

I Am a Systems Engineer and I Do...

Tim Rabbets



Why did you choose to be a Systems Engineer?

I became a systems engineer really by accident when joining my first employer as a stop-gap job. Having a degree in maths I was interested in technical matters but not in the detail. The breadth of a Systems Engineering role, integrating different disciplines and working with a broad range of people, has been challenging, stimulating and rewarding in equal measures. It has resulted in my life-long career as a systems engineer.

Although much of my career has been focused on the technical delivery of systems projects, I have recently taken on managerial responsibility for a range of teams of systems engineers. I thoroughly enjoy working with engineers and helping them to both develop their capabilities and careers and also to address a wide range of problems in differing domains. I combine this role with specialist consultancy and research, predominately in the area of systems architecture. This combination enables me to continue to develop my technical skills and also to pass on knowledge and experience to my team.

No two days at work are the same and this variety is something I seek. One day I may be meeting with other managers and addressing resourcing or staff training issues. The next day I might be writing a proposal or leading a workshop to solve a technical problem.

Outside of work I participate in an INCOSE working group and also in BSI and ISO working groups on architecting standards. Putting something back into society and professions becomes more important as you pass the 'mid career' stage.

What education/qualifications do you have for Systems Engineering?

Like many systems engineers of my generation there was little formal training in the subject available (and just a couple of textbooks on the subject), and therefore much of my learning has been 'on the job'. Fortunately university (Oxford) taught me to teach myself and this has proven a useful skill. Lifelong learning is important, as is increasingly widely recognised.

My second job entailed working in far larger teams in a different domain, working on larger scale systems and applying a range of quite new techniques. These were very much the early days of what is now termed Model-Based Systems Engineering. I also joined INCOSE (NCOSE as it was then)!

Moving to my present employer (when it was DERA) provided me with experience as a customer for systems and presented the opportunity to conduct Systems Engineering research, resulting in being awarded a company fellowship. Most recently I have specialised as a system architect, working across a very broad range of system types and domains. I co-chair the INCOSE UK Architectures Working Group with Prof Mike Wilkinson.

So I have few formal qualifications in Systems Engineering but am formally qualified in other relevant professions. I recognise this as a weakness and aim to complete my ESEP application this year!

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

I believe I am naturally a systems thinker and am comfortable devising and applying different concepts. This contrasts with much of the maths I learnt at university where the thought processes are predominately analytical.

Systems Engineering is a highly interesting mix of analytical and synthetic skills, with work being conducted at a necessary level of precise abstraction. Architecting entails working in the problem and solution spaces, addressing technical and enterprise issues, and considering their evolution through time. It is challenging and fascinating at the

same time. I am the sort of person who would get bored in a job entailing a lot of routine work.

What advice would you give a Systems Engineer

An early piece of advice I received was to work across different sites, abroad, and for multiple employers. This has proven very sound advice and one which I have repeated to many colleagues, friends, and to my kids!

It is also important to develop some breadth in skills and experience early on in your career as it is more acceptable to be a novice at this stage. I encourage 'early career' systems engineers to strike a balance between formal training and broad-ranging practical experience, covering different sectors, employers, and skill sets. The development of soft skills such as communication and team working is also crucial. Working abroad and across cultures is both rewarding and growing in importance.

For engineers wanting to become specialists, involvement in standardisation bodies and INCOSE (UK or international) offers useful opportunities. Working with thought leaders enables the development and honing of skills, questions your understanding, and develops new insights.

In summary, Systems Engineering is a fascinating discipline offering great opportunities moving forwards. It offers a career which you can shape to suit your aspirations!

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