

**Project Proposal  
for a new  
INCITS Standard**

**SCSI / ATA Translation  
(SAT)**

**15 July 2004**

## **1 Source of Proposed Project**

**1.1 Title:** SCSI / ATA Translation.

**1.2 Date Submitted:** 15 July 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. It is anticipated several interim working group meetings will be scheduled to align with T13 meetings.

**2.7 Target Date for Initial Public Review (Milestone 4):** December 2005.

**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 SCSI / ATA Translation defines standard mappings and behaviors among implementations that effect the behavior of SCSI devices as viewed by a host driver where the physical devices are ATA class devices presented to the host by applying a translation layer between the Serial ATA or Parallel ATA device and the SCSI interface.

The following items should be considered for inclusion in SCSI / ATA Translation.

- 1) Define translation of selected SCSI commands implemented using ATA devices;
- 2) Specification of sense data reporting;
- 3) Define Mode and Log pages applicable to SCSI devices emulated using ATA devices;
- 4) Define usage of Task Management functions for SCSI emulation using ATA devices;
- 5) Define mapping of SMART functions;
- 6) Define elements to facilitate use of SATA port selectors and SATA port multipliers;

- 7) Define elements to provide consistent mapping of ATAPI devices as SCSI devices; and
- 8) 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 solutions that use SCSI to ATA command translations. These solutions have been designed independently of each other and typically vary only slightly in the command translations. However, inconsistencies in the interpretation of both ATA and SCSI standards, and differing views on how to effect a mapping between the two results in varying behavior between implementations. This limits the ability of a SCSI application client to expect deterministic behavior of SCSI devices emulated using ATA devices. The variability in implementation prevents the use of the full richness of SCSI protocol with these devices because some of the more powerful elements of SCSI protocol (e.g. persistent reserve/release) are the elements with greater variation in how they are emulated using ATA devices.

Standardizing the translation between SCSI and ATA protocol would provide a stable baseline of function that both application clients and SCSI/ATA translation units can rely on for consistent and deterministic behavior across implementations. A standard can also provide the reporting mechanisms to identify optional capabilities implemented in the translation layer; thereby providing the means for the application client to determine the capabilities of the emulated SCSI target devices during initialization.

Perhaps one of the areas of greatest variation between existing implementations is in error reporting. A primary focus of the standardization effort would be to establish common error reporting methods.

### **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 mapping of SCSI to ATA. This ensures that investments in such mappings 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
X3.270:1996 [R2001]	SCSI-3 Architecture Model (SAM)
INCITS.366:2003	SCSI Architecture Model - 2 (SAM-2)
X3.301-1997	SCSI-3 Primary Commands (SPC)
NCITS.351:2001	SCSI Primary Commands - 2 (SPC-2)
NCITS.306:1998	SCSI-3 Block Commands (SBC)
NCITS.330-2000	Reduced Block Commands (RBC)
NCITS.330-2000/AM1-2003	RBC Amendment-1
NCITS.360:2002	MultiMedia Command Set - 3 (MMC-3)
INCITS.380:2003	SCSI Stream Commands - 2 (SSC-2)
INCITS.376:2003	Serial Attached SCSI (SAS)

### 4.2 Related Standards Activity

ID Number	Title
T13/1532D	AT Attachment - 7 with Packet Interface (ATA/ATAPI - 7)
T13/____D	AT Attachment - 7 with Packet Interface (ATA/ATAPI - 8)
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)
T10/1417-D	SCSI Block Commands - 2 (SBC-2)
T10/1545-D	MultiMedia Command Set - 4 (MMC-4)
T10/1675-D	MultiMedia Command Set - 5 (MMC-5)
T10/1611-D	SCSI Stream Commands - 3 (SSC-3)
T10/1601-D	Serial Attached SCSI - 1.1 (SAS-1.1)

### 4.3 Corresponding ISO projects

ID Number	Title
ISO/IEC 14776	Multipart SCSI standard
ISO/IEC 14776-411	SCSI-3 Architecture Model (SAM)
ISO/IEC 14776-452	SCSI-3 Primary Commands - 2 (SPC-2)

### 4.4 Recommendations for Close Liaison

Technical Committee T13.

## 5 Units of Measurement used in the Standard

Not measurement sensitive.