

T10/97-262r0

**Project Proposal
For a New
NCITS Standard**

SCSI-4 Parallel Interface - 3

(SPI-3)

Physical & Protocol Layers

October 15, 1997

1. IDENTIFICATION OF PROPOSED PROJECT

1.1 **TITLE:** SCSI-4 Parallel Interconnect - 3 (SPI-3)t

1.2 **PROPOSER:** T10.

1.3 **DATE SUBMITTED:** November 11, 1997

1.4 **PROJECT TYPE:** D - Development of a standard within an NCITS TC.

2. JUSTIFICATION OF PROPOSED STANDARD

2.1 NEEDS:

Project Proposal for SCSI-4 Parallel Interface - 3 (SPI-3), a second generation low-voltage differential (LVD-2) technology, that will allow a dual-channel host adapter to attain greater than 5 Gbits per second data rate, effectively quintupling the data rate of current serial technology. This LVD-2 technology will allow peripherals to meet the data I/O needs of the next generation 64-bit processors being delivered by the end of the millenium.

In addition to improving the fundamental data rate to 80 mega-transfers per second, SPI-3 will significantly reduce the overhead of parallel SCSI with the adoption of a 'low-fat' protocol (LFP) allowing achievement of greater than 30,000 I/O's per second. LFP is scheduled to include an error detection scheme along with packetization that will increase the data integrity and provide unrestricted hot-plugging for parallel SCSI.

SPI-3 is will also deal with the advancing developments in silicon technology related to power management and voltage-reduction. These are key features of the next generation of chips.

2.2 RECOMMENDED SCOPE OF STANDARD:

The SPI-3 standard will:

- a) increase the data rate to 80 mega-transfers per second.
- b) reduce the existing protocol overhead.
- b) address power management and voltage reduction issues.
- c) provide other capabilities which fit within the general application scope of the this project that may be proposed during the development phase by the participants in the project.

2.3 EXISTING PRACTICE IN AREA OF PROPOSED STANDARD:

The proposed project involves a compatible evolution of the present SCSI physical and protocol layers.

2.4 EXPECTED STABILITY OF PROPOSED STANDARD WITH RESPECT TO CURRENT AND POTENTIAL TECHNOLOGICAL ADVANCE:

The nature of the proposed project is to insure that SCSI has an upward, highly compatible growth path. This insures that current investments in parallel SCSI are provided with a stable managed migration path in the face of technological developments.

3. DESCRIPTION OF PROPOSED PROJECT:

3.1 **TYPE OF DOCUMENT:** Standard.

3.2 **DEFINITION OF CONCEPTS AND SPECIAL TERMS:**

LFP: Low-fat protocol
Fast-80: Label for associated with fundamental data rate.

3.3 EXPECTED RELATIONSHIP WITH APPROVED NCITS REFERENCE MODELS:

The SPI-3 standard is intended for use in open systems.

3.4 RECOMMENDED PROGRAM OF WORK:

The following program of work is planned for the SPI-3:

- (1) Solicit continuing participation by the current membership of T10 through NCITS procedures. Invite comments and proposals from organizations that may have a contribution to the SPI-3 standard.
- (2) Prepare a draft proposed standard based on proposals submitted and other information gathered during the initial investigation.
- (3) Consider the results of SPI-3 testing as may be available to the committee through the voluntary efforts of the T10 membership.
- (4) Submit the draft proposed standard to NCITS for further processing.

3.5 RESOURCES - INDIVIDUALS AND ORGANIZATIONS COMPETENT IN THE SUBJECT MATTER:

The current membership of T10 includes representatives from all parts of the computer industry, from semiconductor chip manufacturers to large mainframe system manufacturers as well as government agencies. The members of T10 have expressed their desire to participate and cooperate in the development of this proposed standard.

There are sufficient resources to complete the development of this standard without delaying work on other projects.

3.6 RECOMMENDED NCITS DEVELOPMENT TECHNICAL COMMITTEE:

It is recommended that the development work be done in Technical Committee T10 which is responsible for developing the family of SCSI standards.

3.7 ANTICIPATED FREQUENCY AND DURATION OF MEETINGS:

Technical Committee T10 meets bimonthly. Specific task ad hoc groups are called as may be required for one to three days between the regular meetings but their results are not binding.

3.8 TARGET DATE FOR dpANS TO NCITS: March 1999.**3.9 ESTIMATED USEFUL LIFE OF STANDARD:**

It is anticipated that this standard will have a life of 5 years.

4. IMPLEMENTATION IMPACTS**4.1 IMPACT ON EXISTING USER PRACTICES AND INVESTMENTS:**

The proposed SPI-3 standard will provide an evolutionary growth path to the existing practices and investments. It is likely that any isolated negative impacts would occur in any case through non-standard evolution or revolution.

4.2 IMPACT ON SUPPLIER PRODUCTS AND SUPPORT:

The proposed SPI-3 standard will provide an evolutionary growth path to the existing practices and investments. It is likely that any isolated negative impacts would occur in any case through non-standard evolution or revolution.

4.3 TECHNIQUES AND COSTS FOR COMPLIANCE VERIFICATION:

The committee will consider the results of SPI-3 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.

4.4 LEGAL CONSIDERATIONS:

There are no known legal considerations. A Call for Patents will be made.

5. CLOSELY RELATED STANDARDS ACTIVITIES

5.1 EXISTING STANDARDS:

| BSR Number | Title | Project |
|-------------|------------------------------|---------|
| X3.253-1995 | SCSI-3 Parallel Interconnect | 0855-M |
| X3.292-1997 | SCSI-3 Interlocked Protocol | 0856-D |
| X3.277-1996 | SCSI-3 Fast-20 | 1071-M |

5.2 NCITS STANDARDS DEVELOPMENT PROJECTS:

| BSR Number | Title | Project |
|------------|-------------------------------------|---------|
| X3.301 | SCSI Parallel Interface - 2 | 1142-D |
| | SCSI Primary Commands - 2 (SPC-2) | 1236-D |
| | SCSI Architecture Model - 2 (SAM-2) | 1157-D |
| | SCSI Enhanced Parallel Interface | 1143-DT |

5.3 NCITS STUDY GROUPS: None.

5.4 OTHER RELATED DOMESTIC STANDARDS EFFORTS: None.

5.5 ISO/IEC JTC 1 STANDARDS DEVELOPMENT PROJECTS: It is anticipated that SPI-3 will be fast tracked for publication as an ISO standard.

5.6 OTHER RELATED INTERNATIONAL STANDARDS DEVELOPMENT PROJECTS: None.

5.7 RECOMMENDATIONS FOR COORDINATING LIAISON: None.

5.8 RECOMMENDATIONS FOR CLOSE LIAISON: None.