

I Am a Systems Engineer and I Do...

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Why did you choose to be a Systems Engineer?

Leaving School, I had worked out that I wanted to be an Engineer, but what type - I really didn't know. I had always tinkered around with electronics since an early age, culminating in taking apart everyday household electronics and turning them into a number of projects as a teenager. I was a hobby audio technician around age 14 and managed to stumble myself into paid work in touring concert venues and theatres around the country (which I managed to use to fund myself through university). This teenage occupation learning the practical application of audio and signal processing put me down the path of an Electrical and Electronic Engineering MEng at Warwick University. Here, year by year we chose to narrow our specialisms down, and after many group projects and embedded systems and software projects I realised that understanding and defining control mechanisms for complex systems, was what I enjoyed the most. By my master's year I decided to change my degree

specialism to have an elective "with Systems Engineering", although truth be told, I don't think I fully grasped an understanding of the full capabilities and breadth of disciplines that Systems Engineering has to offer, until a good 5 years into my career.

What education/qualifications do you have for Systems Engineering?

Following my A-Levels, I received a small bursary from the Hannam Foundation, a small trust looking to help those living in Skegness and the local area, to go and study a technology or engineering related subject. To fully fund my studies, I took several practical jobs all around live audio and stage production. This practical arrangement actually helped me to realise that I enjoy understanding the interfaces and relationships of seemingly disparate disciplines and understanding how to specify and control the bigger picture. Whilst completing my degree, I was successful in securing a sponsorship based undergraduate engineer position at Jaguar Land Rover. This placement was instrumental in pointing me down my current path. Had I not whetted my appetite for integration or verification and validation at JLR, or secured an offer for a graduate position before returning to university for my final year, I would have probably ended up going down the career route of CMOS VLSI design, which is heavily what my course was focused on. Whilst at JLR I had the opportunity to study master's level modules at Warwick University in Automotive Systems Technology. During my time at Rolls-Royce, I had the push I needed to attain my Chartership by following the Company Based Registration Scheme. More recently, I have attained certified AgilePM status with APMG and also Certified Systems Engineering Quality Manager (SEQM) through the INCOSE SEQM working group scholarship for the program. Currently I am part of the 2023 Emerging Leadership Program cohort at Costain, looking to complete at the end of Q4. Projects are like systems in their own right, morphing with every perturbation, resolving unknowns, and managing stakeholders with different objectives, views and expectations

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

It is the versatility of the thinking and tools associated with Systems Engineering that I find the most compelling. When thinking about Systems Engineering, many people don't quite know what it entails, or they often believe it to be an approach which is applied to the traditional industries to which you may associate it such as Aerospace, Automotive, embedded systems or control. I now work in the Civil Infrastructure domain, a space once dominated by

traditional thinking, and have been surprised at how well some of the ways of thinking and tools have fit into place and can be applied, just in a different context. On a similar vein, my recent work has morphed from the more traditional Systems Engineering products being applied to a product or service, but instead now I focus on organizational processes and behaviors. Here, by applying Systems thinking tools, and changing my frame of reference so that the system of interest is that of the organization, and my interfaces are those between processes, I am still able to use a Systems approach, but in a very different context, I also see many parallels between Systems Engineering and other disciplines. If you approach your problem space with a quality mindset, or that of a LEAN practitioner, you will see many similarities in the toolsets and ways of thinking observed in Systems Engineering.

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

My first piece of advice to any younger engineer, perhaps not yet qualified, would be to seriously consider either an undergraduate placement, apprenticeship or another vocational based practical exposure to engineering. I left school thinking that I needed to go to university to get a degree in “engineering” but had no idea what I really meant by that. It was only by undertaking a practical element coupled with the real-world experience that my undergraduate placement gave me, that I realised I enjoyed integration and validation, which pushed me towards pursuing Systems Engineering. It wasn’t until a good few years into my career that I really realised what it meant to be a Systems Engineer and the benefit that it can bring. My second piece of advice is that Systems Engineering isn’t just about requirements and V&V. Some of my most enjoyable achievements of more recent times have been when I have applied systems tools and techniques into a context where SE is not normally applied, and it is by experimenting with these other applications that I have truly been able to apply the tailoring principle to get the systems life cycle to work for me, in whichever context that I need to apply it.