

Engineering Research and Development to Optimize People and Technology Interaction

Interview conducted by: Lynn Fosse, Senior Editor, CEOCFO Magazine

CEOCFO: *Dr. Lathan, the AnthroTronix tagline is, "Human inspired, technology driven." How do you combine the two?*

Dr. Lathan: We feel that the role of technology is to be a bridge between humans and tasks that they are trying to perform. We talk about the technology bridging the gap between what people want to do and what they are able to do. Whether you have an astronaut in space who is trying to do a spacewalk, a soldier who is trying to control a robot while lying in a trench, or a child with a disability who needs to navigate their environment, these are all human needs that inspire us to look at how technology can drive performance.

CEOCFO: *What are typical engagements? Who is coming to you for help?*

Dr. Lathan: We have clients who are looking for engineering services but want not just your typical engineering services of mechanical or electrical engineering. They really want a company that is immersed in the future of technology that is looking at what technologies are going to be available five years from now and 10 years from now. How can we transform industries? We do have some companies that come to us and ask for engineering services, but our particular brand of engineering services, which is innovative and futuristic. But our biggest client is really the government. Many different branches of the government invest in technology research and development, whether it is NIH, NSF or the Department of Defense. Those agencies really support small business, and in fact, have a special program called the Small Business Innovation Research Program. Small business can propose ideas through this research program and receive grants. You can receive a phase one grant, which is a technical feasibility grant, and then if you prove that technical feasibility, you can get a phase two grant, which is two years and about one million dollars. Those are really our two sets of clients; the government and then private engineering services.



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CEOCFO: *Does it matter if you are working on a health or defense related product?*

Dr. Lathan: All of our projects are related to human performance. For example, with two of our Department of Defense research projects, one has to do with what you might traditionally think of as health and medicine. It has to do with surgical skills and how do you help surgeons who are performing surgery through technology like laparoscopic surgery or robotic surgery? How do you help surgeons gain those skills and retain those skills? The military is very interested in that because often surgeons get deployed and do not necessarily have a chance to practice those skills for quite some time, but it is also relevant for surgeons who go on maternity leave or who are unable to perform surgeries for other reasons. Our approach to that is the same as our approach to other projects that we do for the Department of Defense, which has to do with how to allow a soldier who is patrolling to communicate with his or her team members. We have instrumented gloves that enable them to capture their gestures and transmit them to either other patrol members or to a robot that they are controlling. Both of those projects we are approaching the same way. We are trying to ask how we can capture human performance and use that to enable their abilities. In one case, we are actually using the same instrumented glove to capture movements to help them retain their skills. In another, we are capturing movements for communication. Those are two very different projects, both for the Department of Defense and both related to human performance.

CEOCFO: *When you are working on a project, is the patent yours or the client's?*

Dr. Lathan: If is engineering services for a private client, they own the IP unless there is an exception. In general, they own the IP, and in general with any government project we own the IP.

CEOCFO: *How do you keep ahead of developing technology?*

Dr. Lathan: In some ways as a research and development company, we have the luxury of just trying to develop technology and put together and integrate technology. A lot of what we do is integrating technology in innovative ways

without regard for market drivers. Although that is really fun, the downside of that is that we end up with a lot of technology in what is called the ‘Valley of Death.’ This is a term that I know the government has used, and it is this idea that a lot of innovative technology just cannot come to market because the market is just not ready for it. The market drivers are not there. That is the downside of being ahead of your time. I think the upside is that every once in a while you are well positioned. Because of our experience, we are well positioned to take advantage of market drivers, and that has happened with our most recent product with the DANA (Defense Automated Neurobehavioral Assessment) health assessment tool. Our experience in human performance assessment and with mobile technology over the past 15 years really came together at a time when the market was ready for that kind of product.

CEOCFO: *Would you tell us more about the DANA Health Assessment tool?*

Dr. Lathan: We were asked by the Department of Defense to help them solve a problem, and that problem was that when soldiers are deployed they are exposed to many stressors, both between combat fatigue, combat stress and blast injuries. They are exposed to an environment that can cause cognitive impairment. The brain is very sensitive to these stressors, and the problem the military had was that there was not an easy way for a medic or corpsman to do an assessment of cognitive performance in theater. You really needed to be referred to a specialist, and those specialists were not readily available in theater, so we developed a mobile medical software application called DANA, which allows medics to administer a reaction time test. We know that reaction time can be reflective of brain health, and then that can get them through the first line of assessment of information that would help the clinician to determine a person’s medical status. We developed that for the military, and the FDA made it clear that cognitive computerized testing is a diagnostic support. It is not a diagnostic, but it is an assessment that a clinician can use to help make a diagnosis. We worked with the FDA over the past two years, and we recently received FDA clearance.

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CEOCFO: *Is cost a big factor for you when you are creating or it is really to get the best result no matter what?*

Dr. Lathan: I think there has been a big shift from hardware to software. Hardware over the past decade has been really hard to develop. If your best solution is a robot that is going to be expensive to build and manufacture, it may be the best solution, but it has become cost prohibitive. What has happened in a lot of the robotic and mobile technology fields is that with smart devices you essentially have the processing power and the computing power that enables you to do a lot of things that you could not do a decade ago. We have a smartphone that allows us to do all the processing for controlling a robot, where 10 years ago we were building a lot of wearable computers and devices and it was a huge unique experience to control a robot. Now all you really need is a smartphone. It is the same with health assessment technology. You could have an entire doctor’s office on your smartphone. The breakthrough technologies that are enabling so much that we could not do 10 or 15 years ago allow us to do things that are affordable.

CEOCFO: *How is business these days?*

Dr. Lathan: It is great. We are excited about the interest in DANA, particularly now with the FDA clearance. We think that the challenge now is really finding the right clinical platform to bring DANA to commercial markets, but we have had a lot of interest, and we have proven the technology through our work with the military. We are really excited about the coming year.

CEOCFO: *Will you be doing that with partners or are you own? What do you understand about the commercialization process from past experience?*

Dr. Lathan: We have brought products to market. We have manufactured products in China and the U.S., so we are familiar with bringing what it takes to bring a product to market. We also know how hard it can be. Each product is so unique. I believe DANA’s strength and our vision for DANA as a brain thermometer and health assessment tool will be most powerful as part of a clinical platform or a patient engagement platform. I think finding the right strategic partners will be critical for bringing DANA to market in the most impactful way.

CEOCFO: *Put it all together for our readers. Why choose AnthroTronix?*

Dr. Lathan: AnthroTronix includes innovators, futurists and game changers that research and develop tech-based solutions to human problems. We look for the real convergence between people and technology that can solve real problems. DANA is an example of that where we found the convergence between people with smartphones and personalized medicine to monitor brain health.

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