

I Am a Systems Engineer and I Do...

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Why did you choose to be a Systems Engineer?

Becoming a Systems Engineer was a role that I gradually grew into. My career began as a mechanical engineer at the Space Research Organisation Netherlands (SRON), where I progressively transitioned into a Systems Engineer. Initially, I worked on earth-oriented science instruments, ranging from high-altitude balloon experiments to an instrument on the European Earth Observation satellite, Envisat.

During my final years at SRON, I served as a Systems Engineer for an astronomy satellite instrument. Although both instruments operate in space, they differ significantly due to the different wavelengths of the detectors used.

After 10 years at SRON, I joined Thales Communications to implement CMMI at the hardware department of one of their sites in the Netherlands. Around that time, I became involved with the INCOSE Netherlands Chapter, which led me to decide to pursue a career as a Systems Engineer. Over the years, I have held various positions on the Netherlands INCOSE Board and the International Board of Directors. Among these roles, I found serving as INCOSE's Technical Director to be the most inspiring and interesting. Through visits to numerous EMEA chapters, companies, and universities, I had the opportunity to give presentations, discuss trends in Systems Engineering, and exchange experiences.

Returning to my professional career, after two years at Thales, an opportunity arose in 2003 to start my own business, which I named SEPIAdvies. I specialise in consulting companies and project teams on the application of Systems Engineering. My clients primarily operate in the road and rail infrastructure, healthcare, and energy sectors. During this time, I also began delivering a series of Systems Engineering training topics to professionals from various domains and taught systems thinking in a PD-ENG training course at Eindhoven University.

In addition to my work with INCOSE, I had the privilege of being part of the team that created the Systems Engineering Vision 2035, published in early 2022. Building on this publication, I am now participating in the Future of Systems Engineering (FuSE) initiative to implement the Vision in the years to come.

What education/qualifications do you have for Systems Engineering?

I am a mechanical and Systems Engineer working in both the public and private sectors. I obtained a BSc degree in Mechanical Engineering from Utrecht University of Applied Sciences and an MSc in Engineering Product Design from the University of Wolverhampton, in close collaboration with Utrecht and Delft Universities. In 2017, I also earned the ESEP certification, which demonstrates over 25 years of experience in applying Systems Engineering and leadership in the discipline.

While a significant portion of my Systems Engineering knowledge comes from on-the-job learning, I believe in the importance of experimentation and learning from others. Attending INCOSE events, both nationally and internationally, provides excellent opportunities to share knowledge and experiences while also learning from fellow

attendees through paper presentations, panel discussions, and tutorials. Since 2004, I have participated in all International Symposia, and each event has provided me with at least five valuable takeaways to apply in my daily work.

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

To me, the compelling nature of Systems Engineering is evident in several aspects.

First and foremost, I have become increasingly convinced that the purpose of Systems Engineering is "to provide the relevant information, at the right moment and at the appropriate level of abstraction, to facilitate decision-making about man-made systems." This decision-making entity can be the engineering team, program managers, executive teams, or policymakers, among others.

Secondly, I have witnessed the applicability of Systems Engineering methods and principles across various domains. However, I have also observed teams simply replicating a complete set of processes used in an aeronautics company and applying them directly to an organization managing road infrastructure assets. They soon realise the importance of tailoring these processes to the specific needs and terminology of each domain. While this may seem like an obvious statement, it is remarkable how many people still encounter challenges when faced with such "open doors."

For me, applying Systems Engineering entails striking the delicate balance between processes, in-depth domain knowledge, and interpersonal skills. Discovering that sweet spot is where the true enjoyment of the profession lies.

What advice would you give a Systems Engineer just starting out in their career?

I am passionate about engineering and the art of making systems function effectively. Throughout my journey, I have learned never to overlook how a system will be utilized. The behaviour of the user (emergent behaviour) undoubtedly influences decision-making during the system's development.

For those embarking on their careers, the field of Systems Engineering may seem overwhelming at times. In such cases, it may be tempting to adhere strictly to processes and neglect the analytical nature of Systems Engineering. As a Systems Engineer, you do not need to possess all-encompassing knowledge. Instead, maintain an open mind, thoroughly research the pros and cons of various options, and consult specialists in related fields to make informed trade-offs.

Thirdly, (systems) engineers have a fondness for models. However, it is important not to get lost in overly detailed modeling. Instead, choose an appropriate level of abstraction that enables effective decision-making.

Lastly, enjoy your work as a Systems Engineer! Find fulfillment in what you do and embrace the journey with enthusiasm.