

Accredited Standards Committee*
National Committee on Information Technology Standards (NCITS)

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Project:

Ref. Doc.:

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NCITS SUBGROUP ANNUAL REPORT

Annual Report for: **T10**
Covering the Period: September 1999 to September 2000
Title of NCITS Subgroup: Lower Level Interfaces
Informal Description of Work: T10 develops standards and technical reports on I/O interfaces, particularly the Small Computer System Interface (SCSI).

I. Executive Summary

T10 continues to run smoothly with 41 approved projects. Most of the active projects are related to the SCSI-3 family of standards. T10 membership has declined from 49 to 39 organizations.

Over the last four years, there has been a renewed interest in parallel SCSI. This is mostly due to work on the driver/receiver technology called Low-Voltage Differential (LVD). This work extends SCSI's maximum cable lengths and the maximum data rates supported with only a slight increase in costs. This work is documented in the SPI-2, SPI-3, and SPI-4 projects.

II. Projects

1. Storage Module Interfaces (SMD-E)

- a. Project 0053-RF Storage Module Interfaces (SMD-E)
- b. Target date for dpANS to NCITS:
Original target date:
Previous target date:
Current target date: Maintenance Phase -- 5yr review due in 2002.
- c. Project Description: This is a maintenance project on X3.91-1992, Storage Module Interfaces.
- d. Publications during the past year: none.
- e. Statement of Progress and current status: Published as X3.91M:1987[1997]; Maintenance Phase.

2. Small Computer System Interface (SCSI-2)

- a. Project 0375-R, Small Computer System Interface (SCSI-2)

*Operating under the procedures of The American National Standards Institute.

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- b. Target date for dpANS to NCITS:
Original target date:
Previous target date:
Current target date: Maintenance Phase -- 5yr review due in 2004.
- c. Project Description: The SCSI protocol is designed to provide an efficient peer-to-peer I/O bus with up to 16 devices, including one or more hosts. Data may be transferred asynchronously at rates that only depend on device implementation and cable length. Synchronous data transfers are supported at rates up to 10 mega-transfers per second. With the 32-bit wide data transfer option, data rates of up to 40 megabytes per second are possible.

SCSI-2 includes command sets for magnetic and optical disks, tapes, printers, processors, CD-ROMs, scanners, medium changers, and communications devices.

There are two Technical Information Bulletins associated with this standard: 1) TIB #1: Logging Operations and 2) TIB #2: Partition Management.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as X3.131-1994[1999]; Maintenance Phase.

3. SCSI Common Access Method (SCSI CAM)

- a. Project 0792-M, SCSI Common Access Method (SCSI CAM)
- b. Target date for dpANS to NCITS:
Original target date:
Previous target date:
Current target date: Maintenance Phase -- 5yr review due in 2001.
- c. Project Description: This project defines a common method to access SCSI devices through a standard software interface to SCSI host adapters for several popular operating systems. This should result in simplified integration of products.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as X3.232:1996; Maintenance Phase.

4. Serial Storage Architecture - Transport Layer - 1 (SSA-TL1)

- a. Project 0989-D, Serial Storage Architecture - Transport Layer (SSA-TL1)
- b. Target date for dpANS to NCITS:
Original target date:
Previous target date:
Current target date: Maintenance Phase -- 5yr review due in 2001.
- c. Project Description: The SSA-TL1 standard will define a transport layer that uses the SSA physical layer to transport the protocol above it. The goals of SSA-TL1 are: 1) minimize gate count. 2) define a web that supports frame multiplexing. 3) define flow control that allows a tradeoff between distance and data rate. and 4) define a full duplex transfer mechanism.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as X3.295:1996; Maintenance Phase.

5. SCSI-3 Generic Packetized Protocol (GPP)

- a. Project 0991-DT, SCSI-3 Generic Packetized Protocol (GPP)
- b. Target date for dpANTR to NCITS:
 - Original target date:
 - Previous target date:
 - Current target date: Maintenance Phase -- 5yr review due in 2002.
- c. Project Description: The Generic Packetized Protocol is intended to provide a protocol that can take advantage of multiple physical interfaces in a length-independent manner (i.e., a minimum number of packets per I/O Process). The Generic Packetized Protocol encapsulates the SCSI protocol, functions, commands, status, and data requiring minimal services from the physical interface. This project was converted from a Standards project to a Technical Report project about a year ago.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as X3/TR-16-1997; Maintenance Phase.

6. SCSI-3 Fibre Channel Protocol (FCP)

- a. Project 0993-D, SCSI-3 Fibre Channel Protocol (FCP)
- b. Target date for dpANS to NCITS:
 - Original target date:
 - Previous target date:
 - Current target date: Maintenance Phase -- 5yr review due in 2001.
- c. Project Description: The SCSI-3 Fibre Channel Protocol is intended to provide a protocol that can take advantage of the capabilities provided by the Fibre Channel physical layer to support an efficient, low-overhead transport service for SCSI products. The FCP is one of the protocols used in the FC-4 layer of Fibre Channel.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as X3.269:1996; Maintenance Phase.

7. SCSI-3 Architecture Model (SAM)

- a. Project 0994-D, SCSI-3 Architecture Model (SAM)
- b. Target date for dpANS to NCITS:
 - Original target date:
 - Previous target date:
 - Current target date: Maintenance Phase -- 5yr review due in 2001.
- c. Project Description: The SCSI-3 Architecture Model defines the architecture of SCSI and provides a model for implementing several protocols on a variety of transport mechanisms. This standard will define a unifying framework for the implementation of SCSI.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as X3.270:1996; Maintenance Phase.

8. SCSI-3 Primary Commands (SPC)

- a. Project 0995-D, SCSI-3 Primary Commands (SPC)
- b. Target date for dpANS to NCITS:
Original target date:
Previous target date:
Current target date: Maintenance Phase -- 5yr review due in 2001.
- c. Project Description: The SPC is intended to provide a definition of those commands absolutely necessary to function in an SCSI environment plus those commands that are defined consistently for more than one command set. This command set will provide the means to identify the device type and hence identify which command set is appropriate for the device.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as X3.301:1997; Maintenance Phase.

9. SCSI-3 Block Commands (SBC)

- a. Project 0996-D, SCSI-3 Block Commands (SBC)
- b. Target date for dpANS to NCITS:
Original target date:
Previous target date:
Current target date: Maintenance Phase -- 5yr review due in 2003.
- c. Project Description: The SCSI-3 Block Commands is intended to provide a complete set of commands to complement the SCSI-3 Primary Commands, and will be applicable to devices which transfer data in fixed block sizes (e.g., disk drives).
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as NCITS.306:1998; Maintenance Phase.

10. SCSI-3 Stream Commands (SSC)

- a. Project 0997-D, SCSI-3 Stream Commands (SSC)
- b. Target date for dpANS to NCITS:
Original target date:
Previous target date:
Current target date: Maintenance Phase -- 5yr review due in 2005.
- c. Project Description: The SCSI-3 Stream Commands is intended to provide a complete set of commands to complement the SCSI-3 Primary Commands, and be applicable to devices which transfer data in a streaming manner (e.g., tape drives).
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as NCITS.335:2000; Maintenance Phase.

11. SCSI-3 Medium Changer Commands (SMC)

- a. Project 0999-D, SCSI-3 Medium Changer Commands (SMC)

- b. Target date for dpANS to NCITS:
Original target date:
Previous target date:
Current target date: Maintenance Phase -- 5yr review due in 2003.
- c. Project Description: The SCSI-3 Medium Changer Commands is intended to provide a complete set of commands to complement the SCSI-3 Primary Commands, and be applicable to devices which can relocate data from an inventory location to and from a device.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as NCITS.314:1998; Maintenance Phase.

12. SCSI-3 Multimedia Commands (MMC)

- a. Project 1048-D, SCSI-3 Multimedia Commands (MMC)
- b. Target date for dpANS to NCITS:
Original target date:
Previous target date:
Current target date: Maintenance Phase -- 5yr review due in 2002.
- c. Project Description: The SCSI-3 Multimedia Commands standard is intended to provide, in conjunction with the SCSI-3 Primary Commands (SPC), a complete set of commands for CD devices, while maintaining a high degree of compatibility with SCSI-2 compliant CD-ROM devices.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as X3.304:1997; Maintenance Phase.

13. Serial Storage Architecture - SCSI-3 Protocol (SSA-S3P)

- a. Project 1051-D, Serial Storage Architecture - SCSI-3 Protocol (SSA-S3P)
- b. Target date for dpANS to NCITS:
Original target date:
Previous target date:
Current target date: Maintenance Phase -- 5yr review due in 2003.
- c. Project Description: The SSA-S3P standard will define a protocol that maps the SCSI-3 command sets onto the transport layer and physical interface. This standard will maintain compatibility with SCSI-3 and the SCSI-3 Architecture Model. The goals of SSA-S3P are: a) support for dual port and alternate paths; b) support for data field format extensions; c) support for auto-sense; d) support for third-party operations.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as NCITS.309:1998; Maintenance Phase.

14. Serial Storage Architecture - SCSI-2 Protocol (SSA-S2P)

- a. Project 1121-D, Serial Storage Architecture - SCSI-2 Protocol (SSA-S2P)
- b. Target date for dpANS to NCITS:
Original target date:
Previous target date:

Current target date: Maintenance Phase -- 5yr review due in 2001.

- c. Project Description: The SSA-S2P standard will define a protocol that maps the SCSI-2 command sets onto the transport layer and physical interface. This standard will maintain compatibility with SCSI-2 to the extent possible in a serial environment. The goals of SSA-S2P are:
 - a) provide an easy migration path to a serial interface; b) minimize the impact in converting firmware in existing devices; c) provide an architected error recovery mode; d) improve performance by reducing command overhead; e) define the data field format; f) provide the support needed for concurrent I/O processing.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as X3.294:1996; Maintenance Phase.

15. SCSI Parallel Interface - 2 (SPI-2)

- a. Project 1142-D, SCSI Parallel Interface - 2 (SPI-2)
- b. Target date for dpANS to NCITS:
 - Original target date:
 - Previous target date:
 - Current target date: Maintenance Phase -- 5yr review due in 2004.
- c. Project Description: The SPI-2 standard will define a physical and protocol layers that will support the SCSI-3 command sets above it, while maintaining a high degree of compatibility with the current SPI and SIP standards. Candidates for inclusion in the SPI-2 draft standard are: 1) definition of a new driver/receiver technology to increase data rates, enhance signal margins, enhance cable lengths, and increase device counts; 2) enhancements to the physical layer to reduce power consumption and to address emerging market for lower voltage devices; 3) Maintenance of the SCSI physical level standard that may result from further implementation of the SPI standard.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as X3.302:1999; Maintenance Phase.

16. SCSI Enhanced Parallel Interface Technical Report (EPI)

- a. Project 1143-D, SCSI Enhanced Parallel Interface Technical Report (EPI)
- b. Target date for dpANS to NCITS:
 - Original target date:
 - Previous target date:
 - Current target date: Maintenance Phase -- 5yr review due in 2004.
- c. Project Description: This technical report will address complex physical configurations of parallel SCSI having one or more of the following features: a) mixed single-ended and differential devices on separate segments of the same logical bus; b) higher device count (e.g. > 16 devices); c) physical bus segments with branches to improve transmission line effects; d) extended physical bus segment lengths allowed by the propagation delay assumptions already built into the parallel SCSI protocol; e) removal and replacement of devices on active buses; f) removal, replacement, and addition of physical bus segments in active systems; g) mixed power conditions in active systems.
- d. Publications During Past Year: none.

- e. Statement of Progress and current status: Published as NCITS TR-23:1999; Maintenance Phase.

17. **SCSI Fibre Channel Protocol - 2 (FCP-2)**

- a. Project 1144-D, SCSI Fibre Channel Protocol - 2 (FCP-2)
- b. Target date for dpANS to NCITS:
 - Original target date: November 1997
 - Previous target date: May 2000
 - Current target date: November 2001
- c. Project Description: The FCP-2 standard will define a mapping layer for the execution of SCSI operations as defined by the SCSI-3 Architectural Model, ANSI X3.270-199X on the Fibre Channel - Physical and Signaling Interface as defined by ANSI X3.230-1994. It will maintain a high degree of compatibility with the present FCP standard. Candidates for inclusion in the FCP-2 draft standard include defining an optional response confirmation protocol for certain Fibre Channel Class 3 environments.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: T10 letter ballot conducted with many comments received. Due to extensive changes made, a second T10 letter ballot is expected.

18. **Serial Storage Architecture - Physical Layer - 1 (SSA-PH1)**

- a. Project 1145-D, Serial Storage Architecture - Physical Layer (SSA-PH1)
- b. Target date for dpANS to NCITS:
 - Original target date:
 - Previous target date:
 - Current target date: Maintenance Phase -- 5yr review due in 2001.
- c. Project Description: The SSA-PH1 standard will define a physical layer that will support the SSA transport layer and the protocol above it. The goals of SSA-PH1 are: a) minimize gate count; b) copper cable operation at 20MB/sec.; c) full duplex operation to achieve an aggregate 40MB/sec between two ports; d) connectors and cables sized for small form factor devices.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as X3.293:1996; Maintenance Phase.

19. **Serial Storage Architecture - Physical Layer - 2 (SSA-PH2)**

- a. Project 1146-D, Serial Storage Architecture - Physical Layer (SSA-PH2)
- b. Target date for dpANS to NCITS:
 - Original target date:
 - Previous target date:
 - Current target date: Maintenance Phase -- 5yr review due in 2003.
- c. Project Description: The SSA-PH2 standard will define a physical layer that will support the SSA transport layer and the protocol above it. The goals of SSA-PH2 are: a) extend the cable distance; b) copper cable operation at 40MB/sec or greater; c) full duplex operation to achieve an aggregate 80MB/sec between two ports; and d) consider an optical transmission option.

- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as NCITS.307:1998; Maintenance Phase.

20. Serial Storage Architecture - Transport Layer - 2 (SSA-TL2)

- a. Project 1147-D, Serial Storage Architecture - Transport Layer (SSA-TL2)
- b. Target date for dpANS to NCITS:
 - Original target date:
 - Previous target date:
 - Current target date: Maintenance Phase -- 5yr review due in 2003.
- c. Project Description: The SSA-TL2 standard will define a transport layer that uses the SSA physical layer to support the protocol above it. The goals of SSA-TL2 are: a) provide support for an extended distance option in the physical layer; b) provide support for higher data rates in the physical layer; and c) enhance packet formats and addressing methods.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as NCITS.308:1998; Maintenance Phase.

21. SCSI Serial Bus Protocol 2 (SBP-2)

- a. Project 1155-D, SCSI Serial Bus Protocol 2 (SBP-2)
- b. Target date for dpANS to NCITS:
 - Original target date:
 - Previous target date:
 - Current target date: Maintenance Phase -- 5yr review due in 2002.
- c. Project Description: The SBP-2 standard will define transport layer protocols to take advantage of the continued evolution of the High Performance Serial Bus, IEEE Std 1394-1995. Candidates for inclusion in the SBP-2 draft standard are: a) define a transport protocol that is independent of the command set, b) develop functional specifications for SBP-2 high-availability factors, possibly in connection with yet to be defined extensions to High Performance Serial Bus transport media, c) provide functionality to incorporate the anticipated inclusion of gigabit and greater transfer rates by High Performance Serial Bus, d) insure SBP-2 compatibility for operations within a group of High Performance Serial Buses connected by bridges, e) provision of facilities to take advantage of the isochronous data transfer capabilities of High Performance Serial Bus, and f) other capabilities which fit within the general application scope of High Performance Serial Bus that may be proposed during the development phase by the participants in the project.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as NCITS.325:1998; Maintenance Phase.

22. SCSI Architecture Model - 2 (SAM-2)

- a. Project 1157-D, SCSI Architecture Model - 2 (SAM-2)
- b. Target date for dpANS to NCITS:
 - Original target date: November 1997
 - Previous target date: May 2000
 - Current target date: November 2001

- c. Project Description: The SAM-2 standard will define an abstract layered model specifying those common characteristics of an SCSI I/O subsystem that must be exhibited by all SCSI protocols and implementations to insure compatibility with device drivers and applications regardless of underlying interconnect technology. SAM-2 will maintain a high degree of compatibility with the present SAM standard. Candidates for inclusion in the SAM-2 draft standard include extensions to support high availability requirements.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Project is nearing completion. Delays in defining the multi-port model have caused the schedule slip.

23. SCSI Enclosure Services (SES)

- a. Project 1212-D, SCSI Enclosure Services (SES)
- b. Target date for dpANS to NCITS:
 - Original target date:
 - Previous target date:
 - Current target date: Maintenance Phase -- 5yr review due in 2003.
- c. Project Description: The SES standard defines a model for a SCSI Enclosure Services device type. The command set and command set usage are described. Formats for providing different classes of information are defined. Formats for providing status and control information for each element and type of element in an enclosure are defined. The SES standard uses commands defined in the SPC standard to transfer these formats. Additional formats are provided for other enclosure related information.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: SES Amendment #1 has been forwarded to NCITS to correct some minor technical defects. SES is published. AM#1 is at 1PR (closes 2000/10/09).

24. SCSI Controller Commands - 2 (SCC-2)

- a. Project 1225-D, SCSI Controller Commands (SCC-2)
- b. Target date for dpANS to NCITS:
 - Original target date:
 - Previous target date:
 - Current target date: Maintenance Phase -- 5yr review due in 2003.
- c. Project Description: The SCSI Controller Commands-2 standard is intended to provide a complete set of commands to complement the SCSI-3 Primary Command Set, and be applicable to devices which act as subsystem controllers, such as a disk array controllers. Functions which will be considered for incorporation include: a) Transfer commands unique to SCC-2 devices; b) Control commands to manage the operation of an SCC-2 device; c) Optional device mapping and pass-through support; d) Other capabilities which fit within the general scope of implementing the SCSI Controller Commands-2 on a broad range of applications, and other capabilities that may be proposed during the development phase by the participants in the project.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as NCITS.318:1998; Maintenance Phase.

25. Multi-Media Commands - 2 (MMC-2)

- a. Project 1228-D, Multi-Media Commands - 2 (MMC-2)
- b. Target date for dpANS to NCITS:
 - Original target date:
 - Previous target date:
 - Current target date: Maintenance Phase -- 5yr review due in 2005.
- c. Project Description: The SCSI Multi-Media Commands-2 standard is intended to provide additional commands to existing Multi-Media Command Set, and be applicable to new devices being developed. Functions which will be considered for incorporation include: a) New Format commands unique to DVD, PD devices; b) Other capabilities which fit within the general scope of implementing the SCSI Multi-Media Commands-2 on a broad range of applications, and other capabilities that may be proposed during the development phase by the participants in the project.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as NCITS.333:2000; Maintenance Phase.

26. SCSI Primary Commands - 2 (SPC-2)

- a. Project 1236-D, SCSI Primary Commands - 2 (SPC-2)
- b. Target date for dpANS to NCITS:
 - Original target date: July 1998
 - Previous target date: May 2000
 - Current target date: May 2001
- c. Project Description: The SCSI Primary Commands-2 standard is intended to include additional commands as well as existing SCSI-3 Primary Commands, and be applicable to both existing and new SCSI device types being developed. The participants in the project may decide to move some information in SCSI-3 Primary Commands to another standard or to make some information in SCSI-3 Primary Commands obsolete in SCSI Primary Commands-2. In addition to the information currently in SCSI-3 Primary Commands, information that will be considered for incorporation include: a) New additional sense code values; b) New mode page definitions or new fields in existing mode pages; c) New fields in the parameter data returned by the INQUIRY and REQUEST SENSE commands; d) New vital product data pages; e) New commands appropriate for all SCSI device types; f) Changes to the processor device type model; and g) Other capabilities that fit within the general scope of implementing the SPC-2 on a broad range of applications, and other capabilities that may be proposed during the development phase by the participants in the project.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Completed development; in T10 approval phase. Resolving extensive T10 LB comments.

27. Reduced Block Commands (RBC)

- a. Project 1240-D, Reduced Block Commands (RBC)
- b. Target date for dpANS to NCITS:
 - Original target date:
 - Previous target date:
 - Current target date: Maintenance Phase -- 5yr review due in 2005.

- c. Project Description: This standard will define for hard disk drive and removable disk drive devices: the commands to be utilized; the device operation; the subset of the SBP-2 protocol to be utilized; the security requirements on 1394; the configuration ROM and CSR requirements on 1394.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Published as NCITS.330:2000; Maintenance Phase.

28. SCSI Parallel Interface - 3 (SPI-3)

- a. Project 1302-D, SCSI Parallel Interface - 3 (SPI-3)
- b. Target date for dpANS to NCITS:
 - Original target date: May 1999
 - Previous target date: January 2000
 - Current target date: January 2000
- c. Project Description: The SPI-3, based on low-voltage differential (LVD) technology, will allow a 32-bit dual-channel host adapter to attain greater than 5 Gbits per second data rate, doubling the data rate of current technology. This will permit peripherals to meet the data I/O needs of the next generation 64-bit processors being delivered by the end of the millennium. In addition to improving the fundamental data rate to 80 mega-transfers per second, SPI-3 will consider reducing the overhead of parallel SCSI with the adoption of protocol enhancements allowing a host adapter achievement of greater than 100,000 I/O's per second. The enhancements may include an error detection scheme along with packetization to increase the data integrity and provide unrestricted hot plugging for parallel SCSI. The SPI-3 project will consider the advancing developments in silicon technology related to power management and voltage-reduction.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Two public reviews completed. At NCITS for approval.

29. Object Based Storage Devices Command Set (OSD)

- a. Project 1355-D, Object Based Storage Devices Command Set (OSD)
- b. Target date for dpANS to NCITS:
 - Original target date: November 2003
 - Previous target date:
 - Current target date: November 2003
- c. Project Description: The Object Based Storage Device command set would store data objects instead of blocks of data. The purpose of this abstraction is to assign to the storage device more responsibility for managing the location of the data. The advantages for this approach are: (a) easier sharing of files with multiple initiators, (b) sharing of files among initiators that use different operating systems, (c) moving responsibility for data management functions such as defragmentation to the storage device, and (d) easier implementation of third party backup and restore operations.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Development phase has begun.

30. Multi-Media Commands - 3 (MMC-3)

- a. Project 1363-D, Multi-Media Commands - 3 (MMC-3)
- b. Target date for dpANS to NCITS:
 - Original target date: November 2000
 - Previous target date:
 - Current target date: July 2001
- c. Project Description: The MultiMedia Command set version 3 is based on MultiMedia Command set version 2 that provides for commands to implement CD-R, CD-RW, DVD-ROM, DVD-R, DVD+RW DVD-RAM, DVD-RW, AS-MO, and earlier devices. This command set may be implemented on multiple interfaces such as SCSI, ATA/ATAPI, SBP-2 (1394), and FC-P. The following items should be considered for inclusion in MMC-3: 1) options for improving operation with serial interconnects; 2) extensions to DVD product commands; 3) extensions to CD product commands; 4) other capabilities that may fit within the general application scope of this project.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Development phase nearing completion.

31. Reduced MultiMedia Command Set (RMC)

- a. Project 1364-D, Reduced MultiMedia Command Set (RMC)
- b. Target date for dpANS to NCITS:
 - Original target date: November 2000
 - Previous target date: November 2000
 - Current target date: November 2002
- c. Project Description: The Reduced MultiMedia command set is based on MultiMedia Command Set – 2 (MMC-2), and the Reduced Block Command (RBC) Set for SBP-2. It will provide for a reduced number of commands that will ensure all functions of the CD/DVD will be implemented. The following items should be considered for inclusion in RMC: 1) extensions for minimal command implementation; 2) ensure that the latest CD/DVD products have valid commands; 3) other capabilities that may fit within the general application scope of the this project.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Project on hold waiting for completion of MMC-3 project.

32. SCSI Parallel Interface - 4 (SPI-4)

- a. Project 1365-D, SCSI Parallel Interface - 4 (SPI-4)
- b. Target date for dpANS to NCITS:
 - Original target date: November 2000
 - Previous target date: November 2000
 - Current target date: November 2001
- c. Project Description: The SCSI Parallel Interface - 4 (SPI-4), is based on low-voltage differential (LVD) technology and is designed to provide a 320 MB/sec data rate and lay the groundwork for the next data rate, 640 MB/sec. In addition to doubling the existing data rate of SPI-3, the following items may be considered for inclusion in SPI-4: 1) extended addressing for multi-segment domains; 2) options for expander design; 3) options for improving operation with host interconnects; 4) extensions to domain validation; 5) skew management schemes; 6) improvements

for physical layer signal integrity; 7) power management; 8) voltage reduction options; 9) other capabilities that may fit within the general application scope of the this project.

- d.
- e. Publications During Past Year: none.
- f. Statement of Progress and current status: Development phase started. Slip due to unrealistic date in project proposal.

33. SCSI Domain Validation Technical Report (SDV)

- a. Project 1378-D, SCSI Domain Validation Technical Report (SDV)
- b. Target date for dpANS to NCITS:
 - Original target date: November 2001
 - Previous target date:
 - Current target date: November 2001
- c. Project Description: The SCSI Domain Validation (SDV), is an application of testing techniques to validate the communication capability of the SCSI physical layer. Some of the techniques require cooperation between host and target devices. The following items should be considered for inclusion in SDV: 1) definition of domain validation levels; 2) interoperability parameters for techniques; 3) communication methods for expanders; 4) other capabilities that may fit within the general application scope of the this project.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Development has begun.

34. SCSI on Scheduled Transfer (SST)

- a. Project 1380-D, SCSI on Scheduled Transfer (SST)
- b. Target date for dpANS to NCITS:
 - Original target date: November 2000
 - Previous target date: November 2000
 - Current target date: November 2001
- c. Project Description: This project proposal recommends the development of a mapping for SCSI Architecture and commands onto the facilities provided by Scheduled Transfer (ST). The Scheduled Transfer (ST) project (assigned to T11.1) defines a local transport mechanism for use on several media including the High-Performance Parallel Interface (HIPPI), HIPPI-6400, Fibre Channel, and Ethernet. ST allows maximum network performance. It achieves this by scheduling transfers and sending data only when end devices can accept it.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Development nearing completion. Slip due to unrealistic date in project proposal.

35. SCSI Medium Changer Commands - 2 (SMC-2)

- a. Project 1383-D, SCSI Medium Changer Commands - 2 (SMC-2)
- b. Target date for dpANS to NCITS:
 - Original target date: January 2001
 - Previous target date:

Current target date: November 2001

- c. Project Description: The Media Changers Command set version 2 is based on SCSI Medium Changers Command set version 1 that provides commands to implement changer devices for removable media. This command set may be implemented on multiple interfaces such as SCSI, Fibre Channel, IEEE 1394 and ATA/ATAPI. The following items should be considered for inclusion in SMC-2: 1) Improving operation with serial interconnects; 2) handling interconnected changer devices, 3) improved reporting of error conditions, 4) other capabilities that may fit within the general application scope of this project.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Development has begun. Slip due to little progress because few proposals received.

36. SCSI Signal Modeling (SSM)

- a. Project 1414-DT, SCSI Signal Modeling (SSM)
- b. Target date for dpANS to NCITS:
 - Original target date: September 2001
 - Previous target date:
 - Current target date: September 2001
- c. Project Description: The SCSI Signal Modeling Technical Report (SSM) is a collection of requirements on methodologies to be used to simulate SCSI signals. These methodologies support the current family of SCSI standards and are designed to work at the data rates expected to be specified through 2006. The following items may be considered for inclusion in SSM: 1. Methodologies and models for all the types of components that exist in a SCSI signal path; 2. Simulation tools; 3. Benchmark data patterns; 4. Benchmark test configurations; 5. Output types and formats; 6. Output evaluation schemes; 7. Evaluation of signaling methodologies (encoding, ISI compensation, etc.); 8. Physical measurement / simulation correlation; 9. Definitions for terms and concepts of signal integrity (SNR, random and deterministic jitter); 10. Translation between component manufacturing control parameters and simulation input parameters; 11. Other capabilities that may fit within the general application scope of this project.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Development has begun.

37. SCSI VI Protocol (SVP)

- a. Project 1415-D, SCSI VI Protocol (SVP)
- b. Target date for dpANS to NCITS:
 - Original target date: January 2001
 - Previous target date:
 - Current target date: July 2001
- c. Project Description: Much clustering communication takes place at application or file system levels. However many clustering applications may require frequent device level access as well. A standard protocol for use of the Virtual Interface Architecture by SCSI will aid interoperability and assist future development of clustering technology. The SCSI VI Protocol (SVP) will define a SCSI protocol mapping onto the Virtual Interface Architecture and/or functionally similar cluster protocols. The SCSI VI Protocol will allow the SCSI architecture and command sets to be used with any implementation of the Virtual Interface Architecture.

- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Development has begun.

38. SCSI Primary Commands - 3 (SPC-3)

- a. Project 1416-D, SCSI Primary Commands - 3 (SPC-3)
- b. Target date for dpANS to NCITS:
 - Original target date: July 2002
 - Previous target date:
 - Current target date: November 2002
- c. Project Description: Technological advances require continuing improvements in the set of SCSI commands employed by all SCSI device types. After the publication of SPC-2, SPC-3 will provide the vehicle for standardizing the needed improvements. The SCSI Primary Commands-3 standard is intended to include additional commands as well as existing SCSI primary commands, and be applicable to both existing and new SCSI device types being developed. The participants in the project may decide to move some information in SCSI Primary Commands to another standard or to make some information obsolete in SPC-3. The following items should be considered for inclusion in SPC-3: 1) Moving some information in SAM-2 to SPC-3 to reduce the rate of change in the architecture model document; 2) New additional sense code values; 3) New mode page definitions or new fields in existing mode pages; 4) New fields in the parameter data returned by the INQUIRY and REQUEST SENSE commands; 5) New vital product data pages; 6) New commands appropriate for all SCSI device types; 7) Other capabilities that may fit within the general application scope of this project.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: In development. Slip due to delays in approving SPC-2.

39. SCSI Block Commands - 2 (SBC-2)

- a. Project 1417-D, SCSI Block Commands - 2 (SBC-2)
- b. Target date for dpANS to NCITS:
 - Original target date: July 2002
 - Previous target date:
 - Current target date: November 2001
- c. Project Description: The SCSI Block Commands - 2 is based on SCSI-3 Block Commands (SBC) that provides commands for block structured data storage devices such as magnetic disks and optical memory block devices. This command set may be implemented on multiple interfaces such as SCSI, Fibre Channel, IEEE 1394 and ATA/ATAPI. The following items should be considered for inclusion in SBC-2: 1) Support for media capacities larger than 2 terabytes; 2) Control commands to manage the operation of a device; 3) Other capabilities that may fit within the general application scope of this project.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Development has begun. Project target date was accelerated.

40. SCSI Stream Commands - 2 (SSC-2)

- a. Project 1434-D, SCSI Stream Commands - 2 (SSC-2)

- b. Target date for dpANS to NCITS:
 - Original target date: March 2001
 - Previous target date:
 - Current target date: November 2001
- c. Project Description: The SCSI Stream Commands - 2 is based on SCSI-3 Stream Commands (SSC) that provides commands for stream devices such as sequential-access tape drives and printers. This command set may be implemented on multiple interfaces such as SCSI, Fibre Channel, IEEE 1394 and ATA/ATAPI. The following items should be considered for inclusion in SSC-2: 1) Support for large block addresses; 2) Additional command support; SET CAPACITY; 3) Other capabilities that may fit within the general application scope of this project.
- d. Publications During Past Year: none.
- e. Statement of Progress and current status: Development has begun. Slip due to decision to support a new stateless tape model that has extended the development time.

41. SCSI Passive Interconnect Performance (PIP) Technical Report

- a. Project 1439-D, SCSI Passive Interconnect Performance (PIP) Technical Report
- b. Target date for dpANS to NCITS:
 - Original target date: January 2002
 - Previous target date:
 - Current target date: January 2002
- c. Project Description: The SCSI Passive Interconnect Performance Technical Report (PIP) is a collection of requirements on methodologies to be used to measure the performance of passive SCSI interconnect components such as cable assemblies and backplanes. This work extends previous work for uniform transmission media to the completed interconnect parts that have connectors and other assembly features. These methodologies support the current family of SCSI standards and are designed to work at the data rates expected to be specified through 2007. The following items may be considered for inclusion in PIP: 1) Define how to specify the output signal from a cable assembly in light of the possible use of adjustable active filtering (called equalization by some) in receivers; 2) Allow for the following schemes that are presently being considered for SPI-4: transmitter compensation, adaptive adjustable filtering, compensation of skew; 3) Define how to specify cable assembly construction in terms of performance rather than only in mechanical terms. For example, connector to connector spacing in terms of propagation time rather than length, transition regions in terms of cross talk contribution rather than physical extent, discontinuities in impedance due to connectors rather than nothing, etc.; 4) Preserve the present testing methodologies for media if possible; 5) Specify output types and formats; 6) Specify output evaluation schemes; 7) Define worst case configurations: loading, spacing (regular or not, values); 8) Define interoperability points that involve passive interconnect; 9) Rules for concatenation of passive interconnect components; 10) Extend currently specified tests for media to completedFor example, the attenuation test can be generalized to two port amplitude transfer function (which will include resonance caused by connectors etc). The cross talk test can be generalized by using repeated pulses and varying the rep rate while observing the response of on the victim line; 11) Include the effects of data pattern and placement of cable assembly features that may produce complex interference patterns and recommend how to minimize the impact of these features on the delivered signal; 12) Use the same test specification documentation methodology as used for SPI-3 cable media.; 13) Measurement of common mode performance requirements on shielded and unshielded cable assemblies and backplanes; 14) Other capabilities that may fit within the general application scope of the this project.
- d. Publications During Past Year: none.

- e. Statement of Progress and current status: Development has begun.

III. Committee Activities

- a. Previous Year's Meetings:
 - November 4, 1999; Monterey, CA
 - January 13, 2000; Brisbane, Australia
 - March 9, 2000; Dallas, TX
 - May 18, 2000; Nashua, NH
 - July 13, 2000; Colorado Springs, CO
 - September 14, 2000, Huntington Beach, CA
- b. Current Year's Planned Meetings T10:
 - November 2, 2000, Monterey, CA
 - January 18, 2001; Orlando, FL
 - March 8, 2001; Dallas, TX
 - May 3, 2001; Manchester, NH
 - July 19, 2001; Colorado Springs, CO
 - September 13, 2001, Huntington Beach, CA
 - November 8, 2001, Monterey, CA
- c. Officers: T10
 - Chair: John B. Lohmeyer
 - Vicechair: George O. Penokie
 - Secretary: Ralph O. Weber
- d. Membership: The current T10 membership list is attached.
- e. Liaison Activities: T11, T13, ISO/IEC JTC1/SC25/WG4, IEEE P1394.1, IETF, IEEE P1285.
- f. Administrative Matters of Note: none.
- g. Procedural Matters of Note: none.
- h. Recommendations: none.

IV. Anticipated Projects

It is anticipated that one or more projects will be needed for next-generation versions of current T10 projects as these projects near completion.

V. Future Trends in this Technical Area

The physical layer of parallel SCSI continues to take advantage of advances in silicon technology boosting transfer rates and connectivity. SCSI expanders and switches have recently emerged as methods to enhance SCSI connectivity. The trend to smaller connectors to accommodate wider data paths and smaller devices also impacts the physical layer.

The protocol layers for SCSI command sets continue to expand to encompass new physical layers being developed in other organizations. In addition, advances in parallel protocol are expected to occur in order to reduce overhead.

The SCSI command sets are evolving to encompass the latest developments in storage (e.g., digital video disks, CD recordable devices, and array controllers) as well as refinements to deal with current issues (e.g., power management and security).

Attachment 1: Committee Projects: SD-4 Data

The NCITS Secretariat provided the following data:

T10/SC25/WG4 Lower Level Interface

(Revised 09/08/00) NCITS Project: 53 - M

Standard Designation: X3.91M:1987 [R1997]

Title: Storage Module Interfaces (SMD-E)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

NCITS Project: 375 - M

Standard Designation: X3.131:1994 [R1999]

Title: Small Computer System Interface - 2 (SCSI-2)

Related International Development

ISO/IEC Doc.: IS 9316-1:1995

JTC 1 Project: 25.13.10.13

Standard Designation: X3.131:1994/TIB-1:1995 []

Title: ANSI X3.131:1994 Technical Information Bulletin 1

Related International Development

ISO/IEC Doc.: N/A

JTC 1 Project: _

Standard Designation: X3.131:1994/TIB-2:1995 []

Title: ANSI X3.131:1994 Technical Information Bulletin 2

Related International Development

ISO/IEC Doc.: N/A

JTC 1 Project: __

NCITS Project: 792 - M

Standard Designation: X3.232:1996 []

Title: SCSI-2 Common Access Method Transport and SCSI Interface Module

Related International Development

ISO/IEC Doc.: DIS 15842
JTC 1 Project: 25.13.11.02

NCITS Project: 989 - D
Standard Designation: X3.295:1996 []

Title: Serial Storage Architecture - Transport Layer (SSA-TP1)

Related International Development

ISO/IEC Doc.: N/A
JTC 1 Project: N/A

-
NCITS Project: 991 - DT
Standard Designation: X3/TR-16:1997 []

Title: Technical Report for Generic Packetized Protocol (GPP)

Related International Development

ISO/IEC Doc.: N/A
JTC 1 Project: 25.13.11.06

-
NCITS Project: 993 - M
Standard Designation: X3.269:1996 []

Title: SCSI-3 Fibre Channel Protocol (FCP)

Related International Development

ISO/IEC Doc.: JTC1 N 3917
JTC 1 Project: 25.13.13.02

NCITS Project: 994 - M
Standard Designation: X3.270:1996 []

Title: SCSI-3 Architecture Model (SAM)

Related International Development

ISO/IEC Doc.: IS 14776-411
JTC 1 Project: 25.13.11.08

-

NCITS Project: 995 - D

Standard Designation: X3.301:1997 []

Title: SCSI-3 Primary Commands (SPC)

Related International Development

ISO/IEC Doc.: N/A

JTC 1 Project: N/A

NCITS Project: 996 - D

Standard Designation: NCITS 306:1998 []

Title: SCSI-3 Block Commands (SBC)

Related International Development

ISO/IEC Doc.: FDIS 14766-321

JTC 1 Project: 25.13.11.10

NCITS Project: 997 - D

Standard Designation: NCITS 335:2000 []

Title: Information technology - SCSI-3 Stream Commands (SSC)

Related International Development

ISO/IEC Doc.: FCD 14776-331

JTC 1 Project: 25.13.11.11

NCITS Project: 999 - D

Standard Designation: NCITS 314:1998 []

Title: SCSI-3 Medium Changer Commands (SMC)

Related International Development

ISO/IEC Doc.: CD 14776-351

JTC 1 Project: 25.13.11.13

NCITS Project: 1047 - D

Standard Designation: X3.276:1997 []

Title: SCSI-3 Controller Commands (SCC)

Related International Development

ISO/IEC Doc.: IS 14776-341
JTC 1 Project: 25.13.11.15

NCITS Project: 1048 - D

Standard Designation: X3.304:1997 []

Title: SCSI-3 Multimedia Commands (MMC)

Related International Development

ISO/IEC Doc.: JTC 1 Project: N/A

NCITS Project: 1051 - D

Standard Designation: NCITS 309:1997 []

Title: Serial Storage Architecture - SCSI-3 Protocol (SSA-S3P)

Related International Development

ISO/IEC Doc.: N/A
JTC 1 Project: N/A

NCITS Project: 1071 - M

Standard Designation: X3.277:1996 []

Title: SCSI-3 Fast-20 Parallel Interface (Fast-20)

Related International Development

ISO/IEC Doc.: JTC1 N 3915
JTC 1 Project: N/A

NCITS Project: 1121 - D

Standard Designation: X3.294:1996 []

Title: Serial Storage Architecture - SCSI-2 Protocol (SSA-S2P)

Related International Development

ISO/IEC Doc.: N/A
JTC 1 Project: N/A

NCITS Project: 1142 - D

Standard Designation: X3.302:1998 []

Title: SCSI-3 Parallel Interface - 2 (SPI-2)

Related International Development

ISO/IEC Doc.: CD 14776-112

JTC 1 Project: 25.13.11.21

NCITS Project: 1143 - TR

Standard Designation: NCITS/TR-23:1998 []

Title: Technical Report for SCSI Enhanced Parallel Interface (EPI)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

NCITS Project: 1144 - D

Standard Designation: : []

Title: SCSI Fibre Channel Protocol - 2 (FCP-2)

Related International Development

ISO/IEC Doc.: JTC 1 Project: 25.13.11.18

NCITS Project: 1145 - D

Standard Designation: X3.293:1996 []

Title: Serial Storage Architecture - Physical Layer 1 (SSA-PH1)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

NCITS Project: 1146 - D

Standard Designation: NCITS 307:1997 []

Title: Serial Storage Architecture - Physical Layer 2 (SSA-PH2)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

NCITS Project: 1147 - D

Standard Designation: NCITS 308:1997 []

Title: Serial Storage Architecture - Transport Layer 2 (SSA-TL2)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

-
NCITS Project: 1155 - D

Standard Designation: NCITS 325:1998 []

Title: SCSI-3 Serial Bus Protocol 2 (SBP-2)

Related International Development

ISO/IEC Doc.: DIS 14776-232

JTC 1 Project: 25.13.11.20

-
NCITS Project: 1157 - D

Standard Designation: : []

Title: SCSI Architecture Model-2 (SAM-2)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

NCITS Project: 1212 - D

Standard Designation: NCITS 305:1998/AM1: []

Title: Information Technology - SCSI - Enclosure Services (SES) - Amendment 1

Related International Development

ISO/IEC Doc.: JTC 1 Project:

Standard Designation: NCITS 305:1998 []

Title: SCSI Enclosure Services (SES)

Related International Development

ISO/IEC Doc.: CD 14776-371

JTC 1 Project: 25.13.11.22

-
NCITS Project: 1225 - D

Standard Designation: NCITS 318:1998 []

Title: SCSI Controller Commands - 2 (SCC-2)

Related International Development

ISO/IEC Doc.: CD 14776-342

JTC 1 Project: 25.13.11.23

NCITS Project: 1228 - D

Standard Designation: NCITS 333:2000 []

Title: SCSI Multi-Media Commands - 2 (MMC-2)

Related International Development

ISO/IEC Doc.: FCD 14776-362

JTC 1 Project: 25.13.11.24

NCITS Project: 1236 - D

Standard Designation: : []

Title: SCSI Primary Commands - 2 (SPC-2)

Related International Development

ISO/IEC Doc.: CD 14766-311

JTC 1 Project:

NCITS Project: 1240 - D

Standard Designation: NCITS 330:2000 []

Title: Reduced Block Commands (RBC)

Related International Development

ISO/IEC Doc.: FCD 14776-326

JTC 1 Project: 25.13.11.25

NCITS Project: 1302 - D

Standard Designation: NCITS 336: []

Title: Information technology - SCSI Parallel Interface-3 (SPI-3)

Related International Development

ISO/IEC Doc.: FCD 14776-326

JTC 1 Project: 25.13.11.25

NCITS Project: 1303 - DT

Standard Designation: : []

Title: SCSI Enclosure Profile

Related International Development

ISO/IEC Doc.: JTC 1 Project:

NCITS Project: 1355 - D

Standard Designation: : []

Title: Information technology - Object Based Storage Devices Command Set (OSD)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

NCITS Project: 1363 - D

Standard Designation: : []

Title: MultiMedia Command Set-3 (MMC-3)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

NCITS Project: 1364 - D

Standard Designation: : []

Title: Reduced MultiMedia Command Set (RMC)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

NCITS Project: 1365 - D

Standard Designation: : []

Title: SCSI Parallel Interface-4 (SPI-4)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

NCITS Project: 1378 - DT

Standard Designation: : []

Title: SCSI Domain Validation (SDV)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

NCITS Project: 1380 - D

Standard Designation: : []

Title: Information Technology - Small Computer Systems Interface (SCSI) on Scheduled Transport (ST) (SST)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

NCITS Project: 1383 - D

Standard Designation: : []

Title: Information technology - SCSI Media Changer Command Set version 2 (SMC-2)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

NCITS Project: 1414 - DT

Standard Designation: : []

Title: Information technology - SCSI Signal Modeling (SSM) Technical Report [[For Additional Information](#)]

Related International Development

ISO/IEC Doc.: JTC 1 Project:

NCITS Project: 1415 - D

Standard Designation: : []

Title: Information technology - SCSI VI Protocol (SVP)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

NCITS Project: 1416 - D

Standard Designation: : []

Title: Information technology - SCSI Primary Commands - 3 (SPC-3)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

-
NCITS Project: 1417 - D

Standard Designation: : []

Title: Information technology - SCSI Block Commands - 2 (SBC-2)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

NCITS Project: 1434 - D

Standard Designation: : []

Title: Information technology - SCSI Stream Commands -2 (SSC-2)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

-
NCITS Project: 1439 - DT

Standard Designation: : []

Title: Information Technology - SCSI Passive Interconnect Performance (PIP)

Related International Development

ISO/IEC Doc.: JTC 1 Project:

Attachment 2: Internal Procedures

The T10 internal procedures are as follows:

T10 Standards Development Policies and Procedures: <ftp://ftp.t10.org/t10/document.94/94-198r3.pdf> (approved)
<ftp://ftp.t10.org/t10/document.00/00-283r1.pdf> (revised)
T10 Electronic Procedures: <ftp://ftp.t10.org/t10/document.95/95-146r2.pdf> (approved)
T10 Procedure for Funding Technical Editors: <ftp://ftp.t10.org/t10/document.95/95-148r0.pdf> (approved)
T10 Document Retention Policy: <ftp://ftp.t10.org/t10/document.98/98-107r1.pdf> (approved)
T10 Plenary Meetings & Accompanying Meeting Weeks: <ftp://ftp.t10.org/t10/document.00/00-221r2.pdf> (new)

The above procedures marked 'approved' have been approved by PPC. T10 has recently revised the first procedure and created a new policy on meetings. These documents have been submitted to NCITS for approval.

Attachment 3: Financial Statement

The NCITS Secretariat maintains an escrow account on T10's behalf to pay for technical editing services. See the T10 Procedure for Funding Technical Editors <ftp://ftp.t10.org/t10/document.95/95-148r0.pdf> for details of how this account is administered. The current account balance as of 21 September 2000 is \$28,780.75.

Attachment 4: T10 Current Membership List

This file contains the T10 attendance database in ASCII format. It is not the "official" T10 membership list that is maintained by the NCITS Secretariat. The NCITS list includes people who have never attended a T10 meeting, but have paid their fee(s) and are in "good standing". This list is used for keeping track of attendance since there are minimum attendance requirements to maintain voting rights.

The code in parentheses following people's names indicates their membership status:

- P - the Principal member for an organization
- A - the first Alternate member for an organization
- A# - an additional Alternate member for an organization
- O - an Observer member of T10
- L - a Liaison member of T10 (usually a member of another standards group)
- XO - Ex Officio member of T10 (several NCITS officers are Ex Officio members of T10)

T10 Attendance Database Generated on 2000/09/21 at 11:16:36

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