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

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Project:
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NCITS SUBGROUP ANNUAL REPORT

Annual Report for: **T10**
Covering the Period: April 1997 to August 1998
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 37 approved projects. Most of the active projects are related to the SCSI-3 family of standards. Quite a few of T10's projects were completed over the last year and are now in maintenance phase. T10 membership has been declined slightly and is at 48 organizations.

Work is nearly complete in mapping SCSI command sets to Fibre Channel and IEEE 1394. (The SSA work was completed although there is little industry interest in this activity.) Over the last two 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 and SPI-3 projects.

The 10.1 task group on SSA finished its work *ahead of schedule* and was disbanded. The T10.1 maintenance projects were re-assigned to T10.

II. Projects

1. Interfaces Between Flexible Disks and Their Host Controllers

a. Project 0052-M, Interfaces Between Flexible Disks and Their Host Controllers

b. Target date for dpANS to NCITS: ?
Original target date:
Previous target date:
Current target date: Published

c. Project Description: This is a maintenance project on ANSI/ISO/IEC 9315:[1994], which was previously identified as X3.80-1988, Interfaces Between Flexible Disks and Their Host Controllers.

d. Publications during the past year: none.

e. Statement of Progress or Accomplishments During Year: none.

f. Statement of Status as of This Report: Maintenance Phase -- no activity.

g. Future Plans: none.

h. Reasons for Delay: none.

2. 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: Published--Reaffirmed: 1997

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 or Accomplishments During Year: Reaffirmed in 1997.

f. Statement of Status as of This Report: Maintenance Phase.

g. Future Plans: none.

h. Reasons for Delay: none.

3. Small Computer System Interface (SCSI-2)

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

b. Target date for dpANS to NCITS:
Original target date:
Previous target date:
Current target date: Maintenance Phase -- 5yr review due in 1999.

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.

d. Publications During Past Year: none.

e. Statement of Progress or Accomplishments During Year: none.

f. Statement of Status as of This Report: Maintenance Phase -- 5yr review due in 1999.

g. Future Plans: none for SCSI-2; work continues on the SCSI-3 family of standards.

h. Reasons for Delay: none.

4. Device Level Interface for Streaming Cartridge and Cassette Tape Drives

a. Project 0378-M, Device Level Interface for Streaming Cartridge and Cassette Tape Drives

b. Target date for dpANS to NCITS:
Original target date:
Previous target date:
Current target date: none

c. Project Description: This is a maintenance project on X3.146-1986 [R1992].

d. Publications During Past Year: none.

e. Statement of Progress or Accomplishments During Year: This standard was withdrawn 9/23/97.

f. Statement of Status as of This Report: Withdrawn.

g. Future Plans: none.

h. Reasons for Delay: none.

5. Enhanced Small Device Interface (ESDI)

a. Project 0587-M, Enhanced Small Device Interface (ESDI)

b. Target date for dpANS to NCITS:
Original target date:
Previous target date:
Current target date: Maintenance Phase -- 5yr review due in 1999.

c. Project Description: This is a maintenance project on X3.170-1990[1994]/X3.170a-1991[1994].

d. Publications During Past Year: none.

e. Statement of Progress or Accomplishments During Year: T10 has recommended that NCITS withdraw this standard.

f. Statement of Status as of This Report: Should be on the NCITS September 1998 agenda for withdrawal.

g. Future Plans: none.

h. Reasons for Delay: none.

6. 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 or Accomplishments During Year: ANSI X3.232-1996 published.

f. Statement of Status as of This Report: Maintenance Phase.

g. Future Plans: CAM-3 (Project 0990-D) is in development phase.

h. Reasons for Delay: none.

7. SCSI-3 Parallel Interface (SPI)

a. Project 0855-D, SCSI-3 Parallel Interface (SPI)

b. Target date for dpANS to NCITS:
Original target date:
Previous target date:
Current target date: Maintenance Phase -- 5yr review due in 2000.

c. Project Description: The SCSI-3 Parallel Interface standard maintains a high degree of compatibility with SCSI-2 while providing documentation for new capabilities including an option to permit 16-bit data transfers on a single cable and expanded bus connectivity options to increase the maximum number of SCSI devices on a cable from 8 to 16 or more. This standard does not address areas above the physical level (such as protocol and command sets). This standard is used in conjunction with the command sets defined in SCSI-2 and/or subsequent versions of SCSI.

d. Publications During Past Year: none.

e. Statement of Progress or Accomplishments During Year: SPI Amendment #1 was approved.

f. Statement of Status as of This Report: SPI Amendment #1 was approved by BSR on May 19, 1998.

g. Future Plans: SPI-2 (Project 1142-D) is in approval phase and SPI-3 (Project 1302-D) is in development phase.

h. Reasons for Delay: none.

8. SCSI-3 Interlocked Protocol (SIP)

a. Project 0856-D, SCSI-3 Interlocked Protocol (SIP)

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 Interlocked Protocol standard maintains a high degree of compatibility with the equivalent functions in SCSI-2 while defining several new features and functions. The candidate new features are support of more than 8 devices and other evolutionary features. This standard is intended to be used in conjunction with the SCSI-3 Parallel Interface standard and the SCSI-3 command set standards.

d. Publications During Past Year: none.

e. Statement of Progress or Accomplishments During Year: none.

f. Statement of Status as of This Report: Published.

g. Future Plans: No follow-on projects are planned for SIP because both SPI-2 and SPI-3 integrate the SIP functions.

h. Reasons for Delay: none.

9. 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 or Accomplishments During Year: none.

f. Statement of Status as of This Report: Published.

g. Future Plans: SSA-TL2 (Project 1147-D) was completed.

h. Reasons for Delay: Completed ahead of schedule.

10. Common Access Method - 3 (CAM-3)

a. Project 0990-D, Common Access Method - 3 (CAM-3)

b. Target date for dpANS to NCITS:
Original target date: July 1994
Previous target date: July 1996
Current target date: ?

c. Project Description: This project is intended to revise and enhance the SCSI Common Access Method (CAM) such as adding 64-bit addressing and additional queuing modes.

d. Publications During Past Year: none.

e. Statement of Progress or Accomplishments During Year: Revision 3 of CAM-3 was distributed in the 1998_1 T10 mailing.

f. Statement of Status as of This Report: Progress continues to be slow. There is almost no interest in this project, except from the project editor.

g. Future Plans: none.

h. Reasons for Delay: Lack of interest.

11. 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 or Accomplishments During Year: GPP was registered as X3/TR-16-1997.

f. Statement of Status as of This Report: Published.

g. Future Plans: none.

h. Reasons for Delay: none.

12. 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 or Accomplishments During Year: none.

f. Statement of Status as of This Report: Published.

g. Future Plans: FCP-2 (Project 1144-D) is in development phase.

h. Reasons for Delay: none.

13. 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 or Accomplishments During Year: none..

f. Statement of Status as of This Report: Published.

g. Future Plans: SAM-2 (Project 1157-D) is in development phase.

h. Reasons for Delay: none.

14. 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 or Accomplishments During Year: SPC was approved by BSR on 7/3/97.

f. Statement of Status as of This Report: Published.

g. Future Plans: SPC-2 (Project 1236-D) is in development phase.

h. Reasons for Delay: none.

15. 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 or Accomplishments During Year: Approved and published.

f. Statement of Status as of This Report: Published.

g. Future Plans: SBC-2 project may be proposed and RBC (Project 1240-D), which subsets the SBC command set, is in development.

h. Reasons for Delay: none.

16. SCSI-3 Stream Commands (SSC)

a. Project 0997-D, SCSI-3 Stream Commands (SSC)

b. Target date for dpANS to NCITS:
Original target date: June 1994
Previous target date: May 1997
Current target date: November 1998

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 or Accomplishments During Year: T10 letter ballot completed.

f. Statement of Status as of This Report: T10 letter ballot comments are being resolved. We expect to forward SSC to NCITS late this year.

g. Future Plans: An SSC-2 project will likely be proposed.

h. Reasons for Delay: In mid 1997, the SSC Project Editor resigned due to a job change. Another editor was appointed, but he got busy with his consulting business and was unable to continue. I have recently appointed another editor who has prepared Rev 12 of SSC.

17. 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: June 1994
Previous target date: July 1997
Current target date: n/a

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 or Accomplishments During Year: BSR approved SMC 5/19/98.

f. Statement of Status as of This Report: At ANSI for publication.

g. Future Plans: An SMC-2 project may be proposed.

h. Reasons for Delay: none.

18. SCSI-3 Controller Commands (SCC)

a. Project 1047-D, SCSI-3 Controller Commands (SCC)

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 Controller Commands 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.

d. Publications During Past Year: none.

e. Statement of Progress or Accomplishments During Year: none.

f. Statement of Status as of This Report: Published.

g. Future Plans: SCC-2 (Project 1225-D) has been approved by NCITS.

h. Reasons for Delay: none.

19. 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 or Accomplishments During Year: Approval phase completed.

f. Statement of Status as of This Report: Published.

g. Future Plans: MMC-2 (Project 1228-D) is in development phase.

h. Reasons for Delay: none.

20. 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 or Accomplishments During Year: Approval phase completed.

f. Statement of Status as of This Report: Published.

g. Future Plans: none.

h. Reasons for Delay: none.

21. SCSI-3 Fast-20 Parallel Interface (Fast-20)

a. Project 1071-D, SCSI-3 Fast-20 Parallel Interface (Fast-20)

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 Fast-20 standard is intended to document extensions to SPI to permit transfer rates of 20 mega-transfers per second, while maintaining a high degree of compatibility with SPI.

d. Publications During Past Year: none.

e. Statement of Progress or Accomplishments During Year: none.

f. Statement of Status as of This Report: Published.

g. Future Plans: SPI-2 {Project 1142-D} is in approval phase and SPI-3 (Project 1302-D) is in development phase.

h. Reasons for Delay: none.

22. 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 or Accomplishments During Year: none.

f. Statement of Status as of This Report: Published.

g. Future Plans: SSA-S3P (Project 1051-D) was completed. No further SSA work is planned.

h. Reasons for Delay: none.

23. 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: July 1997
Previous target date: July 1998 (changed in revised project proposal)
Current target date: March 1998

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 or Accomplishments During Year: T10 development and approval were completed. SPI-2 is currently at NCITS letter ballot for approval.

f. Statement of Status as of This Report: At NCITS for approval.

g. Future Plans: none.

h. Reasons for Delay: none.

24. 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: May 1997
Previous target date: May 1998
Current target date: November 1998

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 or Accomplishments During Year: Development completed and T10 letter ballot for forwarding passed; T10 is now resolving letter ballot comments.

f. Statement of Status as of This Report: T10 approval phase.

g. Future Plans: none.

h. Reasons for Delay: Priority was given to SPI-2 development.

25. 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: November 1997
Current target date: November 1999

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 or Accomplishments During Year: Very little; not much has been identified beyond the present FCP standard.

f. Statement of Status as of This Report: In development.

g. Future Plans: none.

h. Reasons for Delay: Very has changed from FCP. We expect several significant changes as the FC-Tape Technical Report completes development.

26. 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 or Accomplishments During Year: none.

f. Statement of Status as of This Report: Published.

g. Future Plans: SSA-PH2 (Project 1146-D) was completed. No further SSA work is planned.

h. Reasons for Delay: none.

27. 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 or Accomplishments During Year: Approval phase completed.

f. Statement of Status as of This Report: Published.

g. Future Plans: none.

h. Reasons for Delay: none.

28. 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 or Accomplishments During Year: Approval phase was completed.

f. Statement of Status as of This Report: Published.

g. Future Plans: none.

h. Reasons for Delay: none.

29. 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: November 1997
Previous target date: November 1997
Current target date: May 1998

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 or Accomplishments During Year: Development work completed.

f. Statement of Status as of This Report: At NCITS for approval.

g. Future Plans: none.

h. Reasons for Delay: Some delays were incurred when it was decided to remove the isochronous services in response to a T10 letter ballot comment.

30. 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: November 1997
Current target date: November 1999

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 or Accomplishments During Year: New editor assigned. We are up to revision 8 and making progress.

f. Statement of Status as of This Report: In development.

g. Future Plans: none.

h. Reasons for Delay: Change of editorship (previous editor changed jobs) and a desire to keep this project in synchronization with the SPC-2 project.

31. SCSI Enclosure Services (SES)

a. Project 1212-D, SCSI Enclosure Services (SES)

b. Target date for dpANS to NCITS:
Original target date: November 1997
Previous target date: January 1997
Current target date: January 1997

c. Project Description: The SES standard will define a model for a SCSI Enclosure Services device type. The command set and command set usage will be described. Formats for providing different classes of information will be defined. Formats for providing status and control information for each element and type of element in an enclosure are defined. The SES standard will use commands defined in the SPC standard to transfer these formats. Additional formats are provided for other enclosure related information. If the committee requests and approves appropriate text, the SES standard may include additional enclosure related information, including MIB/MIFs for enclosure information.

d. Publications During Past Year: none.

e. Statement of Progress or Accomplishments During Year: Approval completed.

f. Statement of Status as of This Report: Approved by BSR 5/19/98.

g. Future Plans: none.

h. Reasons for Delay: Forwarded ahead of schedule; however we had some delays in getting pre-edits included into the working draft.

32. SCSI High Availability Profile (HAP)

a. Project 1224-DT, SCSI High Availability Profile (HAP) Technical Report

b. Target date for dpANTR to NCITS:
Original target date: May 1998
Previous target date: May 1998
Current target date: November 1998 (it seems likely that this date will be missed)

c. Project Description: Candidates for inclusion in the HAP technical report are: a) An interoperability profile for parallel SCSI components; b) System-level considerations for High Availability subsystems; c) Clarify the SCC description of the use of multi-LUN devices; d) Clarify device identification procedures in the case of multiple access paths; e) Identify characteristics needed for devices intended for use in high availability systems, including hardware, software, microcode, and device models; f) Document the process and procedures used to remove and replace device and host enclosures on a SCSI bus; g) Document the proper usage of "Y" cables, location of bus terminators, etc. as applicable to high availability systems; h) Document methods to avoid bus glitches on power cycles; i) Document when a bus reset may be used, when bus options are renegotiated, how to handle incoming bus resets, and the handling of message and command traffic when a host is running its boot or console code; j) Document when certain data needs to be maintained on a per-LUN or a per-host basis in a device; k) Establish guidelines for hosts in a multi-host environment to coordinate the use of mode pages, bus IDs, bus resets, and reservations; l) Clarification of the use of multiple internal controllers inside a SCSI device to provide internal protection against device failure.

d. Publications During Past Year: none.

e. Statement of Progress or Accomplishments During Year: Progress slowed down considerably -- one revision was distributed in the 1997_5 T10 mailing.

f. Statement of Status as of This Report: In development.

g. Future Plans: none.

h. Reasons for Delay: The Project Editor seems to have less time available for this activity. No one else is pushing for its completion.

33. 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: November 1997
Previous target date: November 1997
Current target date: November 1997

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 or Accomplishments During Year: Development and approval completed..

f. Statement of Status as of This Report: At BSR for approval.

g. Future Plans: none.

h. Reasons for Delay: Forwarded on schedule.

34. 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: March 1998
Previous target date: March 1998
Current target date: November 1998

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 or Accomplishments During Year: Several working drafts were prepared and we a expecting a T10 letter ballot in September 1998.

f. Statement of Status as of This Report: In development.

g. Future Plans: none.

h. Reasons for Delay: Emerging DVD device types are not entirely stable yet.

35. 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: July 1998
Current target date: November 1999

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 or Accomplishments During Year: Several revisions of the working draft were prepared.

f. Statement of Status as of This Report: In development.

g. Future Plans: An SPC-3 project will probably be proposed in order to forward SPC-2.

h. Reasons for Delay: It seems necessary to keep an SPC-n project open as long as other command sets projects are open.

36. SCSI Socket/SSL Services Command Set (SSS)

a. Project 1246-D, SCSI Socket/SSL Services Command Set (SSS)

b. Target date for dpANS to NCITS:
Original target date: July 1999
Previous target date: July 1999
Current target date: July 1999

c. Project Description: The SSS standard will: a) define a platform and device independent method of communication between processor devices and communication devices or other devices; b) be optimized for platform/device independence; c) provide other capabilities which fit within the general application scope of the SCSI Socket/SSL Service that may be proposed during the development phase by the participants in the project.

d. Publications During Past Year: none.

e. Statement of Progress or Accomplishments During Year: The Project Editor has prepared several reports, but we are still waiting for a first draft.

f. Statement of Status as of This Report: In development.

g. Future Plans: none.

h. Reasons for Delay: none.

37. 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:
Current target date: May 1999

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 or Accomplishments During Year: A first draft has been prepared and numerous proposals have been presented to T10.

f. Statement of Status as of This Report: In development.

g. Future Plans: An SPI-4 project proposal seems likely.

h. Reasons for Delay: none.

38. SCSI Enclosure Profile (SEP) Technical Report

a. Project 1303-D, SCSI Enclosure Profile (SEP)

b. Target date for dpANS to NCITS:
Original target date: May 1999
Previous target date:
Current target date: May 1999 (It seems likely that this date will be missed.)

c. Project Description: With the near completion of SES (SCSI Enclosure Services) and SCC-2 (SCSI Controller Commands -2) standards, product developers need guidance for cost-effective engineering of RAID (Redundant Arrays of Independent Disks) products based on these new standards. It is important that both host software and RAID controller firmware be developed at minimum time and cost so that initial industry acceptance of these new standards can be achieved. A usage profile describing a minimum usage definition based on the standards and agreed to using the NCITS consensus process is proposed to meet these needs.

d. Publications During Past Year: none.

e. Statement of Progress or Accomplishments During Year: none.

f. Statement of Status as of This Report: In development.

g. Future Plans: none.

h. Reasons for Delay: none.

III. Committee Activities

a. Previous Year's Meetings:

May 8, 1997; Natick, MA
July 17, 1997; Colorado Springs, CO
September 11, 1997; Nashua, NH
November 6, 1997; Palm Springs, CA
March 19, 1998; San Diego, CA
May 7, 1998; Colorado Springs, CO
July 16, 1998; Portland, ME

b. Current Year's Planned Meetings T10:

September 17, 1998; St. Petersburg Beach, FL
November 5, 1998; Palm Springs, CA
March 11, 1999; Sarasota, FL
May 6, 1999; Manchester, NH
July 15, 1999; Colorado Springs, CO
September 16, 1999; Huntington Beach, CA
November 11, 1999; Palm Springs, CA

c. Officers: T10
Chair: John B. Lohmeyer
Vicechair: George O. Penokie (was Lawrence J. Lamers until March 1998)
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, IEEE P1285.

f. Administrative Matters of Note: Recent acquisitions have pointed out a need for clarification in the SD-2 regarding organizations that join or leave a technical committee during a letter ballot period.

g. Procedural Matters of Note: There is still a need to permit abstentions within technical committees on all kinds of votes.

h. Recommendations: Thank you NCITS Secretariat for eliminating the floppy mailings! The web site is a vast improvement!

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 following data was provided by the NCITS Secretariat:

T10/SC25/WG4
Lower Level Interface
(Revised 07/30/98)

Project: 52 - M

Std. Desig.: IS 9315:1989 [1994]
Sold By: ANSI

Cost: 24.00 0.00
Title: Interfaces between flexible disk cartridges drives and their host controllers
Related International Development
ISO/IEC Doc.: IS 9315:1989
JTC 1 Project: 25.13.10.01

- Project: 53 - M
Std. Desig.: X3.91M:1987 [R1997]

Sold By: ANSI

Cost: 28.00 0.00
Title: Storage Module Interfaces (SMD-E)
Related International Development
ISO/IEC Doc.: IS 9324
JTC 1 Project: 25.13.10.03

Project: 375 - M
Std. Desig.: X3.131:1994 []
Sold By: ANSI

Cost: 125.00 0.00
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

Std. Desig.: X3.131:1994/TIB-1:1995 []
Sold By: Global

Cost: 15.00 19.50
Title: ANSI X3.131:1994 Technical Information Bulletin 1
Related International Development
ISO/IEC Doc.: N/A

JTC 1 Project: _

Std. Desig.: X3.131:1994/TIB-2:1995 []
Sold By: Global

Cost: 15.00 19.50
Title: ANSI X3.131:1994 Technical Information Bulletin 2
Related International Development
ISO/IEC Doc.: N/A
JTC 1 Project: __

- Project: 587 - M
Std. Desig.: X3.170:1989 [R1994]

Cost: 25.00 0.00
Sold By: ANSI
Title: Enhanced Small Device Interface (ESDI) (price includes supplement)
Related International Development
ISO/IEC Doc.: DIS 10222
JTC 1 Project: 25.13.10.12

Std. Desig.: X3.170A:1991 [R1994]
Sold By:

Cost: 0.00 0.00
Title: Addendum to ANSI X3.170-1989, Enhanced Small Device Interface (ESDI)
Related International Development
ISO/IEC Doc.: N/A
JTC 1 Project: 25.13.10.12

Project: 792 - M
Std. Desig.: X3.232:1996 []
Sold By: ANSI

Cost: 95.00 0.00
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

- Project: 855 - M
Std. Desig.: X3.253:1995/AM1:1998 []

Sold By:

Cost: 0.00 0.00
Title: Amendment 1 to ANSI X3.253:1995, SCSI-3 Parallel Interface (SPI)
Related International Development
ISO/IEC Doc.: JTC 1 Project:

Std. Desig.: X3.253:1995 []

Cost: 75.00 0.00
Sold By: ANSI
Title: SCSI-3 Parallel Interface (SPI)
Related International Development

ISO/IEC Doc.: JTC1 N 3913
JTC 1 Project: 25.13.11.05

Project: 856 - M
Std. Desig.: X3.292:1997 []

Sold By: ANSI

Cost: 75.00 0.00
Title: SCSI-3 Interlocked Protocol (SIP)
Related International Development
ISO/IEC Doc.: CD 14766-211
JTC 1 Project: 25.13.11.04

- Project: 989 - M
Std. Desig.: X3.295:1996 []

Sold By: ANSI

Cost: 80.00 0.00
Title: Serial Storage Architecture - Transport Layer (SSA- TP1)
Related International Development
ISO/IEC Doc.: N/A
JTC 1 Project: N/A

Project: 990 - D
Std. Desig.: : []
Sold By:

Cost: 0.00 0.00
Title: Common Access Method-3 (CAM-3)
Related International Development
ISO/IEC Doc.: N/A
JTC 1 Project: N/A

- Project: 991 - DT
Std. Desig.: X3/TR-16:1997 []

Sold By: Global

Cost: 65.00 78.00
Title: Technical Report for Generic Packetized Protocal (GPP)
Related International Development
ISO/IEC Doc.: N/A
JTC 1 Project: 25.13.11.06

Project: 993 - M
Std. Desig.: X3.269:1996 []
Sold By: ANSI

Cost: 65.00 0.00
Title: SCSI-3 Fibre Channel Protocol (FCP)
Related International Development
ISO/IEC Doc.: JTC1 N 3917
JTC 1 Project: 25.13.13.02

- Project: 994 - M
Std. Desig.: X3.270:1996 []

Sold By: ANSI

Cost: 65.00 0.00
Title: SCSI-3 Architecture Model (SAM)
Related International Development
ISO/IEC Doc.: JTC1 N 3929
JTC 1 Project: N/A

Project: 995 - M
Std. Desig.: X3.301:1997 []
Sold By: ANSI

Cost: 165.00 0.00
Title: SCSI-3 Primary Commands (SPC)
Related International Development
ISO/IEC Doc.: N/A
JTC 1 Project: N/A

- Project: 996 - M
Std. Desig.: NCITS 306:1998 []
Sold By:

Cost: 0.00 0.00
Title: SCSI-3 Block Commands (SBC)
Related International Development
ISO/IEC Doc.: CD 14766-321
JTC 1 Project: N/A

- X3 Project: 997 - D
Std. Desig.: : []

Sold By: Global

Cost: 35.00 45.50
Title: SCSI-3 Stream Commands (SSC)
Related International Development
ISO/IEC Doc.: N/A
JTC 1 Project: N/A

Project: 999 - M
Std. Desig.: NCITS 314:1998 []
Sold By: Global

Cost: 35.00 45.50
Title: SCSI-3 Medium Changer Commands (SMC)
Related International Development
ISO/IEC Doc.: CD 14776-351
JTC 1 Project: N/A

- Project: 1047 - M
Std. Desig.: X3.276:1997 []
Sold By: ANSI

Cost: 110.00 0.00
Title: SCSI-3 Controller Commands (SCC)
Related International Development
ISO/IEC Doc.: JTC1 N 3916
JTC 1 Project: N/A

- Project: 1048 - M
Std. Desig.: X3.304:1997 []

Sold By: ANSI

Cost: 0.00 0.00
Title: SCSI-3 Multimedia Commands (MMC)
Related International Development
ISO/IEC Doc.: CD 14766-361
JTC 1 Project: N/A

Project: 1051 - M
Std. Desig.: NCITS 309:1997 []
Sold By: ANSI

Cost: 0.00 0.00
Title: Serial Storage Architecture - SCSI-3 Protocol (SSA- S3P)
Related International Development
ISO/IEC Doc.: N/A
JTC 1 Project: N/A

- Project: 1071 - M
Std. Desig.: X3.277:1996 []
Sold By: ANSI

Cost: 28.00 0.00
Title: SCSI-3 Fast-20 Parallel Interface (Fast-20)
Related International Development
ISO/IEC Doc.: JTC1 N 3915
JTC 1 Project: N/A

- Project: 1121 - M
Std. Desig.: X3.294:1996 []

Sold By: ANSI

Cost: 52.00 0.00
Title: Serial Storage Architecture - SCSI-2 Protocol (SSA- S2P)
Related International Development
ISO/IEC Doc.: N/A
JTC 1 Project: N/A

Project: 1142 - D
Std. Desig.: X3.302: []
Sold By:

Cost: 0.00 0.00
Title: SCSI-3 Parallel Interface - 2 (SPI-2)
Related International Development
ISO/IEC Doc.: CD 14776-112

JTC 1 Project:

- Project: 1143 - DT
Std. Desig.: : []
Sold By:

Cost: 0.00 0.00
Title: Technical Report for SCSI Enhanced Parallel Interface (EPI)
Related International Development
ISO/IEC Doc.: JTC 1 Project:

- Project: 1144 - D
Std. Desig.: : []

Sold By:

Cost: 0.00 0.00
Title: SCSI Fibre Channel Protocol - 2 (FCP-2)
Related International Development
ISO/IEC Doc.: JTC 1 Project:

Project: 1145 - M
Std. Desig.: X3.293:1996 []
Sold By: ANSI

Cost: 75.00 0.00
Title: Serial Storage Architecture - Physical Layer 1 (SSA- PH1)
Related International Development
ISO/IEC Doc.: JTC 1 Project:

- Project: 1146 - M
Std. Desig.: NCITS 307:1997 []
Sold By: ANSI

Cost: 75.00 0.00
Title: Serial Storage Architecture - Physical Layer 2 (SSA- PH2)
Related International Development
ISO/IEC Doc.: JTC 1 Project:

- Project: 1147 - M
Std. Desig.: NCITS 308:1997 []

Sold By: ANSI

Cost: 0.00 0.00
Title: Serial Storage Architecture - Transport Layer 2 (SSA-TL2)
Related International Development
ISO/IEC Doc.: JTC 1 Project:

Project: 1155 - D
Std. Desig.: NCITS 325: []
Sold By:

Cost: 0.00 0.00
Title: SCSI-3 Serial Bus Protocol 2 (SBP-2)
Related International Development

ISO/IEC Doc.: JTC 1 Project:

- Project: 1157 - D
Std. Desig.: : []
Sold By:

Cost: 0.00 0.00
Title: SCSI Architecture Model-2 (SAM-2)
Related International Development
ISO/IEC Doc.: JTC 1 Project:

- Project: 1212 - M
Std. Desig.: NCITS 305:1998 []

Sold By:

Cost: 0.00 0.00
Title: SCSI Enclosure Services (SES)
Related International Development
ISO/IEC Doc.: CD 14776-371
JTC 1 Project:

Project: 1224 - DT
Std. Desig.: : []
Sold By:

Cost: 0.00 0.00
Title: SCSI High Availability Profile (HAP) Technical Report
Related International Development
ISO/IEC Doc.: JTC 1 Project:

- Project: 1225 - M
Std. Desig.: NCITS 318:1998 []
Sold By:

Cost: 0.00 0.00
Title: SCSI Controller Commands - 2 (SCC-2)
Related International Development
ISO/IEC Doc.: CD 14776-342
JTC 1 Project:

- Project: 1228 - D
Std. Desig.: : []

Sold By:

Cost: 0.00 0.00
Title: SCSI Multi-Media Commands - 2 (MMC-2)
Related International Development
ISO/IEC Doc.: JTC 1 Project:

Project: 1236 - D
Std. Desig.: : []
Sold By:

Cost: 0.00 0.00

Title: SCSI Primary Commands - 2 (SPC-2)
Related International Development
ISO/IEC Doc.: CD 14766-311
JTC 1 Project:

- Project: 1240 - D
Std. Desig.: : []
Sold By:

Cost: 0.00 0.00
Title: Reduced Block Commands (RBC)
Related International Development
ISO/IEC Doc.: JTC 1 Project:

- Project: 1246 - D
Std. Desig.: : []

Sold By:

Cost: 0.00 0.00
Title: SCSI Socket/SSL Services (SSS)
Related International Development
ISO/IEC Doc.: JTC 1 Project:

- Project: 1302 - D
Std. Desig.: : []
Sold By:

Cost: 0.00 0.00
Title: SCSI Parallel Interface-3 (SPI-3)
Related International Development
ISO/IEC Doc.: JTC 1 Project:

- Project: 1303 - DT
Std. Desig.: : []

Sold By:

Cost: 0.00 0.00
Title: SCSI Enclosure Profile
Related International Development
ISO/IEC Doc.: JTC 1 Project:

Attachment 2: Internal Procedures

Procedure for Funding T10 Technical Editors

Abstract: The volume of work in T10 exceeds the capacity and capabilities of volunteer technical editors. This procedure provides funding for paid editors to support the development and publication efforts within T10. The necessary funds (Editors Fund) is collected by adding a nominal surcharge to the mailing subscription fee. Funds are distributed to the paid editors by the NCITS Secretariat upon approval of an invoice by T10.

Enactment: This procedure shall be enacted upon approval by X3T9.2 and X3T9 (which they did in late 1992; T10 voted to carry the procedure over to T10). Upon enactment, the NCITS Secretariat shall establish accounting procedures to collect and administer the Editor Fund.

Funds Collection: The Editors Fund shall be maintained by the NCITS Secretariat. A surcharge of $50.00 shall be added to the T10 Mailing Subscription Fee. The funds collected from this surcharge shall be accumulated in the Editors Fund. Moneys remaining in the Editors Fund at the end of the year shall be rolled over into the Editors Fund for the next year. T10 may adjust the amount of the surcharge to the Mailing Subscription Fee from year to year to reflect anticipated editing workload.

Funds Accounting: The NCITS Secretariat shall report that status of the Editors Fund to T10 annually and whenever the NCITS Secretariat receives an invoice for editing work.

Funds Distribution: Upon receipt of a written invoice for editing work, the NCITS Secretariat shall notify the T10 Chair providing a copy of the invoice and the current balance in the Editors Fund. The T10 Chair shall either add an item to the agenda of the next T10 meeting or issue a letter ballot to authorize payment of the invoice. Upon T10 approval of the invoice, the T10 Chair shall notify the NCITS Secretariat of the approval and the NCITS Secretariat shall issue a check for payment of the invoice. T10 shall not authorize payment of an invoice which would exceed the balance in the Editors Fund.

Editing Authorization: T10 may contract editing work on approved projects as deemed appropriate by the Technical Committee providing such contract work does not exceed the funds available in the Editor Fund.

T10 Electronic Procedures

This document, upon approval, establishes a procedure for the T10 Technical Committee, its working groups and affiliated activities regarding the usage of electronic means for notification of meetings and conducting business.

A member is any principal, alternate, or observer as recorded in the T10 attendance database at the point in time that the notification is sent.

1. Means of notification and distribution

T10 meets its requirements for notification and distribution through the use of electronic means. Each member shall provide an e-mail address that is accessible through the internet.

The primary means of notification and distribution is the administrative reflector. Each member is responsible for providing their e-mail address to the chair of T10 for inclusion in the committee attendance database and inclusion on the administrative reflector. T10 members in good standing (i.e., have paid appropriate NCITS fees) shall be included on the administrative reflector.

2. Notification of meetings and tele-conferences

At least two weeks prior to the conducting of a meeting or tele-conference all members shall be notified of the event by posting a meeting notice to the appropriate technical reflector. It is recommended that the notice be

sent at least three weeks prior to the event to allow time for transmission, holidays, weekends, and access to the medium.

The notification shall contain the date, time, location of the event. In addition a contact person shall be named and their telephone number provided for anyone desiring further information. The notification shall specify the subject of the meeting and contain a statement of the meeting objective or an agenda.

3. Electronic letter ballots

T10 routinely uses letter ballots in the conduct of its activities. Letter ballots will be sent to the administrative reflector. This transmission constitutes both transmittal of the letter ballots to the principal members and notification to the alternate members of the letter ballot. The letter ballot shall contain 1) any reference documents, or, 2) reference the appropriate committee mailing, or, 3) shall include the electronic location of any reference documents. In the latter case, the reference documents shall be made available electronically on an FTP, WWW, and BBS site.

4. Distribution of meetings minutes

The convenor of the meeting or tele-conference is required post minutes of the activity to the appropriate technical reflector within ten working days of the conclusion of the event. (The NCITS rules allow two weeks for the delivery of meeting minutes.) T10 plenary minutes shall be posted to the administrative reflector within ten working days of the conclusion of the meeting.

The minutes shall contain a list of participants, and sufficient detail that a member familiar with the activity can adequately informed of the progress made.

5. Distribution of documents

Documents sent to the technical reflector are considered to have met the two week rule for taking action if the posting date is at least two weeks prior to the start of the meeting. Any document so distributed shall have a native format version posted to the BBS or FTP site with a document number to be considered a valid proposal.

6. Reflectors and electronic sites

The current T10 administrative reflector is T10-members@symbios.com. One must join T10 and provide his/her email address to the T10 chair to join this reflector.

The current T10 technical reflector is t10@symbios.com. This reflector is open to anyone and may be joined by sending email to majordomo@symbios.com with the following line in the message body:

subscribe t10

The current BBS location is The SCSI BBS at 719-533-7950 and the current ftp site is ftp.symbios.com.

T10 Standards Development Policies and Procedures

(Please see T10/94-198 r3, attached as a separate file)

T10 Document Retention Policy (from T10/98-107r1)

The officers of the T10 Technical Committee prepare a T10 mailing following each T10 plenary meeting. These mailings take the form of a collection of files (the NCITS Secretariat subsequently distributes these files to subscribers on various media). Minimally, the T10 mailings shall include meeting announcements, draft agendas,

and meeting minutes. Additionally, on a best-effort basis, the officers will include proposals submitted to T10 and working drafts prepared by T10 editors.

Anyone may subscribe to the T10 mailings for a nominal fee. T10 encourages its members and other interested parties to retain copies of the T10 mailings as they see fit. T10 itself does not retain these mailings.

Attachment 3: T10 Current Membership List (Note: This is a report from the T10 attendance database, which was recently synchronized with the NCITS Secretariat's database)

T10 Attendance Database on 1998/08/26 at 11:49:29

Mr. Daniel Weng (O)
Acard Technology Corp.
IF NO 6
Wu Hsing Street
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Adaptec, Inc.
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Mr. Wally Bridgewater (A#)
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Milpitas, CA 95035
Phone: (408) 945-8600
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