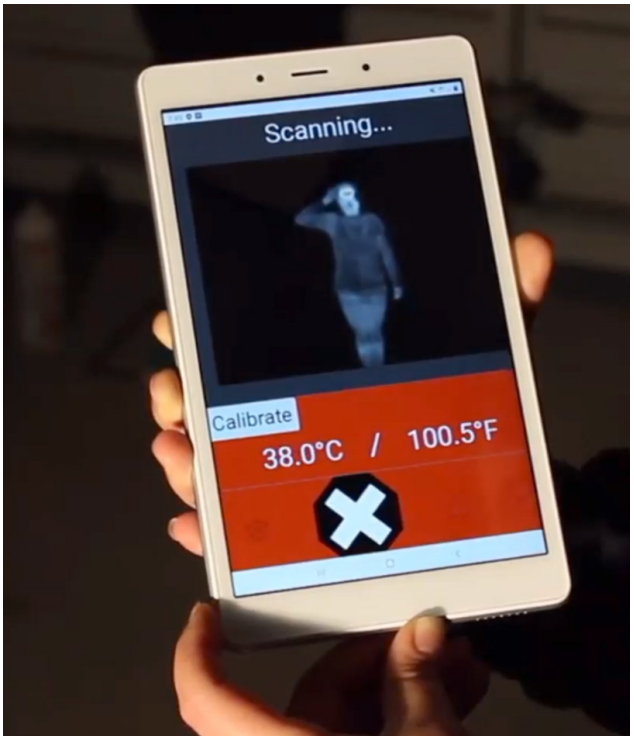
RISING
— to the —
CHALLENGE

Stories from the Covid-19 crisis



Left: Te Kahu Ora (Cloak of health) is a thermal camera to detect elevated body temperature.
Right: Grant Ryan Founder of Cacophony Project.

CACOPHONY: KIWIS DEVELOP TE KAHU ORA (CLOAK OF HEALTH) TO HELP FIGHT COVID-19

Kiwi entrepreneur, engineer, environmentalist and inventor Grant Ryan loves a challenge. As founder of the Cacophony Project he has recently been immersed in tackling New Zealand's environmental problems – developing thermal cameras to detect elusive predators that are decimating our birdlife. Then Covid-19 came along.

"The pandemic was moving quickly, with lots of people pitching in, and my brother Shaun and I were approached initially by Roger Dennis (a kiwi global business problem-solver) – to see if we could help," he says.

"Our focus early on was helping another team manufacture ventilators – but it looked like there was a long lead time to get thermal monitors to NZ and they were very expensive – so we pivoted to see if we could develop a low cost digital fix."

"We were working with the team lead by Rob Fyfe, Sir Stephen Tindall and Sam Morgan who were backing a large range of technologies that could possibly help New Zealand in this crisis."

Classic kiwi ingenuity ensued. Grant and Shaun's solution? Repurposing the AI thermal camera Cacophony had developed to track predators – to track human's temperatures. The now named "Te Kahu Ora" (Cloak of health) thermal camera for tracking people's temperature was born.

Cacophony has since been granted $900,000 from MBIE to help develop the technology, which is still evolving. The social enterprise was already receiving funding from philanthropist Sam Morgan, NEXT, an anonymous ex pat philanthropist, who lives in Europe, Predator Free 2050 Ltd, Christchurch City Council and Landcare. Cacophony

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Bill Kermode
NEXT CEO

works on an open sourced model – so all of the tech community can pitch in with, and use any of the technology. By primarily using digital tools "Moores Law" theory means that things that seem expensive get twice as good or half the price couple of years or so.

Grant says when navigating the Covid-19 crisis it isn't as easy as pointing a digital thermometer at someone's forehead and looking for a reading of 37 degrees to establish they are Covid-free.

"There is variance between different people, so that's not accurate enough in this sort of complex pandemic," he says.

"A heavy framed adult male might have a slightly different temperature to a young slim female, and someone's temperature can also vary depending on the time of day. But taking an individual and reading that person's temperature regularly you learn with more precision what their normal temperature is – that's when the data is invaluable when you are looking for Covid-19.

"With Covid it is kind of like looking for a needle in a haystack and then squashing it. A subtle difference in body temperature is a key indicator, especially in people who are pre-symptomatic or asymptomatic."

"If we can detect a subtle change, then that person can get tested for Covid-19. That can potentially prevent a deadly infectious spread. It's like a filtration system to isolate people more likely at risk of carrying Covid and is particularly useful for high risk areas, like in hospitals, airports and quarantine facilities."

"The temperature tracking can be done for just a few cents, so is very cost effective way to improve the effectiveness of Covid testing."

During lockdown different prototypes of Te Kahu Ora were trialled at supermarkets, factories, rest homes and hospitals. Since then there has been a significant development in the AI to increase its accuracy. Cacophony has collaborated with the University of Canterbury which has developed a "black body" type thermal reference technology to sit alongside Te Kahu Ora.

"Our camera sits on one tripod and the black body type thermal reference camera sits on another, opposite.

So when a person enters a building Te Kahu Ora registers their temperature, and measures it against the black body – which may be set at say 38 degrees.

"Their individual temperature should be consistent against the black body every day at the same time. We are currently trialling this with employees in rest homes in Auckland and Christchurch. The system will work with any employee card system so we can keep high risk work places safer.

"Temperature tracking may well be a part of life in the new Post Covid-19 era. Just as metal detectors became mainstream at airports after 9/11, temperature tracing will become part of security at borders, and other key places like hospitals and rest homes, and quarantine facilities."

Whilst the Covid crisis has been a distraction, the Cacophony team is still working on technology tools for its main vision – to help New Zealand become predator free. There are parallels with eliminating predators and eliminating Covid-19.

"One of the big obstacles to overcome is the trap interaction rate," Grant says.

"Our AI thermal cameras were showing that many predators, like rats stoats and possums, simply walked past traps – they weren't interested in interacting with them," he says.

"To test if that was accurate, we gathered data from the 60 best monitored traps in New Zealand, and the numbers showed on average each trap only catches 1.8 predators a year."

Whilst the currently trapping methods are good for suppression, just like Covid, New Zealand needs to look for elimination of predators, not just low numbers, he says.

"We need to develop a high catch rate device – a trap that will help us get predators to zero.

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Grant Ryan
Cacophony Project Founder

"At the moment we are working on an open live capture trap, using the AI thermal camera so birds can wander in and out of the area without becoming bycatch."

"It's an innovative approach and we are thrilled that Landcare is assisting us with funds to develop this technology.

"We really appreciate the support we have had from our backers who have been happy for us to jump into a timely problem facing New Zealand."

NEXT CEO Bill Kermode says it is fantastic to see a project NEXT supports pitch in where it can to help New Zealand through the crisis.

"Technology is going to be a key in tracking the pandemic until there is a vaccine," he says.

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Grant says the Cacophony team really appreciates the support it has had from its backers who have been happy for them to jump into a timely problem facing New Zealand.

Te Kahu Ora is going to be sold cost effectively through the company Grant and Shaun set up to sell the predator thermal cameras, a social enterprise they have called 2040 (www.2040.co.nz).

Why the name 2040? They believe New Zealand's goal of becoming predator free by 2050 can be achieved ten years earlier.

That's the kiwi can-do attitude.