**Curriculum Vitae Dr William Marsh**
**School of Electronic Engineering and Computer Science**
**Queen Mary, University of London**
Tel 020 7882 5254, Email william@dcs.qmul.ac.uk

**Education**
BA Engineering, Cambridge 1983
MSc Computation, Oxford 1989
PhD Computer Science, Southampton 2000

**Current Position**
Since 2000, I have been a lecturer in the Department of Computer Science at Queen Mary, University of London. I teach Software Engineering and Systems Analysis. I am a member of the Risk Assessment and Decision Analysis Research group, lead by Professor Norman Fenton. Between 2004 and 2008 I was the Director of Undergraduate Studies in Computer Science.

**Other Activities**
I lecture on industrial training courses on Software Safety and IEC 61508. I have undertaken consultancy assignments for
- Agena Ltd: Verification of Expert Systems; Bayesian Test Manager; Expert Witness team
- ERA Technology: Open System Guidelines; Preparation of Safety Awareness training course.

**Research Interests**

*Safety and risk: modelling accidents causes.*
Analysing what can go wrong is fundamental for assessing risk in safety systems. Existing approaches have a number of deficiencies: (1) human behaviour and technical failures are poorly integrated (2) model created for system approval are often not used when a system is in operation (3) information on incidents and procedural compliance is not used to update risks. The aim of or research is to extend existing accident-based modelling techniques to resolve these problems.

*Decision support for software engineering: project management and software testing.*
Every software development project is unique but the results are often (depressingly) similar. The complexity of software development and the multitude of factors influencing a project's outcome makes the design of useful decision support systems very challenging. Can we produce models of software development that are at the same time complex enough to capture relevant phenomena while simple enough to be usable?

**Previous Employment**
1994-2000. I worked as a consultant in the System Safety department at ERA Technology Ltd. My primary activities were:
- Advising on the safety acceptance of safety-related programmable systems
- Advising on the procurement of safety or mission critical systems

Clients were in a variety of industrial sectors including (in approximate order by work undertaken) military avionics, railway signalling and train control, and process industry.

**Projects included:**
- 1996-00    MoD Avionics Software Assurance and Software Safety Consultancy
- 1997-99    EC ESPRIT Research Project SERENE:
- 1998-99    Expert Witness: SCADA System

- 1995-96    DTI SafeIT SEMSPLC project
- 1995-96    Interlocking Specification Validation

1989-1994.  I worked for Program Validation Ltd, Southampton, the original developers of SPARK Ada and the SPARK Examiner.

1983-1988.  I worked as a software developer.

**Publications**

1.  Norman E. Fenton, Martin Neil, William Marsh, Peter Hearty, Lukasz Radlinski & Paul Krause, "On the effectiveness of early life cycle defect prediction with Bayesian Nets" in Empirical Software Engineering, 2008
2.  D. W. R. Marsh & G. Bearfield, "Generalizing event trees using Bayesian networks" in Proc. IMechE, PartO: J. Risk and Reliability vol. 222, no. O2, pp. 105-114, 2008
3.  William Marsh & George Bearfield, 'Representing Parameterised Fault Trees using Bayesian Networks' in Proceedings of the 26th International Conference on Computer Safety, Reliability and Security, SAFECOMP 2007, Springer-Verlag, 2007
4.  N. E. Fenton, M. Neil, W. Marsh, P. Hearty, L. Radlinski & P. Krause, 'Project Data Incorporating Qualitative Factors for Improved Software Defect Prediction' in International Workshop on Predictor Models in Software Engineering, 2007. PROMISE'07: ICSE Workshops, 2007
5.  P. Dray, G.J. Bearfield & D.W.R. Marsh, 'Constructing Scalable and Parameterised System Wide Risk Models' in Proceedings of 25th International System Safety Conference, Baltimore, USA, August 13-17, 2007, 2007
6.  N. Fenton, M. Neil, P. Hearty, D.W.R. Marsh, P. Krause & R. Mishra, 'Predicting Software Defects in Varying Development Lifecycles using Bayesian Nets' in Information and Software Technology vol. 49, pp. 32-43, Jan 2007
7.  D.W.R. Marsh & G.J. Bearfield, 'Merging Event Trees Using Bayesian Networks' in Proceedings of ESREL 2007, Stavanger, Norway 25 - 27 June 2007, 2007
8.  George Bearfield & William Marsh, 'Generalising Event Trees Using Bayesian Networks with a Case Study of Train Derailment' in Proceedings of the 24th International Conference on Computer Safety, Reliability and Security, SAFECOMP 2005, vol. 3688, 2005
9.  William Marsh & George Bearfield, 'Using Bayesian Networks to Model Accident Causation in the UK Railway Industry' in Probabilistic Safety Assessment and Management (PSAM7-ESREL'04): Proceedings of the 7th International Conference on Probabilistic Safety Assessment and Management, 14-18 June 2004, Berlin, Germany, 2004
10. Norman Fenton, William Marsh, Martin Neil, Patrick Cates, Simon Forey & Manesh Tailor, 'Making Resource Decisions for Software Projects' in 26th International Conference on Software Engineering (ICSE 2004), Edinburgh, United Kingdom pp. 397-406, 2004
11. Marsh D.W.R. 'Harmonisation of Defence Standards for Safety-Critical Software', ERA Avionics Conference, Ramada Hotel Heathrow, UK, November 1996.
12. Wichmann B.A., Canning A.A., Clutterbuck D.L., Winsborrow L.A., Ward N.J., Marsh D.W.R, 'Industrial Perspective on Static Analysis', IEE Software Engineering Journal, March 1995.
13. Carré B.A., Garnsworthy J.R., D.W.R. Marsh, SPARK: A Safety-Related Ada Subset, in 'Ada in Transition', editor Taylor W.J., IOS Press, 1992.