

# ATS Network *Newsletter*

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## *ACATS Website Redesign*

The ACATS Forum has redesigned its website, making it easier for members to find their way around and get the information they need.

Reports from members that their web browsers do not support frames was the reason for the change, with the decision taken to remove all frames from the site.

The forum's Internet team found that removing frames automatically required a change in the navigation structure. This was then completed in a way that will make the site easy for people to find relevant information quickly .

The team overcame the difficulty of presenting the test suites in a way that is not confusing.

This is important because the latest versions of test suites are uploaded on to the site to remove reliance on the support team. This helps to avoid delays in cases of people working across different time zones.

The site has also been updated with minor style changes and additional pages.

The proceedings from the ACATS Forum testing conference, ATS-CONF 2002, are now available under the Library section. A section for the next conference ATS-CONF 2003 has also been added, containing the Call for Papers, with further information coming soon.

We hope our members will appreciate the changes to the site, and look forward to more people gaining access. Browsers are invited to send their comments to [Info@ACATS-Forum.org](mailto:Info@ACATS-Forum.org).

<http://www.acats-forum.org/sip.htm>

## SDL Quality Assessment

A consortium of telecommunications companies in Europe is to address the issue of quality assessment in SDL system implementation.

The combined effort will result in a validated software tool for automated quality testing.

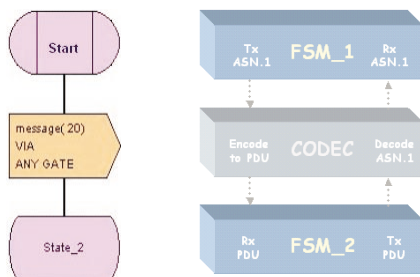
The tool will encourage better practice and methods in the SDL system development process, and will particularly benefit small and medium-sized enterprises (SMEs), by providing a cost-effective aid for the delivery of high-quality products.

Specification Description Language (SDL) is a general-purpose description language for communicating systems.

System behaviour is described using state machines, which are represented by processes. A system has a starting state and a set of defined states. State transitions can only occur, but do not need to occur, on receipt of a signal.

Signals are transported either between processes, or between the processes and the environment of the system model. Formatting of the communications signals is not relevant, only that they are uniquely identifiable and have parameters.

Communication with objects external to the environment clearly have to have a defined format, especially for communication with telecoms sub-systems with bit-level formatting.



Typically this formatting can be isolated in codecs (coders/decoders), which handle the conversion from external format to the abstract internal format.

Once a system is designed, a simulator can perform validation of its concurrent parts. Simulation of a complete/incomplete model enables rapid prototyping very early in the development process, by ensuring the early detection of errors and inconsistencies between specification requirements and design.

Following the design and simulation phases, a code generator builds the system using C/C++, independently of the real-time target environment. The system is integrated with the target environment later, using run-time libraries for real-time operating systems.

SDL's flexibility and convenience as a language for communicating systems has gained it the position of most accepted language for the design and implementation of state machines.

It is used widely in the field of telecommunications, and will play an important role in designing architectures for next generation networks.

The language has extended to other areas too, as manufacturers have started to apply it to the design of systems and software applications for train and air traffic control, as well as medical and packaging systems.

Increased application of the language, and its use in such vital industrial sectors, has led to a pressing need to test, measure and validate the quality and conformance of SDL-generated code for critical communications and control systems.

System quality defects can sometimes arise from SDL weaknesses. The style and use of SDL in published SDL designs can be inconsistent, requiring modification before achieving a working and accurate target system.

One reason is that the capabilities and supported features of the various SDL editing tools differ. Other examples of potential SDL system weaknesses are:

- Code written on a non-conforming editor may contain invalid notation keywords;
- Code may contain naming convention exceptions used by the SDL programmer;
- SDL code generated from UML may inherit weaknesses from the automated conversion process.

Even with the high level of expertise among authors of an SDL system, the production of error-free SDL designs cannot be easily achieved without compilation to a target system and simulation using a simulator.

Furthermore, neither simulators nor code generators are always able to show the true source of problems affecting a target system. This can allow for defects, which can cause vulnerabilities in target systems.

Commercial tools are available to ensure early detection of syntax errors in the early phases of a system implementation. However, they do not provide full checking of SDL implementations or adequate assistance to the SDL system developer.

This is an indication of weakness in quality assessment practices, and the overall result is inaccuracy, longer development cycles and increased costs.

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## SDL Quality Assessment

(continued from page 2)

In 2002, SDL SAFE - a project supported by the European Commission - was set up to address this by providing a practical solution to SDL implementation quality problems, by providing the efficient means to assess the quality of SDL implementations and to contribute towards their improvement.

SDL-SAFE targets the generic activity "Measurements and Testing" of the European Commission GROWTH Programme.

The project particularly contributes to GROWTH objective 6.2.3 (Measurement and testing methodologies in support of quality), by:

- defining a methodology document of SDL rules, metrics and thresholds for embedded SDL implementations/systems in different industrial sectors, ranging from embedded control systems and communication systems to transport automation systems:

The methodology document will specify SDL style objectives, quality metrics and thresholds, and will map these onto quantitative criteria, SDL rules, quality factors and criteria.

- designing, implementing, verifying and validating an automated quality assessment software tool for SDL implementations.

The SDL SAFE tool-set will contain metrics and quality checking mechanisms added on to the SDL definitions. Actions related to metrics will be defined on each SDL definition, as well as between connecting productions to control semantic and style checks.

- providing an innovative and efficient means to assess industrial product quality.

The introduction of automated quality assessment, based on quantifiable metrics, will improve the SDL specification process by detecting errors and weaknesses at an early stage of the development life-cycle.

Additionally, the tool will provide a convenient user interface for the configuration of metrics. Priorities on actions and suppression will be possible and users will also be able to group related sets of metric criteria in a 'project file'.

And it will be possible to generate a standardised reporting document, using statistical representation, showing SDL code that matches/does not match the user-defined criteria for quality.

Evaluation of the methodology document and software tool will be carried out in user trials and experiments in commercial products.

The trials will assess the quality of a variety of projects to check SDL implementations at different stages of their life-cycle. This will involve the integrated use and demonstration of the methods and tools in products from SMEs. Results of the trials, as well as user feedback, will enable a practical revision of the methodology document and enhancement of the tool.

The SDL-SAFE partners form a well-balanced consortium, bringing together requirements from diverse technological areas, with common needs in the area of generic communication processing sub-systems. The partners will use the trial results to provide an assessment report on the effectiveness of the solution, and recommendations on its use.

The partners will also maintain contact with various players in the arena of standardisation: ITU-T, ETSI, SDL Forum and ISO, to ensure a good level of information flow and common understanding.

They will also identify opportunities for co-operation with European test system manufactures and SDL tool providers, to encourage an open approach to the quality assessment of SDL systems.

The aim is to promote best practice in the SDL system development process.

The SDL-SAFE solution will provide accurate assessment, and will encourage better practice in the telecommunications testing industry.

The introduction of automated quality assessment based on quantifiable metrics will improve the SDL specification process by detecting errors and weaknesses early in the development life-cycle.

This will enable SDL system manufacturers to remain competitive, by reducing their time-to-market and by producing high quality products.

The main beneficiaries of the SDL-SAFE solution will be SMEs and other organisations seeking easy to use, highly-integrated, open architecture and off-the-self solutions for the development of fast time-to-market products.

SDL-SAFE provides a cost-effective and practical solution. Larger communication system manufacturers often have the means to control SDL quality through costly TQM methods or through overlapping quality, design and development cycles. SMEs cannot economically justify such methods, and will therefore particularly benefit from the SDL-SAFE solution.

## ATS-CONF 2003 - Call for Papers

The Second ATS Network Conference on Conformance Testing and Interoperability (ATS-CONF 2003) invites your participation in this lively international forum on open and interoperable networks.

Advances in test tools and methods, as well as the rapid evolution of telecommunications and information technologies, are redefining the scene in conformance testing and interoperability. ATS-CONF 2003 will foster understanding of the new systems, methods and concepts.

The conference will provide researchers and developers with a focused, highly interactive opportunity to present and discuss current work and future directions in conformance testing and interoperability, underlying technologies and the services built on them.

The event will be held at Alcatel SEL in Stuttgart, Germany on 20-21 January 2003.

Confirmed speakers include:

- Paulo de Sousa (European Commission, Belgium)
- Anthony Wiles (PTCC, ETSI, France)
- Dieter Hogrefe (University of Göttingen, Germany)
- Mike Dopfer (Siemens, Germany)

Additional authors are invited to submit abstracts or full papers for consideration. All papers will be published in the proceedings.

Suggested topics include, but are not limited to:

- Abstract Test Suites
- Next Generation Networks
- Quality Assessment
- Security Certification in Open Networks
- Standardisation in Conformance Testing
- Test Tools and Test Platforms
- Testing for Mobility and Multicasting
- Testing Quality of Service
- Formal Languages and Testing

The first ATS Network conference ATS-CONF 2002 attracted telecom professionals from all over Europe, constituting a balance of opinion from industry, academia and standardisation bodies.

ATS-CONF 2002 was held in March 2002 in Athens, Greece, and speakers represented the European Commission, Nokia, the National Technical University of Athens (NTUA), ETSI, Cinderella, Alcatel, Telekom Austria, University of Bradford, Intracom and SOLINET.

The presentations mainly concerned issues surrounding next generation networks. One common conclusion reached was that technical solutions will always need to co-exist at different levels.

The challenge here is not only that these are intended to support more features than the networks of today, but that they are expected to do this much more quickly than today.

They should also be able to support services in a more integrated way, and they should become simpler and cheaper to operate, maintain and manage.

However networks are, in fact, becoming more heterogeneous rather than less so. Different parts of the network with their specific characteristics, in addition to growing competition, leads to more convergence difficulties.

Networking is becoming more complex as new technologies emerge, services become more complex, and as third party service providers enter the market.

There are strong trends towards the use of IP as the converged protocol, but IP is only just emerging from its infancy period, and it is estimated that this will take at least another twenty five years to reach maturity.

The European Commission recognises the amount of work still to be completed in the area of network interoperability.

The Commission currently supports 204 projects and is committed to providing further assistance. Paulo de Sousa from the Commission will attend ATS-CONF 2003 and will present opportunities for industry in the Sixth Framework Program.

There is no fee for participating in ATS-CONF 2003. The closing date for receipt of draft papers is 8 November 2002. Final camera-ready papers are due by 20 December 2002.

Further details about submission procedures and local conference and accommodation arrangements are available on:

[www.ACATS-Forum.org/pdf/call\\_atsconf2003.pdf](http://www.ACATS-Forum.org/pdf/call_atsconf2003.pdf)

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