

Hazard Software in Safe Hands

Shell Global Solutions (UK) HSE Consultancy has gained world-wide recognition as an expert in the management of loss prevention and accident hazards on large chemical and industrial sites. They use software models, validated by experiment, which now form the basis of a number of commercial hazard analysis products.

These applications include:

- ❑ FRED (Fire, Release, Explosion and Dispersion), which is used to predict the consequences of the accidental or intended release of chemical products from process, storage, transport, or distribution operations.
- ❑ SCOPE (Shell Code for Overpressure Prediction in gas Explosions) which predicts the likely overpressure explosion generated when a gas cloud ignites in a congested region.
- ❑ Shepherd desktop which incorporates a number of tools to provide rapid consequence assessment and risk ranking to assist in gaining regulatory approval and compliance.

All the programs have been written and designed within an object-orientated framework using Microsoft Visual C++. The core scientific routines used to model the scenarios are contained within FORTRAN dll's, which enable the software products to share the core functionality and routines in a standard library.

Quality is an important requirement for any software product and it becomes even more critical when the safety of people and property is concerned. Extensive test programs can reduce the likelihood of error and bugs appearing, but they are very time consuming to develop and run. The

pressures from commercial markets for the delivery of new software often mean that fitting in thorough testing is difficult.

Software Quality Management

Shell Global Solutions (UK) approached Tessella to assist in the support and development of its hazard and risk software suite. They wanted to improve the Quality Assurance of their software development process to ensure high levels of quality and traceability and thus reassure its customers that risk and hazard assessments are correct first time.



SHELL SHEPHERD Desktop

Tessella has extensive experience of writing scientific engineering programs within a rigorous quality system. As a result of this initial enquiry, Tessella now manage the development and support of all commercial software sold by the HSE consultancy. All Tessella activity is performed within our TickIT quality management system, accredited by the BSI to BS EN ISO 9001.

The project started with a series of quality and technical audits on each software product. These audits were necessary to find out the current 'state' of the hazard and risk

software, hence establishing a baseline for the code and the collation of relevant documentation. Technical recommendations, based upon non-conformities against Tessella coding standards, were made to improve the long-term maintenance of the software. Recommendations from the quality audits highlighted areas for improvement in maintenance processes and included a validation test strategy. This test strategy related experimental data to models within the software code to generate a series of test cases that would ensure each software release conformed to validated experimental data.

The Future

Over the last year Shell Global Solutions (UK), with advice from Tessella, have implemented their own system for ensuring the quality of all software used for consultancy work. This includes both programs that are sold commercially and those developed in-house for commercial HSE Consultancy projects around the world. This quality system, which is now accredited to BS EN ISO 9001, ensures that there is a traceable quality trail. Relevant scientific research papers, code development and configuration, experiments, and extent of data/model validation are all now fully documented. Working with Tessella, Shell Global Solutions (UK) ensures that the software and consultancy marketed by the HSE Consultancy are of the highest standard and maintains the reputation of Shell Global Solution (UK) as a market leader.

If you need help to improve the quality of your software development or require an independent assessment of your processes please contact Tessella on 01235 555511.

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HEAD OFFICE

Tessella Support Services plc

3 Vineyard Chambers • Abingdon • Oxfordshire • OX14 3PX • England.

Telephone: +44 (0)1235 555511 • Facsimile +44 (0)1235 553301 • E-mail: info@tessella.com

Registered in England No. 1466429. VAT Registration No. GB 229 0489 52.