm, this right could unlock opportunities for civic participation, cultural visibility and community-led content discovery, particularly in regions or groups with limited access to mainstream media platforms.

⚖ Could increase transparency and reduce algorithmic bias, while also enabling communities to surface local content, amplify underrepresented voices, and shape digital environments that reflect their values and interests. Success would depend on how accessible and understandable the tools are for diverse users.

✓ Moderate feasibility—would require negotiation with digital platforms and alignment with privacy and data protection laws but could start as a voluntary code or regulatory trial. Prioritising introduction in algorithmic environments where risk of harm is highest could also reveal areas of untapped benefit, such as local news, indigenous storytelling or youth media.

Legend

◎ Effectiveness ✓ Feasibility ⚠ Risks & Mitigation

⚖ Equity $ Cost vs. Benefit 🌏 International examples

$ High—modest government investment could yield significant public benefit in terms of civic engagement, public trust, cultural pluralism and digital inclusion. Could also support innovation in user-centred design and ethical tech development.

⚠ Risk of industry resistance or token compliance; could mitigate through transparency standards, public reporting and regulatory incentives for platforms to comply. Framing the right as a tool for both protection and empowerment may encourage broader uptake and innovation.

Consumer Data Rights (for example, Australia, United Kingdom, NZ) offer precedent for empowering people with data portability and control, which could evolve into content personalisation rights.

Legislative and regulatory actions

Option 18: Responsible AI and algorithmic bias standards could focus on preventing algorithmic discrimination and racial or cultural bias in AI-driven hiring

◎ Would aim to promote fair AI systems and content curation and preventing racial or cultural bias, for example in AI-driven hiring for creative and sports industries.

⚖ May help to protect marginalised groups from AI discrimination, including in digital storytelling and esport.

✓ Moderate feasibility—would require industry compliance and independent AI audits. Could be incorporated into a broader regulatory framework for digital services.

$ May be costly to enforce, but strong social equity benefits.

⚠ Risk of regulatory loopholes and ineffective enforcement; could mitigate via regular AI bias audits and transparency mandates.

An objective of the European Commission's AI Act is to mitigate discrimination and bias in the development, deployment and use of AI systems.

Brazil policy discussions on algorithmic transparency and bias indicate a move towards enforcing algorithmic fairness.

Option 19: Explainability audits for AI-powered journalism, virtual reality (VR) storytelling and automated sports decision-making could help users to understand how AI influences content creation and analysis

◎ Explainability audits would improve transparency in AI-driven cultural and sports reporting and identify and mitigate biases in AI systems to support fair and accurate content creation.

⚖ May help to protect consumers from misinformation and bias.

Legend

◎ Effectiveness ✓ Feasibility ⚠ Risks & Mitigation

⚖ Equity $ Cost vs. Benefit International examples

✓ Moderate feasibility—would require AI auditing infrastructure and industry buy-in. Established methodologies for conducting explainability audits exist that could be adapted for this purpose.

$ Compliance costs for AI developers, but enhanced trust and accountability may enhance consumer confidence.

⚠ Risk of resistance from technology companies due to perceived complexity or cost; could mitigate by providing incentives for compliance and engaging stakeholders in the development process.

The European Union AI Act (Article 86) requires AI systems in high-risk areas (e.g., automated journalism and sports analytics) to provide explainable decision-making.

The United States AI Risk Management Framework outlines principles for AI transparency and accountability in automated processes and analytics.

China is introducing new AI labelling rules to fight the spread of false information.

Funding and incentives

Option 20: A unified government pipeline for digital innovation investment could increase strategic clarity and enable more impactful public investment in new technology

◎ Could strategically coordinate public funding for digital technology development across sectors, including arts, culture, heritage, education and science. Rather than siloed and bespoke investments by individual agencies, this pipeline would streamline decision-making and align investments across government to ensure maximum coherence and efficiency of public funds.

⚖ Strong potential to prioritise underserved communities through shared funding principles but would depend on governance design.

✓ Moderate feasibility—would require significant interagency coordination and strong cross-ministerial leadership but could build on existing mechanisms.

$ Consolidation would improve efficiency, reduce duplicated funding processes, and amplify long-term social and economic returns from public investment.

⚠ Risk of over-centralisation or slow responsiveness to innovation; could mitigate through flexible co-investment models, public accountability and Te Tiriti-based oversight.

The United Kingdom established the Government Digital Service and later the Central Digital and Data Office to foster a unified approach to digital transformation and investment across government departments.

Legend

◎ Effectiveness ✓ Feasibility ⚠ Risks & Mitigation

⚖ Equity $ Cost vs. Benefit International examples

International cooperation and cultural diplomacy

Option 21: Multilateral and regional agreements with partner countries and global cultural institutions could provide a means to share expertise on AI-driven cultural preservation and ethical digital storytelling

High quality agreements would help build international partnerships for responsible AI use in culture. Would facilitate the sharing of best practices, tools and methodologies, and encourage the development of shared ethical frameworks and technical standards. This may improve consistency and quality across borders.

Would strengthen indigenous and regional collaboration. Smaller or less-resourced countries and institutions may benefit from the expertise and infrastructure of more advanced partners. Any international diplomatic efforts and agreements would respect and align with domestic cultural and civic protections.

High feasibility—would leverage existing diplomatic channels. New Zealand has a strong track record of international cooperation, including in cultural and digital diplomacy.

$ Moderate cost, strong cultural diplomacy benefits. Could also have benefits for international awareness, agreement and action to address other key issues associated with AI and digital infrastructure, including resource use and climate change. Costs could be distributed among participating countries and institutions, reducing the financial burden on any one party.

Risk of slow policy adoption; could mitigate by prioritising quick wins through pilot projects.

Without effective safeguards, shared technologies or methods could be misused or misrepresent cultural narratives; could mitigate by co-developing ethical guidelines and consent protocols to protect cultural integrity and support indigenous and local communities to have a role in decision-making processes.

UNESCO adopted the first-ever global agreement on the ethics of artificial intelligence, which includes a chapter on culture and aims to promote human rights and sustainable development through digital transformation.

The African Union's Continental AI Strategy promotes AI's potential as a driving force for cultural renaissance, and the preservation of Africa's cultural heritage.

Legend					
	Effectiveness		Feasibility		Risks & Mitigation
	Equity	$	Cost vs. Benefit		International examples

Protect—Safeguarding culture and heritage
Tiaki—Te tiaki i te ahurea me te tuku ihotanga

The rise of AI and digital technologies brings both significant risks and exciting opportunities for the protection of New Zealanders' stories. Many nations are grappling with how to balance encouraging technological innovation and protecting the rights of creators and communities. While AI can facilitate the preservation and sharing of cultural knowledge, it also presents challenges related to cultural misappropriation and control over data. As these technologies evolve, New Zealand faces the delicate task of balancing innovation with the need to safeguard intellectual property.

Ensuring that New Zealanders' stories are protected requires addressing the risks associated with digital infrastructure and AI's potential to reshape or erase cultural narratives. At the same time, the opportunities for data sovereignty and AI-powered preservation offer new ways to ensure that New Zealand's rich cultural heritage is protected for future generations.

Insights for the future

Insight 9: How we protect New Zealanders' stories will shape our future history

AI and digital technology present opportunities for preserving and sharing cultural knowledge that may otherwise be lost, and work in this space is already underway in New Zealand. Some of New Zealand's museums, libraries and archives, including the Museum of New Zealand Te Papa Tongarewa and Ngā Taonga Sound & Vision, are actively developing and using AI tools to catalogue collections into te reo Māori and other underrepresented languages (Chumko, 2023). Te Hiku Media, recognised by Time magazine for their work on preserving te reo through AI, is using AI to transcribe and document oral histories that are at risk of being forgotten as older generations pass away. With the right frameworks in place, AI can be a tool for enhancing cultural knowledge and passing that knowledge down to future generations, and for the Crown to uphold its Te Tiriti obligation to protect and promote te reo and tikanga Māori.

In an era where AI systems can generate content that mirrors human creativity, concerns arise about the risk of AI reshaping history or erasing significant cultural stories. As previously noted, AI could create alternative versions of historical events or perpetuate biases that favour certain perspectives, while ignoring others. As AI begins to play an increasing role in content creation, this poses a risk to cultural integrity and accuracy (Melo, 2025).

AI may appropriate and commercialise cultural knowledge and stories without permission or proper context. For example, without adequate recognition of tikanga and Māori cultural IP, the integration of Māori cultural values into AI regulations is limited, increasing the risk of cultural misappropriation.

Communities whose stories have historically been excluded from dominant narratives are particularly vulnerable to this risk, including Māori and other indigenous peoples, Pacific peoples

and other ethnic minorities, and disabled people. There is some concern that AI systems, which are primarily trained on data scraped from the internet, are perpetuating stereotypes and prejudice or reinforcing dominant narratives, effectively erasing or distorting some aspects of history.

Insight 10: Protecting New Zealanders' stories will require stronger digital infrastructure

Protecting New Zealanders' stories requires ensuring adequate and safe long-term storage. The sheer volume of data generated necessitates robust cybersecurity measures to protect against data breaches and loss. Ensuring that digital storage solutions are both scalable and secure is essential for safeguarding New Zealand's cultural heritage in the digital age (Stackpole, 2024). Indeed, many of New Zealand's museums, libraries and archives are grappling with growing data storage requirements relating to digitisation programmes, which have no sign of abating. The storage demands at Auckland War Memorial Museum, for example, have increased 8-10 percent annually (Withers, 2024).

One key issue is the culture of obsolescence, where data stored on outdated hardware or software becomes inaccessible as technology evolves (Finance Magnates, 2023). Technological progress has made it easier for New Zealanders to document their stories, but as technology has progressed, it has increasingly led previous technologies and formats to become obsolete, from wax cylinders to vinyl records, to magnetic tape and older storage systems. It is also increasingly costly to access and maintain access to older, legacy systems of information storage due to technologies and equipment being no longer produced or supported. Unlike paper, which can last for centuries if properly preserved, digital data has a much shorter lifecycle and requires ongoing maintenance to remain accessible.

While cloud storage has made it easier to store and access information, it has also led to ongoing subscription costs and introduced additional new critical dependencies and vulnerabilities. Cloud storage requires fast internet infrastructure, consistent server uptime and ethical vendor practices to ensure that cloud storage remains affordable and available for New Zealand communities in the long-term. These challenges could lead to the loss of valuable cultural narratives if data is not regularly migrated to current formats and systems.

The centralisation of data storage with international Big Tech companies, which increasingly control digital infrastructure, raises concerns. Many New Zealanders' stories are currently stored in databases and digital archives managed by large multinational corporations, raising questions about who controls access to this data, where it is held, who profits from it, and what will happen if that platform becomes disestablished or obsolete.

Once stories are stored digitally, they may become susceptible to breaches of privacy, misconfiguration or loss due to poor data management practices. The rise of streaming services has highlighted how content can be removed or altered after release, raising concerns about disappearing cultural content. Digital platforms like Netflix not only choose which content is made available but also have the power to remove or edit it, limiting access to locally produced stories (Brody, 2023). This practice highlights the risks associated with placing valuable cultural content in the hands of large, international corporations.

The metadata associated with these stories could also be exposed, revealing private information that was not meant to be shared. As digital archives continue to grow, ensuring that they are secure, accessible and protected from misuse becomes increasingly important. There is also the increasing risk of cyberattacks on cultural institutions like museums, archives and sports organisations, which could erase or manipulate digital cultural assets.

Bifet et al. (2021) emphasise that New Zealand must invest in AI research to ensure technological independence and data sovereignty, warning that relying on overseas companies and digital infrastructure could undermine the country's control over its own technological future. They stress the need for a strong local AI ecosystem to avoid New Zealand becoming dependent on foreign AI infrastructure. Australia's LTIB (Department of the Prime Minister and Cabinet, 2023) highlights the challenges of regulating AI due to the borderless nature of digital platforms, which complicates efforts to control data storage and usage, especially when large international technology companies dominate the sector.

> "It is important to invest in AI imbued with characteristics and values important for Aotearoa New Zealand such as sustainability, fairness, equality, data sovereignty, Te Tiriti obligations, multiculturalism, intergenerational thinking, people and whānau first, and holistic thinking. Otherwise, we risk being relegated to users of overseas technologies developed by countries with different values."
> – Bifet et al. (2021, p. 1)

The shift to digital platforms provides an opportunity for New Zealand to assert greater control over how its cultural stories are stored and shared. There is potential for local institutions, such as museums and galleries, to work together to build digital infrastructure that prioritises New Zealand's data sovereignty. This could involve creating national digital repositories that store cultural data within New Zealand data centres and digital platforms, reducing reliance on international technology companies.

AI and machine learning could also play a role in improving how cultural stories are indexed, categorised and made accessible to the public. New Zealand's museums, libraries and archives could use AI to streamline the cataloguing of their collections, improving access while maintaining the integrity of cultural knowledge. However, as the use of AI grows, it is critical that these systems are designed in a way that respects the cultural significance of the material they store and that they do not inadvertently erode local control.

The sustainability of data storage on digital platforms must also be considered. Digital technologies, particularly AI training and immersive technologies, consume vast amounts of energy and water, raising significant concerns about their environmental impacts and contribution to climate change. This creates a dilemma for New Zealand as it seeks to balance the benefits of technological advancement with the need for sustainability. The environmental footprint associated with data storage and AI infrastructure highlights the importance of considering the resource demands and carbon intensity of digital technologies when planning for the future of New Zealand's digital culture and data sovereignty.

Insight 11: Policy and legislation will need to be flexible and adaptive to keep up with the pace of technological change

There are some concerns about the risks of AI for New Zealand and global society. A 2023 survey by Verian revealed that over 66 percent of New Zealanders are highly concerned about the malicious use, lack of regulation and unintended consequences of AI (Matika, 2023), results mirrored in other recent surveys such as One NZ's AI Trust report (2025). New Zealanders' trust in AI appears especially low. The Ipsos AI Monitor (2024) found that of 32 countries, New Zealand ranked second highest on levels of concern about AI products and services.

"While 77% of New Zealanders have knowingly used AI-powered services in the past year, nearly half don't trust large companies to use AI ethically."
– One NZ (2025, p.2)

Existing intellectual property laws may not adequately protect New Zealanders' stories, particularly in the context of GenAI. For instance, current laws do not necessarily account for collective cultural knowledge, such as that of Māori communities. Copyright legislation currently favours individual rather than collective rights and responsibilities. Māori communities are concerned that their cultural data, including traditional stories, whakapapa and taonga, are vulnerable to exploitation and misuse without proper safeguards in place. Technological advancements operate within an economically driven ecosystem that often favours multinational corporations.

To safeguard creators' rights, some experts recommend regulations that prevent the unauthorised use of content by AI, funding for AI research independent of corporate interests, and an education system that addresses the power dynamics influencing technological development (Jiang et al., 2023). A fit-for-purpose regulatory environment and responsible uptake should lead to creative work opportunities evolving, rather than disappearing, and respond to concerns about work being misused.

In recent years, the global community has been grappling with how intellectual property, copyright and other legislation can keep up with developments in AI. In 2021, UNESCO adopted the first global standard on AI ethics, the Recommendation on the Ethics of Artificial Intelligence. Since then, international lawmakers have developed various AI regulations to address ethical concerns about data privacy, bias and transparency. A key concern for the creative and cultural sectors is ensuring copyright and intellectual property law keeps pace with advances in AI technology.

In 2023, the U.S. Senate Judiciary Subcommittee on Intellectual Property held hearings on AI and intellectual property, discussing issues such as licensing for AI training, fair use of creators' works in data training and outputs, the challenge to creatives to be able to opt in or out of their work being used for AI training, and transparency for consumers regarding AI-generated and human-generated content (Crowell & Moring LLP, 2023). The same year, the Japanese Government declared that using datasets for training AI models did not violate copyright law, allowing those training AI models to amass openly accessible data without licensing or consent from data owners (Lanz, 2023).

In 2024, in the United Kingdom, the All-Party Parliamentary Group on Music and UK Music recommended the UK Government create "a pro-creative industries AI bill" (p. 7), setting out the copyright and transparency obligations of AI companies, and introducing "a specific personality right to protect creators and artists from misappropriation and false endorsement" (p. 8). In the report's foreword, MP Kevin Brennan argues, "The UK must grasp the transformative potential of AI in shaping the future of music if it is to retain its role as a powerhouse in exporting music and nurturing world-class talent. We must also confront the danger that unfettered developments in AI could pose to the UK's musicians and music businesses" (p. 4).

In New Zealand, new legislative measures and funding are needed to better protect creatives. New Zealand is currently exploring how it can protect its stories from misuse or misappropriation in an environment where the boundaries of copyright and intellectual property law are blurred by AI technologies. The Ministry for Business, Innovation and Employment Hīkina Whakatutuki is leading work on AI as part of the Government's *Strategy for Artificial Intelligence* (2025) and is reviewing copyright settings to take into account technological and other developments.

Insight 12: Data sovereignty principles and cultural values may help to safeguard future stories in New Zealand's unique context

There are opportunities to use emerging data sovereignty frameworks to protect New Zealanders' stories more effectively. As discussed in the section on te ao Māori, these frameworks provide leadership for data to be governed responsibly and for communities to assert greater control over their data and cultural knowledge. This includes the right to determine how their stories are used and shared, as well as the ability to consent to the use of their data in AI training models. Decentralised platforms and blockchain offer the possibility of creating more robust and dynamic systems for cataloguing, preserving and sharing cultural knowledge in ways that align with local values and cultural practices.

The development of systems that are informed by Māori values provide guidance more broadly, and could help to ensure all New Zealanders' stories are respected and protected as taonga. Additionally, the rise of Māori data sovereignty networks such as Te Mana Rauranga and Te Kāhui Rauranga, as well as other indigenous data sovereignty movements around the world, offers New Zealand an opportunity to participate in global conversations on how to protect indigenous stories through the use of emerging technologies.

Potential policy levers

To address the risks and opportunities explored above, future policy professionals may want to consider a range of policy levers and approaches such as: legislative and regulatory actions, public awareness and inclusion initiatives, emerging technology literacy, funding and innovation for digital resilience, oversight and accountability mechanisms, and international cooperation and diplomacy.

The following section provides a range of ideas for potential options or tools within these levers, along with their strengths and weaknesses based on the evaluation criteria (see Annex 1), and current international examples. In keeping with guidance for the LTIB, this section does not prioritise or recommend which actions the current or future government should take, or allocate responsibilities based on existing government portfolios or structures.

Legislative and regulatory actions

Option 22: A legally binding digital sovereignty framework could support Māori data sovereignty, AI-generated Māori content protections and blockchain-based governance for taonga

- A clear legal framework could help support Māori digital sovereignty and prevent data exploitation. Would align with Te Tiriti o Waitangi the Treaty of Waitangi and help protect whakapapa, tikanga and mātauranga Māori from misappropriation.
- Could benefit iwi and hapū by supporting rangatiratanga or self-determination, including over AI-generated cultural content. Would have a strong focus on Māori cultural protection, with scope to expand the framework to include data sovereignty protections for New Zealand communities more broadly.

Legend					
	Effectiveness		Feasibility		Risks & Mitigation
	Equity	$	Cost vs. Benefit		International examples

✓ Moderate feasibility—would require legal clarity, iwi engagement, cross-sector coordination and government commitment.

$ High initial cost but long-term cultural and economic gains.

⚠ Risk of industry resistance and challenges with enforcement; could mitigate by working with industry partners to encourage compliance, embedding in cultural funding and investment policies, and establishing an oversight body with Māori leadership.

Indigenous Data Sovereignty in Canada uses First Nations Principles of Ownership, Control, Access and Possession (OCAP).

Australia has a framework for working with indigenous data, co-designed with Aboriginal and Torres Strait Islander partners, to improve access to government-held data and support indigenous data sovereignty.

Option 23: Expanding privacy regulation could directly address the regulation of biometric data, AI-driven sports monitoring and digital identity protection in cultural and media sectors

◎ Could help protect individuals, including athletes and cultural performers, from AI-driven surveillance, and help legislation to keep pace with real-world applications and risks.

⚖ Could reduce privacy risks for athletes, including population groups that are over-represented in New Zealand professional sport.

✓ Medium/high feasibility—privacy regulations are evolving globally, and amendments to the current Act in New Zealand are already being considered. Regulating AI and biometric systems would require specialised knowledge and may necessitate new compliance infrastructure.

$ Compliance costs for AI firms, but strong privacy and data ethics protection, which may reduce the risk of data breaches, reputational damage and legal liability.

⚠ Potential resistance from sports technology companies and, if not carefully scoped, new rules could stifle innovation or impose unnecessary burdens; could mitigate via industry consultation and phased rollout to ease transition.

The UK Information Commissioner's Office provides detailed guidelines on managing biometric data under United Kingdom General Data Protection Regulation.

Option 24: Updating public records regulation could require AI-generated historical archives, digital museums and cultural datasets to meet transparency and authenticity standards

◎ Could enable historical and cultural AI-generated records to be verified. Mandating transparency and provenance standards for AI-generated archives may help maintain public trust in digital heritage. As digital museums and AI-curated collections grow, legal clarity may be increasingly important to ensure their long-term integrity and accessibility.

Legend

◎ Effectiveness ✓ Feasibility ⚠ Risks & Mitigation

⚖ Equity $ Cost vs. Benefit International examples

⚖ Would protect heritage integrity, benefiting Māori and other communities and enabling diverse narratives to be reliably and responsibly preserved in digital formats. Clear standards could support access to and understanding of digital heritage for a wide range of users, not just technology experts.

✓ High feasibility—legislative updates would be manageable. The Act already includes provisions for standards, audits and inspections, which could be extended to cover AI-generated content.

$ Moderate costs, strong cultural preservation benefits. The long-term benefits of preserving authentic, transparent digital records may feasibly outweigh the costs, especially for national identity and education.

⚠ Risk of inadequate enforcement; could mitigate by establishing AI record-keeping compliance bodies. Excessive requirements could discourage innovation in digital storytelling and museum curation; could mitigate by involving archivists, technologists and cultural practitioners in shaping amendments to ensure relevance and practicality.

🌐 France's Ministry of Culture has implemented a strategic initiative that includes standards for digital authenticity, traceability and metadata integrity in cultural records, including those used in museums and archives.

Option 25: A legal framework for digital twin heritage sites could provide AI-driven reconstructions of historical Māori and Pacific landmarks, respecting ownership and governance structures

◎ Digital twins of heritage sites could be developed respecting the cultural, spiritual and historical significance of Māori and Pacific landmarks and protecting community ownership of digital heritage.

⚖ Could define who has the right to create, manage and share digital replicas, reducing disputes and misuse. Embedding Māori leadership and data sovereignty principles may help ensure that iwi and hapū retain control over their cultural heritage.

✓ Moderate feasibility—would require legal updates and technical infrastructure. New Zealand's *Public Service AI Framework* and Māori data governance guidance already emphasise Māori rights and ethical AI use, increasing potential policy alignment.

$ Medium cost, but strong cultural preservation benefits. Protecting digital representations of heritage sites would preserve national identity and intergenerational knowledge transmission.

⚠ Risk of commercial exploitation—without clear protections, digital twins could be used inappropriately in games, tourism or commercial media; could mitigate by requiring Māori and community co-governance in digital twin projects.

🌐 France is using new technologies to create digital twins of historical sites, integrating cultural governance protections.

Japan integrates digital twins into cultural heritage preservation and urban planning.

Legend ◎ Effectiveness ✓ Feasibility ⚠ Risks & Mitigation ⚖ Equity $ Cost vs. Benefit 🌐 International examples

Emerging technology literacy and upskilling

Option 26: Māori-led AI design training for culturally-grounded innovation

Māori-led training modules in AI ethics and design could help developers working with Māori content understand tikanga, Māori data sovereignty and culturally grounded governance principles. This would support the active protection and appropriate use of mātauranga Māori in digital environments, while also fostering innovation that reflects and respects indigenous worldviews and New Zealand's wider Pacific context.

Would uphold Māori data sovereignty and enable Māori communities to influence how their knowledge and stories are represented in AI systems. By embedding tikanga Māori into the design process, the policy could also support more inclusive and representative digital ecosystems.

Moderate feasibility—would require collaboration between AI developers, Māori experts and policymakers. While consistent delivery across the technology sector (especially internationally) may be challenging, the initiative could be phased in through procurement standards, certification schemes and partnerships with Māori-led organisations.

$ Low to medium cost; strong long-term benefits in culturally appropriate AI development, public trust and international recognition. The training could also unlock economic opportunities by positioning New Zealand as a leader in ethical and indigenous-led tech innovation, and by enhancing Māori participation in the digital economy.

Risk of superficial implementation could undermine the intent and fail to change practice. This could be mitigated by ensuring Māori leadership in training design and delivery, linking participation to funding eligibility, and embedding modules into broader capability-building efforts across the technology sector.

Canada's Indigenous Protocols for AI is a project led by indigenous researchers to develop ethical AI frameworks aligned with indigenous knowledge and cultural values.

Finland's AI ethics training initiative educates AI developers on ethical considerations in AI development.

Public awareness and inclusion initiatives

Option 27: Community-led digital heritage trusts could enable local iwi, hapori and community groups to secure their historical records using blockchain and decentralised storage

Could strengthen Māori and community-led governance of local heritage. Could also help build awareness of the environmental and social impacts of emerging digital technologies and stimulate innovative local solutions in response.

Could enhance decentralised governance over cultural archives.

Legend					
	Effectiveness		Feasibility		Risks & Mitigation
	Equity	$	Cost vs. Benefit		International examples

✓ Moderate feasibility—would require engagement, collaboration and technical support for iwi and local communities. Would need to ensure protection of cultural autonomy and freedom of access.

$ Blockchain storage could be costly, but the long-term cultural preservation benefits may be substantial.

⚠ Risk of barriers to accessing technology; could mitigate by providing training and co-funding models.

Estonia's KSI (Keyless Signature Infrastructure) blockchain system is used for securing government records and could be extended to digital heritage applications.

Policy reports indicate that China is increasingly using blockchain technology for securing and monetising content and processes across a range of sectors.

Funding and innovation for digital resilience

Option 28: A digital safety fund investing in blockchain authentication, decentralised digital asset storage and cyber-resilience for AI-generated content could strengthen long-term resilience

◎ Could strengthen cybersecurity and protect digital sport, media and cultural content, increasing long-term resilience.

⚖ Decentralised systems could empower communities to manage and protect their own digital content without relying on central authorities.

✓ High feasibility—could be incorporated into cybersecurity initiatives. The fund could be implemented in phases, starting with pilot projects in high-risk or high-value sectors (e.g., journalism, cultural heritage).

$ High cost but beneficial for long-term digital infrastructure resilience. Preventing digital asset loss or manipulation may save significant costs in legal, reputational and operational terms. Could also stimulate local innovation in secure content creation and storage technologies.

⚠ Risk of high operational costs and misuse or overhype; could mitigate through partnering with industry and universities for co-funding and establishing clear criteria for funding, with regular audits and impact assessments.

The United Kingdom's Towards a National Collection programme includes several projects exploring secure digital platforms, blockchain verification and innovative AI.

Germany's Federal Blockchain Strategy, which includes the use of blockchain technology to secure digital cultural assets and intellectual property, explores decentralised infrastructure for public digital services, and supports research and development in areas like secure digital archiving.

Legend	◎ Effectiveness	✓ Feasibility	⚠ Risks & Mitigation
	⚖ Equity	$ Cost vs. Benefit	International examples

Oversight and accountability

Option 29: An 'emerging tech' regulatory authority could oversee AI, blockchain and extended reality (XR) applications

- A dedicated authority could provide focused, expert oversight and enhance responsible governance of rapidly evolving emerging technologies, including in the arts, media and sport sectors. A single authority could harmonise standards across sectors, reducing fragmentation.
- Would provide a means to monitor digital rights, data sovereignty and Te Tiriti compliance. Effective oversight could help prevent discriminatory or exclusionary uses of emerging technology, especially in public services and media.
- Moderate feasibility—would require interagency coordination and political will.
- High operational costs but would be useful for regulatory clarity. Proactive regulation could prevent costly harms (e.g., data breaches, algorithmic bias, misinformation) and reduce legal uncertainty for innovators.
- Risk of bureaucracy and regulatory capture; could mitigate by adopting an agile regulatory model with industry co-governance and using adaptive tools and iterative rule-making.
- The European Union AI Act establishes an oversight body to regulate AI across multiple sectors, including creative industries and sports.

  Canada's proposed Artificial Intelligence and Data Act and framework for responsible use of AI in government aim to ensure transparency, fairness and human rights compliance in AI-powered decision- making.

  Australia's Department of Industry, Science and Resources sought public feedback on a proposal to introduce mandatory guardrails for AI in high-risk settings.

Option 30: AI and sport integrity protections could set ethical and privacy standards relating to the use of athlete biometric data, AI-driven referee decisions and predictive sports analytics

- Stronger protections could reduce AI-related ethical concerns, misuse and error in sports decision-making and increase transparency and trust.
- Could help protect athlete privacy from surveillance overreach and data exploitation—especially for youth, amateur and minority groups—and encourage fair competition.
- Moderate feasibility—would require global alignment on sport AI ethics. New Zealand's Sport Integrity Commission and Sport New Zealand are already exploring AI's role in sport and have frameworks that could support expanded protections.
- Compliance costs for sports organisations, but important for fair play. Ethical AI use may enhance the credibility of New Zealand's sport sector, both domestically and internationally. May also prevent costly legal or reputational fallout from data breaches or biased AI decisions.

Legend

Effectiveness · Equity · Feasibility · Cost vs. Benefit · Risks & Mitigation · International examples

⚠ Risk of AI bias in officiating, overregulation and data misuse; could mitigate through regular AI audits and explainability requirements, applying different standards based on the level of competition (e.g., elite vs. community sport), or requiring informed, revocable consent for biometric data collection and use.

The European Union, through its AI Act, is introducing a risk classification system for AI applications, including those in sports, and requiring stringent impact assessments for high-risk uses.

The International Olympic Committee has been investigating how AI can improve safeguarding in sports, including monitoring online abuse and ensuring safe online spaces for athletes and officials.

International cooperation and cultural diplomacy

Option 31: AI and emerging technology diplomacy and regional cooperation could strengthen New Zealand's role in protecting digital cultural heritage in the Pacific and beyond

◎ Strengthening AI diplomacy could position New Zealand as a regional leader in shaping ethical, inclusive and culturally appropriate norms for digital cultural and heritage assets.

⚖ Could benefit small island nations and enhance regional cooperation. Could facilitate equitable access to AI and digital tools across Pacific nations, many of which face infrastructure and capacity challenges.

✓ High feasibility—aligns with New Zealand's regional leadership role. The AI Forum's *AI Blueprint 2025* and New Zealand's *Public Service AI Framework* already emphasise international cooperation, ethics and Te Tiriti commitments.

$ Diplomatic effort required, but strong long-term cultural security. Multilateral cooperation could reduce costs by pooling expertise, infrastructure and policy development.

⚠ Risk of slow negotiations, geopolitical tensions and tokenism; could mitigate by aligning with existing trade and cultural agreements, promoting shared values like transparency, data sovereignty and cultural respect as the foundation of cooperation, and ensuring Pacific and indigenous voices are central to agenda-setting and decision-making.

The European Union is working on international agreements to ensure AI systems respect human rights and cultural diversity. For example, the European Union-Japan Digital Partnership is advancing cooperation on digital issues to foster economic growth, facilitate digital trade and a human-centric digital transformation based on common values.

Legend					
	◎ Effectiveness	✓ Feasibility	⚠ Risks & Mitigation
	⚖ Equity	$ Cost vs. Benefit	International examples

Final thoughts
Ngā whakaaro whakamutunga

Based on the analysis, this LTIB concludes that regardless of which future scenario transpires, any policy approach to address the risks and opportunities of digital technology in New Zealand's cultural system will need to consider such factors as:

- **Enabling innovation and discovery while protecting rights and reducing harm**—supporting AI and digital technology oversight without stifling culture, creativity and the pursuit of new possibilities, recognising that trade-offs exist.
- **Increasing equity and inclusion**—investing in reaching underrepresented or vulnerable communities (e.g., youth, older people, disabled people, Māori, Pacific peoples, migrants, rural and LGBTQ+ communities) to ensure all parts of society benefit from technology-driven opportunities.
- **Leveraging private investment**—using government investment to attract industry co-investment and enable limited public funds to be maximised and meet New Zealand's emerging technology aspirations. The practicalities of scale and cost to compete effectively will require careful consideration.
- **Strengthening cyber and privacy protections**—safeguarding New Zealand's digital cultural knowledge systems, data, infrastructure and taonga.
- **Future-proofing the workforce**—helping AI and digital technologies to enhance (not replace) cultural, creative and sports professionals and practitioners.
- **Building on Māori digital innovation and leadership**—strengthening Māori involvement in the design, governance and application of emerging technologies, so that digital transformation reflects New Zealand's unique cultural foundations and protects cultural intellectual property while guiding ethical innovation for all communities.

Researchers and policymakers could consider several next steps for strengthening insights and policy analysis, and moving to design and implementation, such as:

- **Continuous tracking of developments and global best practices** relating to emerging technology, including international regulations and the application of technology in the cultural system.
- **Ongoing futures thinking, tracking and analysis** alongside deeper sector-specific impact analysis (e.g., digital technology's effects on Māori broadcasting, esport, or community arts and heritage organisations).
- **Detailed cost-benefit modelling** to weigh economic, cultural and legal trade-offs of AI and emerging technology regulations.
- **Ongoing targeted engagement** with experts and sector stakeholders to refine policy trade-offs, incorporate local and sector-specific insights, and ensure best practice international approaches are adapted to New Zealand's unique context.
- **Embedding frameworks** (such as the Māori Data Governance Model) that offer a pathway for system-wide, values-based governance.

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