

Developing Technology to Empower Researchers in Neurorehabilitation and Beyond

Career paths in neurorehabilitation aren't limited to working in a laboratory, clinic, or traditional academic setting. For Anne Vivian-Scott, MBA, PEng, President and CEO of Kinarm, the path into the field grew from a background in engineering, business, and technology commercialization. Anne has been a valued member of the ASNR community for years, engaging with researchers, clinicians, and trainees through the Kinarm exhibitor booth and other activities at the ASNR Annual Meeting. We invited her to join us for an interview to share her experiences building a career at the intersection of industry, technology, and neurorehabilitation.



1. Can you share your career path and how you got involved in the field of neurorehabilitation?

I am a generalist by training, which gives me a broad view on any project I tackle. As a professional engineer with an MBA, I've worked in fields as divergent as engineering construction in the chemical industry to the fast-paced high-growth telecommunications sector during the boom in the 1990s. Engineering construction taught me the power of collaboration, and I embraced specialized technical teams held together by the project management team. The boom and bust of the telecom sector left me committed to "doing things differently". I will always run a business with high ethical principles focused on the customer's needs. It's fascinating that, in my short career, I've worked through three such boom cycles: telecom, dot com, and now AI.

A return to a small university town, Kingston, Ontario, forced me to re-think my career direction. I fell into the then-new world of technology commercialization—or technology transfer—at Queen's University's PARTEQ Innovations. I've spent most of my career dedicated to the challenge of commercializing university-sourced discoveries into sustainable product and business opportunities. Kinarm, my current employment, was one of the projects I worked on: a labour of love and patience to translate one neuroscientist's 'tool' into a general purpose platform for neuroscientists and clinician scientists studying brain function and dysfunction. Essentially, Kinarm Labs allows researchers to monitor and manipulate the upper limb to understand brain function, and to quantify brain dysfunction. It was through Kinarm that I first learned about neurorehabilitation research.

I hadn't thought much about neurorehabilitation before working with the team at Kinarm. However, in helping them further develop their platform to be used by others, I became more excited about how tools like this one could help researchers.

When Kinarm started, we were only selling to basic researchers—neuroscientists attempting to turn what was then a black box of neural circuits into clear paths of function tied to various anatomical regions. It was pretty hardcore, and it was tough for me as a non-scientist to understand their science. When we realized the tool could also be helpful for those studying brain injury and disease, I suddenly felt like I had met my people. Not only could I better understand and appreciate their science, but I also saw some significant challenges in the field with respect to the subjective nature of assessment. The team at Kinarm really hoped that technology, and more specifically, robotics, could help them address those challenges. This could allow the field to advance the scientific understanding of movement and how movement is impacted by neurological conditions as well as the recovery process.

2. What was your experience like working in technology transfer, and what are some valuable lessons that you learned in that role?

Technology transfer was a completely unknown role to me. The overarching objective with technology transfer is to translate, or make available to the public, the output of university research. The thinking is: the taxpayer funds research; they deserve to have the benefit of accessing those discoveries to improve their lives. Technology transfer pulled together many disciplines that were unfamiliar to me: technology or discovery evaluation, intellectual property protection (most often patent protection), new venture creation, venture funding, and finally, business development.

At all times, we were working to identify whether this new discovery could have an impact: who needed it, and what problem does it solve? This often led to challenging conversations with researchers who came to us with their beloved research projects, hoping to patent or commercialize their work.

The first step in any new project is assessing the uniqueness of the invention. It's important to make sure someone hasn't made the same discovery before, or that someone else hasn't already staked a claim to it through a patent. You can imagine how disheartening it can be to a researcher to find out that the idea that they've carefully nurtured for years doesn't pass this first test. We in the tech transfer office had to deliver the news to them that we were rejecting their invention because the field was too crowded or the solution was known.

Those were very difficult conversations! How can you build a relationship with a researcher (so they tell you about their next discovery), when you've just told them you're not interested in their current invention?! Diplomacy was essential. It also taught a valuable lesson to many researchers to consult us early. They would come talk to us as early as the grant writing stage, to ensure they had a good understanding of what challenges they might have in staking a patent claim. I strongly encourage any researcher to consult with your tech transfer office early in the discovery process.

The next step was determining what issues we had to address, or value we had to add to this new finding, in order to 'de-risk' the technology to a prospective developer or licensee. Oftentimes, we filled the 'gap' by creating new companies. In that capacity, I acted as the general manager, bringing together the academic inventors as founders/shareholders in the new company, writing business plans and taking the founders to VC firms to pitch their innovative idea. It was a very collaborative relationship with the researcher. They spoke about the technology. I spoke about the commercial potential—the spin—and importantly, we launched a large number of new products and services, punching way above our weight for a university of our size.

3. Can you tell us more about your current role at Kinarm and what it has been like for you to lead the company?

I'm officially the President & CEO of Kinarm, but really my role is better described as the General Manager. I pull together all of the functions necessary to deliver high quality products to our customers at universities and rehabilitation institutions around the world. As a Kinarm is a very complex electro-mechanical device, most of our team is focused on creating and maintaining the hardware, control system, and data collection and analysis software that allows a user to run their self-designed experiment.

My role has been focused on working with new customers who need Kinarm for their research program. Yes it's "sales," but I see my role more clearly as a "facilitator." Using a Kinarm is not their objective. Rather, a user is trying to understand what has happened to the brain due to a brain injury or disease, and to develop new ways to improve their recovery or mitigate the impact of the disease. Kinarm is a fancy measurement tool that allows them to answer those questions. We're not the "flash," but an enabler to the "flash".

For me, leading Kinarm has been a challenging, but rewarding experience. My position gives me the opportunity to shape the direction of the company, make meaningful changes to adapt as the field evolves, and contribute in a small way to advancing neurorehabilitation research.

4. What do you enjoy most about working as an industry partner in the field of neurorehabilitation?

I love the personal motivation that I often see in our users, and it can be contagious. We have all been touched by brain injury or disease in some way. Everyone knows someone. Researchers in this field really amplify the economic and emotional cost of brain injury and disease in a way I haven't seen in other fields. I love being 'part of the solution' to finding a way to make things better.

5. How can industry professionals collaborate with scientists and clinicians to help advance research and clinical care?

I think/hope we are really seen as partners in their research programs. We don't just sell equipment and then step back. Industry partners want scientists and clinicians to get the most out of the tools we create to allow the researcher to reach their research and clinical goals.

When I make that first connection with a prospective user, to me it's the start of a career-long relationship. I hope our customers see us that way too. Ideally, industry partners and the people they serve should have an ongoing dialogue so we can keep working together to innovate, address new issues that arise, develop new tools to meet their needs, and learn from their feedback to make our products and services better.

Any technology is hard to develop and even harder to maintain. While I admire a scientist who is able to develop their own solution (as our founder did!), I think maintaining and updating a technology platform takes effort and can really detract from the prime jobs of any researcher: experimenting, publishing, and grant writing! I hope scientists will see the value of industry to help them get to a solution faster and give them the freedom to focus their time and energy on the research questions that they are most excited about and will have big impacts on the field.

6. What have been some of the impacts and benefits of your engagement with ASNR and our members?

I have really enjoyed attending the ASNR annual meeting. Attendees are quite friendly and many want to talk directly with us to understand Kinarm, what it is, and how it can help advance the field. For example, over the years, quite a few attendees have come up to talk to us at our exhibitor booth. Through these discussions, I have gained a greater appreciation of the different kinds of scientific questions that researchers in the field are striving to answer, the challenges they are facing, and the needs of the different populations they work with. These discussions have helped us think more deeply about how we can continue to develop our products, the training we offer, and how we engage with scientists to best facilitate their research. Not all scientists will agree with our approach, but like any scientific discourse, one-on-one communication is really important to ensure we understand each other's perspectives.

7. What advice would you give to someone who is interested in pursuing an industry career in neurorehabilitation?

For any career, it's really important to 'find your passion'; neurorehabilitation has that in spades. If you want to be on the industry side, it's very important to think about what skills are needed by a prospective employer and how they align with the customer's needs. For Kinarm, our customers have the neuroscience/neurorehab knowledge—not us. Instead, we need exceptional mechanical design, software development, and analytical skills to ensure safe,

reliable operation of a real-time system that outputs reliable data. Our promise to our customers is that the data collected in New York City will be directly comparable to the data collected in London or Sydney. That data integrity is really important when you're running multi-site clinical trials or collaborating with researchers around the world.

You can [connect with Anne on LinkedIn](#) to learn more and follow her work.