BURGE HUGHES WALSH

SYSTEMS ENGINEERING

2-day System Design Workshop

Workshop Description

This 2-day workshop teaches participants how to design complex systems. Starting with gathering and analysing requirements and continuing through system architecting to solution generation, evaluation and selection. Based on a generic model of Systems Engineering it introduces the systems approach to system design using a simple but extremely powerful tool set.

The taught element of the workshop is supported by a unifying case study where Participants working in small teams can practice the processes and tool set to design a system.

This course is complemented by the 2-day Verification and Validation course.

Course Numbers and Who Should Attend?

The 2-day System Design Workshop can be delivered to up to 20 participants. The workshop applies equally to the design of product-based as to service or process-based systems. The workshop is therefore suitable for all personnel involved in the introduction and through life support of any complex system. It is specifically aimed at those people who wish to practice or would like to practice a systems approach to system design.

Benefits to the Individual and Business

During an intensive two days of teaching and practical 'hands on' exercises, participants will be challenged to develop the skills and mind-set that can be applied to any system design irrespective of type, scale or context.

At the end of the workshop participants will:

- Have an understanding the principles of systems thinking and how it applies to the creation of a new system through the appropriate blend of people, process and tools.
- Understand the critical role of requirements in engineering.
- Be able to identify system stakeholders and gather their requirements.
- Be able to analyse stakeholder requirements and translate these into specific, precise and measurable technical system requirements.
- Be able to generate and down-select alternative system design concepts and architectures
- Be able to consider the impact on future business of adopting a systems approach to systems design.

Learning Approach

The learning approach is based on the Kolb learning cycle with a significant proportion of the course set aside for exercises to reinforce the learning. Indeed, many of the small group exercises involve a case study that provides a practical focus for the course and enables the Participants to practise the methodology and tools presented.

Workshop Structure and Content

Day 1

- Introduction and delegate expectations
- What is and why use a Systems Approach to Systems Design
  - Emergence – desirable and undesirable
  - Systems Thinking
    - Purpose and Context
    - System Boundary
    - Subsystems and super-systems
    - Events, patterns and behaviour
- Systems Thinking in systems design
- Designing in levels and the V diagram
- Generic system design process
- A Systems Approach to Determining Requirements
- Gathering Requirements
  - Process for gathering requirements
  - Requirements Elicitation Plan
  - Stakeholder Analysis using the Stakeholder Map
  - Eliciting and Capturing Requirements
    - Affinity Diagrams
    - Use Cases
    - Tree Diagrams
- Analysing Requirements
  - Understanding Requirements
  - Holistic Requirements Model
  - Process for Analysing Requirements
  - Tools for Analysing Requirements
    - Need Means Analysis

Day 2

- Review of Day 1
  - Tools for Analysing Requirements
    - Viewpoint Analysis
    - Functional Modelling
- A Systems Approach to Systems Design
  - Technology and Architecture considerations
- System Architecting
  - Principles of System Architecting
  - Logical System Architecting
  - N^2 Analysis
  - Interface considerations
- Generating technological solutions
  - Function Means Analysis
  - Down-selection
- Systems Concept evaluation and selection
  - Pugh Matrix

Workshop Costs

The cost of delivering the 2-day workshop, excluding delivery tutor accommodation and expenses, but including all courseware is **£4,500**. VAT will apply at the prevailing rate.

The workshop can be tailored to suit individual customer's operations.

BURGE HUGHES WALSH

QAS INTERNATIONAL ISO 9001:2015 REGISTERED FIRM

ENDORSED TRAINING PROVIDER

BURGE HUGHES WALSH LIMITED

First Floor, 6 Allerton Road, Rugby, Warwickshire CV23 0PA

enquiries@burgehugheswalsh.co.uk

www.burgehugheswalsh.co.uk

01788 550015