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# Systems engineering Area of Practice

Systems engineering deals with the interdisciplinary approach and means to enable the realisation of successful systems.

It focuses on defining customer needs and required functionality early in the development cycle, documenting requirements, then proceeding with design synthesis and system validation while considering the complete problem:

- operations
- performance
- test
- manufacturing
- cost and schedule
- training and support
- disposal.

It integrates all the disciplines and specialty groups into a team effort forming a structured development process that proceeds from concept to production to operation and considers both the business and the technical needs of all customers with the goal of providing a quality product that meets the user needs.

Some of the indicative activities that may be undertaken when practising systems engineering are:

- Application of architectural and design skills to decompose the system specification into a structured hierarchy of progressively smaller but cohesive sub-systems and well defined interfaces.
- Continuous change, release and configuration management of the system, its sub systems and interfaces.
- Defining and scoping customer needs and required functionality early in the development cycle.
- Development of an agreed system specification.
- Structured validation, verification and integration of the sub-systems while continuously considering the complete system problem.

These activities could take place in any of the following systems engineering domains:

- civil infrastructure (power stations, offshore, mining, energy networks)
- defence and aerospace
- emergency services
- information and communications technology (ICT)
- intelligent transport
- medical engineering
- national security
- telecommunications.

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## How to apply

Systems engineering is an area of practice available to those who want to become Chartered and is available to all occupational categories. Learn more about becoming [Chartered](#) and how to apply.

If you want to add systems engineering as an additional area of practice, [email](#) us to enquire about the process.