



Systems Engineering Foundation Course

Duration 3 days including workshop sessions

Course Structure



1. Background to System Engineering

- History
- Standards and Maturity Models
- Literature References

2. The Motivation for Systems Engineering

- The '*Left Shift*' Principle: discovering problems as early as possible
- Typical symptoms of non-existent or bad Systems Engineering
- 'War Stories'
- Where to expect the business benefits of Systems Engineering
- Instituting a virtuous circle of Systems Engineering improvement

3. Systems Engineering Processes 'in the large'

- Basic Systems Engineering Activities - the 'Waterfall Model'
- Pros and cons of the Waterfall Model; ways of making it more realistic
- Iteration in Systems Engineering; Green Field v. Brown Field; Re-use
- Life-Cycle Models in Systems Engineering
- Mapping Systems Engineering Activities onto Life-Cycle Models



4. Systems Engineering 'in the small'

- User Requirements: stakeholder identification and classification, sources, methods and tools
- Systems Requirements: constraints, functional behaviour, '*ilities*'; methods and tools
- System Design/Architecture: heuristics for partitioning
- Preliminary and Detailed Design: sub-contracting and the commercial function
- Testing, Integration, Acceptance and Certification; Validation and Verification



5. Systems Engineering within the organisation

- Commonly used Life-cycle models
- Selection of the most appropriate Life-Cycle
- 'Horses for courses' or 'one size fits all'?
- Creating Life-cycle models for your own organisation
- Systems Engineering Deliverables
- Technical and Gate Reviews
- Systems Engineering Management Plans (SEMPS)

6. Tailoring Generic Models for Specific Projects

- The need to tailor generic process models
- Factors affecting tailoring
- Rule-based tailoring

7. Planning, Estimating and Project Management

- The relationship between Systems Engineering and Project Management
- Risk Management and the link with Systems Engineering
- Process-based planning and integration
- Metrics: identification, collection and application
- Useful rules of thumb
- Parametric estimating models
- Tools to support the Systems Engineering function

Target Audience includes (in alphabetical order):

- Customers
- Project Managers
- Suppliers
- System Developers
- System Engineers or those performing a *de facto* SE function within their organisation
- System Procurers
- System Specifiers

Course Presenters

Andrew Farncombe



Andrew is an experienced Systems Engineering professional and has held senior management positions including Technical Director in UK plc's. He holds a first class honours degree and is Visiting Professor of Systems Engineering at Cranfield University. He designed and co-authored the Systems Engineering Foundation Course and has presented it many times. His consultancy work includes Systems Engineering process development, organisational alignment within the supply chain and managing for improved Systems Integration.

Ian Alexander



Ian is a specialist in Requirements Engineering. He has worked in the telecoms, aerospace, automotive and railway sectors with a wide range of roles involving training, business process modelling, requirements analysis and requirements database customisation. His book 'Writing Better Requirements' is published by Addison-Wesley, 2002. He helps run the BCS Requirements Engineering Specialist Group, and is the head of the Requirements Engineering section of the IEE Professional Network for Systems Engineers.

Some comments on the course from those attending:

"Excellent all round"

"Probably the most important course I have attended, and very enjoyable"

"The course was very well presented and the questions were fielded exceptionally well"

"The presenters' appreciation of business issues was high and useful"

"Excellent course; a must for everyone in my department and other areas of the company"

"A very good introductory course to Systems Engineering"

"Excellent in the overview and detail of Systems Engineering"

"Excellent Course"

Finding out more

Prices on application. If you would like further information or to talk to someone about your Systems Engineering needs, please contact us as follows:

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