

From Research to Reality

By Olive
Heffernan

Olive Heffernan interviews Leonard Hobbs, the Director of Trinity Research and Innovation, on its role in bringing research and innovation to a marketable reality.

Hobbs started his career as a research scientist, but soon joined Intel, where he spent the next 25 years. His journey with the global giant gave him insights into the frontiers of innovation in the ICT sector as well as opportunities to engage with universities and policy-makers in Europe and the US. As Director of Trinity Research & Innovation (TR&I), Hobbs now brings that broad experience to a role in which he leads the commercialisation of Trinity's research.

Q: What's the role of TR&I?

A: As an engineer by training, I tend to think of things in terms of inputs and outputs. If you think of the University as a black box, one of the inputs is research funding. We attach researchers to funding opportunities, and – aside from publishing – we help them manage all of the outputs from their research such as Intellectual Property (IP) Licensing, consultancy and spin out companies.

Q: What are the key areas of commercialisation emerging from Trinity?

A: Most of the innovation is in the areas of medical device technology, pharmaceuticals and ICT. That's fundamentally because resources are available to those areas of research. A lot of Ireland's focus in recent years has been on funding STEM (science, technology, engineering and mathematics). Ireland

CroiValve

Founded in 2016, CroiValve is a campus company developing a minimally invasive device to treat a form of heart failure known as tricuspid regurgitation. In patients with this condition, one of the heart's valves – the tricuspid – stops working properly, and blood leaks back into the right atrium. Treatment usually requires invasive surgery, but there's an urgent need for a less invasive treatment.

The device being developed by CroiValve was conceived by Martin Quinn, a Consultant Interventional Cardiologist, together with Bruce Murphy, an Associate Professor in Trinity's Centre for Bioengineering. Having secured funding from Enterprise Ireland, Quinn and Murphy hired O'Keeffe as CEO, a biomedical engineer with extensive industry experience in medical device development. Together with engineer Paul Heneghan, O'Keeffe is now tasked with taking the concept to full commercialisation.

CroiValve is now at the pre-clinical trial stage. To date, the company has raised over €1 million of non-diluted funding, and is close to raising a multi-million euro seed-round from early-stage and angel investors. At that stage, it will spin out. In the longer-term, the company is planning to have the first-in-man

implant by 2020, and is targeting a multi-billion international market.

The concept has received numerous endorsements, both nationally and internationally. For example, CroiValve recently won the MedTech Innovator Pitch Competition 2018.

O'Keeffe chalks some of their success up to the working environment in Bruce Murphy's Trinity lab. "The lab itself is an incubator for device development," says O'Keeffe. "It has various medical device projects at different stages of development, and we all help each other out."

More broadly, O'Keeffe notes that the Irish ecosystem around medical device technology is very strong and collaborative. "There's a lot of device innovation going on here and there's a lot of support. Ireland is a great place to do this work," she says.



Lucy O'Keeffe, CEO of CroiValve

SoapBox Labs

Launched in 2013, SoapBox Labs is a Trinity spin-out that develops speech recognition solutions for children's voices. The

company licences the technology to third parties who are developing apps, services or products aimed at children.

"People are just beginning to wake up to the fact that children's speech is underserved," says Patricia Scanlon, the founder and CEO of SoapBox Labs. Armed with over 20 years of experience in voice recognition technology – gained during stints at IBM and Columbia University in the US and at Nokia Bell Labs in Ireland – Scanlon saw this gap early on.

While many global brands such as Amazon and Google have developed their own voice-activation technologies, those aimed at children have generally performed pretty poorly. So Scanlon set about developing a better product. In 2013, she launched the company and spun it in to Trinity, which she felt would be a fertile environment for its incubation. The technology now performs 10-15% better than existing platforms aimed at children.

"This has huge utility for children," says Scanlon, naming voice-enabling toys, gaming systems, speech-comprehension and language-learning as potential applications. This year the technology will be developed in Mandarin, Spanish and Portuguese and next year in French, German and Italian.

Within 18 months, it's estimated that 50% of internet searches will be voice activated.

"It hurts the brand if something doesn't work for children," says Scanlon.

SoapBox Labs has raised over €3 million, and has grown to 15 staff, mostly located in Ireland. "We have a huge market lead right now. This has come from know-how expertise. The team has been hugely important for the success of the product".

Scanlon's advice to academics who want to commercialise is to start talking to potential clients early on, and to allow those discussions to inform the development. "Some people start the business side too late," says Scanlon. "It's quite a challenge to take something from the lab to the living room."



Patricia Scanlon, Founder and CEO of SoapBox Labs

spends around €700 million a year on research and one quarter of that comes through Science Foundation Ireland (SFI), which has a strong focus on ICT and on biological sciences. The other major funding streams in Ireland, such as Enterprise Ireland and the Industrial Development Authority, also support STEM research. And it makes sense: STEM generates jobs and there's going to be an even greater demand for graduates in that area in the future. That's where the action is.

Q: Why do you think Trinity is ranked first in Europe for producing entrepreneurs?

A: Trinity produces entrepreneurial types. We scratch our heads on what the secret sauce is, but the data is real. I have personal experience of



Leonard Hobbs, Director of Trinity Research and Innovation

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this as my son came through Trinity and recently graduated. He left with his own company. Watching him go through the whole process here, I would say that Trinity facilitates a broader thinking and gives the freedom to innovate. That might be connected to its position as a hub within Ireland and within Dublin. There's also the fact that Trinity is a HQ for a number of SFI-funded research centres such as Connect and CRANN. Many campus spin-outs are coming from those research centres, which are focused on innovation.

Q: How does Trinity support commercialisation?

A: There are two streams of entrepreneurship in Trinity. The first is student entrepreneurship, which is a programme that students opt into. It's very active. One option for student entrepreneurs is LaunchBox, a summer programme for students at undergraduate or

postgraduate level. They can pitch an idea for a company and if it's chosen, the student gets financial support, equivalent to a salary, over the summer. This acts as an accelerator and incubator for business ideas.

The other stream in Trinity is for academics. Here at TR&I, we have a full-time start-up manager who will work with any academic who has a commercial idea. The staff here will help you to get on the road towards getting it patented and to developing valuable Intellectual Property. At that stage, you might decide to either sell or licence the technology or to develop your own campus company, which will eventually spin-out.

One way in which Trinity supports academics with commercial ideas is through raising funding. There are government grants such

as Enterprise Ireland's commercialisation fund. There's also the University Bridge Fund, a €60 million investment fund which was started to accelerate the commercialisation of groundbreaking research and scaling of business ideas to a global level. Launched in 2016 by TCD and UCD, the fund is managed by Atlantic Bridge Venture Capitalists, and should run for about 5 years.

Q: What's the business model for Trinity?

A: We use a US model, which is to take a 5% revenue share from campus companies in the first round. That percentage is dilutable in subsequent rounds. We also rely on the company, when it's spun out, to licence the technology – which is Trinity Intellectual Property – back from the University.

Q: How are you developing your relationships with industry?

A: Industry engagement is very important to us. A lot of funding today is conditional on having industry involvement. People often say there's a war on talent but I think that there's a war on innovation, where everyone is competing to get the next idea. What we're seeing in Trinity now is that engagement with industry is broadening beyond collaborative research projects. We have a number of companies that we have a strategic relationship with, such as Intel.

We are also actively engaging international companies through mechanisms such as trade shows. We've just begun working with Trinity's Global Relations department to look for ways we can work together to attract world-class industry. The initial effort will be on engaging with universities overseas and as these relationships develop, then the possibility of establishing joint research programmes involving industry emerges.

Q: What are your biggest challenges?

A: Our challenges are many and it's hard to pick out a few. The end

Proverum Medical

Proverum Medical is a Trinity spin-out that is developing a novel device for treating a condition called Benign Prostatic Hyperplasia (BPH). Common in older men, the condition causes problems with urination and can seriously impair quality of life. Traditionally treated with invasive surgery, Proverum Medical is now developing a unique expander device that could be implanted during a day procedure with fewer side-effects.

Conor Harkin, the company's Co-Founder and Chief Scientific Officer, conceived the idea during his time on the BiInnovate Ireland Programme, which brings academics, industry partners and clinicians together to develop new medical technologies. Harkin originally studied medicine at Trinity, but following four years of surgery, he changed tack and joined the global investment bank Goldman Sachs. After several years in finance, he decided to combine his business acumen with his interest in medicine and returned to Ireland to take a place on the BiInnovate Programme.

In 2014, Harkin brought the idea to Bruce Murphy's laboratory at the Trinity Centre for

Bioengineering. Together, they secured €1.1 million from the Enterprise Ireland Commercialisation Fund and in 2015, Róna Ní Ghriallais joined as Co-Founder and Chief Technical Officer. Three years later, in January 2017, they spun-out.

Proverum Medical is now based in Trinity's Translation Medical Institute, which is located on St James' Hospital Campus. Adrian Gilmore, an experienced medical device executive joined as CEO last year and they now have a team of eight.

In December, they closed a €3.5 million investment led by the Atlantic Bridge University Fund. The company will soon begin their first-in-man study, which will inform them of the safety and efficacy of the treatment. That will involve implanting the device in 10 men with BPH. "It's taken us four years to get to this stage, but it's all been worth it," says Harkin. Their hope is to have the device on the market by 2021.



Conor Harkin, Co-Founder and CEO of Proverum Medical

“Trinity produces entrepreneurial types. We scratch our heads on what the secret sauce is, but the data is real.”

of the Horizon 2020 programme in Europe and the start of the next programme will be challenging. We've done well in the former and need to prepare for the latter. We have just started a consultancy office and we look forward to shaping and ramping this activity. We also look forward to deepening relationships internally, such as with the Arts and Humanities, the Business School, Trinity at St James Hospital, and with Global Relations and Development and Alumni as we explore areas of mutual interest.

Q: What is the future for university start-ups in Ireland?

A: We're in an era of change. Business models are changing and people are more empowered. You can easily work from home now, because of the internet. The world's biggest taxi company doesn't own a taxi and the world's biggest hotel company doesn't own a hotel. It's not just big companies that succeed. This generation of students sees themselves as potential entrepreneurs. I grew up on an island but these guys are citizens of the world.

There's also a huge interest in commercialisation; banks are now good at giving small amounts to help start-ups. And globally, people see Ireland as a role model for transforming a rural economy into an innovation economy.

ABOUT THE AUTHOR

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