

# ATS Network *Newsletter*

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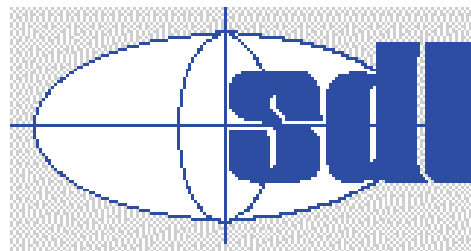
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## **ACATS attends SAM Workshop**

The ACATS Forum is actively maintaining contact with standardisation bodies, with the objective to increase the level of industrial participation and representation in the standardisation process.

In June 2002, representatives from the ACATS Forum attended the SDL Forum Society's 3rd SAM Workshop, which was held at the University of Wales.

During the workshop the ACATS Forum contributed its views on the requirements of signalling systems and, in particular, related to testing.



Although the ACATS Forum addressed fundamental issues, from the practical experience of industrial applications, there was a strong interest in the idea to identify a simpler subject of the SDL language. In fact, this was chosen as one of the main issues of the next year.

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## **ETSI to speak at ATS-CONF 2003**

ETSI has accepted the ACATS Forum's invitation to present a Keynote Speech at ATS-CONF in January 2003.

The speaker will be Anthony Wiles, manager of the PEX and Competence Centre (PTCC) at Sophie Antapolis, France, who is leading the EP Specialist Task Force 196 to produce the TIPHON test specifications for H.225, H.245, H.248, BICC, SIP and OSP.

ATS-CONF 2003 conference on conformance testing and interoperability invites further papers. Details on dates, location and submission procedures are available on:

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

## ACATS attends SAM Workshop

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The SDL Forum Society is a non-profit organisation, with the objectives:

- to promote the Specification and Description Language (SDL) and Message Sequence Chart (MSC);
- to provide and disseminate information on the development and use of SDL / MSC;
- to support education on SDL / MSC; and
- to plan and organize the “SDL Forum” and other events that relate to SDL / MSC.

The SAM (SDL And MSC) workshops take place every second year, and provide an open discussion platform to address topics related to the description techniques of SDL and MSC. Audiences range from SDL Forum Society members to tool vendors, and from researchers to users, as well as those involved in standardisation bodies.

The workshops are less formal than the biennial conference - SDL Forum, as they are designed to facilitate intensive discussions, enabling the exchange of ideas for the future development and application of SDL and MSC.

The June workshop, entitled “Telecommunication and Beyond - The broader applicability of SDL and MSC”, also addressed User Requirements Notation (URN), which is being standardised by ITU-T, UML and the latest version of TTCN.

The Programme Committee consisted of established telecom experts, including: Andreas Prinz, Rick Reed, Uwe Glaesser, Edel Mary Sherrat, Chris Loftus, Reinhard Gotzhein, Joachim Fischer, Dieter Hogrefe, Ekkart Rudolph, Rolv Braek, Susanne Graf, Sjouke Mauw, Nikolai Mansurov, Clive Jervis, Daniel Amyot, Thomas Weigert and Bob Probert.

Representatives of the ACATS Forum saw the three-day workshop as an opportunity to raise the issue of the evolution of SDL for testing requirements.

In the year 2001, a task force working within the ACATS Forum began an analysis to identify similarities between the methodologies used for the implementation of test cases and state machines.

The first preliminary proposal to emerge from the study's early stages was the convergence of the technologies and/or standards used for both implementation and testing into one common framework.

The situation today is that a product's development cycle tends to involve the use of three separate

languages: SDL for the specification of state machines, TTCN for the specification of test scenarios, and ASN.1 for the specification of machine-independent structured data types.

The specifications for these three languages were written by different research committees, with limited contact to the industry. The result is the lack of a common basis, which possibly contributes to many of the glitches in today's test environments.

The question is whether convergence of the methodologies used for implementation and validation will help to remove these glitches or not.

From comparing the characteristics of state machines and test suites, some of the similarities between common components are clear, such as:

- Gates in SDL correspond to Points of Control and Observation (PCOs) and Coordination Points (CPs) in TTCN.
- Signals and Signal Lists in SDL correspond to ASP/PDU Types in TTCN.
- Procedures in SDL correspond to Test Steps in TTCN.

The study is focusing on a detailed analysis of all the common characteristics. For example, many components such as PICS, selection expressions and constraints, have no meaning in state machines.

The study has also identified and made progress on a number of additional points, such as the handling of verdicts and the high-level structuring of test cases, which highlight the different nature of state machines and test suites, and thus have implications for the use of SDL for the implementation of test cases.

This concept was first aired publicly at ATS CONF in March 2002, generating much interest and subsequent debate.

The ACATS Forum raised the issue again at the SAM workshop, as a pool of experts from various backgrounds was readily available to provide fast, direct and informative feedback.

The ACATS Forum is likely to raise the issue again at future events, and welcomes input from other relevant and interested parties.

*Editors Note: The next SDL Forum conference will be held in Stuttgart between 30th June and 4th July 2003. The event attracts experts, users, toolmakers and critics of MSC and SDL. Further details about the SDL Forum Society are available on:*

[www.sdl-forum.org](http://www.sdl-forum.org)

## Generic Test Platform for UMTS

Latest surveys predict an explosive growth of users demanding 3G services. The trend is expected to have a positive impact on the UMTS test tool marketplace, as new testing facilities will be required to validate new services, as well as interoperability.

Leading-edge technology communication networks (such as 3G, UMTS and IP over SONET) are being gradually introduced by telecommunications manufacturers and service providers, to introduce new data manipulation techniques and protocols that boost end-user speeds and that support applications that demand high quality of service (QoS).

Correct assessment procedures should therefore not only be capable of performing conformance measurements, but they should also be able to regenerate malfunction conditions by simulating the behaviour of thousands of users.

Modern networks supporting 3G services are, however, characterised by dynamic expansion and heterogeneity. This has complicated the task of performance assessment, particularly in overload conditions.

Additionally, there is a lack of standardised evaluation procedures and test scenarios for modern communication networks, particularly for quantitative QoS measurements.

This restricts network manufacturers from accurately evaluating the performance of their switching systems and infrastructures.

Products are available to evaluate the functionality of networks up to the service level. However, they mostly deal with the provision of evaluation services tailored to *dedicated* networks technologies and services, such as B-ISDN and IP.

They do not provide any *generic* evaluation functionality to support heterogeneous networks and services. They also lack the functionality to test for interoperability between different technologies.

Furthermore, most of the currently available evaluation tools perform low level u-plane and c-plane traffic experiments, without providing the ability to simulate real, end-point users.

On the other hand, network operators and manufacturers wishing to evaluate a communications network's integrity must invest in several models - each one dealing with different networking technology.

This methodology is not considered efficient, as test activities are so fragmented, that a disproportionate amount of effort is required to produce results.

To refine the evaluation of modern network performance, investment in new evaluation systems, tailored to recent technology requirements, is essential.

In 2002, IASON - a project supported by the European Commission - was set up to accelerate the deployment of new networks technology, by providing a generic evaluation platform for services assessment over heterogeneous networks.



The project contributes directly to the realisation of the objectives of the Key Area IST-2001-IV.2.2. The work particularly matches the following objectives:

- to increase the Quality of Service and functionality of communication networks;
- to support seamless interoperability among heterogeneous networks;
- to increase network agility; and
- to support service interworking and management.

The IASON solution will exhibit an open architecture that will be fully flexible, as it will comprise a single system, combining different interfaces, which will enable interconnection to a wide range of telecommunication networks.

The proposed system will support multiple protocol stacks simultaneously, including SS7, IN, ISDN, ATM, GPRS, GSM, and IP over various access interfaces, including E1/T1, ATM over SDH and Ethernet.

The IASON solution will be representative of industrial requirements, as the project brings together a number of partners, including Alcatel, Siemens and Vodafone.

Their complementary expertise, as well as their significant commercial orientation, will ensure the project's success

The IASON architecture and concept will be validated by setting up a comprehensive 3G UMTS test platform from Siemens and Alcatel, while Vodafone will carry out tests from the user perspective.

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# Generic Test Platform for UMTS

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The 3G UMTS network was chosen as a test platform, as it provides a good example of an infrastructure that is capable of hosting evaluation methodologies of a variety of technology communication networks, but that lacks a generic and open architecture.

The IASON system may be used as:

## *NETWORK NODE SIMULATOR*

Provision of traffic at user-configurable protocol layers, services and applications.

## *CONFORMANCE MONITOR*

The ability to verify the integrity of protocols and services, as well as their compliance to existing standards and agreed quality of service margins.

## *STRESS CONDITIONS GENERATOR & ANALYSER*

The ability to generate and analyse traffic exceeding the signalling capacity of the network nodes, to monitor behaviour under overload conditions

## *LONG-TERM DURATION EVALUATOR*

The ability to test the network's stability, as well as its ability to provide Quality of Service over long duration.

## *PERFORMANCE EVALUATOR*

The ability to record measurements related to QoS aspects and other requirements related to real-time services and protocols performance.

The innovative baseline of IASON will be the ability to perform advanced traffic experiments, according to mathematical distribution models, that will enable the simulation of the behaviour of real users, individually for each application category.

IASON will provide an intuitive GUI, which, will enable test engineers to define, select and activate complex test scenarios (for both u- and c-planes), thus, being able to simulate the behaviour of real users.

As mentioned above, the field of telecoms evaluation has, until now, been characterised by the lack of test suites and user/control plane traffic scenarios.

IASON's key objectives will include the elaboration, definition and implementation of test suites for UMTS, GSM and GPRS up to the service level.

Results may be submitted to standardisation bodies for their consideration as universal guidelines.

IASON will also deal with the elaboration of new protocols that are not yet fully defined (e.g. NAS and RANAP).

This result will be innovative evaluation procedures for standardisation, as well as for QoS measurement and assessment techniques.

The capabilities of the resultant communication networks evaluator system will be exhibited by setting up tests, with the purpose of performing advanced traffic experiments, on a well established UMTS platform.

The UMTS platform was chosen, as it provides a good example of a heterogeneous communication network, requiring high bandwidth communications, over both circuit and packet switched stacks.

It is envisaged that the IASON solution will accelerate the safe introduction of advanced UMTS services.

It will boost network technology by offering an original testing framework that will assist network operators to extensively evaluate heterogeneous communication networks infrastructures before making them available to real users.

Specifically for the case of GSM, GPRS and 3G UMTS, the system will offer intuitive test suites tailored to the target mobile networks requirements.

A growing concern is that as telecom technology evolves towards the provision of more sophisticated services to end-users, interoperability problems may become more acute.

Thus, evaluation systems that are capable of performing extensive evaluation of services and protocols running over heterogeneous networks offer an important added value to the telecommunications sector.

Moreover, it is expected that the work carried out by the IASON project on traffic modelling, scenarios and test suites will effect the standardisation procedures of new services and protocols technologies.

It is anticipated that this work will accelerate the emergence of guidelines for evaluating new, generic services performance, as well as their interoperability with the existing services.

The ACATS Forum is closely following the activities of IASON, particularly the availability of test scenarios. Progress will be reported in future issues of ATS Network Newsletter.

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