I Am a Systems Engineer and I Do...
Nita Rabadia

Why did you choose to be a Systems Engineer?

As a mechanical engineer I have always been drawn towards being able to understand the interfaces with other disciplines, and how they integrate with other functional areas within a programme / project. I chose to follow Systems Engineering practices quite early on during my career and have never looked back.

Within High Speed 2 Ltd (HS2 Ltd), my key responsibilities include the development and management of Department for Transport (DfT) Sponsor's requirements. I derive these requirements into Technical Specifications for our three delivery Units: Construction, Development and Railway Operations.

I work closely with the Internal Sponsor team to promote Systems Thinking and oversee the technical processes and their integration with the wider business. A typical day for me at HS2 is championing and influencing parts of the business to take a 'Systems Thinking' approach. This ensures everyone is clear and aligned, so that we deliver the right optimised solution and output for any given activity.

Being able to see the bigger picture and understand how each part fits within that is key, to avoid any wasted efforts and minimise risk.

What education/qualifications do you have for Systems Engineering?

I graduated from Brunel University with a BEng degree in Engineering Science & Technology. I chose a degree that offered an industrial placement and I was fortunate to be offered an opportunity to work for 3M UK Plc (Head Office in Bracknell). This provided me the foundation of my Systems Engineering knowledge and awareness, although I didn't realise its true potential until much later in my career.

In 2003, I joined Network Rail and worked across a variety of major multidisciplinary programmes over the course of 12 years, including West Coast Route Modernisation (WCRM), North London Rail Infrastructure Programme and East London Line. I joined HS2 Ltd in 2012 to help embed Systems Engineering practices into the organisation.

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

I am passionate about promoting the use of Systems Thinking and applying System Engineering approaches across large multidisciplinary projects. This is one of the main reasons I became one of co-chairs for the INCOSE UK Transportation Working Group; always seeking to share best practises, lessons learnt across different industries and sectors. Most of the challenges we all face are similar, just the complexity, scale and its application varies.

Systems Engineering and its application within the rail sector still varies today and there has been some great work that has been achieved to date and in the pipeline, however we need to ensure we keep spreading the benefits of what SE can provide if adopted early on Programmes and ensure we have a transportation network that is fully integrated and developed.

In my experience we need to adapt the language to suit the audience - most of the time the term SE tends to "switch" people off, so by adapting the language we can help build that general awareness and sense of need and importance.

What is your advice to people considering Systems Engineering as a profession?

Drawing from my own experiences, it is important to raise the fact that there really isn't a glass ceiling that can't be pushed open, through hard work, focus and determination. Sure, there will be challenges along the way. Championing 'Systems Thinking' whenever the possibility arises and ensuring that everyone around you is clear and aligned is key, so that you are able to make informed decisions to deliver optimised outcomes.

Finding the balance and also the courage to pick yourself up during those lows, to get back on that journey to achieve your ultimate goal, is essential. It has a sense of achievement that can't really be explained. This is where I always advise those who I mentor or coach, to keep the end goal in sight.

A great boss at 3M always said to me "divide and you will conquer", which has worked for me. If you haven't got yourself a coach or mentor, get yourself one as it really does help to talk. Finally, I would say that being a systems engineer has provided me with a sense of fulfilment and achievement – no one day is the same, and it's incredible to have a career that really is that rewarding.

Secondly, do not be afraid of failure, by failing you learn! There is no shame in failure; I have learnt some of my most important lessons when things haven't quite gone to plan. At the time it seems like the end of the world, but sometime later when the dust has settled and I have worked back through the problem, I have almost always ended up with a better outcome and the ability to not make the same mistake again!

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