**Project Proposal
For a New
X3 Standard**

**Serial Storage Architecture
SCSI-3 Protocol**

(SSA-S3P)

NOTE: If approved by X3, this project proposal will rename Project 1051-D from SCSI-3 Serial Storage Protocol (SSP) to be more consistent with the other SSA family of projects and will define how SSA-S3P fits into the overall SSA architecture.

March 31, 1995

1. IDENTIFICATION OF PROPOSED PROJECT

1.1 TITLE: Serial Storage Architecture - SCSI-3 Protocol (SSA-S3P).

1.2 PROPOSER: X3T10.

1.3 DATE SUBMITTED: May 9, 1995

1.4 PROJECT TYPE: D - Development of a standard within an X3 TC.

2. JUSTIFICATION OF PROPOSED STANDARD

2.1 NEEDS:

The Serial Storage Architecture fills a need in the evolution from parallel to serial interfaces for storage devices. It meets the space constraints and cabling considerations for high-density storage arrays with a comensurate improvement in reliability and configurability.

The reliability improvements are derived from an architected error recovery, redundant paths to devices, a wrap mode for self-test, line fault detection and a balanced signalling scheme that achieves a low error rate.

The configurability results from the ability to hot-plug devices, the self-configuration capability, the 10 meter length of cable segments.

This standard fills the need for a protocol based on the SCSI-3 command sets that runs on the SSA transport layer and physical interface. This standard fills the need for an implementation of SCSI-3 features on a serial interface.

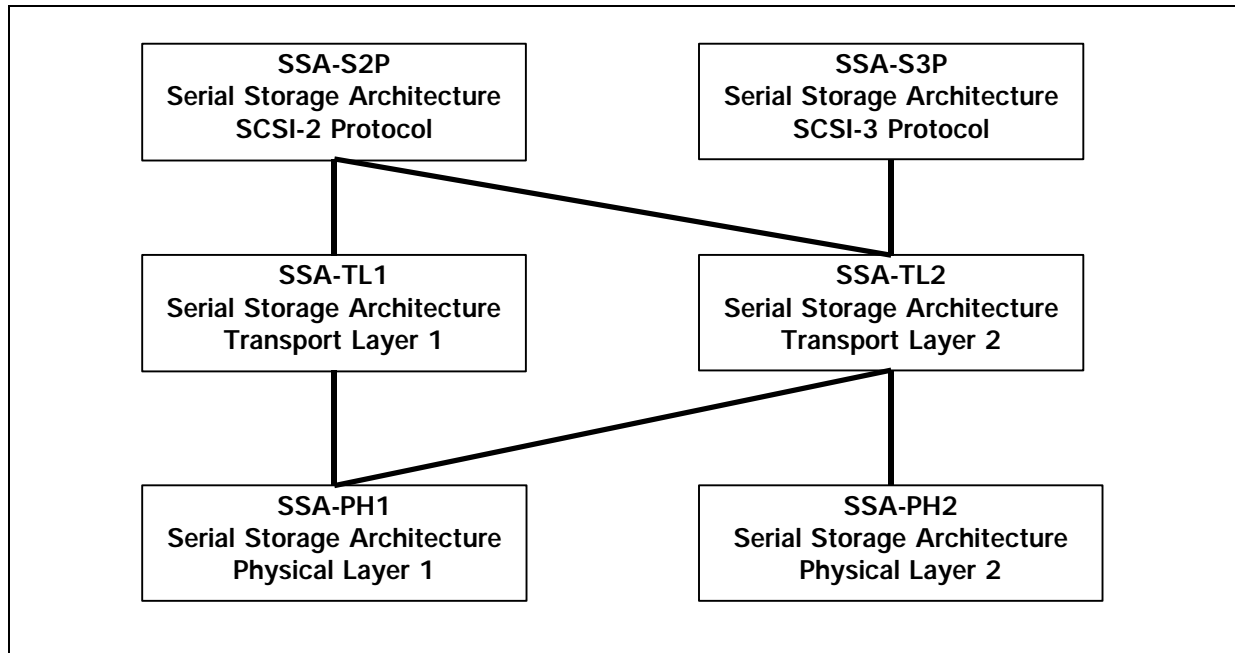## 2.2 RECOMMENDED SCOPE OF STANDARD:

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)   map the SAM services and terminology to SSA.
  b)   define the data field format extensions.
  c)   support for dual port and alternate pathing.
  d)   provide support for auto-sense
  e)   provide support for third-party operations.
  f)   other capabilities that fit within the scope of SSA-S3P that may be proposed during the development phase by the participants in the project.

2.3 EXISTING PRACTICE IN AREA OF PROPOSED STANDARD:

The SSA-S3P standard is part of an evolving family of standards related to the Serial Storage Architecture and SCSI-3. There are implementations of this architecture based on work done in the SSA User Industry Group.

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│   │        SSA-S2P           │        │        SSA-S3P           │       │
│   │  Serial Storage Architecture │    │  Serial Storage Architecture │   │
│   │      SCSI-2 Protocol     │        │      SCSI-3 Protocol     │       │
│   └──────────────────────────┘        └──────────────────────────┘       │
│                                                                           │
│   ┌──────────────────────────┐        ┌──────────────────────────┐       │
│   │        SSA-TL1           │        │        SSA-TL2           │       │
│   │  Serial Storage Architecture │    │  Serial Storage Architecture │   │
│   │     Transport Layer 1    │        │     Transport Layer 2    │       │
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│   │        SSA-PH1           │        │        SSA-PH2           │       │
│   │  Serial Storage Architecture │    │  Serial Storage Architecture │   │
│   │     Physical Layer 1     │        │     Physical Layer 2     │       │
│   └──────────────────────────┘        └──────────────────────────┘       │
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2.4 EXPECTED STABILITY OF PROPOSED STANDARD WITH RESPECT TO CURRENT AND POTENTIAL TECHNOLOGICAL ADVANCE:

This standard provides a part of the migration path from existing SCSI-2 implementations to the future SCSI-3 implementations.

3. DESCRIPTION OF PROPOSED PROJECT:

3.1 TYPE OF DOCUMENT: Standard.

3.2 DEFINITION OF CONCEPTS AND SPECIAL TERMS: None.

3.3 EXPECTED RELATIONSHIP WITH APPROVED X3 REFERENCE MODELS:

The SSA-S3P standard is intended for use in closed systems.

3.4 RECOMMENDED PROGRAM OF WORK:

The following program of work is planned for the SSA-S3P:

(1)   Solicit continuing participation by the current membership of X3T10.1 through X3 procedures. Invite comments by end-user organizations (i.e., SSA-UIG) and invite proposals from organizations that may have a contribution to an SSA-S3P standard.

(2)   Establish functional requirements for SSA-S3P.

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

(4)   Consider the results of SSA-S3P testing as may be available to the committee through the voluntary efforts of the X3T10.1 membership.

(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 X3T10.1 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 X3T10.1 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 technical report without delaying work on other standards.

3.6 RECOMMENDED X3 DEVELOPMENT TECHNICAL COMMITTEE:

It is recommended that the development work be done in Task Group X3T10.1 of Technical Committee X3T10 which is responsible for developing the family of Serial Storage Architecture standards.

3.7 ANTICIPATED FREQUENCY AND DURATION OF MEETINGS:

Technical Committee X3T10.1 meets for one day bi-monthly. 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 X3: April 1997

3.9 ESTIMATED USEFUL LIFE OF STANDARD:

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

4. IMPLEMENTATION IMPACTS

4.1 IMPACT ON EXISTING USER PRACTICES AND INVESTMENTS:

The proposed SSA-S3P standard will provide an initial implementation point complementary 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 SSA-S3P standard will provide an initial implementation point complementary 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 SSA-S3P testing as may be available to the committee through the voluntary efforts of the various participants in X3T10.1. 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:

       X3.131-1994 -- SCSI-2

5.2 X3 STANDARDS DEVELOPMENT PROJECTS:

X3T10.1/0989-D	working draft SSA-Transport Layer 1
X3T10.1/1121-DT	working draft SSA-SCSI-2 Protocol
X3T10/0994-D	working draft SCSI-3 Architecture Model
X3T10/0995-D	working draft SCSI-3 Primary Commands
X3T10/0996-D	working draft SCSI-3 Block Commands
X3T10/0997-D	working draft SCSI-3 Stream Commands
X3T10/0998-D	working draft SCSI-3 Graphics Commands
X3T10/0999-D	working draft SCSI-3 Medium Changer Commands
X3T10/1047-D	working draft SCSI-3 Controller Commands
X3T10/1048-D	working draft SCSI-3 Multi-Media Commands

5.3 X3 STUDY GROUPS: None.

5.4 OTHER RELATED DOMESTIC STANDARDS EFFORTS: None.

5.5 ISO/IEC JTC 1 STANDARDS DEVELOPMENT PROJECTS: ISO/IEC 9316-1 (SCSI-2). It is anticipated that SSA-S3P 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.