

Matchmaking industry problems with science expertise

The world of science offers a treasure trove of expertise to solve problems and supercharge innovation in New Zealand industry. But how do companies know where to find the right scientists, or find out if the required expertise exists locally to help them?

This question was the focus of an event hosted last month by the Dodd Walls Centre for Photonic and Quantum Technologies (that's any science related to lasers, light and the crazy stuff that happens at the tiny scale of atoms and molecules). The event, held in the Centre's new prototyping facility in Auckland was attended by industry representatives, technology experts, investors and scientists. The purpose was to listen to their needs, ideas and experience, and find out how New Zealand universities and scientists can better serve them.

Three speakers shared their views followed by a panel discussion and a robust debate with discussion and more mingling to follow.

Guest speakers were: Andrew Somervell - VP Products & Technology, Fisher and Paykel Healthcare; Berri Schroder - Entrepreneur and Investor and Greg Shanahan - Co-founder, Veriphi, TIN Managing Director.

Here are some of the key ideas and points raised:

CoREs like the Dodd Walls Centre can act as portals connecting companies to a nationwide network of science knowledge and expertise

To an outsider the world of science can seem opaque and obscure. It is often unclear where expertise can be found or whether a solution exists at all. One of the advantages of the network of CoREs (Centres of Research Excellence) is that they span different universities and disciplines, as John Harvey, the Dodd Walls Industry Team Leader pointed out:

“One of the things we try to do is coordinate activities across different universities in a particular endeavor or field. I think that's one of the advantages of the centres that we know what each other are doing.”

An example of the connecting power of the CoREs was shared by Berri Shroder who earlier in the year was assisted by a successful matchmaking process that has since resulted in a breakthrough agricultural technology - an ear tag to measure the weight of a cow.

The story began in April at an event associated with a programme called Interface, which was organised by the Dodd Walls Centre along with the MacDiarmid Institute for Advanced Materials and Nanotechnology. The programme matched teams of scientists from the two CoREs with companies to solve specific problems. Although Berri wasn't part of the formal challenge he still managed to connect with a team of experts to solve his problem. At the time his team had the ear-tag technology worked out (a compact device containing barometers, accelerometers, magnetometers, microphones and more). But they were struggling to make sense of the data.

"When this problem came to us," explained John Harvey, "We realised that it was more a problem concerning data analysis and statistics rather than the physics of light, or materials technologies. There is another CoRE run by Shaun Hendy, Te Pūnaha Matatini (TPM), who focus on that, and we were happy to pass the project across to them."

The TPM director, Shaun Hendy gathered a symposium of scientists with expertise in statistics, mathematics and machine learning. They split into groups tackling different parts of the problem. Over one weekend at the Leigh Research Centre they were able to solve it.

"The model they've been making has now been patented," said Berri, "It will change the game completely...So I take my hat off. I am a smiling man and excited and so is everybody else."

2. Universities need to make IP agreements that work for industry

Much of the feedback from companies showed that Intellectual Property issues are one of the biggest barriers to engaging with university scientists, as Andrew Sommerville from F&P Healthcare pointed out:

"At the end of a project we need to own IP," he said "It's non-negotiable. And we really struggle with the commercialisation departments around that."

The Dodd Walls Centre's aim is to make it as easy, simple and rewarding as possible for companies to access our expertise. The Dodd Walls Director David Hutchinson responded as follows:

"The way I see it, we're funded by the taxpayer, so if the IP benefit is going to NZ companies who are paying tax, that's seems like a really good idea to me...We've spent a lot of time around this and it's absolutely clear that companies won't come to us unless we come to good agreements around IP."

This year, throughout the Interface programme, the DWC Industry team has been working with the university commercialisation offices to come up with IP agreements that work for companies.

3. An online dating agency to match scientists with companies?

So far the successful matches between DWC scientists and industry have come about through personal connections and programmes like Interface. These are the innovation equivalent of meeting a date through friends or at a formal dance. But what if clever analytics could be used to match the needs of companies with the expertise of scientists just as conventional dating services do? This is Berri Schroder's vision as he described at the Lighthouse event:

"This is not a difficult puzzle," he said. "You have two groups of people want to meet each other. On one side is a person who wishes to have something done. On the other is a person, or a collective of people, with intellect locked up in their brains. There is a natural filtering process that needs to occur. My opinion is that we need to create a technology platform to allow these two groups of people to come together...It's like a dating agency. You put down the characteristics that you want. That's mostly physical, then there's a bit of emotional, then there's practical. Then you match them up. This dating agency will short-circuit all the barriers that people like us have in joining the dots together and getting the right people doing the right job."

4. Envisioning a student culture of commercial success

Berry Schroder invited us to imagine a new culture in universities where students could earn money and social standing as they study by working with companies.

"Just imagine if we could set students on a course of commercial success, like an apprenticeship. They would gain community standing by succeeding in something and would come out of their PhD with money in their pockets for the future...**If I had known I could pay my fees or buy a house when I was at university then my attitude would have been completely different!**"

This new culture would require a new protocol including incentives for companies and students to take part. It would require support from government, universities and companies and would provide benefits to each of them. Not only would it help companies to innovate. It would give students a sense of hope and a realistic pathway for their future.

"There is nothing nicer than showing a university student that there is financial funding for the expertise they wish to gain," Berri said.

What are companies looking for in graduates?

As a large company, employing over 500 engineers and technologists, Andrew Somervell said that Fisher and Paykel Healthcare are looking for graduates with the very best technical ability in their chosen field - that no knowledge of business is necessary.

“The number one thing we get in terms of value out of the universities is people,” he said. “We hire about 50 graduates out of New Zealand universities every year and have about 75 interns working for us every summer...Essentially all we are looking for is focus on their discipline whether it's Physics, Engineering or some sort of technology - that's what we want you to be teaching them. We don't want them to be doing management courses as part of their studies, or anything else that distracts from the most technical skills. We can teach that when they come to us.”

According to Andrew they are particularly interested in physicists:

“Our CEO has a degree in physics,” said Andrew, “I have a degree in physics, two of the most senior R&D team have degrees in physics. We like physicists.”

Greg Shanahan raved about the quality of graduates coming out of New Zealand Universities, that he has employed in his start-up company Veriphi.

“The level of smarts that kids are coming out with is incredible,” he said. “They might not have life experience but the equipment that they've got in their brains is of immediate value to business...”

When choosing graduates he also went for technical ability as well as social cohesion in the startup team.

Several Industry representatives said they would like to hire more women to improve gender diversity in their organisations but have struggled with low numbers of women applicants. Some lively discussion followed as to how universities could support and encourage more women in science and technology careers.

New Zealand is already succeeding in innovation

As someone that regularly compiles quantitative data on New Zealand's innovation system for his TIN report, Greg Shanahan is in a good position to comment on the health of innovation in New Zealand. The picture he painted was extremely positive.

“Sir Paul Callaghan used to say imagine what things will be like when one day we understand that this is something that we are really good at,” Greg said. “And I think that moment has arrived. For example last year our top 200 technology companies had revenues of ten billion dollars. Total revenue grew by 8% last year. The year before it was 11%. So you’ve got a ten billion dollar industry growing at roughly 10%. Even an Irish mathematician can tell you that’s a billion dollars a year. It’s the third largest export sector after dairy and tourism. It’s 1.4 billion dollars ahead of meat and it’s going nuts...”

Rather than languishing about what’s wrong and trying to fix it, Greg thinks we need to lift our heads up and consider exactly what success could look like. Wherever we go from here will be building on success.

Contact the Dodd Walls Centre Industry team

If you have a problem or an idea, are curious about what we do or would like to come to our next event please get in touch and we’ll put you in touch with someone who can help:

General Enquiries: Diana Evans: enquiries@doddwalls.ac.nz: Ph. 0064 3 479 7973