

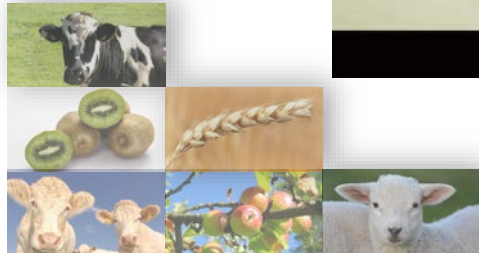


# Innovative and Disruptive Technologies for Agrifood Supply Chains

A New Zealand Perspective

Julian Gairdner

## Open Spaces | Open Hearts | Open Minds



## Who we are:

“Bespoke agri software developers and consultants helping agribusinesses embrace digital”

- NZ parent - 30+ people in Hamilton, NZ (since 2005)
- UK subsidiary - Somerset, UK
- Also operating in Australia



**Product Development for Agriculture**



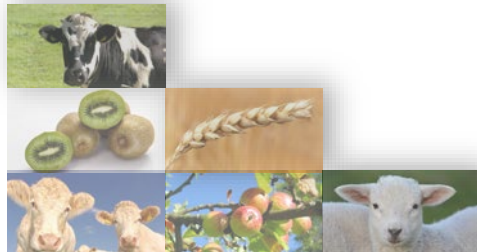
**Livestock Supply Chains**



**Data Standards for Agriculture**



**Smart Biological Models**

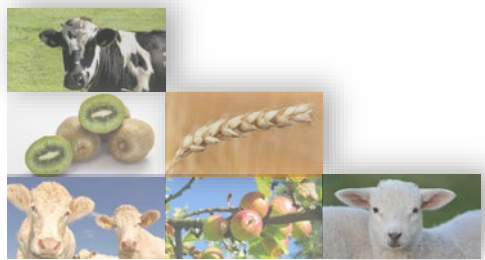


Helping agribusinesses embrace digital

Supply Chain Provenance | Genetics Recording | Livestock & Crops | Forecasting and Modelling | Nutrients

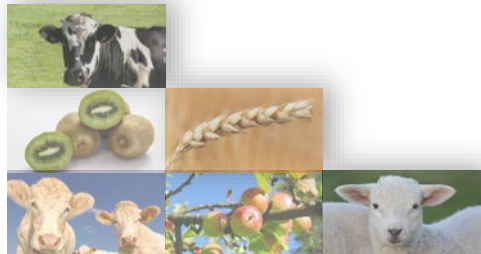
# Comparing NZ and UK:

	NZ	UK
GDP	\$185bn	\$2.6trn
GDP per capita	\$39k	\$40k

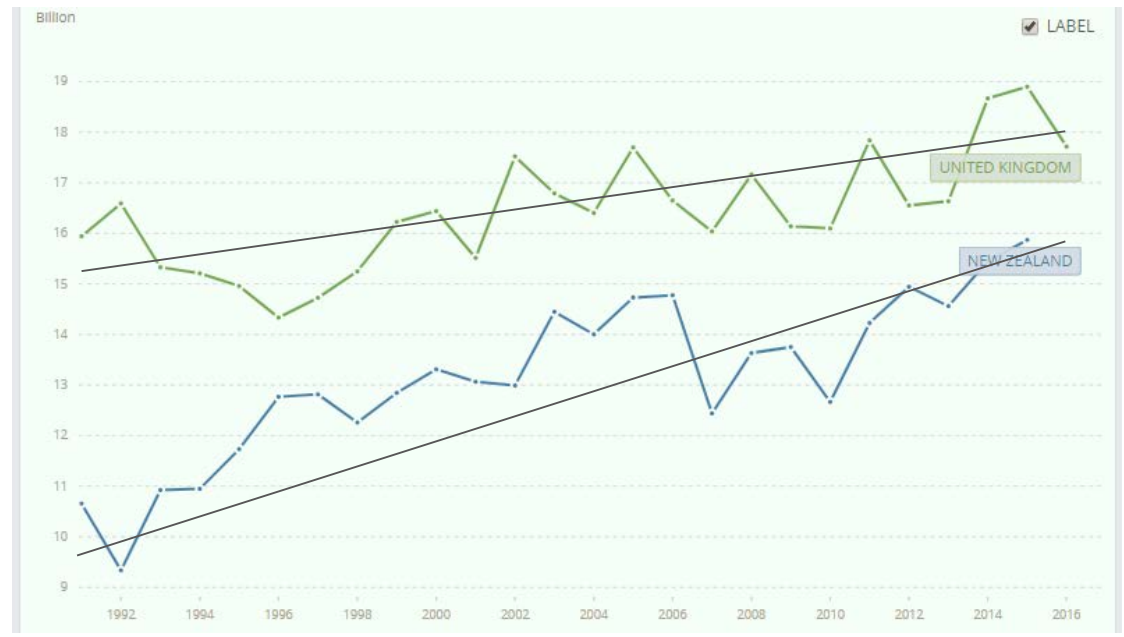


## Comparing NZ and UK:

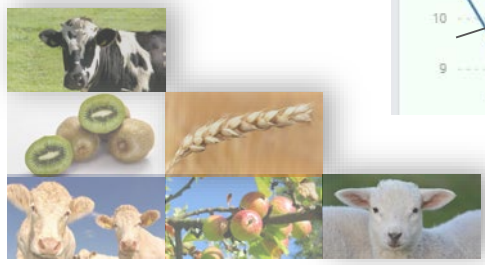
	NZ	UK
Agricultural Land	111,000 sq km	171,000 sq km
Agricultural Value Added	\$15.9bn	\$17.7bn
Agri workers	189,000	443,000
Ag value added per worker	\$84,000	\$40,000
Rural population %	14%	17%



# Comparing NZ and UK: Agriculture, value added (constant 2010 US\$)



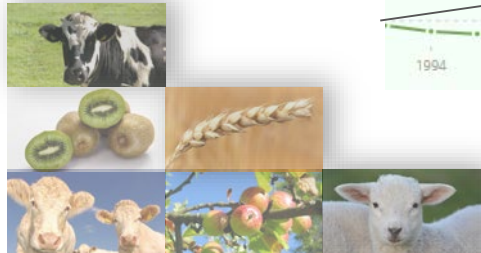
Source: World Bank Group



## Comparing NZ and UK: Agriculture, value added per worker (constant 2010 US\$)



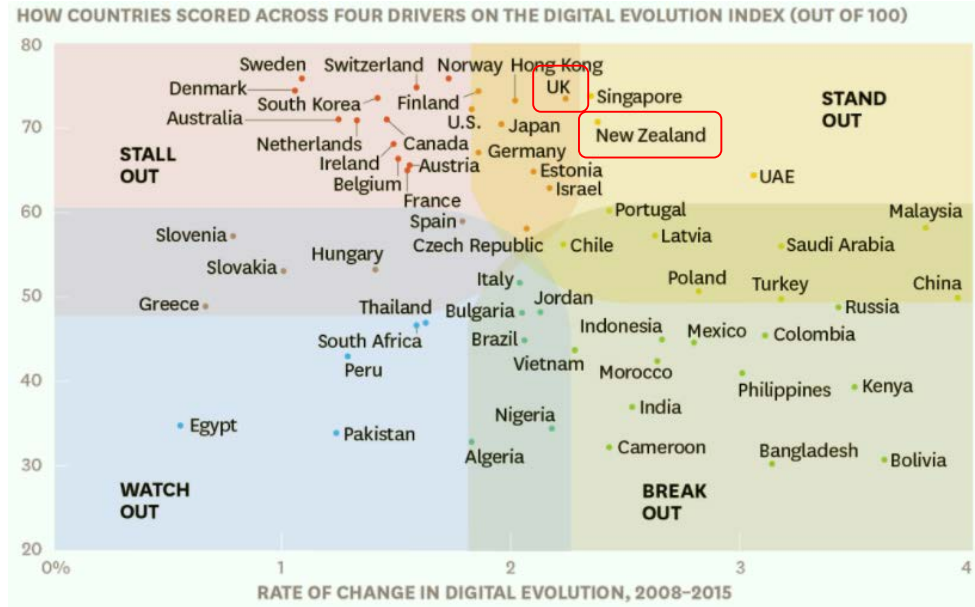
Source: World Bank Group



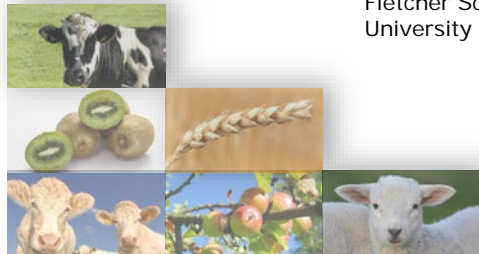
## Comparing NZ and UK: Digital Evolution Index

“ Three countries are notable as standouts even within the Stand Out segment: Singapore, New Zealand, and the UAE. Each has a unique policy-led digital strategy and a narrative that may be considered by other nations as worthy of emulation or adoption.”

Source: DEI 2017, The Fletcher School at Tufts University and Mastercard

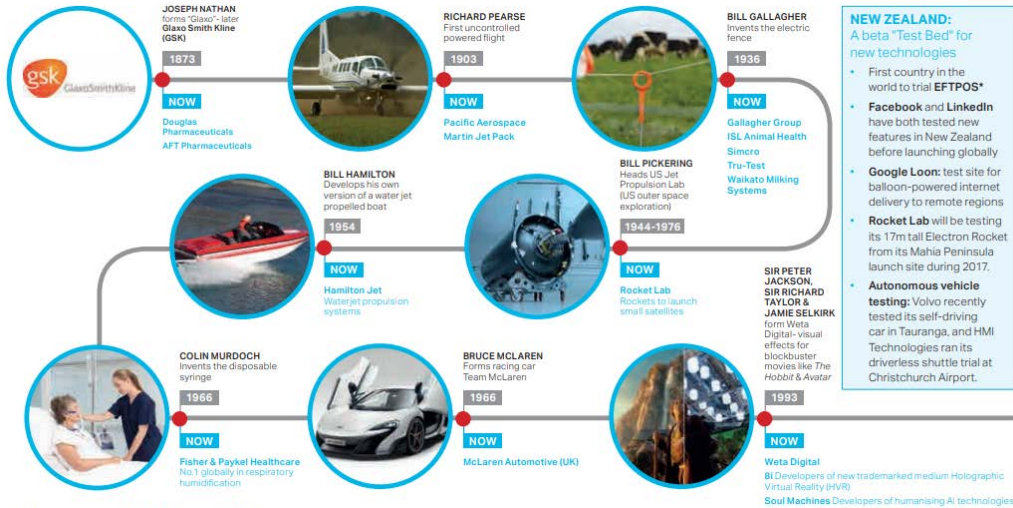


Holistic evaluation of the progress of the digital economy across 60 countries, combining more than 100 different indicators across four key drivers: Supply Conditions, Demand Conditions, Institutional Environment, and Innovation and Change.





# NZ: A land of innovators



**NEW ZEALAND:**  
A beta "Test Bed" for new technologies

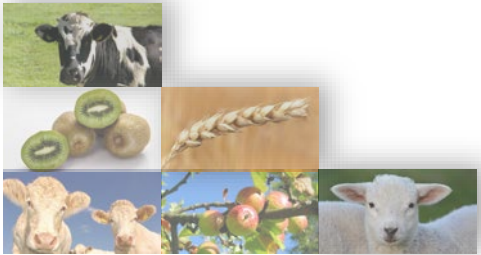
- First country in the world to trial **EFTPOS\***
- **Facebook** and **LinkedIn** have both tested new features in New Zealand before launching globally
- **Google Loon:** test site for balloon-powered internet delivery to remote regions
- **Rocket Lab** will be testing its 17m tall Electron Rocket from its Mahia Peninsula launch site during 2017.
- **Autonomous vehicle testing:** Volvo recently tested its self-driving car in Tauranga, and HMI Technologies ran its driverless shuttle trial at Christchurch Airport.

NZ first country to sign FTA with China and first to sponsor China into WTO.

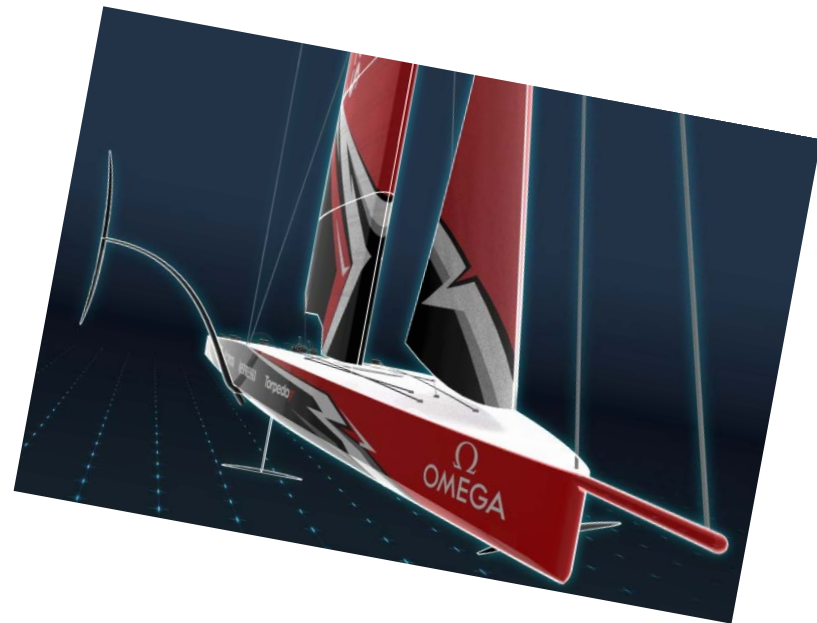


\* EFTPOS refers to "Electronic Funds Transfer at Point Of Sale".

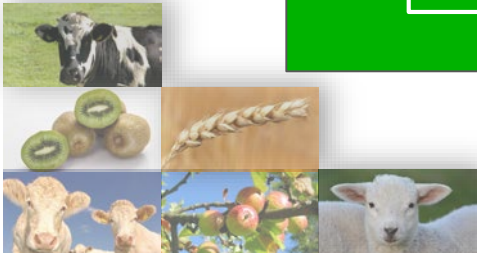
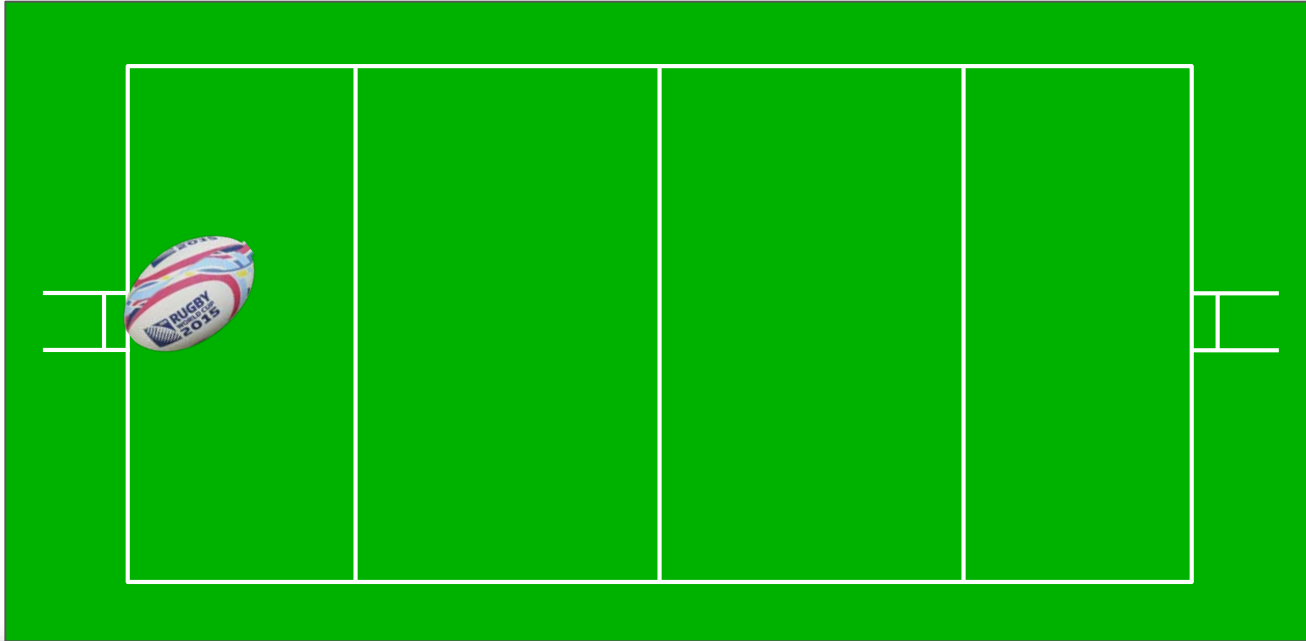
Source: Ministry of Business, Innovation & Employment



## NZ: A land of innovators



## Doing it well: 1. Open for business

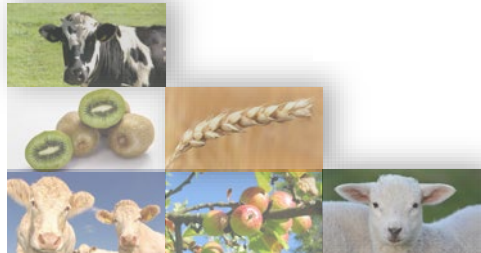


## Doing it well: 1. Open for business



*"We've answered the question of whether a company based in New Zealand can become a global business. This year we hit more than 1 million subscribers in more than 180 countries, doubling subscriber numbers in less than two years and quickly growing to become a global accounting platform leader. We're also excited about building one of the biggest small business ecosystems in the world with more than 500+ app partners growing alongside us."*

Rod Drury, Xero CEO and Founder



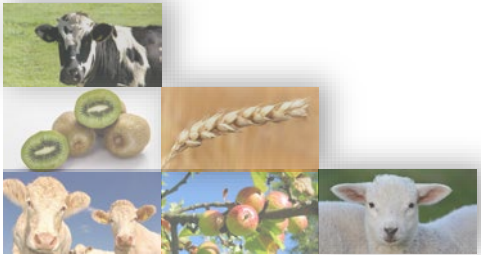
## Doing it well: 1. Open for business

New Zealand retains top spot for ease of doing business

As measured by The World Bank



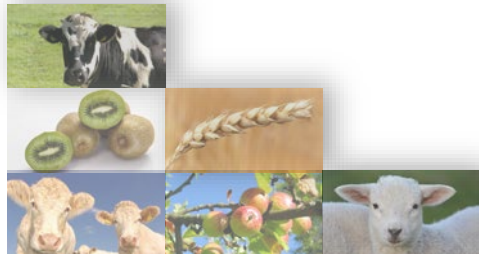
Source: Ministry of Business, Innovation & Employment



## Doing it well: 1. Open for business

~NZ\$160m a year in innovation grants

Labour also introducing 12.5% R&D tax credit



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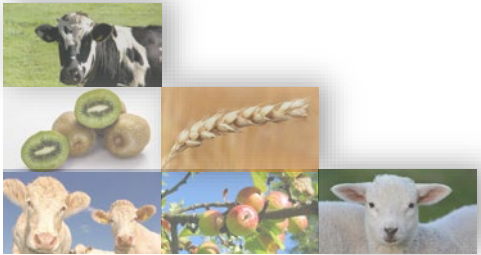
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## Doing it well: 1. Open for business



*BuzzTech*

BuzzTech creates management software for beekeeping companies that also tells beekeepers which hives need attention through software and sensing technology have turned the beehive rental company into the Xero of beekeeping.

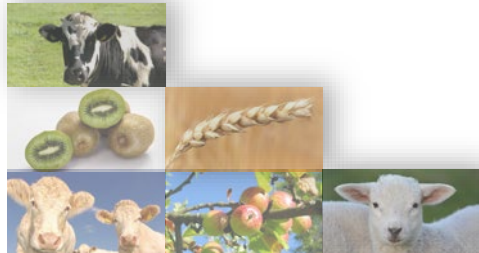


## Doing it well: 1. Open for business



*Ecotain*

New plantain developed by PGG Wrightson Seeds offering a means of reducing nitrogen leaching by up to 90 per cent compared with traditional ryegrass-based pastures.



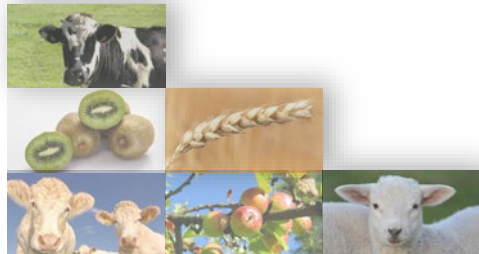


## Doing it well: 1. Open for business



## *Hot Lime Labs*

A Callaghan Innovation-developed process recovering carbon dioxide from the burning of forestry waste and feeding it to plants is set to boost global fruit and vegetable supply.

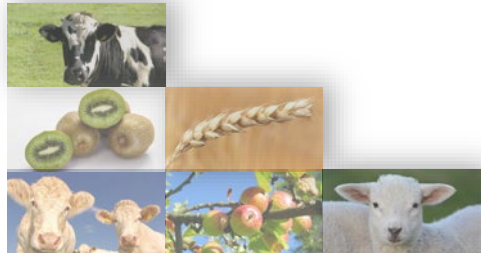


## Doing it well: 1. Open for business

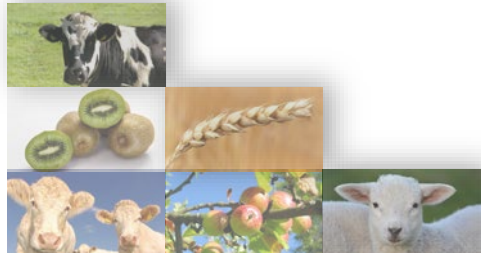
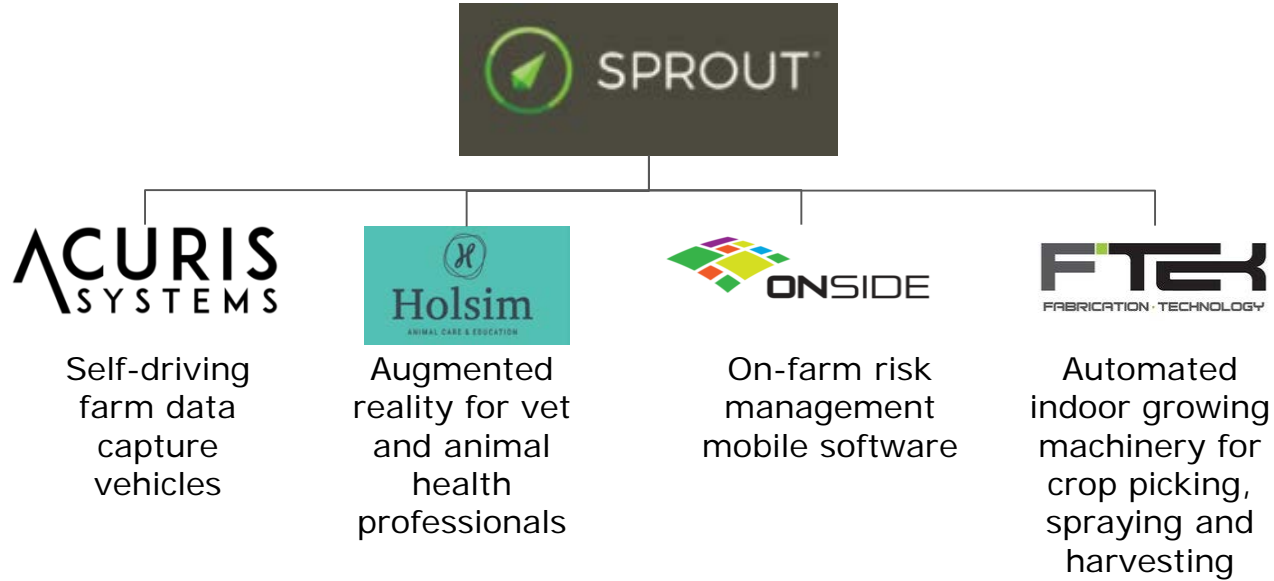
**CallaghanInnovation**



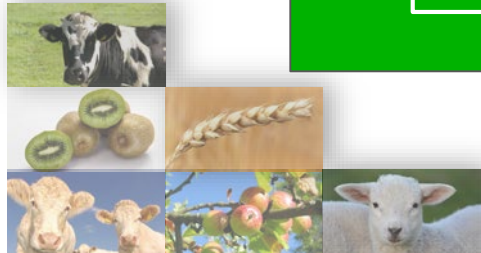
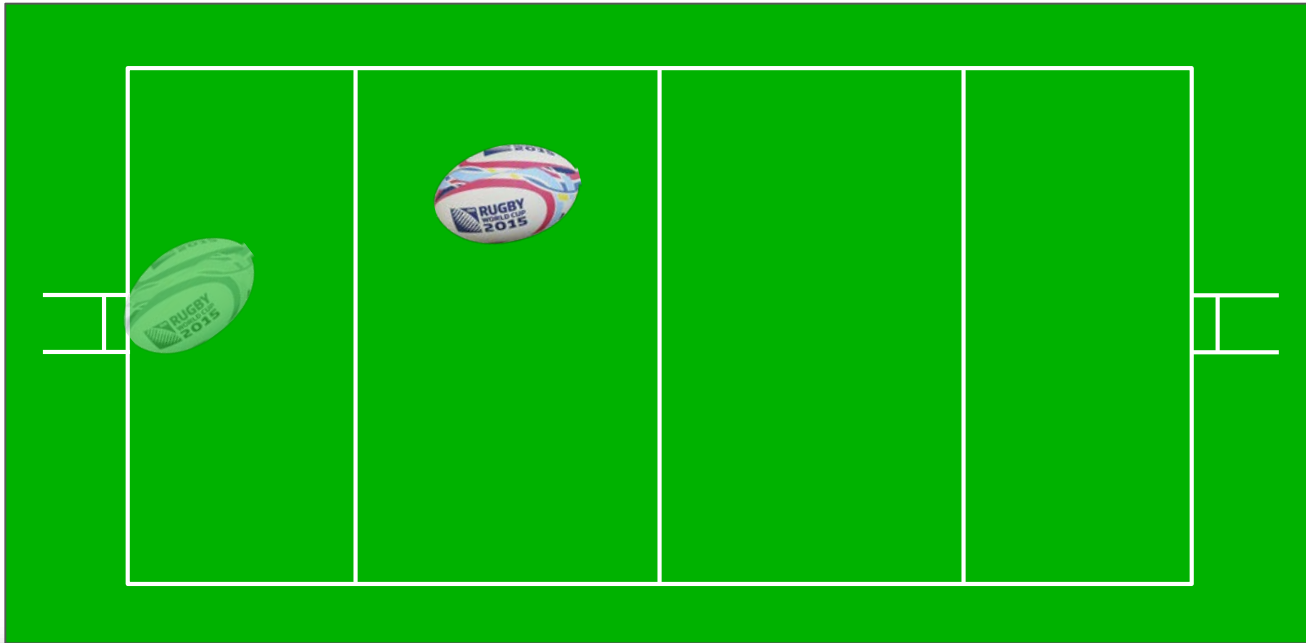
Dedicated agritech incubator



## Doing it well: 1. Open for business



## Doing it well: 2. Working in partnership

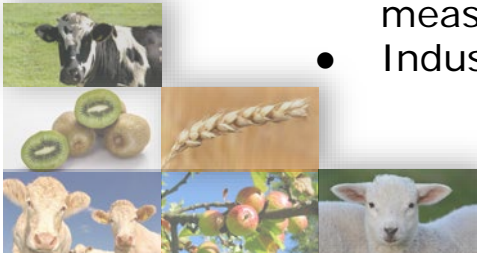


## Doing it well: 2. Working in partnership

### Primary Growth Partnership

- Joint venture between government and industry
- Investing in long-term innovation programmes
- To increase the market success of the primary industries (supports MPI ambition to double primary industry exports to NZ\$64bn by 2025 = 5.5% growth rate a year)
- 22 programmes
- NZ\$759m investment (~half government)
- 32:1 RoI...NZ\$6.4bn est. contribution to GDP from 2025
- 60+ organisations

- Focused industry outcomes & measures
- Industry led



## Doing it well: 2. Working in partnership



Primary Growth Partnership

- Big investments
- Playing the long game

**FarmIQ**  
NZ\$124m over 7 years

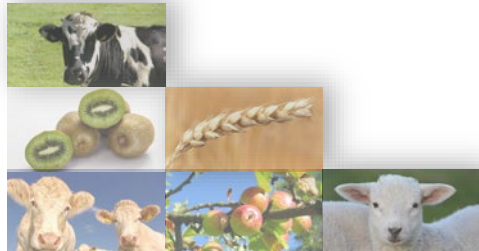
**Steepland Harvesting**  
NZ\$7.6m over 7 years

**RMPP**  
NZ\$64m over 7 years

**Pioneering to Precision**  
NZ\$10m over 7 years

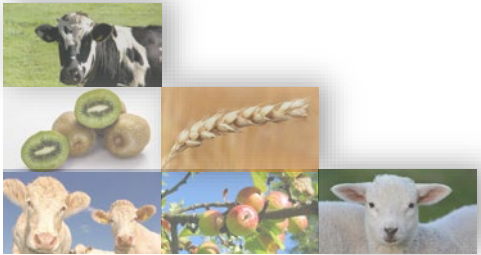
**Transforming the Dairy Value Chain**  
NZ\$171m over 7 years

**Farm Data**

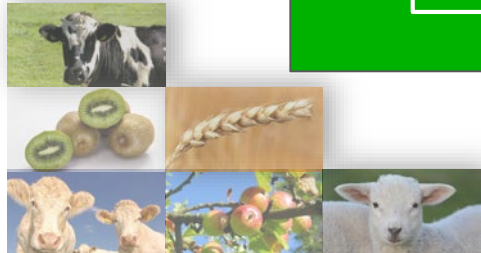
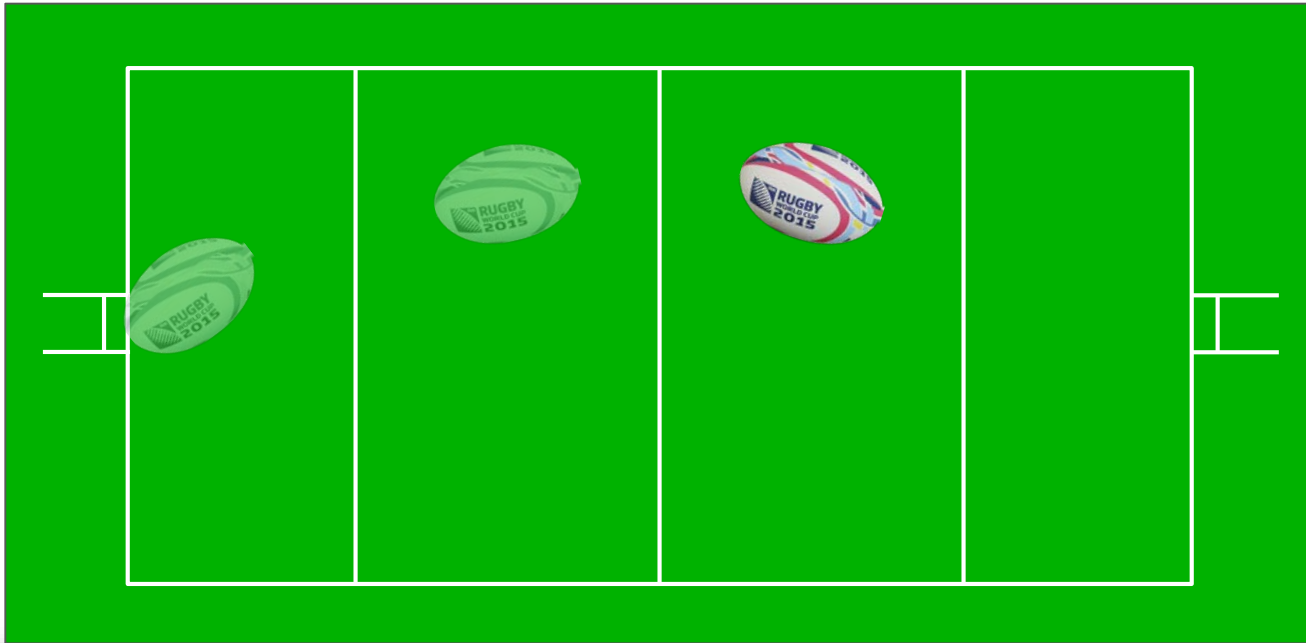


## Doing it well: 2. Working in partnership

### Farm Data



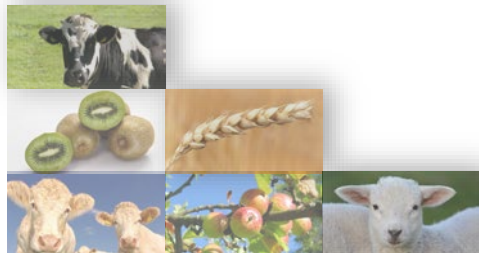
## Doing it well: 3. Global focus





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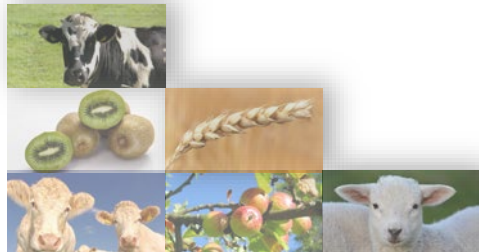
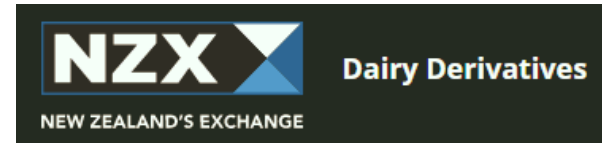
- Largest agricultural event in southern hemisphere
- >130,000 visitors each year



## Doing it well: 3. Global focus

### NZ Milk Price Futures:

- Launched May 2016
- 66.9m KgMS traded by Jan 2018
- Equivalent to 3.6% of NZ's milk supply



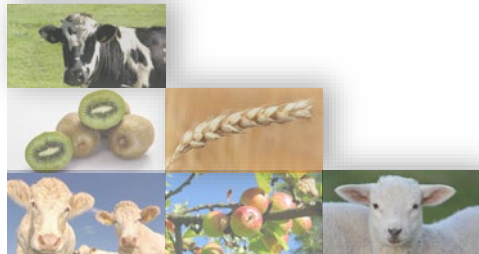
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## Doing it well: 3. Global focus

Figured cloud-based financial management software:

- Online livestock, crop and production tracking
- Farm budgeting and forecasting
- Operating in NZ, Australia, USA and UK/Ireland
- 40 people
- Growing market share
- Recent capital raise to go for UK/Ireland market

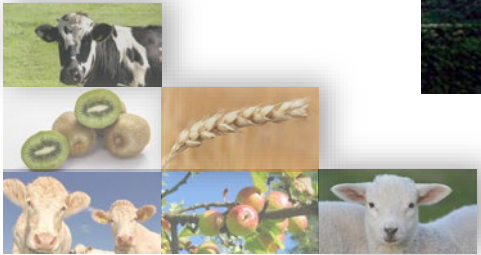


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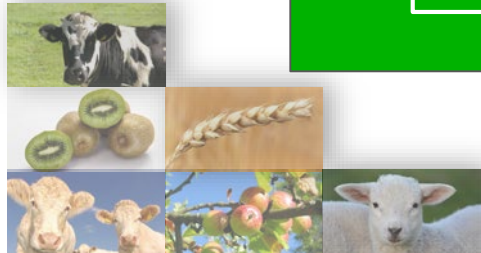
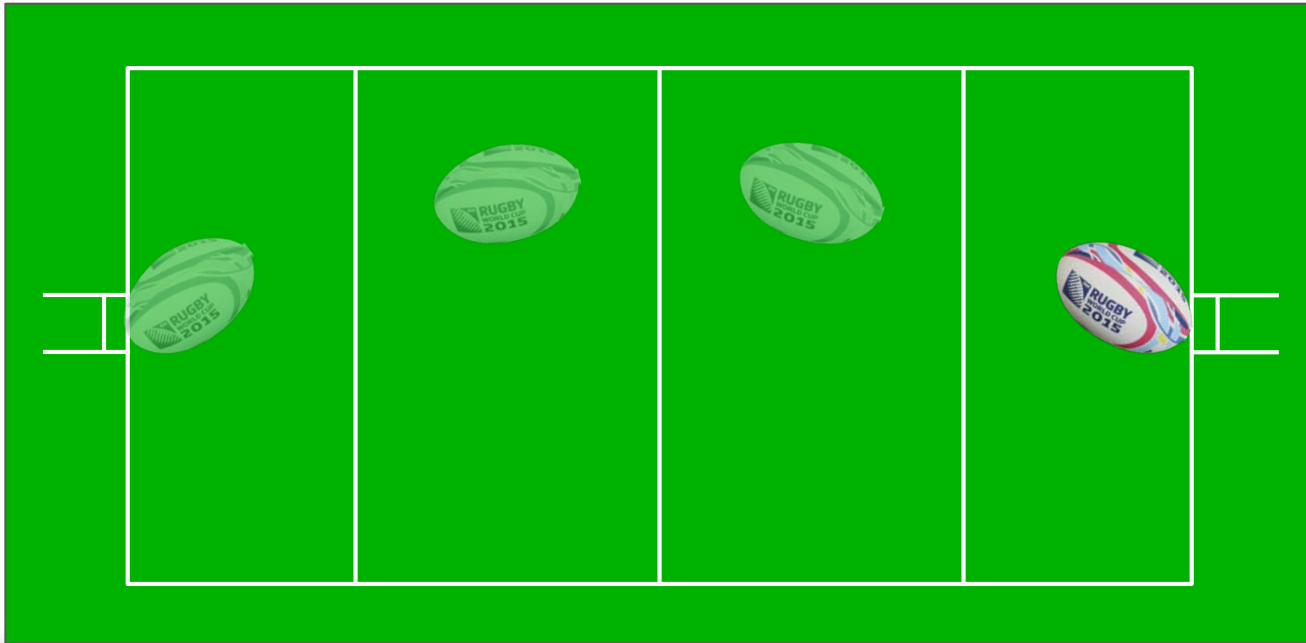
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## Doing it well: 3. Global focus

### New Zealand Trade and Enterprise: The New Zealand Story



## Doing it well: 4. Pioneering spirit



## Doing it well: 4. Pioneering spirit



Agricultural Robots



GPS guidance and job management



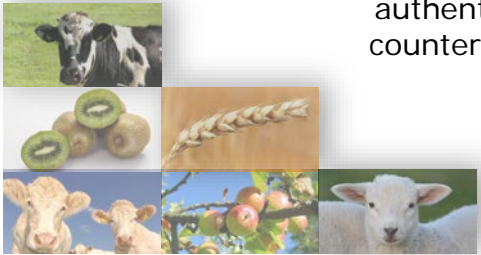
Benchmarking for the dairy sector



Traceability, authentication and anti-counterfeiting in Manuka honey

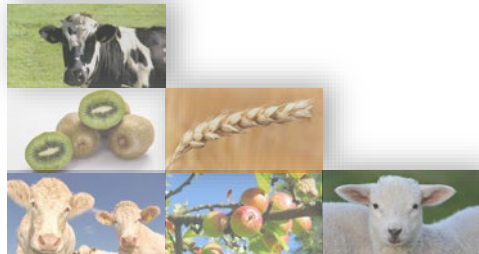


World's first electric farm bike



## Who's driving the disruption? A word of warning from NZ

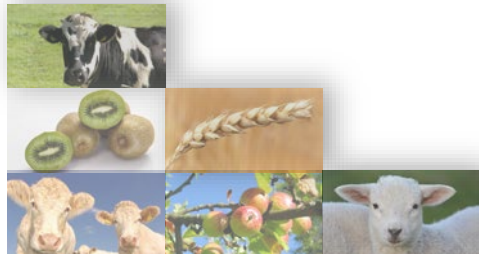
- Future perceived by technologists is one of rapid (big) change...agri-food participants see more incremental gains
- Agri-food participants don't see technology as strategic, disruptive or game changing in the way that technologists do.
- Too many in the agri sector in denial about the role technology will play
- Technology has huge amounts to offer when it comes to environmental sustainability
- There is a need for greater collaboration between technologists and agri-food participants



## Who's driving the disruption? A word of warning from NZ

So, key questions to ask...

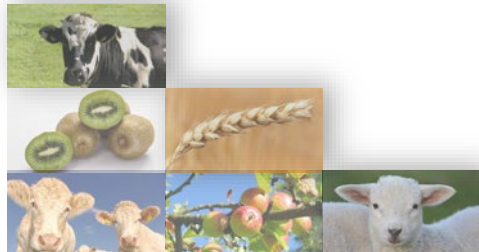
- Focus on technology for incremental change or as a game changer?
- How can agri sector be better at collaboration between the inventors and the agri-food participants?
- What is technology's role in future-proofing agri-food sector?
- What is the role of data and what might data science reveal?





## In conclusion:

- Being able to do business is vital - it needs the right environment
- Lack of farm support has necessitated efficient, market-led approach - farm support versus farm innovation in UK?
- Industry shows a lot of leadership...recent National government was supportive (Labour/Greens could be more challenging)
- Strong focus on innovation
- Distance no longer a barrier...digital technology has no bounds
- Can-do "No.8 wire" is in the DNA
- Easier and transparent movement of data essential
- New tech has to show profit gains or time savings to farmer
- Data input needs to be as automated as possible
- Primary sector becoming hi tech - but this is not (necessarily) being driven by farmers

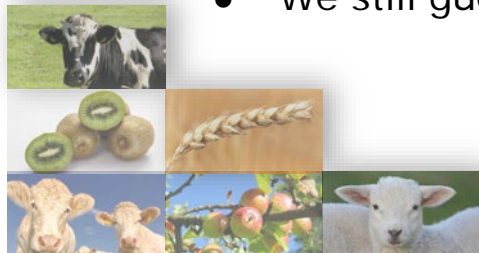


## And finally:

- We don't guess the weather...we use a weather app
- We don't guess directions...we use Google maps
- We don't guess if we can get a ride...we use Uber
- We don't guess if there's anywhere to stay...we use AirBnB
- We don't guess the best loan rate...we use price comparison

BUT...

- We still guess crop yield
- We still guess livestock growth rates
- We still guess when's the best time to sell
- We still guess if the market price will be profitable
- We still guess if we'll get paid for something we've delivered
- We still guess the real provenance of food



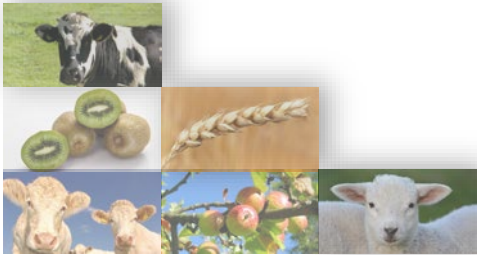
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**And finally:**

**The more guessing there is, the more likely digital will transform or disrupt\***

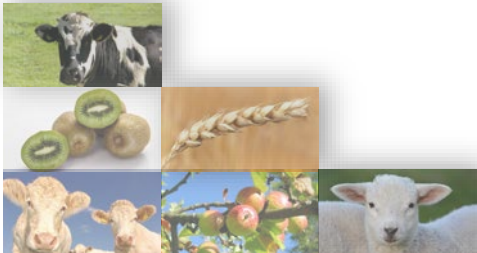
\* With acknowledgment to Alberto Brea



# Thank you

[julian.gairdner@rezare.com](mailto:julian.gairdner@rezare.com)

07484 229448



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