



## Tech World: From the Marine Corps to Human Factors Consultant

*Dean Hooper is a medical device human factors engineer with expertise in applying and directing user-centered activities to deliver safe products in a regulated development environment. He has worked at Ximedica, Stereotaxis, Medtronic, among other places, and recently started HE Consulting LLC, which focuses on the human element for medical device development.*

A college course and a chance meeting with a pacemaker patient who needed a magnetic resonance imaging (MRI) scan resulted in my decision to pursue a career in understanding and exploring human behavior and performance. It also strengthened my resolve to remain in the medical device industry and do whatever I can to ensure products are designed optimally.

After a stint in the Marine Corps, I was off to college with aspirations to be a math teacher. That is until I took my first psychology class, and I was hooked. I could use my love of math and all things analytical to study human behavior. It seemed like the possibilities were limitless, so cognitive psychology was my subject of choice in graduate school.

Late in my program, I interned at the telecommunications company Nortel. While there, I led a research project into why people were hanging up on those obnoxious telephone voice response systems. I was embedded in what was called a “human factors” group. I had no idea such a discipline existed, but, once again, I saw a way to utilize research methods, statistical tools, and my knowledge of cognition and human-performance theory to solve real-world problems. I never looked back.

After some early web design and cellphone software projects, I found myself in Minneapolis, MN, working on implantable systems for Medtronic. I was fortunate to work on a few system-wide projects and interesting software feature designs, but I was longing for a return to the consumer industry. It seemed innovation flourished in the consumer arena and was generally stifled in a regulated environment. I was getting a little restless.

While I was doing some field work for a new MRI-safe pacemaker, an encounter with a patient changed all of that. The nurse told me the patient needed an MRI so that a life-saving procedure could be performed. But he could not get the scan because he had an implanted pacemaker, and his insurance would not pay for an explant. It hit me that the work I was doing had a direct impact on the health and



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well-being of others. And even though the innovations were slow in coming, they were coming—but not just for innovation's sake. There was a deliberate purpose to the progression.

Over the years, device manufacturers have been introducing innovative solutions, and the U.S. Food and Drug Administration, it seems, is more willing to embrace them (or at least the industry is more willing to submit them). This situation has led to the use of tablets and mobile apps to control everything from ultrasounds to patient records. Implanted devices now are connected directly to each other, the clinic, and the physician via long-range telemetry and the Internet. Robotic surgery is safe and intuitive.

The list is growing, and, as a consultant, I'm placed right in the middle of it. In addition, as a result of my consulting work, I can influence a broad range of products to minimize potential use error through design, as well as ensure the ease-of-use for devices. I also work with companies to help get their products through the regulatory process and to the marketplace as quickly and efficiently as possible. All the while knowing that my work—even in a small way—is helping people lead healthy, normal lives. I couldn't ask for more.

—Dean Hooper

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