Project Proposal
For a New
X3 Standard

Serial Storage Protocol

(SSP)

March 29, 1994

1   IDENTIFICATION OF PROPOSED PROJECT

1.1   TITLE: Serial Storage Protocol (SSP)

1.2   PROPOSER: X3T10

1.3   DATE SUBMITTED: October 15, 1993

1.4   PROJECT TYPE: D - Development of standards within X3 TC.

2   JUSTIFICATION OF PROPOSED STANDARD

2.1   NEEDS:

Now that SSA-PH has been approved as a new task group (X3T10.1), a SCSI protocol is needed that will operate over the SSA-PH interface. This proposal suggests that SCSI-3 be mapped to operate over the SSA-PH interface. This will allow SCSI to operate over the high performance SSA serial interface. It is key that most of the tremendous effort involved in SCSI be preserved in the port to SSA.

2.2   RECOMMENDED SCOPE OF STANDARD:

The proposed SSP standard shall preserve as much of SCSI as is practical, while maximizing the key benefits of SSA-PH including but not limited to high performance, high throughput, redundant pathing, dual port, RAID extensions, and serviceability features (hot plug).

Functions which will be considered for incorporation include:

a) Definition of the packet format and addressing method.

b) Mapping bus functions and messages to SSA.

c) Support of the expanded addressing capability of SSA.

d) Support for Dual Port and alternate pathing.

e) Concurrent active I/O processes on the same or different devices.

f) Support of out of order data transfers.

g) Other capabilities which fit within the scope of the Serial Storage Architecture SCSI mapping layer that may be proposed during the development phase by the

participants in the project.

2.3   EXISTING PRACTICE IN AREA OF PROPOSED STANDARD:

Considerable work has been done in X3T10 on SCSI and in the private sector that will be used as the basis for this standard.

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

This standard is possible due to the latest technology advancements, and is expected to be viable for at least 10 years. The interface is extendable by advanced technology that will become commercially feasible within the lifetime of this standard.

3   DESCRIPTION OF PROPOSED PROJECT:

3.1   TYPE OF DOCUMENT: Standard.

3.2   DEFINITION OF CONCEPTS AND SPECIAL TERMS:

SSP is an acronym for Serial Storage Protocol. SSA is an acronym for Serial Storage Architecture. SSA-PH refers to the physical layer of SSA.

3.3   EXPECTED RELATIONSHIP WITH APPROVED X3 REFERENCE MODELS:

The SSP standard is for use in closed systems.

3.4   RECOMMENDED PROGRAM OF WORK:

The following program of work is planned for the SSP standard:

(1)   Solicit participation from members of the storage industry through X3 procedures. Invite comments by end-user organizations and invite proposals from organizations that may have a contribution to a viable SSP standard.

(2)   Develop a viable SSP standard.

(3)   Prepare a draft standard based on proposals submitted and other information gathered during the initial investigation.

(4)   Consider the results of SSP testing as may be available to the committee through the voluntary efforts of the various participants in X3T10 and its assigned task group.

(5)   Submit the draft proposed standard to X3 for further processing.

3.5   RESOURCES - INDIVIDUALS AND ORGANIZATIONS COMPETENT IN SUBJECT MATTER:

The current membership of X3T10 includes representatives from all parts of the computer industry from semiconductor chip manufacturers to large mainframe system manufacturers as well as Government agencies. Initial ground work has been done, and a poll taken of interested parties. A significant number of people in the industry have volunteered 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 standards.

3.6   RECOMMENDED X3 DEVELOPMENT TECHNICAL COMMITTEE:

It is recommended that the development work be done in the X3T10.

3.7   ANTICIPATED FREQUENCY AND DURATION OF MEETINGS:

X3T10 meets 2 days bi-monthly. Specific task and ad hoc groups are called as may be required for 1 to 3 days between regular meetings, but their results are not binding.

3.8   TARGET DATE FOR DPANS TO X3 (MILESTONE 10): December 1994

3.9   ESTIMATED USEFUL LIFE OF STANDARD:

It is anticipated that this standard will have a life of over 10 years.

4   IMPLEMENTATION IMPACTS

4.1   IMPACT ON EXISTING USER PRACTICES AND INVESTMENTS:

The proposed SSP standard will provide an evolutionary path to an higher performance serial interface and allow interface protocols that could preserve existing software (system device driver, device controller microcode) investment. 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 SSP standard will provide an evolutionary path to an higher performance serial interface and allow interface protocols that could preserve existing software (system device driver, device controller microcode) investment. 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 SSP testing as may be available to the committee through the voluntary efforts of the various participants in X3T10 and its assigned task group. 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:

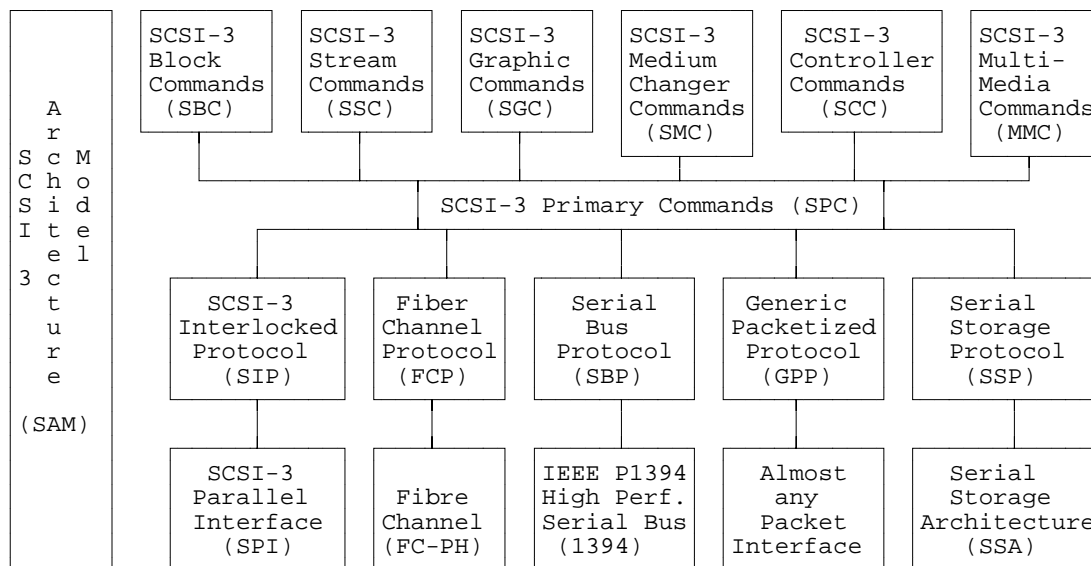There are no known legal considerations. A call for patents will be made under milestone 7.

5   CLOSELY RELATED STANDARDS ACTIVITIES

5.1   EXISTING STANDARDS: None.

The proposed SSP standard provides a protocol for using SCSI-3 command sets on the Serial Storage Architecture physical interface (SSA-PH), which is being developed in X3T10.1 (see 5.2).

5.2   X3 STANDARDS DEVELOPMENT PROJECTS:

The proposed SSP standard is part of the overall SCSI-3 family of standards:

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+--------+  +---------+ +---------+ +---------+ +---------+ +----------+ +---------+
|        |  | SCSI-3  | | SCSI-3  | | SCSI-3  | | SCSI-3  | | SCSI-3   | | SCSI-3  |
|        |  | Block   | | Stream  | | Graphic | | Medium  | |Controller| | Multi-  |
|  A     |  |Commands | |Commands | |Commands | | Changer | | Commands | | Media   |
|S c M   |  | (SBC)   | | (SSC)   | | (SGC)   | |Commands | |  (SCC)   | |Commands |
|C h o   |  +---------+ +---------+ +---------+ | (SMC)   | +----------+ | (MMC)   |
|S i d   |      |           |          |        +---------+      |       +---------+
|I t e   |      |           |          |            |            |           |
|3 e l   |      +-----------+----------+------------+------------+-----------+
|  c     |                        SCSI-3 Primary Commands (SPC)
|  t     |      +-----------+----------+------------+------------+-----------+
|  u     |      |           |          |            |            |
|  r     |  +---------+ +---------+ +---------+ +---------+ +----------+
|  e     |  | SCSI-3  | | Fiber   | | Serial  | | Generic | | Serial   |
|        |  |Interlocked|Channel  | |  Bus    |Packetized| Storage   |
| (SAM)  |  |Protocol | |Protocol | |Protocol | |Protocol | | Protocol |
|        |  | (SIP)   | | (FCP)   | | (SBP)   | | (GPP)   | |  (SSP)   |
|        |  +---------+ +---------+ +---------+ +---------+ +----------+
|        |      |           |          |            |            |
|        |  +---------+ +---------+ +---------+ +---------+ +----------+
|        |  | SCSI-3  | |         | |IEEE P1394| Almost  | | Serial   |
|        |  |Parallel | | Fibre   | |High Perf.|  any    | | Storage  |
|        |  |Interface| |Channel  | |Serial Bus| Packet  |Architecture|
|        |  | (SPI)   | | (FC-PH) | | (1394)  |Interface| |  (SSA)   |
+--------+  +---------+ +---------+ +---------+ +---------+ +----------+
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5.3   **X3 STUDY GROUPS:** None.

5.4   **OTHER RELATED DOMESTIC STANDARDS EFFORTS:** None.

5.5   **ISO/IEC JTC 1 STANDARDS DEVELOPMENT PROJECTS:**

It is anticipated that this standard will be proposed to JTC1/SC25/WG4.

5.6   **OTHER RELATED INTERNATIONAL STANDARDS DEVELOPMENT PROJECTS:** None.

5.7   **RECOMMENDATIONS FOR COORDINATING LIAISON:** None.

5.8   **RECOMMENDATIONS FOR CLOSE LIAISON:** None.