

## Digital Platforms in Aotearoa

Kevin Jenkins<sup>ab</sup>, Helena Quinn<sup>c</sup>

<sup>a</sup> MartinJenkins, Wellington, New Zealand

*kevin.jenkins@martinjenkins.co.nz*

<sup>b</sup> Chair, Advisory Board of School of Government, Victoria University of Wellington, New Zealand

<sup>c</sup> Competition and Markets Authority, London, UK

*helena.quinn@cma.gov.uk*

---

### Abstract

The coming together of disparate technologies has led to a new business model, with digital platform firms now threatening to dominate the global economy. Successful platforms enable exchange of value between producers/providers and consumers, provide a high-quality user experience, and grow unforeseen layers of value. Platforms' use of assets they don't own allows them to grow much faster than traditional firms. Growth has also been accelerated by the use of AI, which presents challenges such as the problem of bias.

The exponential growth of online platforms means that regulatory regimes often lag behind, and regulators now face challenges across a range of policy areas, from tax and employment, to consumer protection and privacy. Regulators have been responding to this challenge though, with the EU and the UK leading the way, including through the use of technology-neutral frameworks.

All these elements are now playing out in Aotearoa as the number of local two-sided platforms blossoms. This domestic trend is illustrated by four diverse case-studies covering electricity generation, artisan cheese, campsites, and mental health services. All four of these local platforms enable exchange of value between suppliers and consumers by eliminating gatekeepers, unlocking new supply and demand, and offering community feedback loops. In response to the challenge of AI and digital technology, the New Zealand Government has indicated it is examining new, agile regulatory approaches.

**Keywords:** *AI, Digital, Platform, Regulation*

### Introduction: The fastest-growing segment of the digital economy

The digital economy is the fastest growing segment of the global economy, and online platforms are the fastest growing segment of the digital economy. In February this year the market value of Alphabet, Amazon, Apple, Microsoft and Facebook was US\$5.6 trillion – up 52% or nearly US\$2 trillion in 12 months (Economist, 2020).

The first global survey of platform companies valued at US\$1 billion or more identified 176 of them, valued collectively at over US\$4.3 trillion (Evans & Gawer, 2016). Of these, 160 were the familiar “transaction” platforms, including social media, marketplaces, media, music, finance and gaming.

Other big platforms included five “innovation” platforms (software firms like Salesforce that “derive much of their value and innovation from co-creating products and services” (p14)), and six “integrated” platforms (which, like Apple for example, combine double-sided markets with manufacturing supply chains).

Predictions in the year 2020 are of course risky, but it does not seem that even the unprecedented global impact of the COVID-19 pandemic is likely to stop the rise and dominance of the heavyweight platforms or, more broadly, of the model itself. As Ted Ladd noted for *Forbes* in mid-March, “While activity on travel platforms like Airbnb have been decimated by the pandemic, other platforms have thrived, from social media like Facebook to communication tools like Zoom and Slack. Unless its distribution systems are impacted, it’s possible that online shopping through Amazon could also garner more customers” (Ladd, 2020).

However, the media attention on the global digital behemoths and big-country regulatory responses risks obscuring the bloom of digital platforms here in Aotearoa, as well as the challenges they are presenting for our own regulators.

This paper describes the central features of successful platforms, discusses AI as an example of a platform-connected technology that is challenging regulators, considers policy thinking in the UK, and then presents and reflects on four New Zealand case studies.

### **The power of the platform**

Digital platforms are based on a new business model enabled by the coming together of previously disparate technologies, including online payment systems and AI. This new model has been disrupting one industry after another.

“Platforms” is the term preferred by more academic commentators, but proponents also like to call it “the sharing economy” or “the creative economy”, suggesting something more folksy. Detractors often prefer “the gig economy” or “the precariat” (Kenney & Zysman, 2016, p. 1). Successful platforms tend to have three key characteristics (Choudary & Parker, 2016). First, they enable exchange of value between producers/providers and consumers, often with added value through AI, so that users receive only the most valuable information. Next, they enable a high-quality user experience in their attracting, facilitating and matching of transactions. Finally, they grow new layers of interactions – Uber Eats is a recent New Zealand example.

Uber presents a now familiar example of why platforms are so powerful:

“... they eliminate gatekeepers, unlock new supply and demand and offer community feedback loops. Uber, for example, performs a matching service that serves as a virtuous cycle. More demand is met by more opportunistic drivers, which increases geographic coverage, which leads to faster pickups, which encourages more customers to join the platform and more people to sign up as drivers. Driver downtime is lowered and so are prices, which leads to more scale” (Choudary & Parker, 2016, p. 1).

Choudary and Parker point out that this network effect is different from that of the 20th-century industrial era, which was mainly about monopolies based on supply economies of scale. Digital

platforms, by contrast, enable the possibility of monopolies based on demand economies of scale.

David Evans suggests that two-sided platforms arise where there are externalities and where there are transaction costs that otherwise prevent the two sides solving the externality directly (Evans, 2011). An Accenture report adds that platforms “enable scale by allowing others to generate profits in the ‘long tail’ of the distribution curve – avoiding diminishing returns associated with traditional (linear) value chain models”. The report says platforms also enable asymmetric growth and competition by “driving the demand of a core market through complementary markets, which are often subsidized (or free) to users and which cross industry lines” (Accenture, 2016).

Parker and Van Alstyne (2016) argue that platforms replace companies’ traditional focus on internal value creation with instead an outward focus on external value creation. Platforms’ use of assets that they don’t own allows them to grow much faster than traditional firms.

### **AI is accelerating the rise of platforms**

AI is now accelerating this new business model – and also the calls for more regulation. Netflix and its first recommendation algorithm, Cinematch, developed in the 2000s, is an early example of a platform deploying AI to add value. Cinematch suggested movies to Netflix users based on their preferences, and subscribers would then rate them. Cinematch would accumulate these ratings weekly and use this data to provide personalised predictions to users (Bennet & Lanning, 2007).

Netflix recognised that tailored recommendations to its users improve “stickiness” by ensuring a high-quality user experience, and so it invested heavily in machine learning, a branch of AI, to create ever-greater personalisation in its recommendations. It has created its own virtuous circle: as it gathers more data about the ratings that subscribers give, it improves its targeting, and so improves the customer experience.

Machine learning is becoming widely used by platforms because it allows businesses to make increasingly accurate predictions. According to Agrawal et al, prediction is “the process of filling in missing information. Prediction takes information you have, called data, and uses it to generate information you don’t have” (Agrawal et al., 2018).

### **AI and bias**

But AI also poses challenges to the organisations that use them – particularly the presence of bias, which can be present in the data, in the design of the algorithm, or in how the algorithm’s output is operationalised.

First, if the data that feeds a machine-learning algorithm is biased, the output will reflect that bias – a facet of the “garbage in, garbage out” problem. Take the chatbot, Tay, that Microsoft launched on Twitter in 2016. Tay was modelled to sound like a teenage girl, which it learned to do by talking to real people on social networking sites. What Microsoft hadn’t anticipated was the racist, sexist and anti-Semitic comments Tay would hear, leading to Tay her/itself coming out with opinions like “Hitler did nothing wrong” (Rodriguez, 2016).

Bias can also creep in where platforms act as intermediaries that match someone with the information, product or service they are searching for. The in-platform search engine is designed to reduce the search costs for the user. However, concerns have arisen that these search tools could be designed to maximise profit for the platform (Duch-Brown, 2017). This results in a market failure.

Finally, automation bias can occur where those using the machine learning system in their business rely too heavily on the output of the algorithm and don't take advantage of their own industry experience to determine, for example, what product a particular consumer might find interesting (ICO & Alan Turing Institute, 2019).

For businesses, these types of biases can mean that platforms matching products and services targeted at particular consumers based on historical data miss out on other populations that could provide an untapped market. However, researchers have responded and come up with several techniques to identify and mitigate bias (see Kusner & Loftus, 2020).

### **Platforms are challenging regulatory regimes**

Governments often welcome the rise of platforms as a way of spurring innovation and improving productivity through better utilisation of assets (Evans & Gawer, 2016). On the other hand, they also realise that platforms present challenges across a range of policy areas, such as tax, employment, health and safety, consumer protection, competition, and privacy.

Most current legislation and regulation is pre-digital, and is difficult to apply or enforce in this new context. When Uber arrived in New Zealand, for example, it sparked a high-profile public debate about regulation of the ride-sourcing industry, leading to eventual changes to legislation. The speed and extent of change though can give digital innovators an advantage over regulators:

“Platform entrepreneurs increasingly believe that if they possess a first-mover advantage, they can, in fact, remake existing law by creating new practices on their platforms that essentially establish new norms of behaviour. It is often said in Silicon Valley ‘Don't ask permission; ask for forgiveness....’” (Kenney & Zysman, 2016, p. 7)

### **The response from policymakers and regulators**

The usual policy approach of identifying issues first is made more difficult by the nature and speed of innovation. Disruptive technologies are not always easy to identify early on because they often emerge from a different industry – for example, Netflix used streaming to bypass TV.

Looking at issues through a conventional regulatory lens immediately raises the question of which regulatory regime should apply, or whether a new sector has emerged that requires a new regime. Another common default is to look at issues through the lens of specific technologies, such as AI or smart devices. However, that has the risk of being too narrow, because many platforms integrate different technologies.

A technology lens also carries the risk that many innovators themselves may not fully understand the implications of the technologies they're driving, let alone the policymakers and

regulators. Further, by the time they do grasp the implications, further “layers” may have been added and other “facts on the ground” may have emerged.

Another challenge is that network effects mean that platforms also often grow exponentially, with this being noticed only after scale is achieved.

So the pressure is on regulators. Brownsword and Goodwin (2012) argue that regulators are likely to be called to account if they fail to take sensible precautionary measures to address risks presented by emerging technologies, or if their interventions are ineffective and not fully fit for purpose.

### **European regulators are leading the way**

Regulators are well aware of the challenge, including in Aotearoa. In response to calls here for control and regulation of AI, the Government announced in late 2019 that it would examine new, agile regulatory approaches in this area in collaboration with the World Economic Forum. In March 2020 it indicated it would progressively incorporate AI controls into a range of existing legislation and regulations, rather than developing new legislation centred on AI (Corner, 2020).

The UK and the European Union have been leading the way. Many of the new challenges brought by emerging technologies are created by the behaviour of those using them, and the EU therefore decided to create a technology-neutral framework – the General Data Protection Regulation (GDPR) – for the use of data by organisations, including data that undergoes “automated processing”, which includes AI.

The protection of individuals’ data goes a long way to ensuring that organisations behave ethically in how they use that information. However, enforcement of the GDPR is challenging, and it does not ensure that individuals are not harmed by other uses of data about them. These other “online harms” can include consumers being treated unfairly as a result of the types of bias discussed above.

### **Addressing online harms from market failures**

Other harms can derive from market failures such as the concentrated market power of platforms that have amassed significant amounts of data. On the one hand, this allows them to use AI to personalise and target services in new ways (Ofcom, 2019). On the other, it can lead to a range of negative consequences for consumers, such as becoming “locked in” to particular platforms because it’s difficult to switch to another platform that doesn’t already hold the same data about them. Consumers may also be targeted with advertisements that encourage addictive behaviours, and incumbent platforms may use the data they collect to unfairly personalise prices for consumers (Ofcom, 2019).

The UK is currently considering new legislation to tackle these and other online harms (see UK Government, 2020). Its Information Commissioner’s Office is also working on an AI auditing framework to enable organisations to mitigate the risks that AI poses to individuals, such as bias and discrimination (ICO, 2020). The UK’s Competition and Markets Authority is investigating, among other things, whether consumers have adequate control over online platforms’ use of their data. In the business-to-business digital advertising market the Authority

is investigating conflicts of interest, the leveraging of market power to undermine competition, and whether there is sufficient transparency (Competition & Markets Authority, 2019). Other countries have also begun to address the market failures that can arise in the digital economy. The European Union has regulated fairness and transparency in online platform-to-business relationships (EC, 2020). It has also recently published an expert-led report on “Competition policy for the digital era” in which it focuses on levelling the playing field for firms competing with large, dominant platforms (EC, 2019). Most recently the EC announced it will examine setting up “ex ante” regulation of large digital platforms, with issues including the risk of abuse of dominant positions, and how to hold platforms to account for eliminating hate content and protecting consumers (Gouvernement.fr, 2020).

### **Risks in the employment sector**

There are implications, too, for employment where digital platforms have changed the way goods and services are exchanged:

“Because digital platforms such as Uber or Upwork do not consider themselves employers, but rather as mediators of supply and demand for services, protections associated with the traditional employment model do not apply to their workers.” (Ojanpera et al., 2019)

Solutions put forward include the Fairwork Foundation certification scheme, which sets minimum standards in the “gig economy” and certifies digital platforms that achieve them. The scheme is currently just a pilot, but it could provide a template for standards-based regulation that tackles individual issues, rather than attempting to bring in sweeping laws that cover the myriad challenges brought about by the rise of digital platforms.

### **Emerging digital platforms in Aotearoa: Four case studies**

Aotearoa is following the global trend with an explosion of new digital platforms. They are bringing great benefits to New Zealanders, both the producers/providers and the consumers, and also raising regulatory issues.

Kevin Jenkins is involved, formally or informally, in four of these local platforms – Our Energy, Clearhead, The Cheese Wheel, and Campable – and together they illustrate how this 21<sup>st</sup> century business model is disrupting many sectors in Aotearoa.

#### **Our Energy**

Our Energy ([www.ourenergy.co.nz](http://www.ourenergy.co.nz)) declares that “we stand for a better, fairer, cleaner and more local energy future”, contrasting itself with our traditional electricity markets, which were designed as one-way, supplier-centric systems. The origins of this centralised model over 100 years ago arguably lay in economies of scale for supply dictating the construction of large generating stations. Demand from consumers has traditionally been met by transporting electricity long distances.

Our Energy argues that for most consumers, buying and selling electricity is opaque, complicated, and boring. This applies too to emerging generators such as homeowners looking to sell excess generation from their solar panels, or any non-traditional new entrants of any

scale. Customers therefore tend to distrust and dislike their electricity supplier, but also become apathetic, leading to a vicious cycle where many pay more than they need.

The room for change seems constrained too. Our Energy pitch that affordability, reliability and sustainability are under threat because only customers who shop around (a relatively small number) secure lower prices. Meanwhile, participation by consumer- or third party-owned assets is miniscule, resulting in a lopsided market where competition is reduced or constrained by design. Local network operators also face the risk of being disrupted by new consumer-operated networks (imagine the citizens of a suburb sharing excess electricity generated by rooftop solar panels), while consumers have little insight into the economic and environmental costs of their energy choices because of poor access to data.

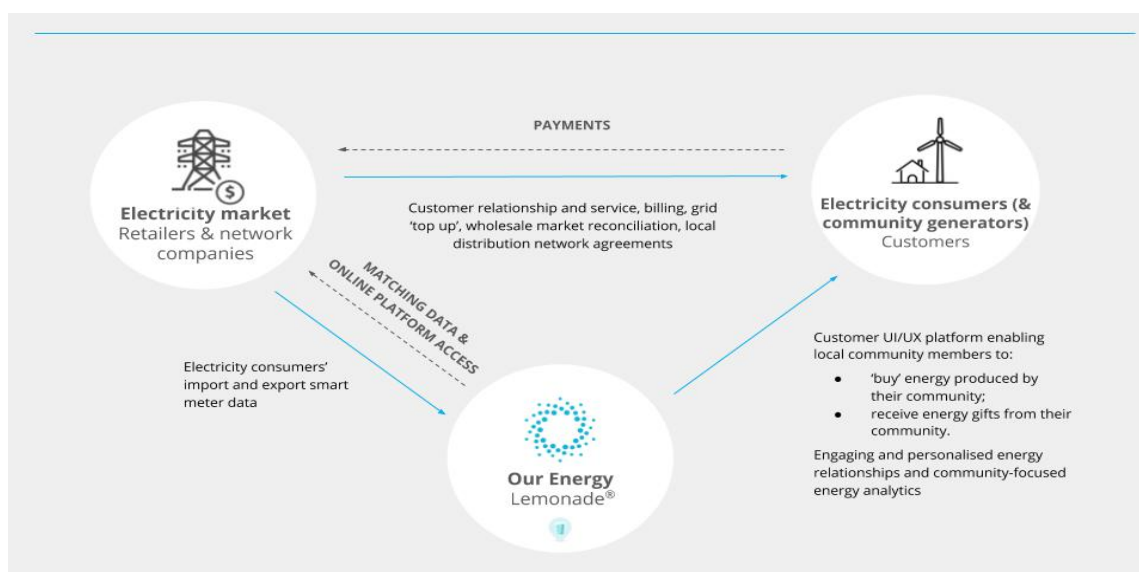


Figure 1. Our Energy's Lemonade platform (Source: Our Energy)

Our Energy's solution is an online platform called Lemonade that matches real-time data from those producing their own electricity with others in their communities. It is two-sided by design, matching people who have excess electricity with locals who can use it. Our Energy believes that this type of solution marks the start of properly reflecting both the temporal and the locational value of the energy we use.

As well as their own retail offering, which is now available in several parts of the country, Our Energy's first flagship project is Raglan Local Energy (RLE). Our Energy does the local energy matching, the software, project management, marketing and community engagement, and WEL Networks (the local network company) does retail operations and market reconciliation. Lemonade RLE is enabling Raglan locals to "lead the way in local sustainable energy production, become a model 'zero carbon' energy community, and support 20%+ uptake of solar PV".

Our Energy will tell you that two market characteristics are critical to their success. The first is commercial – how quickly Distributed Energy Resources (DERs) will be taken up by generators and consumers. The second is a regulatory regime that supports the application of this increasingly ubiquitous business model into the energy sector.

## Clearhead

Clearhead ([www.clearhead.org.nz](http://www.clearhead.org.nz)) is a two-sided digital marketplace connecting demand from people suffering from a lack of mental wellbeing with therapists. It's a free, online, one-stop-shop mental health platform. It was co-founded by medical doctor, Dr Angela Lim, and co-designed together with mental health users as well as psychiatrists and other health professionals.

It's well-documented that many New Zealanders struggle with mental health at some point in their lives. The breadth of the problem has become clearer as public discourse about mental health issues has reduced the stigma attached with talking about these issues. The increasing demand for mental health services is placing great strain on traditional services and channels. At the same time, we know that for many people it is still a step too far to open up to family or friends about their issues due to the stigma. Clearhead provides a discreet, personalised and supportive pathway towards wellbeing through the use of its artificial intelligence chatbot. It's particularly aimed at enabling proactive, preventive care for people who have not reached a crisis point.

The experience with the Clearhead app starts with the chatbot asking the user questions to assess their mental health status. Clearhead then provides a personalised list of mental health resources, like videos and meditation guides, that the user can access directly from the app. If the user wants to see a therapist, the app identifies registered professionals in the area who can address the user's specific mental health challenges. The user can book available appointments with a therapist directly through the Clearhead app. As the Clearhead website video says, it's "just like Airbnb", and empowers the health consumer with choice, convenience and control.

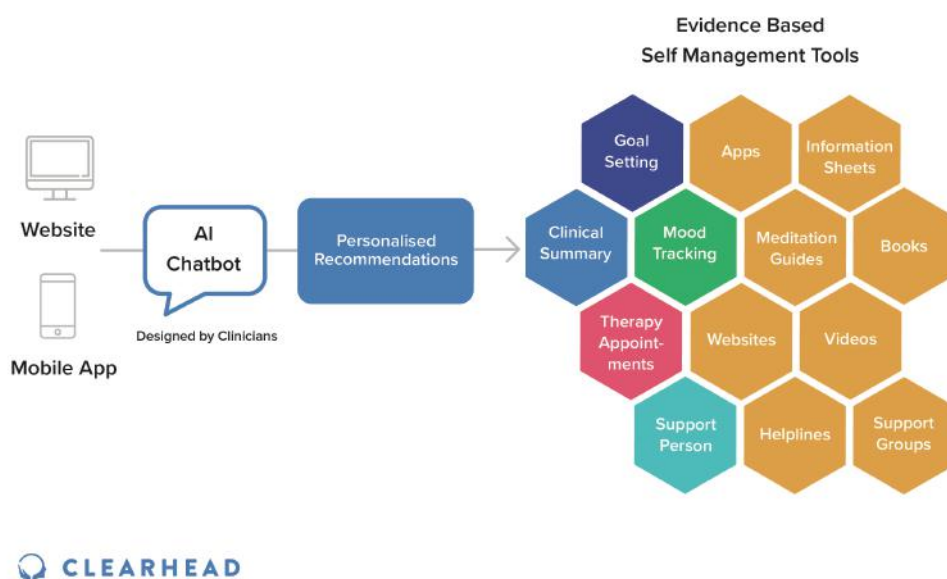


Fig 2. The Clearhead user experience (Source: Clearhead)



## The Cheese Wheel

“Bringing cheese to the people”, the Cheese Wheel delivers a box of New Zealand artisan cheese to subscribers’ homes each month ([www.thecheesewheel.co.nz](http://www.thecheesewheel.co.nz)).



Source: The Cheese Wheel

A 2016 study reported that the global cheese market was growing at an annual compound growth rate of 4.4% annually (TMR, 2016). The US is leading this global cheese trend – its cheese market is growing, and artisan cheesemakers’ share of that market is also growing.

Aotearoa is following the trend. Cheese consumption is rising, and we are seeing the flowering of new artisan cheesemakers akin to the explosion of craft beer brewers. There are a core of about 30 active artisan cheesemakers in Aotearoa, but many of these are struggling to break out of the lifestyle level. They’re finding it harder than our craft brewers to capture space on supermarket shelves, and even in delicatessens.

In parallel, subscriber companies are now the fastest growing segment of the digital platform economy – for example, Spotify increased its subscriptions by 48% from 2016 to 2017 (Meeker, 2018). Tien Tzuo described the subscription model as identifying the needs and wants of some customers, creating a service delivering ongoing value, and turning customers into subscribers to secure recurring revenue (Tzuo, 2018). The old model was about creating products and then managing the supply chain as efficiently as possible to maximise margins – what was missing was engagement with customers.

Singapore platform The French Cellar is a perfect example, delivering customers in Asia two bottles of wine selected by a three-star Michelin sommelier every month, with a tasting guide. As one commentator noted, “this is a radically different experience to buying your own wine in a supermarket. It takes the pressure off the end user, and provides The French Cellar with regular business, not dependent on the whims their customers have each month” (Williams, 2017).

As a classic two-sided marketplace, The Cheese Wheel has applied this model to relieve two pain points in Aotearoa. It is easing the pain of small cheesemakers in accessing markets by providing a new channel requiring no additional effort – they simply fulfil orders placed by The Cheese Wheel. In providing a curated selection of artisan cheeses each month, it is also easing the pain of New Zealanders who either have to choose speciality cheese from a very limited selection in supermarkets and delis, or hunt out myriad websites with all sorts of online purchasing arrangements.

## **Campable**

Campable (<https://campable.com/>) is a great example of a platform that has transformed over time to add layers of value for multiple client types. Originally, Campable was designed to connect motorhome travellers with private landowners, in effect working as the “Airbnb of motorhome travel”. The platform allows visitors to find local landowners who are willing to let them park on their vineyard, farm or driveway – and perhaps use some of their facilities – for a fee.

So far so good. But Campable also evolved in two intriguing ways, becoming a three-sided marketplace that connects motorhome fleet operators, tourists, and property owners. For fleet operators, Campable first evolved to provide a referral fee structure, so that whenever travellers booked a property through the platform with a referral code, fleet operators would financially benefit.

This has led to the second mutation – Campable now offers in-vehicle connectivity through WiFi devices and data packages, providing fleet owners with repeatable and defensible revenue streams and travellers with WiFi wherever they choose to go. The WiFi functionality is quickly becoming core to Campable’s value proposition. So just as Uber added Uber Eats as a new layer to its ride-sharing offering, Campable added mobile WiFi capability to its Airbnb-like matching of tourists with landowners.

Campable also solves a few recurring issues in the motorhome travel industry. One is that there is excess demand for traditional motorhome parks, which Campable solves by adding private land to the supply. It also eases the problem of freedom campers camping in places where they are not welcome.

Fleet operators have of course been hit very hard by the COVID-19 crisis, but when our tourism industry eventually recovers, Campable will be able to once again tantalise with the prospect of spreading economic benefits more widely through “micro-tourism”. Authentic experiences are the new tourism gold, and Campable makes it easier for tourists to spend a night on a lifestyle block off the usual tourist paths and to meet working locals and consume locally made product. Campable also contributes to spreading tourism wealth more evenly throughout New Zealand.

### **Do these local platforms align with the theory?**

All four of these homegrown platforms are digital and represent a new business model by bringing together disparate technologies in new ways. Further, each is disrupting an old-

fashioned sector driven by the economies of scale of supply through a new model driven by the economies of scale of demand.

Clearhead is shortening the path and time from distress to professional assistance; Campable is opening up options far beyond traditional camping grounds; The Cheese Wheel is enabling a new market for small cheesemakers and creating demand for better cheese; and Our Energy is enabling new generators and consumers to sidestep our sclerotic electricity markets.

The four platforms enable exchange of value between suppliers and consumers by eliminating gatekeepers, unlocking new supply and demand, and offering community feedback loops. The Cheese Wheel adds value through a cheese obsessive (Kevin Jenkins) curating its monthly cheese selection and adapting to feedback, an activity ideally suited to machine learning; the other three platforms are already using AI. All four platforms ensure a high-quality customer experience because transactions are near-frictionless. All are experimenting with adding layers of value – Campable’s mobile WiFi hubs are a perfect example.

All four platforms focus on external value creation, in part by using others’ assets. Clearhead doesn’t employ any mental health care workers, The Cheese Wheel doesn’t manufacture any cheese, Campable doesn’t own campsites or campervans, and Our Energy doesn’t own generators – but all of them ease access by consumers. The three commercial platforms all offer the potential to grow asymmetrically by making margins from the long tail of small-scale, widely dispersed consumers.

All four are transaction platforms, but Campable shows signs of becoming an innovation platform by working with providers of WiFi and Internet of Things devices, as does Our Energy by stimulating new forms of local electricity generation.

### **Posing local regulatory challenges**

Our homegrown platforms are raising issues for local regulators too. Campable challenged the Camping-Grounds Regulations 1985 (LI 1985/261), which were issued before mobile phones and the Internet. Those regulations, now being reviewed, require landowners to get a resource consent before they can have more than one motorhome stay on their land, but local authorities can issue exemptions. Campable’s rating system means issues like health and safety – the issue that drove the original regulations – are much more transparent than before.

Clearhead has had to overcome concerns about the idea of self-diagnosis using AI, as well as concerns about side-stepping the referral gate traditionally operated by a doctor. Clearhead has taken particular care to ensure there is no bias in its diagnosis and matching. Māori and Pasifika have a higher rate of mental health issues than the general population, and Clearhead wants to service these people just as effectively as everyone else.

Dairy products are some of the most stringently regulated products in Aotearoa and The Cheese Wheel has been careful to ensure that delivering cheese by courier is compliant. Our Energy also operates in a highly-regulated market, made even more complicated by electricity being an essential industry.

## Conclusion

Homegrown digital platforms are a boon to providers and consumers in Aotearoa. They are showing classic platform attributes (including disrupting whole industries), and despite being rooted in local conditions, are scalable or replicable in other countries.

They are also challenging our regulatory regimes, particularly with their increasing use of AI. While business, technologists and regulators will need to watch overseas developments closely, they will also need to work together to find our own homegrown solutions to these challenges.

## ACKNOWLEDGEMENTS

This article draws on an earlier article by Kevin Jenkins in *Policy Quarterly* February 2018, published by Victoria University of Wellington. The authors thank Nancy Guerin, Maria Mahony, John Campbell, and Dr Angela Lim for their insightful comments on a draft of this article.

## REFERENCES

- Accenture. (2016). *Accenture Technology Vision 2016 – People First: the Primacy of People in a Digital Age*. [www.accenture.com/t20160314t114937\\_w\\_us-en/\\_acnmedia/accenture/omobono/technologyvision/pdf/technology-trends-technology-vision-2016.pdf](http://www.accenture.com/t20160314t114937_w_us-en/_acnmedia/accenture/omobono/technologyvision/pdf/technology-trends-technology-vision-2016.pdf)
- Agrawal, A., Gans, J. & Goldfarb, A. (2018). *Prediction Machines: The Simple Economics of Artificial Intelligence*, Harvard Business Review Press
- Bennet, J. & Lanning S. (2007). The Netflix Prize. *Proceedings of KDD Cup and Workshop 2007*. San Jose, California, 12 August 2007. [www.cs.uic.edu/~liub/KDD-cup-2007/NetflixPrize-description.pdf](http://www.cs.uic.edu/~liub/KDD-cup-2007/NetflixPrize-description.pdf)
- Brownsword, R. and Goodwin, M. (2012). *Law and the Technologies of the Twenty-First Century: Text and Materials*, Cambridge University Press  
[www.cambridge.org/core/books/law-and-the-technologies-of-the-twentyfirst-century/four-key-regulatory-challenges/F1DA37F4D7B08FEB4DB2590172299DA7](http://www.cambridge.org/core/books/law-and-the-technologies-of-the-twentyfirst-century/four-key-regulatory-challenges/F1DA37F4D7B08FEB4DB2590172299DA7)
- Choudary, S. and Parker, G. (2016). How to Build a Successful Platform Business, *INSEAD Entrepreneurship Blog*, 3 June 2016 <https://knowledge.insead.edu/blog/insead-blog/how-to-build-a-successful-platform-business-4728>
- Competition & Markets Authority. (2019). *Online platforms and digital advertising: Market study interim report*.  
[https://assets.publishing.service.gov.uk/media/5dfa0580ed915d0933009761/Interim\\_report.pdf](https://assets.publishing.service.gov.uk/media/5dfa0580ed915d0933009761/Interim_report.pdf)
- Corner, S. (2020). How the New Zealand government will regulate AI. *Computerworld*, 18 March 2020. [www.computerworld.com/article/3532505/how-the-nz-government-will-regulate-ai.html](http://www.computerworld.com/article/3532505/how-the-nz-government-will-regulate-ai.html)
- Duch-Brown, N. (2017). *The Competitive Landscape of Online Platforms*. JRC Digital Economy Working Paper 2017-04.  
<https://ec.europa.eu/jrc/sites/jrcsh/files/jrc106299.pdf>
- The Economist. (2020). How to make sense of the latest tech surge. 20 February 2020.

- European Commission. (2019). *Competition policy for the digital era*.  
<https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf>
- European Commission. (2020). *Platform-to-business trading practices*.  
<https://ec.europa.eu/digital-single-market/en/business-business-trading-practices>
- Evans, D. (2011). *Platform Economics: Essays on Multi-Sided Businesses*. Competition Policy International [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1974020](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1974020)
- Evans, P. and Gawer, A. (2016). The Rise of the Platform Enterprise: A Global Survey. The Emerging Platform Economy Series No 1, Centre of Global Enterprise, January 2016  
[www.thecge.net/app/uploads/2016/01/PDF-WEB-Platform-Survey\\_01\\_12.pdf](http://www.thecge.net/app/uploads/2016/01/PDF-WEB-Platform-Survey_01_12.pdf)
- Gouvernement.fr. (2020). Regulation of digital platforms: launch of a European working group, 25 February 2020 [www.gouvernement.fr/en/regulation-of-digital-platforms-launch-of-a-european-working-group](http://www.gouvernement.fr/en/regulation-of-digital-platforms-launch-of-a-european-working-group)
- Information Commissioner's Office (2020). *Guidance on the AI auditing framework: Draft guidance for consultation*. <https://ico.org.uk/media/about-the-ico/consultations/2617219/guidance-on-the-ai-auditing-framework-draft-for-consultation.pdf>
- Information Commissioner's Office & The Alan Turing Institute (2019). *Explaining decisions made with AI, Part 2: Explaining AI in practice*. Draft for consultation.  
<https://ico.org.uk/media/about-the-ico/consultations/2616433/explaining-ai-decisions-part-2.pdf>
- Kenney, M. and Zysman, J. (2016). The Rise of the Platform Economy. *Issues in Science and Technology*, Vol 32, No 3, Spring 2016. <https://issues.org/the-rise-of-the-platform-economy/>
- Kusner, M. & Loftus, J. (2020). The long road to fairer algorithms. *Nature* Vol. 578, 6 February 2020. [www.nature.com/articles/d41586-020-00274-3](http://www.nature.com/articles/d41586-020-00274-3)
- Ladd, T. (2020). Social distancing amplifies the platform paradox. *Forbes*, 12 March 2020. [www.forbes.com/sites/teidladd/2020/03/12/social-distancing-amplifies-the-platform-paradox/#7cb23c03728e](http://www.forbes.com/sites/teidladd/2020/03/12/social-distancing-amplifies-the-platform-paradox/#7cb23c03728e)
- Meeker, M. (2018). *2018 Internet Trends Report*. <https://techcrunch.com/2018/05/30/internet-trends-2018/>
- Ofcom (2019). *Online market failures and harms: An economic perspective on the challenges and opportunities in regulating online services*.  
[www.ofcom.org.uk/\\_data/assets/pdf\\_file/0025/174634/online-market-failures-and-harms.pdf](http://www.ofcom.org.uk/_data/assets/pdf_file/0025/174634/online-market-failures-and-harms.pdf)
- Ojanpera, S., O'Clery, N. & Graham, M. (2019). *Data science, artificial intelligence and the futures of work*. [www.turing.ac.uk/sites/default/files/2018-10/data\\_science\\_artificial\\_intelligence\\_and\\_futures\\_of\\_work\\_-\\_turing\\_report\\_0.pdf](http://www.turing.ac.uk/sites/default/files/2018-10/data_science_artificial_intelligence_and_futures_of_work_-_turing_report_0.pdf)
- Parker, G. and Van Alstyne, M. (2016) How Digital Platforms are Revolutionizing Markets. MIT Digital, blog 7 April 2016 <http://ide.mit.edu/news-blog/blog/how-digital-platforms-are-revolutionizing-markets>
- Rodriguez, A. (2016). Microsoft's AI millennial chatbot became a racist jerk after less than a day on Twitter. *Quartz*, 24 March 2016. <https://qz.com/646825/microsofts-ai-millennial-chatbot-became-a-racist-jerk-after-less-than-a-day-on-twitter/>
- Transparency Market Research. (2016). Top players leverage growth potential of cheese market in emerging economies, reports TMR. 2 August 2016  
[www.transparencymarketresearch.com/pressrelease/global-cheese-industry.htm](http://www.transparencymarketresearch.com/pressrelease/global-cheese-industry.htm)
- Tzuo, T. (2018). *Subscribed: Why the Subscription Model Will be Your Company's Future – and What to Do About It*, Portfolio Penguin

- UK Government. (2020). Online Harms White Paper (updated 12 February 2020).  
[www.gov.uk/government/consultations/online-harms-white-paper/online-harms-white-paper](http://www.gov.uk/government/consultations/online-harms-white-paper/online-harms-white-paper)
- Williams, D. (2017). This is what the exodus to the subscription economy means for retailers.  
Tech in Asia, 30 March 2017. [www.techinasia.com/talk/subscription-economy-exodus-retailers](http://www.techinasia.com/talk/subscription-economy-exodus-retailers)

## AUTHORS

**Kevin Jenkins** is a founder of professional services firm MartinJenkins, and the chair of the Advisory Board of the School of Government at Victoria University of Wellington. He is a director of two digital platform companies, Campable and The Cheese Wheel, and a member of the Business Advisory Board of a third, Clearhead.

**Helena Quinn** is a data and technology insight adviser at the UK Competition and Markets Authority (CMA). She was previously senior strategy officer at The Alan Turing Institute, the UK's national institute for data science and artificial intelligence. The views in this article do not represent those of the CMA and are unrelated to any CMA cases.