REPORT ON SCC20 ACTIVITIES FOR 2003

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The following constitutes the annual report on the activities of SCC20 and its three subcommittees to the Computer Society Standards Activities Board.

The IEEE Standards Coordinating Committee 20 on Test and Diagnosis for Electronic Systems consists of three standards development subcommittees focusing on issues related to system level test and automatic test equipment. The Test Description Subcommittee has charge of maintaining IEEE Std 716 (Abbreviated Test Language for All Systems (ATLAS)) and IEEE Std 771 (ATLAS Users Guide). The Diagnostic and Maintenance Control Subcommittee has charge of maintaining IEEE Std 1232 (Artificial Intelligence Exchange and Service Tie to All Test Environments (AI-ESTATE)). Finally, the Hardware Interfaces subcommittee is responsible for the development of IEEE P1505 (Receiver Fixture Interface (RFI)) and IEEE P1552 (Structured Architecture for Test Systems (SATS)).

SCC20 Plenary Meeting

SCC20 met as a plenary group once in 2003 in conjunction with the IEEE Systems Readiness Conference (AUTO TESTCON) held in September at the Disneyland Hotel, Anaheim, CA. At this meeting, elections were held for the 2004 officers. Leslie Orlidge (AAI Corporation) was elected as the 2004 Chair, John Sheppard (ARINC) as the 2004 Vice Chair, and David Droste (DRS Test and Engineering Management) as the 2004 Secretary. Officers of the various subcommittees were reaffirmed for 2004. The 2003 Chair (Naryanan Ramachandran) was also appointed as the Test Description subcommittee co-chair. These other officers include the following:

- Diagnostic and Maintenance Control Co-Chairs: Mark Kaufman and Timothy Wilmering
- Hardware Interfaces Co-Chairs: David Droste and Michael Stora
- Test Description Co-Chairs: Keith Ellis and Naryanan Ramachandran

Diagnostic and Maintenance Control Subcommittee

The SCC20 DMC met three times in 2003 and succeeded in bringing three standards to ballot:

- IEEE Std 1445-1998 (Digital Test Interchange Format)—reaffirmation
- IEEE P1552 (Testability and Diagnosability Characteristics and Metrics)—initial sponsor ballot as a trial use standard
- IEEE P1598 (Test Requirements Model)—initial sponsor ballot as a trial use standard
In addition, the DMC initiated work on a new standard project—P1636, Standard Software Interface for Maintenance Information Collection and Analysis. This project is focusing on defining standard information entities for purposes of capturing maintenance information to support diagnostic maturation. Further, DMC (and SCC20 as a whole) started discussions with an ad hoc industry working group developing an Automatic Test Markup Language (ATML) for use in a new DoD initiative to develop the Agile Rapid Global Combat Support (ARGCS) System. DMC was identified to start discussions on behalf of SCC20 because the initial ATML model to be developed is the Diagnostic Markup Language. DML will be based on the AI-ESTATE standard developed and maintained by DMC.

**Hardware Interface Subcommittee**

The Hardware Interface subcommittee met periodically in 2003 with its last official meeting at the SCC20 meeting in Anaheim. Current projects are the P1505 RFI standard and the P1552 SATS standard. Both standards are approaching their ballot.

**Test Description Subcommittee**

The Test Description subcommittee met five times in 2003 with the final meeting at the SCC20 meeting in Anaheim. The P1641 Signal and Test Definition standard is to provide a replacement for ATLAS that is compatible with modern test environments. This standard was submitted to the IEEE Balloting Service for ballot at the end of 2003.

STD Signal descriptions use keywords familiar to the engineering disciplines being described. The basis for these signal descriptions comes from the Basic Signal Components (building blocks) which are used to describe any arbitrary signal. These components have mathematical descriptions, so there is no ambiguity in terms of the descriptions. If new basic components need to be added, they also will have the underlying formal descriptions.

New signals can be created and described using the Basic Signal Components, hence extensibility is an inherent feature of STD, but with rigorous controls on the components used to create signal descriptions.

ATLAS was and remains an implicitly object orientated approach: the concept of signals as objects which are manipulated by methods such as APPLY, VERIFY, MEASURE was and remains one of the corner stones of this approach. STD can be implemented in today's object orientated programming environments with ease as STD describes Signal Objects in user extensible libraries.

**Automatic Test Markup Language**

As mentioned in the discussion on the DMC, the industry ATML working group is looking to join SCC20 to support publication of its “standards” under an official standards development organization. The purpose of ATML is to define a collection of
XML schemata that allow ATE and test information to be exchanged in a common format adhering to the XML standard from the W3C. Specific goals of ATML include the following:

- Establish an industry standard for test information exchange
- Allow for managed extensibility
- Ensure compatibility with other ATE standards
- Allow for legacy systems
- Create modular descriptions for Test Environments
- Leverage existing technologies
- Allow for the use of dynamic test sequences that can change with historical data
- Allow for the use of optimization techniques such as Artificial Intelligence
- Facilitate description of both instrument control and signal level control
- Facilitate description of parallel/simultaneous testing and complex timing relationships

To satisfy these goals, ten XML schemata are being developed:

- ATML—Automatic Test Markup Language
- TCML—Test Configuration Markup Language
- TRML—Test Results Markup Language
- TPML—Test Program Markup Language
- URML—UUT Requirements Markup Language
- UCML—UUT Configuration Markup Language
- ISML—Instrument Specification Markup Language
- TSML—Test Station Markup Language
- IAML—Interface Adapter Markup Language
- DML—Diagnostic Markup Language

Given the overlap in goals between SCC20 and ATML, it was felt that these two groups would do well to work together. The initial discussions on such cooperation occurred at AUTOTESTCON in Anaheim. Several members of ATML have since been invited to participate in SCC20 efforts.