

# I Am a Systems Engineer and I Do...

## Tim Kerby



### Why did you choose to be a Systems Engineer?

I think I was born a Systems Engineer, but it took me 30 years to adopt the title. As a small child, I was more inclined to keep a gadget under my pillow at night than to cuddle a teddy bear. I was the kid who took things apart just to see how they worked, then painstakingly put them back together again. Most of the time, they still worked, but we all learn from our mistakes! This fascination with understanding how things worked was just the beginning.

As I advanced through school, I found myself drawn to the technical challenges of engineering and its hands-on application. I loved designing things, not for creation alone but for solving genuine problems people face daily. I created burglar alarms at primary school

to stop my friends from helping themselves to my chocolate. In secondary school, I worked with universities and industry to develop products, including electronic children's toys, factory control systems and contactless fluid flow meters. My interest led me to study Electronics at the University of Edinburgh, where I had more interest in problem-solving and skills development through industrial projects than developing detailed design knowledge.

The journey to discovering the title "Systems Engineer" was long. I worked in systems but hadn't come across the Systems Engineering discipline. I'd even created a form of requirements management to support tracking customer needs while developing the cameras for mobile phones. In my work now as a consultant, I see this in many of my clients and realise we need to do much more to promote the discipline as a natural home for people like me.

The shift from working in the semiconductor industry to Systems Engineering was a natural progression. The time I spent helping solve problems for customers equipped me with the breadth of understanding needed to excel in Systems Engineering. Furthermore, the increasing importance of automotive safety in the semiconductor industry pushed Systems Engineering to the forefront, and the transition came quite easily. From there, it opened many more doors into other sectors and industries.

### What education/qualifications do you have for Systems Engineering?

Like most Systems Engineers, I'm mainly self-taught. My first degree was an MEng (Hons) in Electronics, but education for me didn't stop with the attainment of a degree. I am a strong advocate for continuous professional development (CPD), and this led me to get my Chartered Engineer (CEng) status with the Institution of Engineering and Technology (IET), of which I am now a Fellow. I have a Certified Systems Engineering Professional (CSEP) qualification with INCOSE and am keen to apply for ESEP soon.

I knew there were areas for development I might not readily get at work, particularly in my early career, such as leading and developing teams, facilitation skills and empathising with stakeholders. I felt it was

essential to fill these gaps. I became keenly interested in the voluntary sector, including joining the Red Cross and training as ambulance crew. This experience was instrumental in helping me secure my CEng, and it unknowingly laid the foundation for my current career trajectory and future work in healthcare. After all, emergency medicine has a substantial similarity to Systems Engineering.

## What is it about Systems Engineering that you find so compelling?

Systems Engineering brings me a wide range of exciting challenges and opportunities. Since starting my company, Edinburgh Systems, I've had the chance to work across many projects and industries. It's a role that keeps me constantly engaged, never bored, and lets me choose what I work on.

The projects I work on span many industries. Some are helping organisations build their own Systems Engineering capabilities, whereas others involve designing, changing, and managing large complex systems. Over the last two years, I've been defining the UK airport to support zero-emission hydrogen aircraft with Connected Places Catapult (ZEFI programme). I've also had the chance to design subsea equipment, support large battery storage projects, manufacture PPE for the NHS and improve patient experiences. It's this versatility that Systems Engineering offers that I find truly compelling.

I consider myself a front-end Systems Engineer, with my core skills in eliciting the problems and challenges people face, seeing and communicating the system structures, and finding the right technical experts to solve them. I'm delighted to be able to work on projects that make a significant positive contribution to society, including net-zero, healthcare, and mobility.

## What advice would you give a systems engineer just starting out in their career?

Embarking on a career in Systems Engineering is a journey that starts even before you realise that you want to be a Systems Engineer. Whenever I interact with school students, I emphasise the importance of understanding problems and asking questions before diving into solutions. In the world of engineering, we often promote problem-solving over problem-understanding, and this is a mindset that I believe we need to change.

My advice to budding Systems Engineers would be not to rush into specialisation. Thinking like a Systems Engineer early on will allow you to try different branches of engineering and build both a depth and breadth of knowledge. I'd also suggest working for both large and small companies and thinking about running your own business. This approach will expand your horizons, keep your options open, and help you develop your skills as a Systems Engineer. Similarly, I would advise Systems Engineers that are starting out to remember that being a Systems Engineer doesn't mean you must be stuck in a specific industry or type of project. While its origins came from defence and aerospace, you can bring Systems Engineering principles into any organisation. The challenge is to do this in a lightweight and cost-effective way.

I'd also advise spending time on networking. Without laying some foundations in the early years of my career, it would have been much harder to start my own business and maintain it through the challenges of Brexit and Covid-19. It's helped me find exciting opportunities to work on, and I'm always looking for interesting new projects and collaborations. Finally, and this is perhaps the most important advice I can give to younger Systems Engineers, is to cultivate a love for learning and ensure you never stop. Systems Engineering is constantly evolving, and you need to grow with it. So, keep learning, exploring, and pushing the boundaries of what you can achieve.