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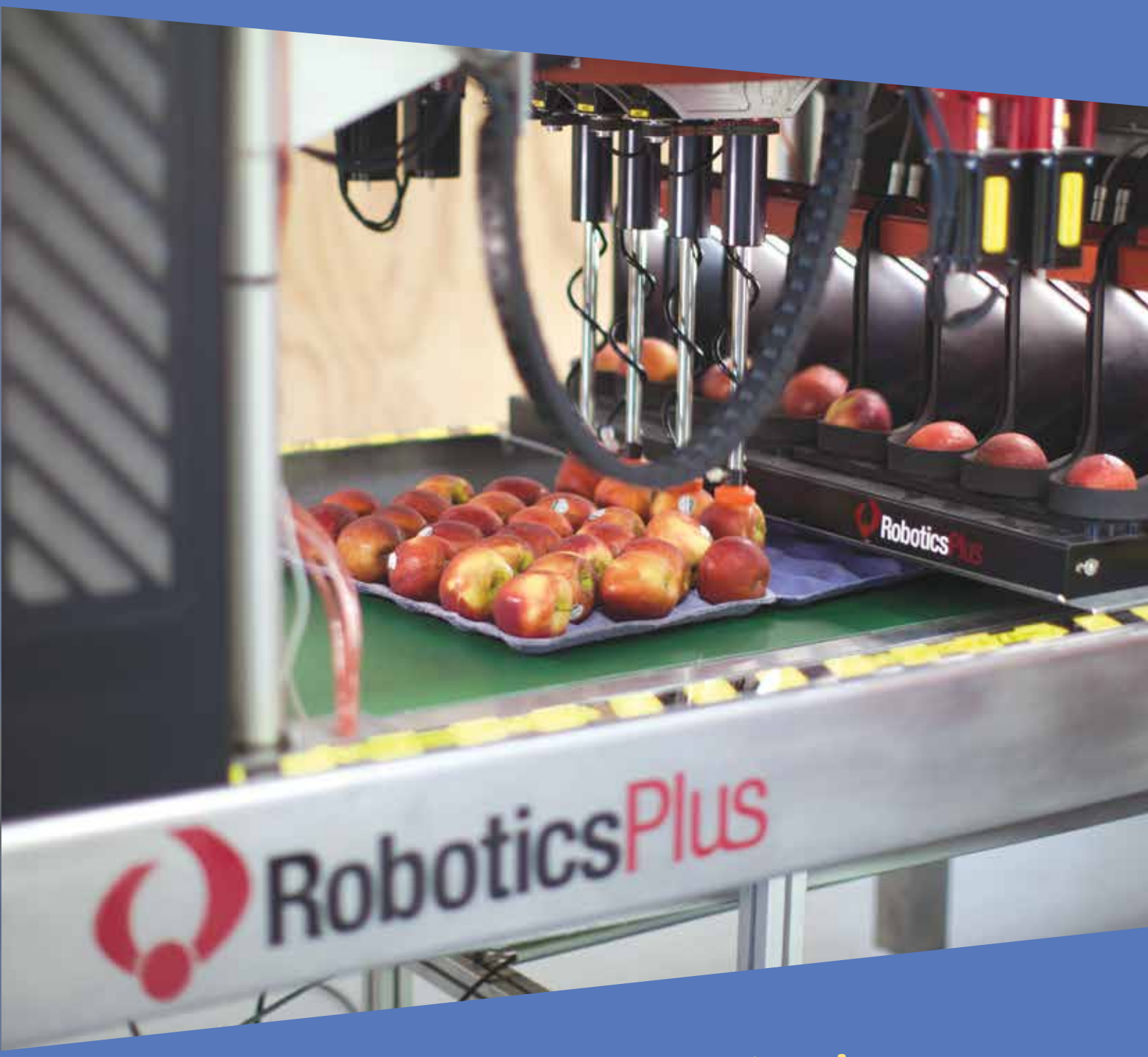

Robotics Plus:
GLOBAL PARTNERSHIPS FOR AGRITECH GROWTH

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THE COMPANY

Robotics Plus Limited is an agricultural robotics and automation company established in Tauranga in 2008 by Alistair Scarfe and Steve Saunders. The company develops mechanization, automation, robotic and sensor technologies for horticulture and other primary industries.

The Robotics Plus story began when Scarfe, an engineer with a PhD in industrial automation, established a partnership with Steve Saunders, who was then Managing Director of Plus Group Horticulture. They aimed to develop technology to address labour shortages in packhouses. Saunders, now the board Chairman of Robotics Plus, recognized that horticulture faced a looming problem of labour shortages that could be addressed through robotic solutions.

Robotics Plus has won several awards recognizing its achievements in applying cutting edge science to traditional agricultural systems. The company and its partners have developed a range of technologies, including a robotic apple packer, robotic truck scanner, autonomous agricultural vehicles, a robotic pollinator and kiwifruit harvester. New Zealand's agriculture industry serves as a test bed and incubator to develop its global technology solutions.

Robotics Plus successfully attained its first year of revenue in 2017 and currently has a team of 41 staff and 4 researchers. A key focus for Robotics Plus in the near future is to actively recruit more engineers to add to their current team.

With an ambitious global growth plan 'to provide truly disruptive robotic solutions that many in the industry are looking for', the company successfully secured a total investment of U.S.$10 million and sealed a partnership agreement with Yamaha Motor Co. of Japan in 2018. In the same year, Robotics Plus signed an agency and distribution agreement with Global Pac Technologies, a joint venture between United States company Van Doren Sales and New Zealand-owned Jenkins Group, for the company's revolutionary robotic apple packers to go global. The apple packer identifies and places apples in their trays and can safely handle up to 120 fruit per minute, the equivalent of two people, and is already operating in packhouses in New Zealand and the U.S. The company anticipates market demand in places facing growing shortages of labour, including the North Asian countries with aging populations, as well North America, Australia and Europe.

CHALLENGES

As a young company, Robotics Plus has had to overcome several challenges, many of which are shared by other New Zealand start-ups. This section focuses on issues faced in bringing the company's innovative technology to global markets from a small and distant base.

Technical and manufacturing challenges

According to Saunders, 'success in agricultural technology is not just about solving challenges today, but is about imagining how automation will transform the agriculture of tomorrow and creating the technologies that will enable that vision.' The technology required to meet the labour shortage problems in horticulture is inherently complex. The company's automated machines need to be able to 'distinguish fruit for harvesting, flowers for pollination, or objects around the machine for navigation' – and they need to be able to cope consistently and automatically with the vast amount of variability within both crop and environment. Unlike robotics in manufacturing contexts, where parts manipulated by a robot are man-made, in agriculture there are far more variable and complex. In the case of the company's apple-packing robot, for example, 'appearance, size, shape and position' are all inconsistent and the robot has to be able to match a human's ability to detect different apple varieties, colours, shapes and blemishes.

Meeting these demands meant acquiring significant capacity in hardware development, software and artificial intelligence capacity. The company needed to attract top-of-class human resources with skills and talent in engineering, design and software development. Recruiting highly skilled staff tends to be challenging even for the largest companies, so a relatively high-risk start-up environment can make it harder to attract talent.

There was then the dilemma of how much to invest in manufacturing capacity. Should the company focus on proof of concept, or go further and invest in independent manufacturing capacity for supply to world markets? The facilities to take on manufacturing at scale would require enormous capacity and thus represent a significant amount of risk.

Scale and distance

New Zealand size and distance from world markets present some inherent problems. 'We don't have scale in New Zealand, so if we're going to scale, we have to be globally relevant', says Dr Matt Glenn, the CEO of Robotics Plus. Yet the New Zealand environment does not make getting to scale easy. Referring to the apple packing industry as an example, New Zealand's industry is 'dwarfed by the Italian apple packing or apple industry in North America.' The company would need to look outside of New Zealand to be viable.

As a small company with a relatively young staffing profile, Robotics Plus needed to demonstrate enough credibility to convince a variety of partners – investors, distributors and ultimately end-users – that it had a viable product and the ability to deliver on promises. This task, as the company found, required both technical skills and the "soft skills" associated with experience and cultural competence to communicate with key partners in Japan and elsewhere. As captured by Glenn, they needed to demonstrate that they had a solution for 'a big global problem', that they were developing the intellectual property and know-how that would give them a competitive advantage, and that they had the 'right people around the table who can actually deliver. You have to have all three of these things, otherwise you are un-investable.'

Difficulties with the initial business model

The company's initial service model was similar to a leasing approach that avoided confronting growers with a significant capital cost. They had thought that, according to Saunders, 'one of the hardest things is getting people to adapt to technology.' To convert people

to their technology, the company initially believed that it would help to keep the up-front costs low and emphasize the '24/7 reliability' at no additional cost. With the idea of taking away the pain of buying a very expensive piece of technology in the early days, their machines were not sold as a capital investment to firms, but on a model that saw costs accruing on the basis of how much fruit was actually packed, pegged to current labour packing costs.

However, the company found this was a problematic and difficult model in practice, due to the lack of control over how the end user utilizes the technology. Problems could occur, for example, if the machine was used incorrectly such as by feeding it with inconsistent fruit. Under the initial pricing model, users did not have strong incentives to make optimal use of the technology. It could also be difficult to tell end users how make changes to their practice.

STRATEGY

Securing a partnership with Yamaha Motor Co. Ltd, Japan

Robotics Plus turned to an international partnership as a means of tackling a number of its challenges. A source of investment finance was necessary, but money was not the main consideration. Glenn recalls that they had several offers of financial backing, but the key factors they sought in a partner were credibility in the areas of manufacturing prowess, global reach, brand recognition and being able to leverage an international network of relationships. Yamaha, with a long-established, globally-respected brand and the capacity that comes with 6,000 employees around the world had a great deal to offer on all counts.

By the end of 2018, Robotics Plus had signed a partnership agreement with Yamaha Motor Co. Ltd of Japan that brought the Yamaha investment in Robotics Plus to $10 million in Robotics Plus. Forging such a major partnership required a significant investment in time and effort over more than three years. It began, according to Glenn, when Saunders went on a joint New Zealand Trade and Enterprise (NZTE), Callaghan Innovation-organized visit to California, where he met the then Chief Operating Officer of Yamaha Ventures, based in San Francisco. The two men kept in touch over the next year, before a second meeting at which they discussed in concrete terms what investment opportunities might be possible. It then took another 12 months or so for Yamaha to go through its own processes of due diligence and refinement of a partnership model. And then, when it seemed all agreed, Yamaha itself went through a restructuring which saw responsibilities reallocated within the firm. This meant that the initial investment early in 2018 was for only $2 million, extending the time for the Robotics Plus team to continue the conversation with senior Yamaha executives in both California and Japan.

At first, their initial contact in Yamaha Ventures was an observer on the Robotics Plus board, and eventually a senior Japanese executive became a full member of the board. These key players from Yamaha Ventures were able to help the company engage with Yamaha's decision-makers in Japan. Although small in capital terms for a company the size of Yamaha, the eventual $10 million investment was in fact their largest globally, with the exception of mergers and acquisitions where Yamaha took full control. Yamaha's approach was conservative. The Robotics Plus team 'wrote a lot of documents. We prepared a lot of financial statements. We did the business plans. We did the presentations. We met with what seemed like everyone. It went through two rounds of process before it got to the final decision with the Yamaha board.' And at that point, Glenn recounts, the key Yamaha decision-maker turned to his colleagues and asked, 'do you trust them?' The trust they had established allowed the deal to go ahead.

Managing and leveraging the Yamaha partnership

Yamaha's involvement in Robotics Plus is poised to help expand the company's global footprint and brings significant manufacturing expertise and capacity. According to Saunders, Robotics Plus has deep roots in horticulture and has built up a strong team of talented robotics and automation engineers. By joining forces with Yamaha, they were in a position to provide truly disruptive robotic solutions that many in the industry were looking for. Glenn added that Yamaha 'brought about scale as they already have a significant robotic division and they have a wealth of experience in it.'

The partnership deal delivers 'value that is greater than money', says Glenn. In addition to manufacturing expertise, the partnership has brought benefits in terms of legitimacy and credibility to a small start-up from New Zealand. The Yamaha connection adds to the company's network of relationships. Glenn points out that, 'wherever we go in the world, Yamaha is ensuring that we are meeting and connecting with the key Yamaha executives.' Over a recent 12 month period, the company has also hosted over 35 visitors from Yamaha. The value of these connections may not be immediately realized in an instrumental sense; the important thing is to nurture the relationship. In Japanese culture, notes Glenn, the relationship comes before the business deal.

The partnership requires cultural competence. Glenn notes that the team has enough experience in Asia to know how to adapt to what can be a more formal, hierarchical culture. They take the lead from their Japanese counterparts, for example, in terms of how they address people. They know that 'there's a time and place to be casual and a time and place for being more formal.'

Shared values across the two partners have had a positive effect. Saunders commented that, 'the Japanese cultural values aligned a lot with our Māori values – they are long term, they are intergenerational, very culturally oriented, so we like that.'

Glenn emphasizes that it has not been a matter of assimilating into the larger firm's culture. Yamaha recognizes the strengths of the Robotics Plus organization and culture, in terms of speed of decision-making, fast-moving innovation and agility. Yamaha may have the depth and scale of manufacturing expertise and global presence, but they don't want Robotics Plus to lose its distinctive strengths as a high technology kiwi innovator.

The partnership is not a substitute for developing local capacity, but a means to increase it. Saunders has noted that 'we have great capability and great young minds.' Attracting multinationals that are interested in New Zealand technology is a pathway by which 'we can create the environments for our young talents coming out of university into global high-tech companies that have an R&D base in New Zealand.' This can help address challenges associated with building local capability and retaining of world class talent. The wealth of experience and institutional knowledge of Yamaha Motor can create 'a fantastic opportunity to develop great young talent out of New Zealand', says Saunders.

Adopting a distributorship model to go global

In May 2018, Robotics Plus signed an agency and distribution agreement with Global Pac Technologies, a joint venture between United States company Van Doren Sales and New Zealand owned Jenkins Group, for the company's revolutionary robotic apple packers to go global. Both companies have a presence in almost every packhouse in New Zealand, Australia and the U.S. Robotics Plus sees advantages in working with Global Pac Technologies, leveraging their global packhouse relationships to expand distribution of their apple packers to markets beyond New Zealand. Global Pac, says Saunders, 'share our vision for the future of packhouse automation and together we aim to transform the global horticulture industry.'

Adopting the distributorship model enabled after sales service and support to be promptly provided to customers such as advice, training and service follow up. 'It would take us years to replicate the relationship and connections that Global Pac have' says Dr Glenn. Global Pac has the global presence, instrumentation as well as support and maintenance staff.

Rather than trying to duplicate the resources of an established operator, Robotics Plus has adopted a strategy of specialization that relies on good distributors.

Leveraging NZ Inc

Developing a knowledge-intensive business requires a strategy that can tap sources of skill and the local networks that help convert research ideas into commercial prospects. Robotics Plus established research relationships with the University of Auckland, the University of Waikato, Massey University and Plant & Food Research. The company's eight researchers who are concurrently pursuing postgraduate research degrees while also contributing to the company's capacity connect research and the commercial world. The company is also a founding partner of PlantTech, an industry-led research organization based in the Western Bay of Plenty.

The company's innovation and growth journey has also been supported by central and local government agencies: Callaghan Innovation (New Zealand's science commercialization agency), NZTE, the Ministry of Business, Innovation and Employment, the Ministry for Primary Industries and Te Puni Kōkiri. Robotics Plus had funding support from Callaghan Innovation, with funds committed through to 2021 to support its R&D programme. As a member of NZTE's Fast 700 programme, Robotics Plus has tapped into another source of support, advice and connections. The long gestation periods and risks associated with the commercialization of knowledge-intensive innovations mean that there is often a funding gap to bridge. But Robotics Plus has been able to leverage the NZ Inc network for more diffuse types of benefit as well. Glenn cites the example of a fortuitous opportunity made available through a former New Zealand diplomat associated with New Zealand Golf – which provided an entry to a New Zealand Golf event that the company used to invite a key Yamaha executive to New Zealand. Networking on the golf course, of course, is no substitute for the hard grist of research – but converting scientific knowledge into a global business involves more than science.

RESOURCES

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