

I Am a Systems Engineer and I Do...

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Why did you choose to be a Systems Engineer?

I wanted to be an SE because I have a natural preference to think deeply and reflectively about what I experience in order to make sense, understand and apply my skills, experience and knowledge, to figure out how to make things better. I'm also genuinely curious about what people really need and why. I find that my mind naturally focuses a lot on the future, and I'm always thinking about what could go wrong, in order to identify actions to proactively mitigate those risks. In my mind I often find myself imagining the different hypothetical scenarios that might play-out, and how the correct sequence of choices might maximise the chance of success. I believe that all these natural preferences are closely aligned with Systems Engineering; trying to understand the true requirements, trading-off the best hypothetical solutions, modelling, architecting robust fault-tolerant systems, checking that systems satisfy user needs, and sustaining those systems into the future.

What education/qualifications do you have for Systems Engineering?

My late father worked at the European Space Agency while I was in nursery and being exposed to all that space exploration technology had an inspirational and lasting impact on my life. As a result, I've always wanted to be an astronaut. As both my parents were engineering graduates I was fortunate enough to have access to lots of STEM resources at home, as well as watching lots of science fiction shows on TV. At school I realised that I could be good at many things if I focused enough energy on doing them well. I was not academically gifted at school so I only managed to achieve the minimum science and maths A Levels needed to squeeze onto an electronic and electrical engineering degree at university. It was there that I really excelled, graduating with first class honours. 12 years later I finally got my chance to apply to be an astronaut (along with around 20,000 others from across the EU) and I can honestly say that it was the most exciting job application that I've ever made because I had to demonstrate all the cognitive and physical abilities that I'd acquired in my life. Tim Peake beat me to it with extensive flight experience, so I decided to wholeheartedly embrace Systems Engineering; presenting a paper at the 2014 INCOSE international conference in Scotland and obtaining a diploma in coaching. I now feel like it's time for me to focus on mentoring and coaching to accelerate the learning and development of others at the beginning of their career.

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

The biggest problems that we face as a society are sociotechnical and increasingly complex issues, such as global warming and pandemics, which are uncertain and rapidly changing in nature. Systems Engineering lies at the heart of solving these 'wicked' problems and that is why I find it so compelling. I want to make the world a better place for everyone and I feel that this is the best way to use my 'gifts' to make a real difference. The other key thing for me is that the INCOSE competency framework, in addition to core and technical competencies, specifies essential professional competencies like emotional intelligence, ethics, facilitation, coaching and mentoring, and leadership. I believe that these skills are critical, not only for personal development, but also bringing the best out of others, which is a real passion of mine. When I look back at my career, much of it occurred by chance, and I've been really lucky to have been managed and encouraged to develop by people who recognised the hidden potential in me. I want to make sure that everyone is systematically talent managed so that they deliver to the best of their abilities, and the Systems Engineering professional competencies help to make every systems engineer curious and supportive about what others have to offer.

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

Make a purposeful effort and reserve time to reflect on what you've done so you can better understand yourself, including what you're good at and what really matters to you. The strength of your emotional response to the things that you've done, and the things that have happened to you, are indicative of what really matters and what you truly value. By consciously understanding your values, you will be able to focus on the work that you really care about, this includes choosing to work for an organisation that is closely aligned with your values, and being able to focus passion and energy on the activities that truly motivate you. Being more self-aware will sharpen your Systems Engineering skills because poor decisions are often caused by our cognitive biases and perceptions (based on our limited life experiences) that distort our understanding. We can mitigate this by being more open-minded, reserving judgement, and consulting the thoughts of others with different preferences and life experiences to our own.