Te Kotahi Research Institute

An exploratory report focused on the current and potential use of digital identity in digital trade.

Te Mata Punenga o Te Kotahi - Te Kotahi Research Institute
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1. Contents

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Te Reo Glossary

Term	Definition
Aotearoa	New Zealand
hapū	subtribe, kinship group, clan
iwi	tribe
mahi	work
mana motuhake	tribal autonomy, autonomy, self-government, self-determination
mana	power, authority, dignity, prestige
marae	open area and complex of buildings used by Māori for formal exchanges
mokomokai	tattooed preserved heads
Māori	Indigenous people of Aotearoa New Zealand
mātauranga Māori	Māori knowledge
mātauranga	knowledge, wisdom
provenance	the place where propagation materials come from
rangahau	research
tangata whenua	Māori or Indigenous peoples of native territories, people of the land
taonga	anything of value or treasured in Māori culture (object, place or person)
tauhokohoko	commerce, trade, exchange
te ao Māori	Māori world view or paradigm
te reo Māori	Māori language
Te Tiriti o Waitangi	Treaty of Waitangi, between British Crown and Māori chiefs, 6 February 1840
tikanga	customary system of values, practices and behaviours developed over time
tāmoko	traditional tattoo
tāngata	people
waiata	song, chant
whakapapa	ancestry, genealogy, heritage, a fundamental principle in Māori culture of linkage
whare	house, building
whenua	land
whānau	family
wānanga	forum, discussion

Abbreviations

Term	Definition
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
DEPA	Digital Economy Partnership Agreement
DI/DID	Decentralised Identifier
EU	European Union
FTA	fair trade agreement
MAI	Multilateral Agreement on Investment
OECD	Organisation for Economic Co-operation and Development
VC	Verifiable Credentials

2. Preface

Acknowledgements

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Background

This report is **part of the Tauhokohoko research project**. The Tauhokohoko research project aims: "*to transform trade policy, measurement, and facilitation using Indigenous knowledge, methods, and values for the benefit of Māori and non-Māori people, communities, and enterprises in Aotearoa New Zealand, with application for Indigenous peoples elsewhere.*"[1] Mātauranga Māori and Māori data sovereignty are a key part of the project, in particular, as it relates to digital trade.

This report contributes to the Tauhokohoko project by looking at the use of digital identity as a conduit for digital trade, to ensure the protection of people and taonga in digital trade. It hopes to help create "*a future where Māori as tangata whenua and Te Tiriti partners can equitably participate in and benefit from New Zealand's trade agreemenst.*"[2]

This report builds on a previous report, done as part of the Tikanga in Technology research project, titled '*Protecting the heartwood: how tikanga Māori and mātauranga Māori can inform the construction of digital identities in Aotearoa New Zealand*.'[3]

[1] Tauhokohoko research project brief.

[2] Tauhokohoko research stream slideshow.

[3] See Lucas, D. (2025). Protecting the heartwood: How can tikanga Māori and mātauranga Māori inform the construction of digital identities and relational responsibilities to data in Aotearoa New Zealand? https://doi.org/10.15663/j21.36017.

3. Introduction

From marae and whakapapa to meetings and shopping lists, most of our daily activities can be, and are, done in the digital landscape. To communicate, connect and consume world-wide, both our identities and our systems of trade have moved online. Digital identities now provide individuals, organisations, and even products with a way to express and engage online. While trade has morphed from physical borders and boats to digital firewalls and e-transfers.

As the digital landscape continues to grow, individuals, whānau and hapū are impacted in new and unique ways. With the growth of digital trade more information, knowledge and products from te ao Māori (the Māori world) are moved across the globe creating opportunities for trade and appropriation. Simultaneously, the increasing need for digital identities is collecting and storing the '*pieces of us*'[4] that make up Māori culture, individuals and taonga providing safeguards for information and scattering it.

Therefore, this report explores two concepts, digital identity and digital trade, to build an understanding of how they could be used to explore how Māori communities can both leverage and protect their rights within the digital economy. It continues the 'long history' Māori have of *"...adopting new technologies, but also of innovating and developing technologies that suit their specific needs and allow for the expression of their culture and identity."*[5] So how might digital identity work to promote and protect Māori interests in digital trade?

This report begins by distinguishing digital identity from digital identification and digitally enabled trade from trade in digital assets. These distinctions, as discussed in other reports as part of this research project, create diverse policy impacts and concerns for Māori communities. This report then outlines how digital identity and digital identification are used in trade today, exploring the various forms of digital identification that help to resolve issues of provenance, authenticity, and traceability. Lastly, it poses a series of questions to help explore how different digital identification mechanisms, can be applied to digital trade.

This report focuses on the digital identity and digital identification of a product when it is being traded, rather than the digital identity or identification of an individual or organisation to access a product (or service). However, both can impact how we trade digitally.

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[4] Referencing the article title of Kukutai, T. (2025). Protecting pieces of us: The need for Indigenous perspectives in the fuzzy world of biometric data regulation. Science, 388(6743). https://doi.org/10.1126/science.adw9973. The 'pieces of us' referred to are biometric data which is 'more than just personal data about us. Rather, it encodes the very essence of us.'

[5] Ferreira, J., Young, J., Shedlock, K., Welch, I., Patterson, L., Pantidi, N., & Roberts, H. (2024). Prototyping Digital Taonga: Considerations for Digital Representation, Interaction, and Access. Australian Conference on Computer-Human Interaction, Brisbane QLD, Australia. November 30 – December 04, 2024. Page 2.

4. Definitions and distinctions

Distinguishing digital identity and digital identification

As argued in '*Protecting the heartwood*'[6] there is an important distinction between having a digital identity and providing digital identification. As outlined in *Table 1* below, digital identity is one's online persona while digital identification is how someone proves who they are in the digital landscape. For example, posting on Facebook is part of your digital identity while the username and password required to access that Facebook page are part of your digital identification.

Table 1: Comparing and Contrasting Digital Identity and Digital Identification

Aspect	Digital Identity	Digital Identification
Focus	To express oneself and engage in digital environments	To prove who you are, usually to access/use/provide services or information
Purpose	Create an online persona and self-representation	Verification of identity
Components	Attributes, content, online interactions, behavioural data, digital footprint	Registration, Verification, Issuance and Authentication information.
Parties	Content producer, content consumer, website/platform holder	Service user, identification verifier/holder, service provider
Example	The Facebook profile of a marae	The administrator's username and password to log on to the marae Facebook page

Although often interlinked, these two distinct concepts can be treated separately – as they are used for different purposes and require different processes. A digital identity can be created through online posts, interactions or branding. However, creating a secure digital identification is a more technical process which involves multiple people, or organisations, requiring adequate processes to validate, store and protect identification information. *Figure 1* outlines the process for constructing a digital identification highlighting the information collected at each step.

[6] Lucas, D. (2025). Protecting the heartwood: How can tikanga Māori and mātauranga Māori inform the construction of digital identities and relational responsibilities to data in Aotearoa New Zealand? https://doi.org/10.15663/j21.36017.

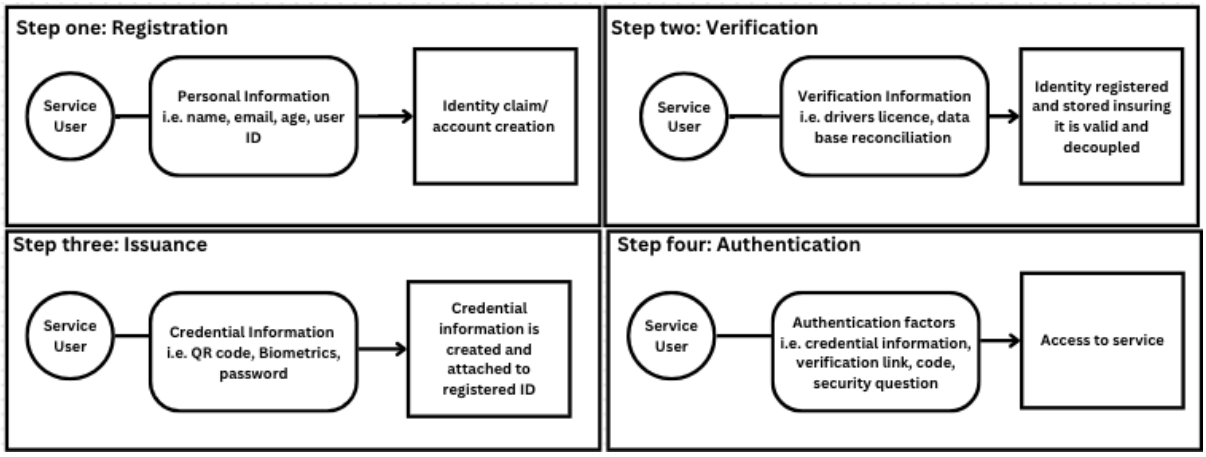

Figure 1: An overview of the process to construct one's digital identification highlighting the information that is shared at each step[7]

Digital identification can be used to verify the identity of an individual or organisation. This is an important concept in the online environment when traditional identification methods (such as looking at an officially issued photographic document) are not always possible. For example, it is not always possible to view someone's passport or drivers licence online. A secure digital identification is important to confirm who someone is in the digital environment. Digital identification can also confirm if that person (or organisation) meets certain claims. For example, a driver's licence not only proves who someone is, it also shows that they have met the requirements to hold a driver's licence and are therefore permitted to drive a car. These 'verifiable credentials' are an important part of digital identification and can be used to confirm a claim or to manage access. For tangata Māori the expansion of digital identities and identification enhances challenges over data governance, communal ownership and protection of mātauranga (Lucas, 2025).

Although there are differences between digital identity and digital identification, they are both important in trade. As e-commerce expands access to new markets, digital identity is also important for consumers to understand both what they are buying and who they are buying from. Digital identification is also important in trade as it allows the consumer to verify things about the seller or organisation, they are purchasing a product from, and to verify that the product itself is what it claims to be. As the concept, technology and processes behind digital identity and digital identification continue to develop, it is being used in more diverse ways, from marketing to verification. Digital identity and identification are also increasing in importance as trade continues to develop.

[7] For a more detailed breakdown of these steps see pages 13-14 of Lucas, D. (2025). Protecting the heartwood: How can tikanga Māori and mātauranga Māori inform the construction of digital identities and relational responsibilities to data in Aotearoa New Zealand? https://doi.org/10.15663/j21.36017.

Distinguishing digital trade and digitally enabled trade

As outlined in the scoping report '*Māori perspectives on digital trade*'[8], trading digitally and digital trade are distinct concepts. Digitally enabled trade does not change what is traded but instead enables the trade to occur differently (through platforms such as Uber or Amazon). Digital trade, however, is the trade of digital assets such as data and algorithms. These distinct forms of trade have diverse policy impacts, meaning that it is helpful to discuss them separately although they often occur simultaneously.

Figure 2, below, demonstrates the distinctions between digital identification and digital identity and digitally enabled trade (or e-commerce) and digital trade (or trade in digital assets).

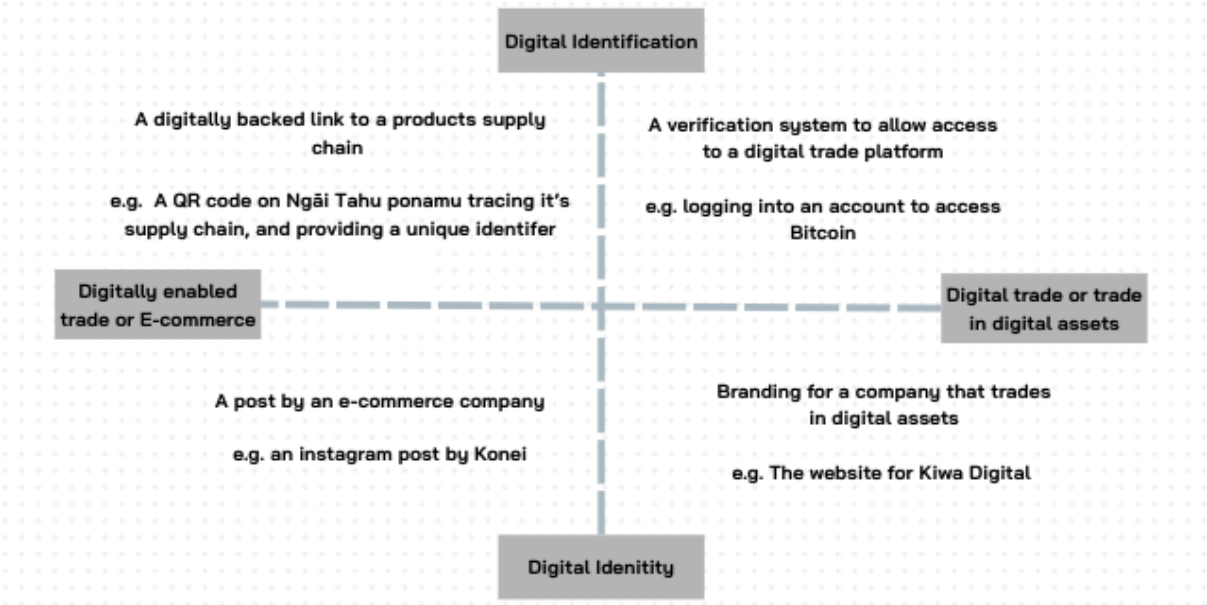

Figure 2: Examples of the use of digital identification and digital identity in digitally enabled trade (or e-commerce) and digital trade (or trade in digital assets).

Although separated in *Figure 2* there are many examples where these concepts can be intertwined. For example, the sale of a smart watch on an e-commerce platform will also lead to digital trade in health data. While a company trading on that e-commerce platform may use both their digital identity to market the watch and digital identification to give the watch a unique identifier (such as digital taggants). The next section explores these nuances by looking at the current use of digital identity and digital identification in e-commerce.

[8] Also created as part of the Tauhokohoko research project.

5. How are digital identity and digital identification used in trade?

Digital identity is important to producers for sales and marketing purposes, mainly used to build branding and awareness.

For Māori communities there are additional concerns in digital trade, including ensuring cultural authenticity and minimising cultural appropriation. An important consideration is the communal aspect of the mātauranga, resources, data and products that are being traded. [9] E-commerce or digitally enabled trade exacerbates issues of provenance, traceability, authenticity and cultural appropriation, increasing the need for consumer protection and producer intellectual property rights.[10] While digital trade or trade in digital assets can result in privacy and surveillance issues, and a loss of ownership and control of culturally significant data. The international nature of both these forms of trade further intensifies issues by requiring more international cooperation, usually negotiated in the form of trade agreements.

What does digital identity look like in e-commerce and trade in digital assets?

A digital identity or online presence is an important tool for Māori businesses. From increasing global reach to storytelling and branding, an online presence can help organisations with marketing, sales, making connections, and improving resilience. Many Māori companies, businesses and collectives utilise a 'digital identity', with 76% of Māori enterprises and 74% of Māori authorities having an online presence in 2022 (Figure NZ, 2022).[11]

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[9] Kukutai, T. (2024). How Indigenous communities in New Zealand are protecting their data. Science, 384(6691). https://doi.org/10.1126/science.ado9298.

[10] Anderson, M. (2024). A report on Māori views on provenance, authenticity, and traceability (PAT) on taonga species during commercialisation. In *ResearchGate*. Veracity Project as part of the National Science Challenge – Science for Technological Innovation. https://www.researchgate.net/profile/Michela-Anderson/publication/382853002_A_report_on_Maori_views_on_provenance_authenticity_and_traceability_PAT_on_taonga_species_during_commercialisation/links/66af24b2299c327096ac1d95/A-report-on-Maori-views-on-provenance-authenticity-and-traceability-PAT-on-taonga-species-during-commercialisation.pdf.

[11] Figure NZ. (2022). *Māori businesses in New Zealand with a web presence*. Figure.NZ. https://figure.nz/chart/sE2QUWUbatrTe1xt. This data is derived from Tatauranga Umanga Māori 2022. Definitions: a Māori business is a business that is owned by a person or people who have Māori whakapapa, and a representative of that business identifies the business as Māori. Māori authorities are economically significant businesses involved in the collective management of assets held by Māori. "Other Māori enterprises" in this release refers to Māori businesses that are economically significant and are not Māori authorities.

Māori companies often incorporate aspects from te ao Māori into their digital identity. A digital identity allows companies to market their product or services to potential buyers, building their brand and educating people about their values alongside their products and services. This may be particularly important for Māori businesses that often embed Māori concepts into their business ventures, and utilise this as part of their sales, marketing, management, and business strategies. For example, Ora[12], a cosmetics brand, and Ōku[13], a beverage company, both use toi Māori (Māori art or imagery), te reo Māori (the Māori language) and mātauranga Māori (Māori knowledge) on their websites to promote and explain their products.

Like digitally enabled trade or e-commerce, digital identity is an important part of digital trade to build branding and awareness. Companies involved in the trade of digital assets also use concepts from te ao Māori in their digital identity, for example, Kiwa Digital uses te reo Māori to express their business values and ideals (Kiwa Digital Ltd, 2024)).[14]

While the debate over who can use aspects of te ao Māori in their branding continues[15], so does the misappropriation or misuse of aspects of te ao Māori. Examples of cultural appropriation include products such as beer[16], cheese[17], and fake mokomokai (tattooed preserved heads)[18], which trivialise and commercialise cultural heritage while allowing others to profit off false authenticity. Proving what a product is and where it comes from is becoming increasingly important to resolve authenticity questions. Could digital identification be the solution to authenticity issues posed by a worldwide market?

What does digital identification look like in e-commerce?

Having a form of digital identification can ensure that someone is, in fact, who they claim to be. However, in the world of international trade, which allows products to be distributed near and far, there is a growing need, from both consumers and producers, to ensure that a product or service is in fact what it says it is.

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[12] Ora Skincare NZ. (2025). *Mamaku*. Ora Skincare NZ. https://ora.co.nz/pages/mamaku.

[13] Ōku New Zealand. (2023). *About*. ŌKU New Zealand. https://www.oku.co.nz/about-oku.

[14] Kiwa Digital Ltd. (2024). *About us*. Kiwa Digital. https://kiwadigital.com/about-us/.

[15]See both: Liam , R. (2024, September 17). *It's time we called out Māori brands too*. The Spinoff. https://thespinoff.co.nz/atea/18-09-2024/its-time-we-called-out-maori-brands-too?

Baltus, B. (2020). *Perceptions of authenticity towards Māori Branding: Congruence as determinator?* Thesis in completion of a Masters of Marketing. Te Herenga Waka – Victoria University of Wellington. https://doi.org/10.26686/wgtn.17147627.

[16] Muru-Lanning, C. (2023, January 24). *Why are overseas breweries still getting it so wrong when it comes to Māori?* The Spinoff. https://thespinoff.co.nz/kai/25-01-2023/why-are-overseas-breweries-still-getting-it-so-wrong-when-it-comes-to-maori?

[17] Nicol-Williams, K. (2019, January 10). *Fonterra under fire from iwi over name of its Kapiti-brand cheese, Tuteremoana*. 1News. https://www.1news.co.nz/2019/01/10/fonterra-under-fire-from-iwi-over-name-of-its-kapiti-brand-cheese-tuteremoana.

[18] Boynton, J. (2018, July 3). *US business called out for selling fake mokomokai*. RNZ. https://www.rnz.co.nz/news/te-manu-korihi/360978/us-business-called-out-for-selling-fake-mokomokai?.

Digital identification of products can provide authentication, provenance and traceability information for each product (Anderson, 2024). [19] This allows the buyer to ensure that what they are purchasing is legitimate and from the correct place or people, increasing the value of the product and protecting it's authenticity. Anderson (2024 p.24) explains how these elements can work together:

> "*Provenance acts as proof of where indigenous goods come from, confirming their cultural importance through narratives and historical background. Authenticity ensures that these products remain true to their traditional forms, including the communities involved, and ingredients passed down through generations. However, it's traceability that truly seals the commitment to responsibility.*" [20]

Verification of a product is particularly important for indigenous communities where, as mentioned above, the cultural authenticity of a product is required to protect both mātauranga and markets. Cultural authenticity is rapidly becoming more important in a digital landscape where chat GPT can compose waiata (songs and compositions), and overseas companies can copy and paste tāmoko (traditional tattoo) designs.[21]

To combat these issues, many companies (including Māori communities) have found ways to encode elements of authenticity, provenance, and traceability into their products, both physically and digitally. Physical forms of identification such as Quick Response (QR) codes, barcodes, Quality Marks, Near Field Communication (NFC), holograms, taggants and Assurance quality marks can contain product information on that product or it's packaging.[22]

Holograms, Quality Marks and Assurance Quality Marks all seek to idenitify that a product meets a certain standard. As Anderson (2024 p.17) describes them

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[19] Anderson, M. (2024). A report on Māori views on provenance, authenticity, and traceability (PAT) on taonga species during commercialisation. In *ResearchGate*. Veracity Project as part of the National Science Challenge – Science for Technological Innovation. https://www.researchgate.net/profile/Michela-Anderson/publication/382853002_A_report_on_Maori_views_on_provenance_authenticity_and_traceability_PAT_on_taonga_species_during_commercialisation/links/66af24b2299c327096ac1d95/A-report-on-Maori-views-on-provenance-authenticity-and-traceability-PAT-on-taonga-species-during-commercialisation.pdf.

[20] On page 24.

[21] See: Haimona-Riki, M. (2020). *"Blatantly arrogant" company appropriates Māori artists designs*. Te Ao Māori News. https://www.teaonews.co.nz/2020/05/06/blatantly-arrogant-company-appropriates-maori-artists-designs.

Yates, S. (2023, October 14). *The dangers of digital colonisation*. E-Tangata. https://e-tangata.co.nz/comment-and-analysis/the-dangers-of-digital-colonisation/.

[22]Anderson (2024). A report on Māori views on provenance, authenticity, and traceability (PAT) on taonga species during commercialisation. In *ResearchGate*. Veracity Project as part of the National Science Challenge – Science for Technological Innovation. https://www.researchgate.net/profile/Michela-Anderson/publication/382853002_A_report_on_Maori_views_on_provenance_authenticity_and_traceability_PAT_on_taonga_species_during_commercialisation/links/66af24b2299c327096ac1d95/A-report-on-Maori-views-on-provenance-authenticity-and-traceability-PAT-on-taonga-species-during-commercialisation.pdf.

> *"... Quality marks are symbols or labels signifying that a product or service adheres to specific standards or specifications. Holograms are three-dimensional images, crafted through laser technology, that serve as a security measure on products or documents to deter counterfeiting. Assure Quality marks are a form of quality designation found on products in New Zealand and other nations, signifying that the product has undergone independent verification to meet specific standards related to safety, quality, and sustainability."*

Although not inherently digital these forms of product identification can be linked to a digital system which provides further product information. Despite these methods being currently used to identify product standards while trading, they are easy to copy or fake.

QR codes, NFCs, barcodes and digital taggants, on the other hand, contain machine readable data, making them more complex to copy. These digital identification systems have pros and cons, as outlined in *Table 2* below in terms of their affordability, accessibility, data storage and security.

Table 2: The pros and cons of various digital identification solutions on physical products

Feature	QR Codes[23]	Barcodes[24]	NFC	Digital Taggants
Description[25]	QR codes are two-dimensional barcodes scannable using a smartphone camera, providing rapid access to information or a website	Barcodes are one-dimensional codes, scanned with a barcode reader, which fetch information about a product or item	NFC (near-field communication) is a technology for close-range wireless communication among devices, like mobile phones and payment terminals	Taggants are tiny particles or substances added to a product for identification and authentication purposes, facilitating product tracking and tracing or detecting counterfeit items
Accessibility	Smartphone required to read QR code Internet usually required as most QR	Barcode scanner required to read barcode Systems can use local databases. If trading	Smartphone required to read NFC Internet not required for reading the information	Invisible and require specialized machinery to read

[23] Tiwari, S. (2016). An Introduction to QR Code Technology. *2016 International Conference on Information Technology (ICIT)*, *1*(1), 39–44. https://doi.org/10.1109/icit.2016.021.

[24]

[25] As explained in Anderson (2024). A report on Māori views on provenance, authenticity, and traceability (PAT) on taonga species during commercialisation. In *ResearchGate*. Veracity Project as part of the National Science Challenge – Science for Technological Innovation. https://www.researchgate.net/profile/Michela-Anderson/publication/382853002_A_report_on_Maori_views_on_provenance_authenticity_and_traceability_PAT_on_taonga_species_during_commercialisation/links/66af24b2299c327096ac1d95/A-report-on-Maori-views-on-provenance-authenticity-and-traceability-PAT-on-taonga-species-during-commercialisation.pdf. Page 17.

Feature	QR Codes[23]	Barcodes[24]	NFC	Digital Taggants
	codes link to online resources	internationally this could become difficult	unless there is dynamic information linked	Internet not required as authentication can be done offline
Data storage capacity	Can hold URLs, IDs, or text files	Stores only an ID number; details must be retrieved from a database	Stores modest data or pointers requiring dynamic interaction	ID hash
Security	Can be copied with a copier/printer Can be removed or swapped	Easy to replicate, no inherent anti-tamper features	Encrypted chips and ability to lock data make cloning and altering difficult	Extremely difficult to replicate and not easily removed
Cost	Generated and printed with ease	Standard printing processes	Tags are pricier than QR/barcodes and need chip integration	Expensive

Table 2 highlights the trade-offs that companies must make when using digital identities to verify product information. If a company's main priority is to ensure their products are verifiable and unable to be copied then digital taggants could be the solution, although expensive to implement and difficult for consumers to understand. On the other hand, if a company prioritised providing information alongside their product to build consumer awareness, QR codes provide an inexpensive solution to share dynamic information but can be easily replicated.

Several Māori businesses have adopted the use of QR codes. For example, Ngāi Tahu pounamu already utilises QR codes to provide traceability *"from raw stone to the finished product."*[26] While Ora, a Māori cosmetic brand using Mamaku, also uses QR codes in their products. QR codes work by encrypting data, often in the form of a link to a website. The use of QR codes to provide consumers with provenance, authentication and traceability information can help solve the issue of consumers being unable to trust certain products. However, it is possible that unverified or false information could be provided to the consumer through a QR code. For example, if an inauthentic product uses the QR code.

Although QR codes (and the other digital identification solutions outlined in *Table 2*) are used to provide information about a product, ensuring a unique identification for that product requires more of a product stewardship approach. Overseas product stewardship systems already exist, like the Digital Product Passport (DPP). DPP will be used to verify certain

[26] Anderson, M. (2024). A report on Māori views on provenance, authenticity, and traceability (PAT) on taonga species during commercialisation. In *ResearchGate*. Veracity Project as part of the National Science Challenge – Science for Technological Innovation. https://www.researchgate.net/profile/Michela-Anderson/publication/382853002_A_report_on_Maori_views_on_provenance_authenticity_and_traceability_PAT_on_taonga_species_during_commercialisation/links/66af24b2299c327096ac1d95/A-report-on-Maori-views-on-provenance-authenticity-and-traceability-PAT-on-taonga-species-during-commercialisation.pdf. Page 17.

characteristics of a good in the European Union. A DPP is a unique identity for products containing information about that product by providing:

> *"...a digital identity card for products, components, and materials, which will store relevant information to support products' sustainability, promote their circularity and strengthen legal compliance. This information will be accessible electronically...It will also allow custom authorities to perform automatic checks on the existence and authenticity of the DPPs of imported products* (European Commission, 2024)."[27]

Some luxury brands, such as Tod's, Coach and Mugler have already adopted DPPs (McDowell, M. 2024).[28]

As highlighted by Lopes and Barata (2024 p.982), ensuring that DPPs can function across various sectors requires *"a transdisciplinary approach to obtain, store, process, and share product information..."*[29] The range of technological solutions required to implement DPP, include:

> "*...sensing technologies in different stages of the supply chain (e.g., GPS for product location, process parameters monitoring), data carriers (e.g., bar code, QR code, RFID) ... Data storage (off-chain, using cloud platforms, which can also be used in parallel with blockchain for more critical information) and protection using cryptography techniques will also be essential to provide trust to consumers..."* [30]

Adopting such an approach requires multiple technical trade-offs by Māori communities and business (like those highlighted in *Table 2)*.

Some are already making these trade-offs including eleven Māori retailers wanting to sell through Alibaba to the Chinese market.[31] Adopting blockchain backed QR codes, these businesses can contain a unique identifier (for products, similar to a serial number), a link to a blockchain record or encrypted metadata. Therefore, blockchain technology goes some way

[27] The European Commission. (2024). *Ecodesign for Sustainable Products Regulation*. European Commission. https://commission.europa.eu/energy-climate-change-environment/standards-tools-and-labels/products-labelling-rules-and-requirements/ecodesign-sustainable-products-regulation_en.

[28] McDowell, M. (2024, January 30). *Ski lifts and instant resale: new ways to use digital ids*. Vogue Business. https://www.voguebusiness.com/story/technology/ski-lifts-and-instant-resale-new-ways-to-use-digital-ids?utm_source=chatgpt.com.

[29] Lopes, C., & Barata, J. (2024). Digital Product Passport: A Review and Research Agenda. *Procedia Computer Science*, *246*, 981–990. https://doi.org/10.1016/j.procs.2024.09.517. Page 982.

[30] Lopes, C., & Barata, J. (2024). Digital Product Passport: A Review and Research Agenda. *Procedia Computer Science*, *246*, 981–990. https://doi.org/10.1016/j.procs.2024.09.517. Page 985.

[31] Mandow, N. (2018, October 30). Māori food and wine exporters get onto the blockchain. *Newsroom*. https://newsroom.co.nz/2018/10/30/mori-food-and-wine-exporters-get-onto-the-blockchain.

to *"determining an indisputable chain of information for a product – a single source of truth."*[32] Specht et al (2025) go on to explain,
"Blockchain technology, with its features of immutability, security, and transparency is ideally configured to support the flow of information and data through a network. It is distributed by design, and the data are shared across network members, meaning no central entity can control stored data."[33]

However, there are some downsides to blockchain technology. Firstly, as each transaction is recorded on each ledger, it is difficult to change or update information meaning that mistakes or incorrect information can be incorporated into the chain.[34] Secondly, as pointed out by the European Commission "*blockchain is not exempt from security concerns, as for example, private keys may be stolen by hackers or lost*." [35] Thirdly, public blockchain limits privacy by there being no privileged user, meaning "*every participant can join the network to access all the information on blockchain and validate new transactions.*"[36]

For Māori communities, communal notions of ownership and identity may mean more communal control of information is preferred.

Instead of a distributed ledger system, could a centralised system, although removing some of the sovereignty benefits provide an alternative? Instead of each product containing encrypted information on provenance, authenticity, and traceability, could there be a centralised body that provides verification of products or suppliers? Having a central organisation gets around the complications of our current digital identification system being set up for 'individuals and organisations' rather than products, while also providing a way to consistently apply definitions and standards. However, this leads to questions beyond technical ones for example could it verify that something is 'Māori made' or that it comes from a 'Māori business?

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[32] Mandow, N. (2018, October 30). Māori food and wine exporters get onto the blockchain. Newsroom. https://newsroom.co.nz/2018/10/30/mori-food-and-wine-exporters-get-onto-the-blockchain. Quoting Dene Green, NZ Post's general manager for international strategy and partnerships at para 10.
NOTE: all Hui Collective articles available seem to be from 2018. Including articles by Scoop, MFAT and media. It is unclear if the collective continues to exist today.

[33] Specht, A., Bryceson, K., Cao, S., O'Brien, M., Guru, S. M., Correa, P. P., & Waycott, M. (2025). A Collaborative Data Network for the Asia Oceania Region Enabled by Emerging Technologies to Foster Innovation in a Secure and Open Environment. Data Science Journal, 24. https://doi.org/10.5334/dsj-2025-001.

[34] See:
Beduschi, A. (2019). Digital identity: Contemporary challenges for data protection, privacy, and non-discrimination rights. Big Data & Society, 6(2), 205395171985509. https://doi.org/10.1177/2053951719855091.

[35] Beduschi, A. (2019). Digital identity: Contemporary challenges for data protection, privacy, and non-discrimination rights. Big Data & Society, 6(2), 205395171985509. https://doi.org/10.1177/2053951719855091.

[36] Liu, Y., Lu, Q., Paik, H.-Y., & Xu, X. (2020, July 1). Design Patterns for Blockchain-based Self-Sovereign Identity. EuroPLoP '20: European Conference on Pattern Languages of Programs 2020. https://doi.org/10.1145/3424771.3424802.

However, this leads to further definitional question such as, what constitutes a 'Māori business'? There are currently diverse definitions for what constitutes a Māori business ranging from self-identification to percentage of ownership.[37] This shows the difficulty of verifying something which does not have an agreed definition. Unlike a driver's licence, where there is a test to qualify to drive a vehicle, becoming a 'Māori business' is not clear cut. Other governance questions also exist such as who would be the verifier? Could it be iwi, hapū, whānau or individuals? Would this be appropriate?[38] How would that be governed? And by who?

Digital identification for physical products is rapidly developing. Although international product stewardship systems provide examples to follow, there are many questions remaining for Māori business wishing to implement them – from the pros and cons of information carriers to definitions and governance. These important questions also apply to digital trade of digital assets.

What could digital identification look like while trading digital assets

Digital trade not only changes how things are traded (like e-commerce), but the type of product traded. This range of digital products is vast and growing, varying from Bitcoin and data to photos and virtual twins. As Rodríguez de las Heras Ballell, T, (2024) explains;

> *"The concept of "digital asset" is neither uniformly defined nor clearly delimited. It is indeed a broad category of undefined contours that comprises different sub-classes from cryptocurrencies, and stable coins, to tokens of various kinds and non-fungible tokens (NFTs). These sub-classes of digital assets have distinctive characteristics depending upon operational features, holding methods and commercial uses, and*

[37] For example, the definition for a Māori business can be:
"Businesses where 50% or more of shareholder wages are being paid to individuals of Māori ethnicity or descent." as mentioned in The Ministry of Business, Innovation and Employment. (2016). *Māori-owned firms.* Govt.nz. https://www.mbie.govt.nz/business-and-employment/economic-growth/screen-sector/economic-trends-in-the-screen-sector/economic-trends-in-the-new-zealand-screen-sector-february-2024/maori-owned-firms.
"A Māori-owned business was defined as a business which meets one or more of the following criteria: A business that pays at least 50% of wages to active shareholders, directors or partners of Māori ethnicity or descent or a business identified as Māori by Stats NZ." as used in Te Puni Kōkiri. (2021). *Te Matapaeroa*. https://www.tpk.govt.nz/en/nga-putea-me-nga-ratonga/maori-enterprise/te-matapaeroa.
"A Māori business is a business that is fully or partly owned by a person or people who have Māori whakapapa, and a representative of that business identifies the business as Māori." As defined by Stats NZ. (n.d.). *Data standard for Māori business.* Www.stats.govt.nz. https://www.stats.govt.nz/reports/data-standard-for-maori-business/

[38] This point references the finding that *"In a surprising realisation (to the academics) RIT members identified that the Aro prototype imposes a gatekeeper role on the Iwi Trust and subsequently questioned whether controlling access to taonga was an appropriate function of the Trust."* Ferreira, J., Young, J., Shedlock, K., Welch, I., Patterson, L., Pantidi, N., & Roberts, H. (2024). Prototyping Digital Taonga: Considerations for Digital Representation, Interaction, and Access. Australian Conference on Computer-Human Interaction, Brisbane QLD, Australia. November 30 – December 04, 2024. Page 7.

> *show differing degrees of analogy to existing asset classes. While certain assets resemble, and are treated as, financial instruments, others may be deemed contracts, license agreements or mere representations of other assets, value or rights."*[39]

As these diverse subclasses can be replicated, shared and transferred without any impact on the original product, they exacerbate the problems of provenance, authenticity and authentication experienced in e-commerce while creating further issues of governance and access. For example, if someone is trading data on Māori land boundaries, how does the buyer know that the data is legitimate? And how does the seller stop the data from being shared or traded by the buyer without their permission? These issues are of particular concern to Māori communities as important cultural assets are digitised.

An example of digital trade: digital taonga

Although this review found limited examples of Māori companies that trade directly in Māori data there are many examples of companies which, as a by-product of their sales, create and transfer Māori data.

As the rest of our lives move online, so too do our taonga. From whakapapa to marae, digital representations of our taonga are becoming abundant.[40] Taonga Māori are often translated as 'prized possessions' or 'treasure'.[41] However, taonga, is often considered a broader concept than the physical object:

> *"Taonga Māori as a concept is complex and cannot be straightforwardly replicated in the digital realm. Dictionary definitions show the variety inherent in the term, which can refer to "property, goods, possession," including "anything considered to be of value including socially or culturally valuable . . .ideas and techniques"*[42]

[39] Rodríguez de las Heras Ballell, T. (2024). The Emergence of Principles and Best Practices on Digital Assets: Proprietary Rights, and Enforcement. *European Journal of Risk Regulation*, 1–12. https://doi.org/10.1017/err.2024.55.

[40] See:

Webb-Liddall, A. (2022, September 27). How cutting-edge virtual reality is making marae more accessible. The Spinoff; The Spinoff. https://thespinoff.co.nz/atea/28-09-2022/how-cutting-edge-virtual-reality-is-making-marae-more-accessible.

Slade, M. (2019, March 13). *Digital taonga: The ambitious bid to record whakapapa using blockchain*. The Spinoff. https://thespinoff.co.nz/business/14-03-2019/digital-taonga-the-ambitious-bid-to-record-whakapapa-using-blockchain?

[41] Te Aka. (n.d.). *Taonga*. Maoridictionary.co.nz. https://maoridictionary.co.nz/search?keywords=taonga.

[42] Ferreira, J., Young, J., Shedlock, K., Welch, I., Patterson, L., Pantidi, N., & Roberts, H. (2024). Prototyping Digital Taonga: Considerations for Digital Representation, Interaction, and Access. Australian Conference on Computer-Human Interaction, Brisbane QLD, Australia. November 30 – December 04, 2024. Page 7.

There are many benefits to creating digital taonga[43], however, the process for taonga moving online can vary significantly, from someone uploading an image of their marae on Facebook to the digital repatriation of a privately owned carving. The appropriate process for digitising taonga, and upholding the *"personal, whanau and the iwi histories and traditions"* in the digital sphere, is becoming an on-going concern (Ferreira J. Y., November 30 – December 04, 2024).

Another concern is the ownership of these digital taonga, and who can access them.[44] Digital repatriation efforts may allow some communities to be closer to their taonga, while still alienating ownership rights. As explained by Chiripanhura et al (2025), *"As digital records and reproductions are often managed and controlled by these Western institutions, Indigenous communities may face challenges in asserting their rights over their own cultural heritage in the digital realm."*[45]

Māori communities are building ways to combat these issues. Ferreira et al (2024) tested three diverse ways to digitise taonga with iwi representatives, finding that " *...taonga Māori are complex artefacts connected to people, places, and histories..."* and that although off the shelf solutions might meet design choices, *"...there is a clear need for designing and developing bespoke tools"* to meet the needs of Māori communities.[46] In creating ways to limit access, governance and the information around taonga could there also be a way to protect and promote them? Could this result in a whole new area of trade where Māori communities trade access to digital taonga or other digital assets?

New technical solutions, such as Decentralised Identifiers (DI or DID) paired with Verifiable Credentials (VC), could provide solutions to issues around access. Although commonly used for individual identification, DI and VC could be applied to digital taonga. As Goh (2023) explains;

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[43] Digital taonga can provide opportunities *"...to interact with and share taonga that may not be physically accessible due to being held in museums or private collections, or due to the people with connections to the taonga residing away from their communities." From* Ferreira, J., Young, J., Shedlock, K., Welch, I., Patterson, L., Pantidi, N., & Roberts, H. (2024). Prototyping Digital Taonga: Considerations for Digital Representation, Interaction, and Access. Australian Conference on Computer-Human Interaction, Brisbane QLD, Australia. November 30 – December 04, 2024. Page 1.

[44] Ferreira, J., Young, J., Shedlock, K., Welch, I., Patterson, L., Pantidi, N., & Roberts, H. (2024). Prototyping Digital Taonga: Considerations for Digital Representation, Interaction, and Access. Australian Conference on Computer-Human Interaction, Brisbane QLD, Australia. November 30 – December 04, 2024. Page 3.

[45] Chiripanhura, P., Sibanda, M., & Chabata, F. (2025). Digital Repatriations: A Temporary Solution to Improve Access to Zimbabwe's Heritage. In Homogenizing Traditional Knowledge and Biodiversity Conservation (pp. 17–38). IGI Global. https://doi.org/10.4018/979-8-3693-7964-6.ch022.Page 22.

[46] Ferreira, J., Young, J., Shedlock, K., Welch, I., Patterson, L., Pantidi, N., & Roberts, H. (2024). Prototyping Digital Taonga: Considerations for Digital Representation, Interaction, and Access. Australian Conference on Computer-Human Interaction, Brisbane QLD, Australia. November 30 – December 04, 2024. Page 10.

> *"DIDs provide a unique identifier that can be used to verify an individual's identity, while VCs provide information about their subject, such as an individual's qualifications, skills, and attributes... they can be very powerful when used in combination. For example, a VC can use a DID to identify its issuer and/or subject, which then ties the information contained within the VC with a verifiable digital identity."*[47]

DID's offer a range of benefits, including being:

> *"(i) Permanent. Once the DID is created, it can never be changed, since it is recorded in the blockchain or other distributed ledgers.*
> *(ii) Resolvable. Since the DID is pairwise with a DID document, which contains the metadata of the subject, everyone could look it up to discover the metadata of the DID.*
> *(iii) Verifiable. A DID is associated with one public/private key pair, the controller of the private key can prove that they are the only owner of the DID. On the contrary, anyone could verify this DID to ensure it belongs to the real controller.*
> *(iv) Decentralized. The cryptography mechanism eliminates the need for centralized registration authorities, the kind of system needed for almost every other global identifier systems we use. DID and DID document could be store in blockchain, which play the role as the trust anchor, and it exactly realizes the decentralized feature of this new type identifier."*[48]

Could the above solutions, used in storing product information for e-commerce, be transferred to trade in digital assets or digital taonga? Some of the suggested digital identification mechanisms are designed primarily for physical products, such as digital taggants, NFCs and to an extent barcodes. QR codes can be scanned when presented digitally (rather than on a physical product) but may be difficult to attach to digital assets (although not impossible). Depending on its implementation, a form of the DPP (or the information in the DPP) could provide a way for Māori suppliers of digital assets to trace the lifecycle of such assets.

However, to implement these solutions in Māori communities a raft of technical decisions, as well as unique governance and tikanga questions need to be addressed. The most appropriate manner to do this is by working with Māori communities and their taonga to understand how, when and why digital identification can be used to protect taonga Māori.

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[47] Goh, K. (2023, August 5). *The Future of Digital Identity: Decentralised Identifiers and Verifiable Credentials Explained*. Medium; Government Digital Products, Singapore. https://medium.com/singapore-gds/the-future-of-digital-identity-decentralised-identifiers-and-verifiable-credentials-explained-2cef2ba1c2ad.

[48] Li, H., Jing, Y., & Guan, Z. (2024). The Review and Comparison between Centralized and Decentralized Digital Identity Systems. *Mobile Information Systems*, *2024*, e6651273. https://doi.org/10.1155/2024/6651273.

Furthermore, any digital identification solutions to digital trade must work within the current legal and political domestic and international frameworks.

The developing digital trade and digital identity frameworks

While the digital identification landscape develops in Aotearoa New Zealand, a legislative and regulatory framework develops alongside it to understand the landscape. This section looks at the current domestic legislation, and international trade agreements related to digital identification. Highlighting the difficulty with definitions, throughout the legislation and trade agreements assessed, both 'digital identity' and 'digital identification' are used to refer to, what this report calls digital identification.

Domestic legislation

There are currently three Acts related to digital identity in Aotearoa New Zealand (*The Digital Identity Services Trust Framework Act 2023, Electronic Identity Verification Act 2012 and the Identity Information Confirmation Act 2012*). Annex one outlines these Acts, each of their purposes and notes the limitations in their scopes mainly that these Acts apply to the digital identification of individuals or organisations and do not address the digital identification of products or assets and their use in trade.

Two further pieces of legislation (*The Privacy Act 2020* and *Customer and Product Data Act 2025*) discuss the use of personal, customer and product data or information which can impact how data (as a digital product) is traded. While the *Privacy Act 2020* provides *"a framework for protecting an individual's right to privacy of personal information"*[49] and adopts international standards related to individual privacy. In regards to digital trade, the scope of the *Privacy Act 2020* is limited to personal information meaning the communally owned information (such as mātauranga) and communal privacy (such as that of a hapū) are not protected under the Act.[50] The *Consumer and Product Data Protection Act 2025* aims to provide customers with better access to the data collected about them when receiving services.[51] Although unrelated to digital identification directly, this Act impacts the trade of specific forms of customer and product data and regulates how they are transferred.

Currently these Acts fail to adequately protect Indigenous knowledge and taonga as the above Acts only apply to individual or joint identities, rather than that of a community.[52] They also fail to allow for a communal version of ownership or identities.

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[49] Section 3 of the Privacy Act 2020.

[50] Kukutai, T. (2024). How Indigenous communities in New Zealand are protecting their data. Science, 384(6691). https://doi.org/10.1126/science.ado9298.

[51] The Ministry of Business, Innovation and Employment. (2025, April 11). *Consumer data right.* New Zealand Government. https://www.mbie.govt.nz/business-and-employment/business/competition-regulation-and-policy/consumer-data-right.

[52] Kukutai, T. (2024). How Indigenous communities in New Zealand are protecting their data. Science, 384(6691). https://doi.org/10.1126/science.ado9298.

International trade agreements

Further digital trade restrictions exist in the international trade sector. Aotearoa New Zealand creates trade agreements with multiple countries to facilitate trade. Increasingly, these trade agreements include digital trade chapters or sections, articulating rules for digital trade[53] and are also beginning to include digital identity chapters (mainly concerning digital identification).

Annex two outlines three recent trade agreements that contain references to digital identification, and the text included in the agreements (Digital Economy Partnership Agreement (DEPA)[54], NZ–UK Free Trade Agreement (NZ-UK fair trade agreement (FTA))[55] and the New Zealand – United Arab Emirates Comprehensive Economic Partnership agreement (NZ–UAE CEPA)[56]).These trade agreements promote international cooperation by agreeing to support the interoperability of each parties' version of digital identities, while supporting international frameworks and exchanging knowledge and best practise. Interoperable digital identities could facilitate international trade, as the identities of products could be easily transferred, secured and understood. All three agreements also provide a public policy carve out where the agreements made on digital identification can be overruled for a '*legitimate public policy purpose'*.

Similar to domestic legislation, two of the agreements (DEPA and NZ-UAE CPA) restrict the application of the articles (7.1 and 10.20 respectively) to 'individual or corporate' identities in the DEPA and 'natural persons and enterprises' identities in the NZ-UAE CPA. The NZ-UK Free Trade Agreement does not appear to limit digital identities.

Other recent trade agreements (such as the NZ-European Union (EU) FTA)[57] do not contain specific reference to digital identity; however, they contain digital trade chapters. Likewise, the Comprehensive and Progressive Trans-Pacific Partnership (Comprehensive and

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[53] Ngā Toki Whakarururanga. (n.d.). *Deep Dive on Digital Trade Rules and Te Tiriti (Day 2)*. Retrieved May 12, 2025, from https://ngatoki.nz/wp-content/uploads/2024/07/Digital-trade-DEEP-DIVE-day-2-copy-2.pdf.

[54] New Zealand Ministry of Foreign Affairs and Trade. (n.d.). *Overview of the DEPA*. New Zealand Ministry of Foreign Affairs and Trade. https://www.mfat.govt.nz/en/trade/free-trade-agreements/free-trade-agreements-in-force/digital-economy-partnership-agreement-depa/overview.

[55] New Zealand Ministry of Foreign Affairs and Trade. (2022). *New Zealand - United Kingdom Free Trade Agreement*. New Zealand Ministry of Foreign Affairs and Trade; MFAT. https://www.mfat.govt.nz/en/trade/free-trade-agreements/free-trade-agreements-in-force/new-zealand-united-kingdom-free-trade-agreement.

[56] New Zealand Ministry of Foreign Affairs and Trade. (2024). *Overview of CEPA Chapters and Key Benefits*. New Zealand Ministry of Foreign Affairs and Trade; MFAT. https://www.mfat.govt.nz/en/trade/free-trade-agreements/free-trade-agreements-concluded-but-not-in-force/new-zealand-united-arab-emirates-free-trade-agreement/overview-of-cepa-chapters.

[57] New Zealand Ministry of Foreign Affairs and Trade. (n.d.-a). *New Zealand-European Union Free Trade Agreement*. New Zealand Ministry of Foreign Affairs and Trade. https://www.mfat.govt.nz/en/trade/free-trade-agreements/free-trade-agreements-in-force/new-zealand-european-union-free-trade-agreement.

Progressive Agreement for Trans-Pacific Partnership (CPTPP))[58] does not mention digital identity specifically but defines electronic authentication as *"... the process or act of verifying the identity of a party to an electronic communication or transaction and ensuring the integrity of an electronic communication"* but does not specifically mention digital identity (although implies it through authentication factor use).

6. Conclusion

As Aotearoa New Zealand navigates the digital age, the convergence of digital identity, digital identification and digital trade presents both opportunities and risks for Māori communities. While digital identity and identification are already being used by Māori businesses to strengthen branding, increase market access and protect product authenticity, new developments like the Digital Product Passport and Decentralised Identifiers provide new avenues against appropriation. They also raise new questions about governance, ownership and tikanga in the digital space. Furthermore, the digitisation of taonga Māori and the growing prevalence of digital assets necessitate frameworks that can accommodate Māori concepts of communal ownership. Existing domestic legislation and international trade agreements often fall short in this regard, failing to recognise collective rights and responsibilities or to adequately protect mātauranga Māori.

Ultimately, the challenge is not just technical, but cultural, legal and political. Realising a future in which Māori can equitably participate in and benefit from digital trade requires not only new tools, but also new ways of thinking.

[58] New Zealand Ministry of Foreign Affairs and Trade. (n.d.-a). *Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)*. New Zealand Ministry of Foreign Affairs and Trade. https://www.mfat.govt.nz/en/trade/free-trade-agreements/free-trade-agreements-in-force/cptpp.

ANNEX ONE: A summary of New Zealand legislation relevant to Digital Identity

Act	Purpose	Applies to	Notes
The Digital Identity Services Trust Framework Act 2023	Section 3 - The purposes of this Act are— to establish a legal framework for the provision of secure and trusted digital identity services for individuals and organisations: to establish governance and accreditation functions that are transparent and incorporate te ao Māori approaches to identity.	Individuals and organisations (Section 3)	Importantly, this Act mentions the incorporation of 'Te Ao Māori approaches to identity' (in section 3), the Crown's responsibility to give effect to the Principles of Te Tiriti o Waitangi (in section 9) and the establishment of a Māori Advisory Committee (in section 53).
Electronic Identity Verification Act 2012	Section 3 (1) - The purpose of this Act is to facilitate secure interactions (particularly online interactions) between individuals on the one hand and participating agencies on the other.	Individuals and agencies (Section 3)	Section 15 – An individual does not have any legal or beneficial interest in an electronic identity credential that has been issued to him or her.
Identity Information Confirmation Act 2012	Section 4 – The purpose of this Act is to facilitate the use of an electronic service that allows agencies to confirm identity information about individuals so as to— (a) contribute to the prevention of crime (particularly identity-related crimes); and (b) ensure that agencies can use and, if necessary, record confirmed identity information.	Individuals and agencies	The Confirmation Service is a way for organisations to quickly confirm the accuracy and validity of identity information in a privacy-protective manner.
The Privacy Act 2020	Section 3 - The purpose of this Act is to promote and protect individual privacy by— providing a framework for protecting an individual's right to privacy of personal information, including the right of an individual to access their personal information, while recognising that other rights and interests may at times also need to be taken into account; and giving effect to internationally recognised privacy obligations and standards in relation to the privacy of personal information, including the Organisation for Economic Co-operation and Development (OECD) Guidelines and the International Covenant on Civil and Political Rights.	Personal Information of an individual	This Act only applies to individual privacy of a natural person, it does not extend to taonga or communal privacy. Cannot be overruled by the *Digital Identity Services Framework Act 2023*. However, s21(1)(d) of the *Identity Information Confirmation Act 2012* and s59 of the *Electronic Identity Verification Act 2012* override some of the *Privacy Act 2020*.
Customer and Product Data Act 2025	Section 3 - (1) The purpose of this Act is to establish a framework to— (a) realise the value of certain data for the benefit of customers and society; and (b) promote competition and innovation for the long-term benefit of customers; and (c) facilitate secure, standardised, and efficient data services in certain sectors of the New Zealand economy.	Starting with the banking sector in 2025, and all customers of that sector	No mention of communal ownership.

	(2) The purpose is to be achieved by— (a) improving the ability of customers, and third parties they authorise, to access and use the data held about them by participants in those sectors; and (b) improving access to data about products in those sectors; and (c) requiring certain safeguards, controls, standards, and functionality in connection with those data services.		

ANNEX TWO: Recent trade agreements with digital identity chapters

Agreement	Date in Force	Text
DEPA	7 Jan 2021 The DEPA protocol became legally enforceable on 20 March 2024[59]	Article 7.1: Digital Identities Recognising that the cooperation of the Parties on digital identities, individual or corporate, will increase regional and global connectivity, and recognising that each Party may have different implementations of, and legal approaches to, digital identities, each Party shall endeavour to promote the interoperability between their respective regimes for digital identities. This may include: (a) the establishment or maintenance of appropriate frameworks to foster technical interoperability or common standards between each Party's implementation of digital identities; (b) comparable protection of digital identities afforded by each Party's respective legal frameworks, or the recognition of their legal and regulatory effects, whether accorded autonomously or by mutual agreement; (c) the establishment or maintenance of broader international frameworks; and d) the exchange of knowledge and expertise on best practices relating to digital identity policies and regulations, technical implementation and security standards, and user adoption. For greater certainty, nothing in this Article shall prevent a Party from adopting or maintaining measures inconsistent with paragraph 1 to achieve a legitimate public policy objective.
NZ–UK Free Trade Agreement	31 May 2023	Article 15.8 Digital Identities[60] 1. The Parties recognise that: (a) the cooperation of the Parties on digital identities will increase regional and global connectivity; and (b) each Party may have different implementations of, and legal approaches to, digital identities.

[59] New Zealand Ministry of Foreign Affairs and Trade. (n.d.). *Overview of the DEPA*. New Zealand Ministry of Foreign Affairs and Trade. https://www.mfat.govt.nz/en/trade/free-trade-agreements/free-trade-agreements-in-force/digital-economy-partnership-agreement-depa/overview.

[60] New Zealand Ministry of Foreign Affairs and Trade. (2022). *New Zealand - United Kingdom Free Trade Agreement*. New Zealand Ministry of Foreign Affairs and Trade; MFAT. https://www.mfat.govt.nz/en/trade/free-trade-agreements/free-trade-agreements-in-force/new-zealand-united-kingdom-free-trade-agreement.

Agreement	Date in Force	Text
		2. The Parties shall strengthen cooperation and facilitate initiatives to promote compatibility and interoperability between their respective regimes for digital identities, including exploring: (a) the development and maintenance of appropriate frameworks to increase technical and service interoperability between each Party's implementation of digital identities; (b) supporting the development of international frameworks on digital identity regimes; (c) identifying use cases for the mutual recognition of digital identities; and (d) the exchange of knowledge and expertise on best practices relating to digital identity policies and regulations, technical implementation and security standards, promotion, and user adoption. 3. For greater certainty, nothing in this Article shall prevent a Party from adopting or maintaining measures inconsistent with paragraph 2 to achieve a legitimate public policy objective.
New Zealand – United Arab Emirates comprehensive economic partnership agreement (NZ–UAE CEPA)	Signed Sept 2024; likely in force 2025	ARTICLE 10.20 Digital Identities [61] 1. Recognising that cooperation between the Parties on digital identities, for natural persons and enterprises, will promote connectivity and growth of digital trade, and recognising that each Party may take different legal and technical approaches to digital identities, the Parties shall endeavour to promote compatibility between their respective digital identity regimes. This may include: (a) developing appropriate frameworks and common standards to foster technical interoperability between each Party's implementation of digital identities; (b) developing comparable protection of digital identities under each Party's respective legal frameworks, or the recognition of their legal effects, whether accorded autonomously or by agreement; (c) supporting the development of international frameworks on digital identity regimes; and (d) exchanging knowledge and expertise on best practices relating to digital identity policies and regulations, technical implementation and security standards, and the promotion of the use of digital identities. 2. For greater certainty, nothing in this Article shall prevent a Party from adopting or maintaining measures inconsistent with paragraph 1 to achieve a legitimate public policy objective.

[61] New Zealand Ministry of Foreign Affairs and Trade. (2024). *Overview of CEPA Chapters and Key Benefits*. New Zealand Ministry of Foreign Affairs and Trade; MFAT. https://www.mfat.govt.nz/en/trade/free-trade-agreements/free-trade-agreements-concluded-but-not-in-force/new-zealand-united-arab-emirates-free-trade-agreement/overview-of-cepa-chapters.