Accredited Standards Committee*
X3, Information Technology

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Project:
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X3 SUBGROUP ANNUAL REPORT

Annual Report for: **X3T10**
Covering the Period: April 1995 to March 1996
Title of X3 Subgroup: Lower Level Interfaces
Informal Description of Work: X3T10 develops standards and technical reports on I/O interfaces, particularly the Small Computer System Interface (SCSI).

I. Executive Summary

X3T10 continues to run smoothly with 33 projects. Most of the active projects are related to the SCSI-3 family of standards. X3T10 membership has declined to 48 voting organizations from last year's 58 organizations. This drop is due to at least two factors: 1) There have been several acquisitions in our industry and 2) The ATA family of standards projects were transferred to the new X3T13 technical committee.

Work continues to progress in mapping SCSI command sets to three serial interfaces: Fibre Channel, SSA, and IEEE 1394. Also, there has been a renewed interest in parallel SCSI. This is mostly due to work on a new driver 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.

The X3T10.1 task group has benefited from its experienced leadership in 1995. However, due to a job change, Ken Hallam had to resign as Chair of X3T10.1. Larry Lamers, another experienced officer, is the acting Chair and has formally applied for the position. The first generation of SSA projects have been forwarded to *X3 ahead of schedule* for first public review.

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 X3: ?
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 X3: ?
Original target date:
Previous target date:
Current target date: Published--Reaffirmed: October 12, 1992

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: none.

f. Statement of Status as of This Report: Maintenance Phase -- 5yr review due in 1997.

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 X3:
Original target date: January 1988
Previous target date: December 1991
Current target date: none -- BSR approved 1/31/94

c. Project Description: This project revised X3.131-1990 (SCSI-2 Rev 10c), which was approved by ANSI 8/31/90, but never published at X3's request.

d. Publications During Past Year: none.

e. Statement of Progress or Accomplishments During Year: Two TIBs were published.

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 X3:
Original target date: ?
Previous target date: ?

Current target date: Published

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: none.

f. Statement of Status as of This Report: Maintenance Phase -- 5yr review due in 1997.

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 X3:
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: Reaffirmed on 11/14/94.

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

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 X3:
Original target date: August 1991
Previous target date: February 1995
Current target date: N/A

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: CAM passed its second public review, was approved by X3, and was approved by BSR on 2/5/96.

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

g. Future Plans: A 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 X3:
Original target date: April 1992
Previous target date: February 1995
Current target date: (BSR approved 8/17/95)

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 passed its second public review, was approved by X3, and was approved by BSR on 8/17/95.

f. Statement of Status as of This Report: SPI Revision 15a is in publication phase at ANSI. The ANSI publications department found that a drafting standard referenced by SPI (for four figures) has been superseded. The change in the referenced standard has caused a 30-day X3 letter ballot to approve the reference change and the resulting minor edits to the four figures. Other more serious errors were discovered recently that have resulted in a SPI Amendment project request (currently at X3 letter ballot). The draft amendment is nearly complete and may be forwarded at the May ‘96 X3T10 meeting

g. Future Plans: A SPI-2 project is in development phase.

h. Reasons for Delay: Caught in a “Catch-22” due to the superseded drafting standard.

8. SCSI-3 Interlocked Protocol (SIP)

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

b. Target date for dpANS to X3:
Original target date: April 1992
Previous target date: July 1995
Current target date: March 1996

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: Several revisions were prepared and X3T10 forwarded SIP Revision 9a to X3 in March '96 for first public review.

f. Statement of Status as of This Report: Revision 9a is ready for 1PR.

g. Future Plans: A SIP-2 project will likely be requested for future enhancements to SIP.

h. Reasons for Delay: Previous project editors were overloaded and delays in SPI and SAM prevented progress on SIP. This project benefited enormously this past year from a motivated project editor (George Penokie).

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 X3:
Original target date: August 1996
Previous target date: August 1996
Current target date: March 1996

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: The Task Group finished work on this project and forwarded SSA-TL1 to X3T10 in December 1995. X3T10 forwarded SSA-TL1 to X3 in March 1996.

f. Statement of Status as of This Report: At X3 ready for 1PR.

g. Future Plans: The SSA-TL2 (project 1147-D) is in development.

h. Reasons for Delay: Forwarded to X3 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 X3:
Original target date: July 1994
Previous target date: July 1996
Current target date: July 1996

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: A first draft document was distributed in March 1996.

f. Statement of Status as of This Report: A first draft was recently distributed. Participation at meetings was been discouragingly low. Since most of the people who care about this topic are

highly motivated to use email, we plan to shift the focus to electronic development using the committee reflectors.

g. Future Plans: none.

h. Reasons for Delay: The CAM project completely consumed the resources of those interested in this project.

11. SCSI-3 Generic Packetized Protocol (GPP)

a. Project 0991-DT, SCSI-3 Generic Packetized Protocol (GPP)

b. Target date for dpANTR to X3:
Original target date: June 1993
Previous target date: March 1995
Current target date:

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-16-1995.

f. Statement of Status as of This Report: Project complete.

g. Future Plans: none.

h. Reasons for Delay: Controversy over the GPP scope.

12. SCSI-3 Serial Bus Protocol (SBP)

a. Project 0992-D, SCSI-3 Serial Bus Protocol (SBP)

b. Target date for dpANS to X3:
Original target date: February 1994
Previous target date: December 1994
Current target date:

c. Project Description: The Serial Bus Protocol is intended to provide a protocol that can take advantage of the capabilities provided by the High Performance Serial Bus (IEEE 1394) to support an efficient transport service for SCSI products.

d. Publications During Past Year: none.

e. Statement of Progress or Accomplishments During Year: Comments were received and addressed from the first public review. SBP is currently in 2PR.

f. Statement of Status as of This Report: Second public review closes April 30, 1996. No comments were received as of April 2nd

g. Future Plans: An SBP-2 project has been approved and is in development (Project 1155-D).

h. Reasons for Delay: The IEEE 1394 project was delayed.

13. SCSI-3 Fibre Channel Protocol (FCP)

a. Project 0993-D, SCSI-3 Fibre Channel Protocol (FCP)

b. Target date for dpANS to X3:
Original target date: February 1994
Previous target date: December 1994
Current target date: December 1994

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: Several comments were received and addressed from first public review. Second public review passed without comments.

f. Statement of Status as of This Report: FCP is at BSR for approval.

g. Future Plans: An FCP-2 project has been approved and is in development (Project 1144-D).

h. Reasons for Delay: This project was dependent on SAM and FC-PH reaching stability.

14. SCSI-3 Architecture Model (SAM)

a. Project 0994-D, SCSI-3 Architecture Model (SAM)

b. Target date for dpANS to X3:
Original target date: February 1994
Previous target date: December 1994
Current target date: December 1994

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: Several comments were received and addressed from first public review. Second public review passed without comments.

f. Statement of Status as of This Report: SAM is at BSR for approval.

g. Future Plans: none.

h. Reasons for Delay: Controversy on several SAM requirements lead to a longer than anticipated time to reach consensus on the working draft.

15. SCSI-3 Primary Commands (SPC)

a. Project 0995-D, SCSI-3 Primary Commands (SPC)

b. Target date for dpANS to X3:
Original target date: June 1994
Previous target date: September 1995
Current target date: May 1996

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: An X3T10 forwarding letter ballot passed in March 1996. X3T10 is addressing the letter ballot comments and expects to forward SPC to X3 in May '96.

f. Statement of Status as of This Report: Addressing X3T10 letter ballot comments.

g. Future Plans: An SPC-2 project proposal will likely be forwarded during the next year.

h. Reasons for Delay: It was difficult to cut off development, especially since most of the other SCSI-3 command set documents are behind SPC in development.

16. SCSI-3 Block Commands (SBC)

a. Project 0996-D, SCSI-3 Block Commands (SBC)

b. Target date for dpANS to X3:
Original target date: June 1994
Previous target date: September 1995
Current target date: June 1996

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: Revision 2 was reviewed at the March '96 SCSI ad hoc meeting.

f. Statement of Status as of This Report: We now have a motivated project editor and active development is under way. An ad hoc meeting in May '96 has been scheduled to review SBC.

g. Future Plans: none.

h. Reasons for Delay: Lack of project editor resources.

17. SCSI-3 Stream Commands (SSC)

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

b. Target date for dpANS to X3:
Original target date: June 1994
Previous target date: September 1995
Current target date: May 1996

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: Three working drafts were prepared.

f. Statement of Status as of This Report: A forwarding letter ballot is scheduled following the May '96 X3T10 meeting.

g. Future Plans: none.

h. Reasons for Delay: Waiting on the other SCSI-3 command set documents to reach maturity.

18. SCSI-3 Graphic Commands (SGC)

a. Project 0998-D, SCSI-3 Graphic Commands (SGC)

b. Target date for dpANS to X3:
Original target date: June 1994
Previous target date: April 1996
Current target date: ???

c. Project Description: The SCSI-3 Graphic 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 from/to a visual representation to/from a computer.

d. Publications During Past Year: none.

e. Statement of Progress or Accomplishments During Year: A first draft document was prepared.

f. Statement of Status as of This Report: There has been almost no interest in this project. The X3T10 chair plans to introduce a motion to withdraw the project if no activity occurs before September 1996.

g. Future Plans: none.

h. Reasons for Delay: Lack of interest.

19. SCSI-3 Medium Changer Commands (SMC)

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

b. Target date for dpANS to X3:
Original target date: June 1994
Previous target date: November 1995
Current target date: July 1996

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: Two revisions of the working draft were prepared.

f. Statement of Status as of This Report: An X3T10 forwarding ballot is planned following the July '96 meeting.

g. Future Plans: none.

h. Reasons for Delay: Waiting on the other SCSI-3 command set documents to reach maturity.

20. SCSI-3 Controller Commands (SCC)

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

b. Target date for dpANS to X3:
Original target date: July 1995
Previous target date: February 1995
Current target date:

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: This project forwarded last year ahead of schedule. Comments from the first public review were addressed and a second public review passed without comment.

f. Statement of Status as of This Report: SCC is at BSR for approval.

g. Future Plans: X3T10 plans to address an SCC-2 project proposal.

h. Reasons for Delay: No delay!

21. SCSI-3 Multimedia Commands (MMC)

a. Project 1048-D, SCSI-3 Multimedia Commands (MMC)

b. Target date for dpANS to X3:
Original target date: December 1994
Previous target date: September 1995
Current target date: July 1996

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: This project continues to receive a great deal of industry interest. Two working drafts were prepared and distributed.

f. Statement of Status as of This Report: An X3T10 forwarding ballot is planned following the July '96 meeting.

g. Future Plans: none.

h. Reasons for Delay: There have been several recent developments in the CD-ROM industry that are extending the time to complete this project.

22. 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 X3:
Original target date: April 1997
Previous target date: February 1996 (before project was redefined)
Current target date: April 1997

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: This project was placed on the back burner while the SSA-S2P standard was developed. Now that SSA-S2P has been forwarded, active development on SSA-S3P is under way.

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

g. Future Plans: none.

h. Reasons for Delay: Priority was given to SSA-S2P.

23. 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 X3:
Original target date: November 1995
Previous target date: May 1995
Current target date:

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: Fast-20 passed its first public review with no comments.

f. Statement of Status as of This Report: Fast-20 is at BSR for approval.

g. Future Plans: none.

h. Reasons for Delay: No delay!

24. 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 X3:
Original target date: June 1996 (before project was redefined)
Previous target date: June 1996 (before project was redefined)
Current target date: August 1996

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: SSA-S2P Revision 7 was forwarded to X3 in March 1996.

f. Statement of Status as of This Report: At X3 for 1PR.

g. Future Plans: SSA-S3P (project 1051-D) is in development.

h. Reasons for Delay: Forwarded ahead of schedule.

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

a. Project 1142-D, SCSI Parallel Interface - 2 (SPI-2)

b. Target date for dpANS to X3:
Original target date: July 1997
Previous target date:
Current target date: July 1997

c. Project Description: The SPI-2 standard will define a physical layer that will support the SCSI-3 Interlocked Protocol (SIP) transport layer and the command sets above it, while maintaining a high degree of compatibility with the current SPI standard. 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: Several revisions of the draft standard were prepared. There is strong industry interest in the Low-Voltage Differential (LVD) driver technology being defined.

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

g. Future Plans: none.

h. Reasons for Delay: none.

26. SCSI Enhanced Parallel Interface Technical Report (EPI)

a. Project 1143-D, SCSI Enhanced Parallel Interface Technical Report (EPI)

b. Target date for dpANS to X3:
Original target date: May 1997
Previous target date:
Current target date: May 1997

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: Several revisions of the draft technical report were prepared.

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

g. Future Plans: none.

h. Reasons for Delay: none.

27. SCSI Fibre Channel Protocol - 2 (FCP-2)

a. Project 1144-D, SCSI Fibre Channel Protocol - 2 (FCP-2)

b. Target date for dpANS to X3:
Original target date: November 1997
Previous target date:
Current target date: November 1997

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: none.

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

g. Future Plans: none.

h. Reasons for Delay: none.

28. 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 X3:
Original target date: June 1994
Previous target date: March 1996 (before project was redefined)
Current target date: August 1996

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: The Task Group finished work on this project and forwarded SSA-PH1 to X3T10 in December 1995. X3T10 forwarded SSA-PH1 to X3 in March 1996.

f. Statement of Status as of This Report: At X3 ready for 1PR.

g. Future Plans: The SSA-PH2 (project 1146-D) is in development.

h. Reasons for Delay: Forwarded ahead of schedule!

29. 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 X3:
Original target date: April 1997
Previous target date:
Current target date: April 1997

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: none.

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

g. Future Plans: none.

h. Reasons for Delay: none.

30. 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 X3:
Original target date: April 1997
Previous target date:

Current target date: April 1997

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: none.

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

g. Future Plans: none.

h. Reasons for Delay: none.

31. Boot Considerations for Devices Greater than 8 GBytes Technical Report

a. Project 1154-DT, Boot Considerations for Devices Greater than 8 GBytes Technical Report

b. Target date for dpANTR to X3:
Original target date: March 1996
Previous target date:
Current target date: July 1996

c. Project Description: The traditional personal computer firmware mechanism for accessing files on a hard disk has an intrinsic limit of 8 GByte total disk capacity. SCSI disks are now available that exceed 8GByte, and similar ATA drives will be available in the near future. There has been considerable confusion over how to deal with this situation. X3T10 has addressed this question and feels that the industry would be well served by a document describing the current limitation and a recommended solution..

d. Publications During Past Year: none.

e. Statement of Progress or Accomplishments During Year: Technical work is complete.

f. Statement of Status as of This Report: Editorial work is needed to convert the technical document into proper format for an ANSI Technical Report.

g. Future Plans: none.

h. Reasons for Delay: Lack of resources to do the editorial work.

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

a. Project 1155-D, SCSI Serial Bus Protocol 2 (SBP-2)

b. Target date for dpANS to X3:
Original target date: November 1997
Previous target date:
Current target date: November 1997

c. Project Description: The SBP-2 standard will define extensions to the transport layer protocols of Serial Bus Protocol to take advantage of the continued evolution of the High Performance Serial Bus. Candidates for inclusion in the SBP-2 draft standard are: a) clarify the SBP paradigm and revise the sections that map SBP to the SCSI-3 Architecture Model so they

more accurately describe SBP compliance; b) develop functional specifications for SBP high-availability factors, possibly in connection with to be defined extensions to High Performance Serial Bus transport media; c) extend SBP functionality to incorporate the anticipated inclusion of gigabit and greater transfer rates by High Performance Serial Bus; d) extend SBP functional specifications as required for operations within a group of High Performance Serial Buses connected by bridges, e) maintenance of the Serial Bus Protocol standard that may result from further implementation of the SBP standard (particularly in the area of isochronous data).

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 - a first draft is planned for July '96.

g. Future Plans: none.

h. Reasons for Delay: none.

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

a. Project 1157-D, SCSI Architecture Model - 2 (SAM-2)

b. Target date for dpANS to X3:
Original target date: November 1997
Previous target date:
Current target date: November 1997

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: none.

f. Statement of Status as of This Report: In development - initial work on this project is planned for the May '96 SCSI ad hoc meeting.

g. Future Plans: none.

h. Reasons for Delay: none.

34. SCSI-3 Parallel Interface Amendment (SPI Amnd)

a. Project ____-D, SCSI-3 Parallel Interface Amendment (SPI Amnd))

b. Target date for dpANS to X3:
Original target date: May 1996
Previous target date:
Current target date: May 1996

c. Project Description: The proposed scope of work is to develop an amendment to SPI to correct the identified defects.

d. Publications During Past Year: none.

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

f. Statement of Status as of This Report: The X3 letter ballot on approval of this project closes April 26, 1996. Technical work on the amendment is nearly complete. We hope to complete the editorial work in time to issue a forwarding letter ballot in May '96 .

g. Future Plans: none.

h. Reasons for Delay: none.

III. Committee Activities

a. Previous Year's Meetings:

May 11, 1995; Harrisburg, PA
July 13, 1995; Colorado Springs, CO
September 14; Manchester, NH
November 9, 1995; Palm Springs, CA
January 11, 1996; Dallas, TX
March 14, 1996; San Diego, CA

Previous Year's Meetings X3T10.1:

May 9, 1995; Harrisburg, PA
June 29, 1995; San Jose, CA
August 30, 1995; Ithaca, NY
November 1, 1995; Botley, England
December 13, 1995; Milpitas, CA
February 28, 1996; Stateline, NV

b. Current Year's Planned Meetings X3T10:

May 9, 1996; Ft. Lauderdale, FL
July 18, 1996; Colorado Springs, CO
September 12, 1996; Natick, MA
November 7, 1996; Palm Springs, CA
January 9, 1997; Dallas, TX
March 13, 1997; San Diego, CA

Current Year's Planned Meetings X3T10.1:

May 1, 1996; South Burlington, VT
June 26, 1996; St. Petersburg Beach, FL
August 28, 1996; Ft. Collins, CO
October 30, 1996; San Jose, CA
December 11, 1996; (TBD)
February 26, 1996; (TBD)

c.

Officers:	X3T10	X3T10.1
Chair:	John B. Lohmeyer	Lawrence J. Lamers (acting)
Vicechair:	Lawrence J. Lamers	Greg Kapraun
Secretary:	Ralph O. Weber	Lawrence J. Lamers (*)

* Larry is soliciting volunteers to take over the Secretary position.

d. Membership: The current X3T10 and X3T10.1 membership lists are attached.

e. Liaison Activities: X3T11, X3T13, ISO/IEC JTC1/SC25/WG4, IEEE P1394.1, IEEE P1285.

f. Administrative Matters of Note:

X3T10 and X3T11 have spent a great deal of time debating the fairness of the IPF. The people who are members of multiple X3 committees are being billed for each committee membership (and their memberships are terminated if they do not pay) while IEEE members are encouraged to pay once for all of their IEEE committee memberships (on a strictly voluntary basis). This discrepancy is impossible to defend.

g. Procedural Matters of Note:

I understand that PPC approved the "X3T10 Standards Development Policies and Procedures" (X3T10/94-198 r3) at their January '96 meeting. That document is attached in addition to previously adopted X3T10 procedures. An agenda item for the May '96 X3T10 meeting would revise the X3T10 Electronic Notification procedure to include performing letter ballots completely electronically.

h. Recommendations:

I understand that PPC has recently addressed the recurring issue of abstentions on technical issues. I did not hear the outcome, but fully support SD-2 changes to permit abstentions on all ballots except document forwardings.

IV. Anticipated Projects

It is anticipated that one or more projects will be needed for next-generation versions of current X3T10 projects as these projects near completion.

V. Future Trends in this Technical Area

The lower-level I/O interface market is in a state of transition. This is largely the result of technological advances that permit physically smaller disk drives. These drives will trend toward I/O interfaces that directly attach to host system circuit cards without an interface cable. This has resulted in less emphasis on cabled connectors and more emphasis on connectors that can either plug directly into a backplane or into a device connector such as the PCMCIA.

Meanwhile, other I/O interface applications that typically reside outside the processor cabinet, such as magnetic tape, printers, and optical devices, are trending toward serial interfaces to reduce cabling costs. A key enabling technology for these applications is the higher clock rates now available in CMOS and other circuit technologies.

Attachment 1: Committee Projects: SD-4 Data

(To be attached by the X3 Secretariat)

Attachment 2: Internal Procedures

Procedure for Funding X3T10 Technical Editors

Abstract: The volume of work in X3T10 exceeds the capacity and capabilities of volunteer technical editors. This procedure provides funding for paid editors to support the development and publication efforts within X3T10. 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 X3 Secretariat upon approval of an invoice by X3T10.

Enactment: This procedure shall be enacted upon approval by X3T9.2 and X3T9 (which they did in late 1992; X3T10 voted to carry the procedure over to X3T10). Upon enactment, the X3 Secretariat shall establish accounting procedures to collect and administer the Editor Fund.

Funds Collection: The Editors Fund shall be maintained by the X3 Secretariat. A surcharge of $50.00 shall be added to the X3T10 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. X3T10 may adjust the amount of the surcharge to the Mailing Subscription Fee from year to year to reflect anticipated editing workload.

Funds Accounting: The X3 Secretariat shall report that status of the Editors Fund to X3T10 annually and whenever the X3 Secretariat receives an invoice for editing work.

Funds Distribution: Upon receipt of a written invoice for editing work, the X3 Secretariat shall notify the X3T10 Chair providing a copy of the invoice and the current balance in the Editors Fund. The X3T10 Chair shall either add an item to the agenda of the next X3T10 meeting or issue a letter ballot to authorize payment of the invoice. Upon X3T10 approval of the invoice, the X3T10 Chair shall notify the X3 Secretariat of the approval and the X3 Secretariat shall issue a check for payment of the invoice. X3T10 shall not authorize payment of an invoice which would exceed the balance in the Editors Fund.

Editing Authorization: X3T10 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.

Electronic Notification Procedure

(A revision of this procedure is to be considered at the May 9, 1996 X3T10 meeting)

This document proposes a procedure for the technical committee X3T10, its working groups and affiliated activities regarding the notification of principal, alternate, and observer members of a meeting or teleconference.

A member is any principal, alternate, or observer as recorded in the X3T10 attendance database at the point in time that the notification is sent.

1. Means of notification and distribution

X3T10 intends to meet its stated requirements for notification and distribution through the use of electronic means. Each member is requested to provide an e-mail address that is accessible through internet for the purpose of receiving the notifications. Members without an e-mail address cannot be guaranteed timely access to information on activities.

The primary means of notification and distribution will be the SCSI reflector e-mail list. Each member is responsible for requesting that their e-mail address be added to the SCSI reflector list (by sending an e-mail request to scsiadm@wichitaks.ncr.com).

2. Notification of meetings and tele-conferences

Two weeks prior to the conducting of a meeting or tele-conference all members shall be notified of the event. It is recommended that the notice be sent 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. Notification of alternates on letter ballots

X3T10 routinely uses letter ballots in the conduct of its activities. The requirement for notification of alternates regarding the occurrence of a letter ballot will be met by sending a notice to the SCSI reflector.

Note - Principal members will receive via the postal service a letter ballot and the necessary documents for voting.

4. Distribution of meetings minutes

The convenor of the meeting or tele-conference is required post minutes of the activity to the SCSI reflector within ten working days of the conclusion of the event. (The X3 rules allow two weeks for the delivery of meeting minutes.)

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 SCSI reflector will be considered to have met the two week rule for taking action if the members receive them two weeks prior to the start of the X3T10 plenary meeting. Any document so distributed shall have a native format version posted to the SCSI BBS or FTP site with a document number to be considered a proposal.

X3T10 Standards Development Policies and Procedures

(Please see X3T10/94-198 r3, attached as a separate file)

Attachment 3: X3T10 Current Membership List (Note: This is the attendance database, which may omit some people from the X3 Secretariat's database of those people receiving mailings, particularly those people who have not attended a meeting.)

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Attachment 4: X3T10.1 Current Membership List (Note: This is the attendance database, which may omit some people from the X3 Secretariat's database of those people receiving mailings, particularly those people who have not attended a meeting.)

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