

# Improve your Competitiveness through Systems Engineering Training

**“There is a strong direct relationship between past experience and the likely success of future projects.”**

This is one of the conclusions from a Carnegie Mellon® survey [1] on the effectiveness of systems engineering, but it confirms what many people know intuitively.

The survey was carried out on projects identified with the aid of The United States' National Defence Industrial Association (NDIA), the Institute of Electrical and Electronic Engineers (IEEE), and the International Council on Systems Engineering (INCOSE).

The primary purpose of the survey was to identify systems engineering best practice on projects, collect performance data on these projects, and identify relationships between the application of these systems engineering best practices and project performance, but they also looked at how other factors might influence performance. Experience of similar projects was one of those factors.

The survey found that experience is an even more important factor in *challenging* projects. Challenging projects include those that deal with complexity, are innovative, or push the boundaries of the state of the art.

The survey results show that experience is critical to an organisation's success in a competitive environment. Experience can only be acquired quickly by buying services or by recruiting, but sustainable experience can often be achieved only through organic development. The start of the process is always training, whether this be through private study and experimentation or in a formal classroom or lecture theatre environment.

## Reference:

- [1] “The Business Case for Systems Engineering Study: Results of the Systems Engineering Effectiveness Survey”, Joseph P Elm and Dennis R Goldenson, November 2012, Carnegie Mellon® University. Available at:  
[https://resources.sei.cmu.edu/asset\\_files/SpecialReport/2012\\_003\\_001\\_34067.pdf](https://resources.sei.cmu.edu/asset_files/SpecialReport/2012_003_001_34067.pdf)

*SyntheSys provides coaching, mentoring, and formal training courses to organisations to help them improve their processes and introduce software tools. Please contact us to find out more.*

## What is a system?

A system is a combination of interacting elements organised to achieve one or more stated purposes.

As defined in ISO/IEC/IEEE 15288

An element is any identifiable entity.

As defined by Kuhn

## What is systems engineering?

Systems engineering is an interdisciplinary approach governing the total technical and managerial effort required to transform a set of stakeholder needs, expectations, and constraints into a solution and to support that solution.

As defined in ISO/IEC/IEEE 15288

## Training & Mentoring

As active members of the INCOSE community, we have a portfolio of different Systems Engineering Training solutions which cater for a variety of different industry challenges from Automotive to Defence. Our specialist training includes:

### Requirements Capture & Management

With years of experience in requirements writing SyntheSys is currently delivering a long-term training program to a major automotive company in requirements writing.

### Systems Engineering Foundation

Our Systems Engineering Foundation course has been designed to provide a high-level foundation to the principles and practices of systems engineering. The course is aimed at those whose role heavily integrates with a software or systems development process and is suitable for both engineers and non-engineers at all levels.

The course content is aligned with the INCOSE Systems Engineering Handbook and provides an introduction and overview of the processes required for successful systems engineering delivery of projects. Presented by an experienced systems engineering practitioner, the course examines the role and benefits of applying systems engineering principles within your organisation.

### INCOSE Certified Systems Engineering Practitioner (CSEP)

#### Accreditation Preparation Course

A five-day course which equips students with the knowledge and structure of the INCOSE Systems Engineering Handbook, and its constituent processes to prepare for the CSEP examination.

The course combines real-world scenarios with theory, presented in the INCOSE Systems Engineering Handbook, to provide students with a unique learning experience which will enable them to comfortably sit the INCOSE CSEP examination.

Presented by a fully accredited, qualified CSEP instructor, the course examines the role and benefits of applying Systems Engineering principles within an organisation. We teach students how to apply this theory and how to use the correct terminology to convey this process and complete a series of exercises which will prepare them for the exam.

### IBM Watson Internet of Things (IBM Watson IoT™) Tool and Application Training

As an IBM Watson IoT™ Gold Business Partner, SyntheSys provides a unique blend of application knowledge, experience and a flexible delivery mechanism, which provides customers with the right software solution and a deeper understanding of the tools to ensure maximum benefit.

Our ability to work with IBM® to distribute Watson IoT™ software is built on a firm foundation of industry know-how and extensive knowledge of the IBM Watson IoT™ tools which enables us to distribute the tools in a value-added way. Our broad expertise of IBM® Rational® DOORS®, DOORS® Next Generation (NG), Rational Team Concert™ (RTC), Rational® Publishing Engine (RPE) and Rational® Quality Manager (RQM), makes us best placed to offer a value-added service throughout the IBM Watson IoT™ community. Our offerings stretch much further than deployment of technology. We offer training courses which teach students on the implementation, application and acceleration of IBM Watson IoT™ software products.

### About SyntheSys

SyntheSys provides defence systems, training, systems and software engineering and technical management services over a spectrum of different industry sectors. Along with distinct support and consultancy services, our innovative product range makes us first choice provider for both large and small organisations. Established in 1988, the company focus is on fusing technical expertise with intuitive software applications to solve common industry challenges.

