Project Proposal
for a new
INCITS Standard

Serial Attached SCSI Driver Interface
(SDI)

11 November 2004

1 Source of Proposed Project

1.1 Title: Serial Attached SCSI Driver Interface.

1.2 Date Submitted: 11 November 2004.

1.3 Proposing Group: T10.

2 Process Description for the Proposed Project

2.1 Project Type: D - Development.

2.2 Type of Document: Standard.

2.3 Definitions of Concepts and Special Terms: none.

2.4 Expected Relationship with Approved Reference Models, Frameworks, Architectures, etc.
None, it is expected that this standard will be used in closed systems.

2.5 Recommended INCITS Development Technical Committee: T10.

2.6 Anticipated Frequency and Duration of Meetings
Technical Committee T10 meets on a regularly scheduled basis (see http://www.t10.org for the current meeting schedule). Specific task ad hoc groups are called as required between the regular meetings but their results are not binding.

2.7 Target Date for Initial Public Review (Milestone 4): May 2006.

2.8 Estimated Useful Life of Standard or Technical Report: 5 Years.

3 Business Case for Developing the Proposed Standard or Technical Report

3.1 Description
The Serial Attached SCSI Driver Interface (SDI) defines a set of functions provided by a device driver to allow management applications low-level access to the Serial Attached SCSI (SAS) infrastructure. The following items should be considered for inclusion in SDI:

1)   Descriptive information about the device driver (e.g., its version and capabilities);
2)   Descriptive information about the HBA (e.g., its configuration and operational status, firmware version and capabilities, phy status including link error counters, information about the connector configuration on the HBA board, information about the devices attached to the HBA);
3)   For HBAs providing RAID functionality, descriptive information about the RAID configuration;
4)   Mechanisms to configure the HBA (e.g., firmware download, phy enable/disable, minimum/maximum physical link rates, and phy transceiver settings);

5)   Mechanisms for passing through commands, task management functions, etc. for each of the protocols that may be supported by a SAS HBA:
   A) SMP (Serial Management Protocol);
   B) SSP (Serial SCSI Protocol), including SATA devices emulated as SCSI devices;
   C) STP (Serial ATA Tunneling Protocol); and
   D) SATA (Serial ATA);
6)   Mechanism for converting between SAS addresses and the OS-specific (e.g. bus/target/LUN) addresses; and
7)   Other capabilities that may fit within the scope of this project.

3.2 Existing Practice and the Need for a Standard
There are many existing management and diagnostic applications that use proprietary device driver interfaces to access the SCSI infrastructure. These solutions have been designed independently of each other to manage aspects of the SCSI infrastructure that are outside the bounds of typical operating system (OS) requirements. This limits the ability of applications to access the underlying SCSI infrastructure with different HBAs.

Standardizing a device driver interface for these applications would provide a stable baseline of function upon which both application clients and SAS device driver developers can rely for consistent and deterministic behavior across implementations.

This standard can be leveraged by developers of upper-level management standards like SM-HBA, being developed by T11, or INCITS 388-2004 SMI-S, developed by the Storage Networking Industry Association (SNIA).

3.3 Implementation Impacts of the Proposed Standard

3.3.1 Development Costs
Members of T10 will provide the necessary resources. The T10 members will host the required meetings for development, provide for the necessary lab experiments, and provide the Technical Editor for the project.

3.3.2 Impact on Existing or Potential Markets
This proposed project is intended to provide a more consistent driver interface for SAS solutions. This ensures that investments in such solutions have a stable managed migration path in the face of technological development.

3.3.3 Costs and Methods for Conformity Assessment
The committee will consider the results of testing as may be available to the committee through the voluntary efforts of the various participants in T10. With this method all costs are borne by the organizations of the various participants and have for the most part been mainly an adjunct of their normal development costs.

3.3.4 Return on Investment
ROI information is considered proprietary data by the member organizations, but members have stated that the ROI is expected to be large.

3.4 Legal Considerations

3.4.1 Patent Assertions
Calls will be made to identify assertions of patent rights in accordance with the relevant INCITS, ANSI, and ISO/IEC policies and procedures.

3.4.2 Dissemination of the Standard or Technical Report
Drafts of this document will be disseminated electronically. Dissemination of the final standard will be restricted, as the document becomes property of INCITS, ANSI, and/or ISO/IEC.

4 Related Standards Activities

4.1 Existing INCITS / ANSI Standards:

ID Number	Title
INCITS 366-2003	SCSI Architecture Model - 2 (SAM-2)
INCITS 351-2001	SCSI Primary Commands - 2 (SPC-2)
INCITS 376-2003	Serial Attached SCSI (SAS)
INCITS 388-2004	Storage Management (SMI-S)

4.2 Related Standards Activity

ID Number	Title
T10/1561-D	SCSI Architecture Model - 3 (SAM-3)
T10/1683-D	SCSI Architecture Model - 4 (SAM-4)
T10/1416-D	SCSI Primary Commands - 3 (SPC-3)
T10/1601-D	Serial Attached SCSI - 1.1 (SAS-1.1)
T11/1695-D	Storage Management Host Bus Adapter Application Programming Interface (SM-HBA)
T13/1532D	AT Attachment - 7 with Packet Interface (ATA/ATAPI-7)
T13/1697D	AT Attachment - 8 - Serial Transport (ATA8-ST)
T13/1699D	AT Attachment - 8 - ATA/ATAPI Command Set (ATA8-ACS)
T13/1700D	AT Attachment - 8 - Architecture Model (ATA8-AM)

4.3 Corresponding ISO projects

ID Number	Title
ISO/IEC 14776	Multipart SCSI standard

4.4 Recommendations for Close Liaison

Technical Committee T11.
Technical Committee T13.

5 Units of Measurement used in the Standard

Not measurement sensitive.