

## Introduction to the IEE Safety, Competency and Commitment

Kurt Bieri 28 June 2002

### Background.

The Australian Computer Society (ACS) Policy on Safety-Related Systems Containing Software (ACS-TCSCS-P) identifies the requirement for safety responsibility to be identified and agreed amongst all stakeholders. Where a stakeholder accepts responsibility for aspects of safety, there is a Duty of Care requirement that the stakeholder is competent to fulfil the associated function. In addition, the ACS policy identifies the requirement for all stakeholders involved with safety related systems to demonstrate competence in the specific sector of their intended safety related activity.

While competency standards have been addressed by individual organisations in various sectors, the requirements have been vague and difficult to use as a benchmark across sectors. The Institution of Electrical Engineers, in collaboration with the British Computer Society has produced *Safety, Competency and Commitment (SCC), Competency Guidelines for Safety-Related System Practitioners* (IEE, 1999). The ACS recommends the adoption of the guidelines as a tool to aid in the assessment of safety practitioners, benchmarking competencies and defining objectives for competency development.

### SCC Guidelines.

The SCC Guidelines comprise a set of competency statements, guidance on interpretation and a suggested scheme for organisations to implement a competency assessment. The scope of the competency statements in the guidelines addresses the functions and responsibilities required to undertake the activities of functional<sup>1</sup> safety assurance of safety-related systems. The functions within the scope of the document relate to the roles required to implement IEC 61508 Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems. The functions and responsibilities in IEC 61508 are generally a superset of those defined under other safety standards, such as those listed in ACS-TCSC-P, and the guidelines are applicable across all sectors and technologies.

The guidelines define the competencies for twelve functions:

- Corporate Functional Safety Management
- Project Safety Assurance Management
- Safety-Related System Maintenance and Modification
- Safety-Related System or Services Procurement
- Independent Safety Assessment
- Safety Hazard and Risk Analysis
- Safety Requirements Specification
- Safety Validation
- Safety-Related System Architectural Design
- Safety-Related System Hardware Realisation
- Safety-Related System Software Realisation
- Human Factors Safety Engineering

Each of the functions is defined by the set of tasks that the safety professional is required to perform in order to undertake the function. The guidelines define the competencies for functions and associated tasks, providing statements that identify how competency can be demonstrated. The definitions provide for three levels of competency of supervised practitioner, practitioner and expert.

Competency is always achieved within a particular context that includes the industry sector, application, technology and standards used. The context is captured as part of the assessment process and is a mechanism to allow comparison between assessments.

### Australian Context

The United Kingdom has a comparatively mature safety culture. This is due to public reaction to accidents such as the Piper Alpha oil platform fire and a broad industrial base involved in the development and manufacture of safety-related systems. Compared with the UK, Australia has a less mature safety culture. This means that the competency levels that can be achieved in the UK may be more difficult to achieve in Australia. However, the products that are developed in Australia have just as much potential to cause harm as those in the UK. It is therefore prudent that stakeholders utilise the SCC guidelines to define competency objectives for personnel.

While the competency objectives may be difficult to achieve in Australia, the guidelines should be used to provide a benchmark and then used to drive professional development programs. Because it may be difficult to locate personnel who meet all of the competency requirements, there may be a need to trade-off between context, knowledge and experience. For example safety engineer from the automotive sector may be acceptable in the rail sector.

### Assessment Process

The guidelines propose a comprehensive scheme for the assessment of safety-related practitioners. Many Australian organisations have only one or two safety practitioners and the proposed process may be difficult to implement. Consideration should be given to tailoring the assessment scheme to suit organisational necessities. This could involve the use of the guidelines as a prompt during recruitment interviews.

<sup>1</sup> Functional safety does not include occupational health and safety.