

X3T9.2/87-06
5 Feb. 1987
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X3 Technical Committee
Annual Report
for 1986
X3T9.2

IA. Technical Activities

1. Small Computer System Interface

- a. Project 375D, Small Computer System Interface.
- b. Target Date for dpANS to X3:

Original target date: February 1984
Previous target date: Submitted to X3 December 1985.
Current target date: Published by ANSI, Sept. 1986.

c. Project Description: Low cost but highly "intelligent" bus interface for microprocessor based computer systems. The interface is primarily aimed at the interconnection of small computers and high bandwidth block transfer peripherals and includes relatively high level command sets for magnetic disks and tapes, optical disks, and printers. This will be a multimaster bus which also supports direct computer-to-computer interconnections.

- d. Publications During Past Year: The ANSI standard, X3.131-1986 was published in Sept. 1986.
- e. Statement of Progress or Accomplishments During the Year: Publication of ANSI X3.131-1986, American National Standard for information systems--Small Computer System Interface (SCSI)
- f. Status as of This Report: Published ANSI Standard
- g. Future Plans: See item 2, enhanced Small Computer System Interface (SCSI).

2. Enhanced Small Computer System Interface (SCSI-2)

- a. Project 375R, enhanced Small Computer System Interface (SCSI-2)
- b. Target Date for dpANS to X3:

Original target date: Jan 1988
Previous target date: None
Current target date: Jan 1988

- c. Project Description: This will be an extension of ANSI, X3.131, Small Computer System Interface, a low cost but highly "intelligent" bus interface for microprocessor based computer systems. The interface is primarily aimed at the interconnection of small computers and high bandwidth block transfer peripherals and includes relatively high level command sets for magnetic disks and tapes, optical disks, and printers. This will be a multimaster bus which also supports direct computer-to-computer interconnections. SCSI-2 will add some new device types (e.g. scanners and "jukeboxes") and considerably expand command sets for some existing device types. It will also provide for faster transfer rates.
- d. Publications During Past Year: Principal publication was X3T9.2/86-109 enhanced Small Computer System Interface - this document is the first draft of a standard which specifies an interface for peripherals and small computers. See attached document register for 127 related documents.
- e. Statement of Progress or Accomplishments During the Year: The project proposal for SCSI-2 was approved and work begun on the standard. The first more or less complete draft of the proposed standard was approved as the working draft at the December 1986 meeting of X3T9.2.
- f. Status as of This Report: Development continues on SCSI-2. Initial drafts of most new material are now included. The major planned extension for SCSI-2 which is not yet incorporated in the SCSI-2 draft is a compatible extension of the bus to 16-bits, allowing higher transfer rates. There is no specific reason yet to slip the Jan. 1988 target date for submission to X3, however meeting this date will depend on a number of activities going well, and any major disputes or problems would cause delay.
- g. Future Plans: In 1987 X3T9.2 will vigorously pursue the development of SCSI-2.

II. Committee's Projects - SD-4 Report Input

X3 Project No.	Type	Title	ANSI Document No.	Est. Compl.	ISO/TC97 Project Document	ECMA Standard
375	Interface Standard	Small Computer System Interface	X3.131-1986	Published Sept 1986	97.13.10 DIS 9316	ECMA 111
375R	Interface Standard	enhanced Small Computer System Interface	X3.131-198X	Forward to X3T9 Dec. 1987; to X3 Jan 88	None Yet	None

III. Committee Activities

a. Previous Years Meetings

24-25 February 1986; Clearwater Beach, FL
 14-15 April 1986; Phoenix, AZ
 23-24 June 1986; Seattle, WA
 18-19 August 1986; Boulder, CO
 13-14 October 1986; Austin, TX
 8-9 December 1986; San Diego, CA

b. Next Years Planned Meetings:

16-17 February 1987, Clearwater, FL
 27-28 April 1987; San Jose, CA
 22-23 June 1987; Vancouver, BC
 17-18 August 1987; Denver, CO
 12-16 October, Adirondack Mountains, NY
 7-8 December, 1987; San Diego, CA

c. Officers:

Chairman: William E. Burr*
 Vice Chairman: John Lohmeyer, NCR
 Secretary: William E. Burr*, NBS

d. Membership: The X3T9.2 membership list as of December 31, 1986 is attached. X3T9.2 is a large TG with about 235 current P, A, O, and L members.

e. Liaison Activity: ECMA TC30, X3T9.3, ISO TC 97 SC13, IEEE P1134, & IEEE P996

*Note: Mr. Burr will be stepping down as Chairman and Secretary.
 SMT Letter Ballot for Chairman completes 20 Feb 1987.

f. Administrative Matters of Note: Last year this report complained about X3 billing procedures. While those procedures do not seem to have changed dramatically, the execution of the Secretariat has been much improved, and this is greatly appreciated.

The Secretariat has also turned over document sales to a commercial service and has allowed sales of some drafts (i.e. SCSI-2) early in the development stage. Document distribution has become a major problem as the X3T9.2 committee has grown and interest in SCSI has grown. This will ease the problem somewhat.

A problem occurs, however, when a document is approved by BSR. At this point X3 stops selling it, but it is typically 6 mo. or more after BSR approval before the standard is available for sale. In the case of SCSI we cut this to about three months by pre-editing the document (the ANSI editor, Mr. Rosenfield, was very effective and helpful) and by supplying ANSI with camera ready copy. None-the-less, the X3T9.2 Chairman had to respond to about 100 requests for copies. This was distracting and expensive to him and cost X3 revenues.

It is strongly urged that X3 continue selling copies of drafts after approval by BSR, until ANSI actually has copies available for sale.

The "no development before approval of the project proposal rule," (SD-2, milestone 5 & 6 pages 42 & 43) is unworkable and almost never followed in practice. It is unworkable because, having mustered a substantial interest and consensus for developing a standard, it is impossible to suspend that interest and activity for four to six months while SPARC purses its leisurely course, without killing or damaging that interest and consensus. In the case of SCSI-2, when the Chairman pointed out the rule, the result was a unanimous resolution of the membership to proceed full speed ahead. The computer business is very much dependent upon getting products to market promptly, and standards developers will not (indeed can not) wait for the slow actions of SPARC and X3. SPARC and X3 cannot indefinitely suspend the development of a standard whose time has come any more than Canute could stay the tide.

One other point deserves mention. The period from initial forwarding to the end of public review is too long. This never takes less than six months and often takes eight months or more. Let a TG sit for six months or more and they're bound to find something to change. Thus nearly every dpANS goes through 2 forwardings. TG members are under a lot of pressure to show progress. Every plenary meeting of X3T9.2 now costs the member

companies around \$200K just for the participants labor and travel expenses. Members spend nearly as much in ad hoc working meetings as for each plenary meeting. Over the past two or three years X3T9.2 meetings have cost member companies on the order of \$2M per year. At these prices we have to show progress to our management (the big questions from management: "When will you be done?" or "Is it stable yet?"). This results in early forwarding, showing apparent progress, knowing that we will have eight more months to find the things that are wrong during the 1st public review. Almost all significant comments come from TG members to the TG chairman and usually are never seen by the Secretariat. Then we can fix things and go for a second forwarding, which is at least two months shorter. SPARC is a big part of the delay. Everything SPARC does could be either eliminated or done in parallel with the public review, rather than serially. Quicker initial processing of forwarded dpANS would make TG's be more careful before forwarding, and save everyone time and money.

IV. Anticipated Projects

X3T9.2 has no immediate plans beyond SCSI-2. Two long range possibilities are a fiber optic physical layer for SCSI or adapting SCSI command sets to FDDI.

V. Future Trends in the Area of Standardization

The major direct trend evident in 1986 was the announcement and availability of more SCSI protocol chips and the first single chip disk controller chips with direct support for SCSI. This is in turn resulted in announcements of 5.25 and 3.5 inch disk drives with "embedded" SCSI controllers and most vendors of such products in the world have announced or are developing small drives with built-in SCSI controllers. This trend is continuing strongly, with the announcement of several more protocol chips for SCSI and many new embedded SCSI 5.25 and 3.5 in drives.

Another strong trend, manifested earlier but which continued strongly through 1986, is the wide use of SCSI in high performance minicomputers and superminicomputers. This has been spurred by the initial availability in 1986 of protocol chips implementing the synchronous transfer mode. This trend to high performance SCSI has been so strong that it clearly will be necessary to address either speeding up the protocol or widening the bus, or both, in SCSI-2.

As SCSI is becoming ubiquitous on new computers, it is being used for many purposes other than its original application as a mass storage interface. It is being used on scanners, logic analyzers and circuit emulators, for example. There is increased interest in its use for high performance

printers, and for communications controllers.

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Doc. No.	Entry Rev	Date	Doc. Date	Author	Description of Document
1		8 JAN	6 JAN 86	W. Burr	Minutes of X3T9.2 Meeting # 61, OCoronado, CA, 10 Dec. 85
2		14 JAN	23 DEC 85	J. Lohmeyer	Letter to W. Burr re: SCSI Sequential Access Cmd Set, Ver 2 Proposals
3		15 JAN	23 DEC 85	R. Weber	Ltr to J. Lohmeyer; re: tape issues, particularly Immediat Bit
4		29 JAN	6 JAN 86	M. Robinson	Ltr to W. Burr, re: " Error Recovery Parameters
5		29 JAN	20 JAN 86	R. Schultz	Ltr to W. Burr, re: Suppress Illegal Length Indicator for tape
6	1	10 MAR	10 MAR 86	W. Burr	X3T9.2 Annual Report for 1985
7		18 FEB	9 FEB 86	T. Kurihara	Comments on "SCSI-II" project proposal.
8		18 FEB	23 JAN 86	P. Sandt	Unregistered X3 Pub. Rev. comment on SCSI, X3/86-181.
9		24 FEB	21 FEB 86	R. Bolen	Memo to Tape WG re: Fill Function for Copy
10		24 FEB	28 JAN 86	S. Murray	ICL report on single-ended electrical concerns.
11		24 FEB	16 OCT 85	AMPRO	SCSI/PLUS (tm) Technical Specification
12		24 FEB	19 FEB 86	W. Homans	Ltr to W. Burr re: Single Ended Noise Margin.
13		24 FEB	21 FEB 86	X3B7.1	Press Release re: Disk Drive Test Interface Standard
14		4 MAR	28 FEB 86	K. Kreitman	Ltr to W. Burr re: SCSI Icon.
15		11 MAR	11 MAR 86	W. Burr	Ltr to P. Sandt thanking her for editorial Pub Rev comment
16		11 MAR	1MAR 86	P. Lannan	X3T9 IR Report for 1985
17		11 MAR	20 FEB 86	W. Burr	Letter to L. Gronke, DIN, enclosing ISO dp for SCSI, 97/13 N 349 Rev. 2.
18		17 MAR	12 MAR 86	W. Burr	Minutes of X3T9.2 Meeting # 62, Clearwater, FL, 24-25 FEB 1986
19		1 APR	25 MAR 86	J. Lohmeyer	SCSI Tape Working Group Meeting Minutes
20		7 APR	31 MAR 86	M. Monen	Proposed Common Command Set for WORM Devices
21		9 APR	1 APR 86	C. Brill	Letter to J. Lohmeyer enclosing SCSI unshielded connector drawings.
22		14 APR	11 APR 86	J. Lohmeyer	Memo to W. Burr, Subject:READ & WRITE BUFFER Proposal
23		14 APR	10 APR 86	D. McIntyre	Memo to CCS Working Group, re: Retry Count - Recovery Time Limit
24		14 APR		W. Watson	Letter to X3T9.2 Chair re: Check Condition Status after Hard Reset
25		14 APR	1 APR 86	Apple Comp.	SCSI Icon with relative dimensions
26	1	15 MAY	9 MAY 86	A. Rocatti	Recorded Digital Magnetic Tape Standards
27		14 APR	11 APR 86	I. D. Allan	Letter to X3T9.2 Chair re: Offer to distribute documents
28		14 APR	14 APR 86	Sony Corp.	X3T9.2 Optical Memory Devices Working Group Proposal
29	2	29 JUL	17 JUL 86	DEST Corp.	Proposed SCSI Command Set for Scanner Devices
30	1	23 JUN	23 JUN 86	W. Burr	Minutes of X3T9.2 Meeting # 63, 14-15 APR 86, Scottsdale, AZ
31		21 APR	21 APR 86	W. Burr	List of Documents Related to SCSI-II
32		30 APR	21 APR 86	C. Kachurik	Ltr. to D. Shoemaker re: Approval of SCSI dpANS by X3 (42-0-0-1)
33		2 MAY	24 APR 86	R. Snively	Ltr. to W. Burr with proposed commands for Direct Access logging
34		5 MAY	APR 86	ECMA/TC30	SCSI Contribution by ECMA to SC 13, ECMA/TC30/86/1, SC13 N374
35		5 MAY	DEC 85	ECMA	Small Computer System Interface, Standard ECMA-111
36		5 MAY	1 MAY 86	J. Murphy	Ltr. re: scanner WG mtg 8 MAY 86 in San Jose, enclosing X3T9.2/86-29 R2.
37		5 MAY	28 APR 86	R. Weber	Ltr. to J. Lohmeyer re: Tape WG meeting on 20 MAR 1986
38		8 MAY	30 APR 86	J. Lohmeyer	Memo to SCSI Connector Review List re: Review of Non-Shielded Drawings
39		14 MAY	7 MAY 86	R. Schultz	Ltr. to W. Burr, re: Mandatory Commands for SCSI-II
40		14 MAY	7 MAY 86	R. Schultz	Ltr. to J. Lohmeyer, re: Sense Codes for Sequential Drives
41		19 MAY	13 MAY 86	J. Lohmeyer	SCSI-2 Tape Working Group Minutes, 8-9 May, 1986, Mountain View, CA.
42		29 MAY	15 MAY 86	J. Lohmeyer	Ltr to Connector Review List, re Revised Nonshielded Connector Drawing
50		2/86-42	replaced by 86-53		
43		29 MAY	9 MAY 86	C. Kachurik	Ltr to Trudy Goodman re Transmittal of X3.131-198X; SCSI
44		2 JUN	12 MAY 86	K. Van de Poel	Ltr to W. Burr re: Scanner SCSI Interface
45		3 JUN	2 JUN 86	W. Burr	Ltr to K. Van de Poel re: Scanner Command Set Plans
46		11 JUN	14 MAY 86		Small Computer System Interface, Version II
47		23 JUN	23 JUN 86	J. Stai	Use of Field Pointer Bytes for Error Count Reporting
48		23 JUN	14 JUN 86	D. Loski	Ltr to Bill Burr re: Proposals for SCSI 2
49		23 JUN	16 JUN 86	D. Moczarny	Ltr to W. Burr re: adding Read and Write Long commands to SCSI-II
50		23 JUN	TI		A proposal for Modification to the ANSI X3T9.2 Specification for SCSI

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51	23 JUN	17 JUN 86	J. Lohmeyer	ANSI, ECMA and ISO Medium Type and Density Codes Differences
52	23 JUN	19 JUN 86	J. Lohmeyer	Initiator DISCONNECT Message proposal for SCSI-2
53	23 JUN	23 JUN 86	J. Lohmeyer	Revised Drawing for Unshielded connector (replaces X3T9.2/86-38)
54	23 JUN	20 JUN 86	A. England	Proposed SCSI Logos
55	23 JUN	11 JUN 86	B. Barter	Minutes of Tape Working Group, 5-6 June 1986, Chicago, IL
56	23 JUN	19 JUN 86	R. Lehrbaum	Memo to X3T9.2 Members re: SCSI System Call Standardization
57	Rev1 13 OCT	10 JUN 86	J. Semenak	SCSI2 Tape Working Group DRAFT Document
58	3 JUL	1 JUL 86	W. Burr	Ltr to K. Van de Poel re: SCSI Scanner Command Set
59	5 JUL	23 JUN 86	P. Boulay	Proposed Command for WORM Optical Devices: SEARCH FOR EMPTY BLOCKS
60	5 JUL	23 JUN 86	P. Boulay	SCSI Logo Counter Proposal
61	5 JUL	10 JUN 86	X3T9.3	Project Proposal (SD-J) for Revision of IPI Physical Interface
62	5 JUL	10 JUN 86	X3T9.3	Project Proposal (SD-J) for Enhanced Small Device Interface (ESDI)
63	5 JUL	30 JUN 86	X3T9.3	Project Proposal (SD-J) for Device Specific Command Set for Magnetic Tape
64	8 JUL	8 JUL 86	W. Burr	Minutes of X3T9.2 Meeting #64, 23-24 June 1986, Bellevue, WA
65	15 JUL	27 JUN 86	W. Burr	Press Release on SCSI Scanner Command Set
66	18 JUL	11 JUL 86	R. Schultz	Ltr to W. Burr with enclosed working paper on changes for SCSI-II
67	28 JUL	14 JUL 86	G. Houlder	Memo to Bill Burr, re: Four Proposed Clarifications for SCSI-2.
68	29 JUL	21 JUL 86	H. Machado	Proposed revision to SCSI Scanner Command Set (X3T9.2/86-29 R4)
69	30 JUL	30 JUL 86	J. Lohmeyer	Ltr to Harvey Rosenfeld, ANSI, enclosing edited copy opf X3.131-1986.
70	30 JUL	23 JUN 86	A. Meola	Ltr. to C. Kachurik, re: BSR approval of SCSI (X3/86-1253-X)
71	1 AUG	27 JUL 86	J. Lohmeyer	SCSI-2 Working group Meeting Minutes
72	18 AUG	11 AUG 86	G. Pauli	Memo to: X3T9.2, Re: Sourcing Terminator Power and Related Safety Issues
73	18 AUG	14 AUG 86	Nat. Semi.	Memo to: X3T9.2, Re: Proposed Changes to the Differential Termination
74	18 AUG	18 AUG 86	D. Moczarny	Memo to: W. Burr, re: Read Long, Write Long and Write Same Commands
75	18 AUG		R. Snively	Ltr to W. Burr, re: Compatiblity between SCSI and SCSI-2.
76	18 AUG		D. McIntyre	Memo to X3T9.2, re: Deficiency in Reassign Blocks Command
77	18 AUG	12 AUG 86	J. Lohmeyer	Ltr to W. Burr enclosing proposal on Initiator Disconnect Message
78	18 AUG	5 AUG 86	J. Lohmeyer	Ltr to W. Burr enclosing Read Buffer/Write Buffer proposal for SCSI-2
79	18 AUG	13 AUG 86	J. Lohmeyer	Ltr to W. Burr enclosing Inquiry Data Format Field proposal.
80	18 AUG	18 AUG 86	D. Davies	Memo to X3T9.2 re New Device Config. Param. for Sequential-Access
81	18 AUG	16 AUG 86	D. Loski	Memo to W. Burr, re: Proposals for SCSI-2.
82	18 AUG	31 AUG 86	G. Houlder	Memo to W. Burr, re:Proposed Changes for SCSI-2(rev. of X3T9.2/86-67)
83	18 AUG		Van de Poel	Ltr to W. Burr, re:AGFA Comments on SCSI Scanformat.
84	5 SEP	18 AUG 86	L. Gronke	Ltr to Project Editors re: Uncompleted document revisions.
85	5 SEP	18 AUG 86	X3 Sec.	Press release on revision of SCSI (scanners)
86	5 SEP	7 AUG 86	W. Burr	Federal Register Notice, 51FR28402, Proposing SCSI and IPI FIPS.
87	9 SEP	23 AUG 86	J. Eckelkamp	Memo to X3T9.2 WG, re: SUPPRESS SYNCHRONOUS TRANSFER Message
88	9 SEP	29 AUG 86	R. Weber	Identity Page proposal.
89	9 SEP	9 SEP 86	W. Burr	Minutes of X3T9.2 Meeting # 65, Boulder, CO, 18-19 Aug. 1986.
90	17 SEP		R. Schultz	Draft of Sections 1 through 5 of SCSI-2
91	26 SEP	19 SEP 86	J. Lohmeyer	September 1986 SCSI-2 Working Group Meeting Minutes
92	1 OCT	11 SEP 86	G. Milligan	Ltr to W. Burr, re:
93	1 OCT	11 SEP 86	B. Driscoll	Proposed SCSI Command Set for Scanner Devices. Revision A 9/11/86
94	13 OCT	8 OCT 86	G. Stephens	Ltr to J. Lohmeyer re: Tape working Group SCSI-2
95	13 OCT	8 OCT 86	G. Stephens	Ltr to W. Burr, re: SCSI version II Draft 8/30/86 Corrections.
96	13 OCT	8 SEP 86	R. Snively	Ltr to W. Burr, re: Mode Select
97	13 OCT	23 SEP 86	J. Stai	Define Field Pointer Bytes for General Use
98	13 OCT	13 OCT 86	P. Boulay	Asynchronous Event Notification Ideas
99	13 OCT	10 OCT 86	P. Boulay	Proposed Command for WORM and Optical Device Types
100	13 OCT	3 OCT 86	W. Burr	Draft of Proposed SCSI Logo (see X3T9.2/86-60)
101	13 OCT	11 OCT 86	J. Siegle	Ltr to W. Burr, re: Add Defect List Format to Reassign Blocks
102	13 OCT	23 SEP 86	J. Stai	Comments on documents distributed in the Sept mailing.
103	13 OCT	11 OCT 86	C. Lewis	Modification of SCSI Voh Vol (Differential)
104	13 OCT	12 OCT 86	J. Eckelkamp	Supress Synchronous Transfer

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105 13 OCT 12 OCT 86 G. Pauli Multiple Message Attention Condition
 106 13 OCT 13 OCT 86 G. Pauli Multiple Message Attention Condition, Revised
 107 13 OCT 14 OCT 86 P. Boulay Event Notification Protocol (supplement to X3T9.2/86-98)
 108 1 30 DEC 9 DEC 86 W. Burr Minutes of X3T9.2 Meeting Number 66, 13 and 14 Oct 1986, Austin TX
 109 27 OCT Draft of extended Small Computer System Interface, "SCSI-2"
 110 27 OCT Ltr to W. Burr, re: standardization of additional sense bytes for SCSI-2
 111 27 OCT 22 OCT 86 G. Floryance Ltr To W. Burr, re: Use of "SCSI" as trademark.
 112 27 OCT 17 OCT 86 S. Allen Call for Volunteers, Chair, X3T9.2, X3/86-1675-M
 113 27 OCT 17 OCT 86 S. Allen Call for Volunteers, Vice Chair, X3T9.2
 114 19 NOV 19 NOV 86 W. Burr Ltr to V. Morgan, re: Copyright issues for SCSI-2.
 115 8 DEC 8 DEC 86 P. Boulay Memo to X3T9.2 mbrs., re: Asynchronous Event Notification Revisited
 116 8 DEC 25 NOV 86 D. Loski Ltr. to Bill burr, re: My Comments to SCSI2.
 117 8 DEC 1 DEC 86 J. Stal Proposal for a QIC120 Density Code
 118 8 DEC 2 DEC 86 T. Johnson Memo to J. Lohmeyer, re: Flex. disk Mode select page.
 119 8 DEC 4 DEC 86 T. Johnson Memo to J. Lohmeyer, re: Printer Commands
 121 8 DEC 5 DEC 86 S. Goldman Memo to ANSI Committee X3T9.2, re: Wide SCSI
 122 8 DEC 5 DEC 86 R. Snively Ltr to W. Burr, Comment on X3T9.2/86-99, Proposed WORM command set.
 123 30 DEC 12 DEC 86 G. Houlder Memo to X3T9.2, re: Clarification to BUS FREE phase description
 124 30 DEC C. Warren Announcement of orginizational meeting of IEEE P1134, PC/AT BIOS
 125 30 DEC 17 DEC 86 G. Pauli Memo to X3T9.2, re: Proposed Changes to Message System for Synch Xfr.
 126 30 DEC 22 DEC 86 T. Johnson X3T9.2 SCSI-2 Printer Draft Proposal
 127 30 DEC 30 DEC 86 W. Burr Minutes of X3T9.2 Meeting # 67, 8-9 DEC 1986, San Diego, CA.

X3T9.2 Summary Membership List for the Year Ending 31 DEC 1986

Name	S Company Name	Address1	Address2	Address3	Phone
Mr. Anthony Kozlowski	P JM Company	3M Center	Bldg. 236-GN-06	St. Paul, MN 55144	(612) 733-7063
Mr. Terry Smudz	A JM Company	Bldg. 502, POB 2963	11209 Metric Blvd.	Austin, TX 78769-2963	(512) 834-6701
Mr. Charles Brill	P AMP, Inc.	Mail Stop 210-20	P. O. Box 3608	Harrisburg, PA 17105	(717) 561-6198
Mr. Rick Lehrbaum	P AMPRO Computers, Inc.	67 E. Evelyn Ave.	Mtn. View, CA 94041		(415) 962-0230
Mr. William Dollar	A AMPRO Computers, Inc.	67 E. Evelyn Ave.	Mtn. View, CA 94041		
Mr. P. Allen England	P AT&T Information Systems	1100 E. Warrenville Rd. Room 1W 2A-234			
Mr. James J. Semenak	A AT&T Information Systems	1100 E. Warrenville Rd. Room 2A-138			
Mr. Robert N. Snively	P Adaptec, Inc.	580 Cottonwood Dr.	Milpitas, CA 95035	Naperville, IL 60566	(312) 979-7852
Mr. William A. Horton	P Adaptec, Inc.	580 Cottonwood Dr.	Milpitas, CA 95035	Naperville, IL 60566	(312) 979-7981
Mr. Roberto Zampiglia	P Adaptec, Inc.	580 Cottonwood Dr.	Milpitas, CA 95035		(408) 432-8600
Mr. Ted Petrowich	P Allied Amphenol Products	4300 Commerce Ct.	Lisle, IL 60532		(408) 432-8600
Mr. Dennis Krob	A Allied Amphenol Products	4300 Commerce Ct.	Lisle, IL 60532		(312) 983-3553
Mr. William Watson	P Apple Computer	Mail Stop 22-AA	20525 Mariani Ave.	Cupertino, CA 95014	(408) 973-2927
Mr. Jon Milledge	A Apple Computer	M. S. 22-AA	20525 Mariani Ave.	Cupertino, CA 95014	(408) 973-6727
Mr. Randy Sprague	P Applied Microsystems Corp	5050 148th Ave. N. E.	P. O. Box C-1002	Redmond, WA 98071-1002	(202) 882-2000
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Mr. Mike Newton	A Archive Corp.	1650 Sunflower Ave.	Costa Mesa, CA 92626		(714) 641-0279
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Mr. Guy Prival	A Bull Peripheral Corp.	766 San Alejo	Sunnyvale, CA 94086		(408) 745-0855
Mr. Gene Milligan	P CDC/MPI	MS ORK 275	P. O. Box 12313	Oklahoma City, OK 73115	(405) 124-3070
Mr. Gerald Houlder	A CDC/MPI	Mail Station MTKOOG	5950 Clearwater Dr.	Minnetonka, MN 55343	(612) 931-8273
Mr. Robert Knight	P CPT Corp.	8100 Mitchel Rd.	P. O. Box 295	Minneapolis, MN 55440	(612) 937-8000
Ms. Lisa Long	A CPT Corp.	8100 Mitchel Rd.	P. O. Box 295	Minneapolis, MN 55440	(612) 937-8000
Mr. Dan Davies	P Cipher Data Products, Inc	10101 Old Grove Rd.	Mail Stop A8	San Diego, CA 92138	(619) 578-9100
Mr. Steve Crompton	A Cipher Data Products, Inc	10101 Old Grove Rd.	Mail Stop D-4	San Diego, CA 92131	(619) 671-3333
Mr. Charles Helkenn	P Cipher/Optimem	435 Oakmead Pkwy.	Sunnyvale, CA 94086		(408) 737-7173
Ms. Joanne Monaco	A Cipher/Optimem	435 Oakmead Pkwy.	Sunnyvale, CA 94086		(408) 737-7173
Mr. Jim Murphy	P DEST Corporation	1201 Cadillac Court	Milpitas, CA 95035		(408) 946-7100
Mr. Steve Goldman	P DPT	132 Candace Dr.	Maitland, FL 32751		(305) 810-5522
Mr. Tom Treadway	A DPT	132 Candace Dr.	Maitland, FL 32751		(305) 810-5522
Mr. Charles DiChiara	A Data Technology Corp.	15 Wiggins Ave.	Bedford, MA 01730		(617) 275-4044
Mr. Cliff Hall	P Datacopy Corp.	1215 Terra Bella Ave.	Mtn. View, CA 94043		(415) 965-7900
Mr. Mel Herman	A Datacopy Corp.	1215 Terra Bella Ave.	Mtn. View, CA 94043		(415) 965-7900
Mr. Ben Driscoll	A Datacopy Corp.	1215 Terra Bella Ave.	Mtn. View, CA 94043		(415) 965-7900
Mr. Gary S. Robinson	P Digital Equipment Corp.	Mail stop ML 12-J/E51	Maynard, MA 01754		(617) 491-4094
Mr. Edward A. Gardner	A Digital Equipment Corp.	301 Rockrimmon Blvd.	SCXO 1-2/N22	Col. Springs, CO 80919	(303) 594-2247
Mr. Duncan McDonald	P Distributed Logic	1555 S. Sinclair	Anaheim, CA 92806		(714) 937-5700
Mr. Curt Ridgeway	A Distributed Logic Corp.	1555 S. Sinclair St.	Anaheim, CA 92806		(714) 937-5700
Mr. Arnold J. Roccati	P EG&G WASC, Inc.	1396 Piccard Dr.	Rockville, MD 20850		(301) 840-3277
Mr. Robert B. Anthony	A EG&G WASC, Inc.	P. O. Box 552	Dahlgren, VA 22448		(703) 661-2161
Mr. Stephen Fitzgerald	P Eastman Kodak Co.	Mass Memory Division	460 Buffalo Rd.	Rochester, NY 14611	(716) 588-0219
Mr. Allan Miller	A Eastman Kodak Co.	Mass Memory Division	460 Buffalo Rd.	Rochester, NY 14611	(716) 588-0220
Mr. Paul Nitza	P Emulex Corp.	3545 Harbor Blvd.	P. O. Box 6725	Costa Mesa, CA 92626	(714) 662-5600
Mr. Robert Liu	P Fujitsu America, Inc.	3055 Orchard Dr.	San Jose, CA 95134		(408) 946-8777
Mr. David Snook	A Fujitsu America, Inc.	3055 Orchard Dr.	San Jose, CA 95134		(408) 946-8777
Dr. Sam Karunanithi	P HNSI, Inc.	2202 N. First Street	POB 39, MS-213	Boise, ID 83707	(208) 323-3208
Mr. Greg Hite	P HP	Disk Memory Div.	14413 Chinden, MS-221	Boise, ID 83707	(208) 323-3003
Mr. Dave McIntyre	A HP	Disk Memory Div.	Greeley, CO 80634		(303) 350-4551
Ms. Ellen Hunt	A Hewlett Packard Co.	700 71st Ave.	Dpt. JE2, Bldg. 114-2	Rochester, MN 55901	(507) 253-1869
Mr. Greg Floryance	P IBM Corp.	137 St. Highway 52	44 W. Broakaw Rd.	San Jose, CA 95110	(617) 449-2000
Mr. E. W. Calkins	A IBM Corp.	P32144	Wenlock Way	Manchester, UK M125DR	
Mr. Tony Salthouse	P ICL		West Gorton		
Mr. Paul Rikkinen	P Intergraph Corp.	1 Madison Industrial Pk	Huntsville, AL 35807	Mail Stop 1105	(205) 772-2000

XJT9.2 Summary Membership List for the Year Ending 31 DEC 1986

Name	S	Company Name	Address1	Address2	Address3	Phone
Mr. Dave Bethune	A	Intergraph corp.	1 Madison Ind. Park	Huntsville, AL 35807	M/S CRI104	(205) 772-6136
Mr. Steve Kappes	P	Interphase Corp.	2925 Merrel Rd.	Dallas, TX 75229		(214) 350-2900
Mr. Ed Gross	A	Interphase Corp.	2925 Merrel Rd.	Dallas, TX 75229		(214) 350-2900
Mr. Marvin R. DeForest	P	Iomega Corp.	1821 West 4000 South	Roy, UT 84067	Bldg. # 6	(801) 778-1000
Mr. Stephen Cornaby	A	Iomega Corp.	1821 West 4000 South	Roy, UT 84067	Bldg. # 6	(801) 778-1000
Mr. Rino Mazzucco	P	Kennedy Company	1600 Shamrock Ave.	Monrovia, CA 91016		(818) 301-8172
Mr. Tu Ton	P	Kennedy Corp.	1600 Shamrock Ave.	Monrovia, CA 91016		(215) 666-4764
Mr. William Homans	P	LMSI-CPI	2621 Van Buren Ave.	Norristown, PA 19403		(303) 593-4205
Mr. Louis G. Edwards	P	LMSI-OSI	4425 Arrowswest Dr.	Col. Springs, CO 80907		(714) 924-2509
Mr. Robert E. Smiley	P	MAI Basic Four	14101 Myford MD312	Tustin, CA 92680		(408) 942-1700
Mr. Dan Banerje	P	Maxtor Corp.	150 River Oaks Pkwy	San Jose, CA 95134		(408) 942-1700
Mr. Skip Jones	A	Maxtor Corp.	150 River Oaks Pkwy	San Jose, CA 95134		(408) 942-1700
Mr. Bob Masterson	P	Methode Electronics, Inc.	2950 S. Jamaca, #100	Aurora, CO 80014		(303) 695-1333
Mr. Hobie Weaver	A	Methode Electronics, Inc.	3125 Poplarwood Ct.	PO Box 95073	Realeigh, NC 27625	(919) 878-0988
Mr. John Eagle	A	Micropolis	21129 Nordhoff St.	Chatsworth, CA 91011		(818) 709-3489
Mr. Bob Mortensen	P	Micropolis Corp.	21123 Nordhoff St.	Chatsworth, CA 91011		(818) 709-3318
Mr. Paul Stavish	A	Micropolis Corp.	21239 Nordhoff St.	Chatsworth, CA 91011		(818) 709-3466
Mr. Bruce Bonner	P	Mitsubishi Electronics	Am991 Knox St.	Torrance, CA 90502		(213) 515-1993
Mr. Daniel E. Moczarny	A	Mitsubishi Electronics	Am991 Knox St.	Torrance, CA 90502		(213) 515-1993
Mr. John Lohmeyer	P	NCR Corp.	3718 N. Rock Rd.	Wichita, KS 67226		(316) 688-8703
Mr. Marty Francis	A	NCR Corp.	3718 N. Rock Rd.	Wichita, KS 67226		(316) 688-8000
Mr. William E. Burr	P	Nat. Bureau of Standards	Room A-216, Bldg. 225	Gaithersburg, MD 20899		(301) 975-2914
Mr. Liu Zugiu	A	Nat. Bureau of Standards	Room A-216, Bldg. 225	Gaithersburg, MD 20899		(301) 975-2914
Mr. James Schuessler	P	National Semiconductor	POB 58090, M/S 3969	2900 Semiconductor Dr. Santa Clara, CA 95052	(408) 721-5964	
Mr. Larry Kendall	A	National Semiconductor	POB 58090, M/S 3969	2900 Semiconductor Dr. Santa Clara, CA 95052	(408) 721-5964	
Mr. Paul K. Garretson	A	Hiissei Sangyo (Hitachi)	460 E. Middlefield Rd.	Mt. View, CA 94043		(415) 969-1100
Mr. Ron Sulyma	P	North Atlantic Industries	60 Plant Ave.	Hauppauge, NY 11788		(516) 582-6500
Mr. David Filpus	P	Northern Telecom, Inc.	Memory Systems Division	100 Phoenix Dr., POB D Ann Arbor, MI 48106	(313) 973-4848	
Mr. Frank Haas	A	Northern Telecom, Inc.	Memory Systems Division	100 Phoenix Dr., POB D Ann Arbor, MI 48106	(313) 973-4000	
Mr. John Hoy	P	Optotech, Inc.	740 Wooten Rd.	Colorado Spr., CO 80915		(408) 377-7802
Mr. Don Wilde	A	Optotech, Inc.	770 Wooten Rd.	Colorado Spr., CO 80915		(408) 377-7802
Mr. Robert Bender	P	Pentax Teknologies	880 Interlocken Pkwy	Broomfield, CO 80020		(303) 570-7500
Mr. Bill Bunker	A	Pentax Teknologies	880 Interlocken Pkwy	Broomfield, CO 80020		(303) 460-1600
Mr. Mike Machado	P	Quantum Corp.	1804 McCarthy Blvd.	Milpitas, CA 95035		(408) 262-1100
Mr. Tony Lo	A	Quantum Corp.	1804 McCarthy Blvd.	Milpitas, CA 95035		(408) 262-1100
Mr. David Ruxton	P	RODIME LTD	Southfield	Glenrothes, Scotland		44(592)774704
Dr. Tetsuro Motoyama	P	Ricoh Systems Inc.	2071 Concourse Dr.	San Jose, CA 95131		(408) 946-6200
Mr. Dave Koger	A	Ricoh Systems, Inc.	2071 Concourse Dr.	San Jose, CA 95124		(408) 946-6200
Mr. Daniel Loski	P	Scientific Micro Systems	339 N. Bernardo Ave.	P. O. Box 7777	Mtn View, CA 94039	(415) 962-5460
Mr. Bob Reid	A	Scientific Micro Systems	339 N. Bernardo Ave.	P. O. Box 7777	Mtn View, CA 94039	(415) 962-5416
Mr. D. Michael Robinson	P	Seagate Technology	920 Disc Drive	Scotts Valley, CA 95066		(408) 438-6550
Mr. Carter O'Brien	A	Seagate Technology	920 Disc Drive	Scotts Valley, CA 95066		(408) 438-6550
Mr. Sergio Fonseca	P	Sony Corp. of America	1 Sony Dr.	Park Ridge, NJ 07656		(201) 930-6464
Mr. Lawrence J. Lamers	A	Sony Corp. of America	1350 Old Oakland Rd.	San Jose, CA 95112		(408) 280-0111
Mr. Joseph Placentino	P	Standard Micro Systems	35 Marcus Blvd.	Hauppauge, NY 11788		(516) 273-3100
Mr. Mort Kalter	A	Standard Micro Systems	35 Marcus Blvd.	Hauppauge, NY 11788		(516) 273-3100
Mr. Dennis Appleyard	P	Storage Technology Corp.	Mail Drop PE	2270 South 88th St.	Louisville, CO 80028	(301) 673-6685
Mr. Michael O'Donnell	A	Storage Technology Corp.	Mail Drop 91	2270 South 88th St.	Louisville, CO 80028	(408) 996-6516
Mr. Satish Shah	P	Tandem Computer Inc.	Location 100-03	10555 Ridgeview Ct.	Cupertino, CA 95014	(512) 250-6525
Mr. Jesse Eckelkamp	P	Texas Instruments	Data Systems Division	POB 2909, MS 2091	Austin, TX 78769	(512) 250-6627
Mr. D. W. Spence	A	Texas Instruments	Data Systems Division	POB 2909, MS 2091	Austin, TX 78769	(512) 250-6632
Mr. Giles A. Pauli	A	Texas Instruments	Data Systems Division	POB 2909, MS 2091	Austin, TX 78769	(201) 469-4000
Mr. Harvey Waltersdorf	P	Thomas & Betts	920 Route 202	Raritan, NJ 08869		

XJT9.2 Summary Membership List for the Year Ending 31 DEC 1986

Name	S	Company Name	Address1	Address2	Address3	Phone
Mr. Paul Phillips	A	Thomas & Betts	920 Route 202	Raritan, NJ 08869		(201) 469-4000
Mr. Al Crowell	P	U.S. Design	5100 Philadelphia Way	Lanham, MD 20706	Harrisburg, PA 17105	(301) 577-2880
Mr. Ralph Schultz	P	UNIVSYS	Mail Stop E4-121	P. O. Box 500	Blue Bell, PA 19424	(215) 542-3713
Mr. John Frissell	P	Wang Laboratories	Mail stop 1429	1 Industrial Ave.	Lowell, MA 01852	(602) 437-9035
Mr. Ken Post	P	Western Digital	2445 McCabe Way	Irvine, CA 92714		(714) 474-2033
Mr. Jeff Stai	A	Western Digital	2445 McCabe Way	Irvine, CA 92714		(714) 474-2033
Mr. Joseph Chen	P	Xebec	3579 Hwy 50 East	Carson City, NV 89701		(702) 883-4000
Mr. Johnny Pierce	A	Xebec	P. O. Box 50400	Reno, NV 89513-0400		(702) 323-4222
Below are XJT9.2 Liaison Members as of 31 DEC 1986						
X3 Secretariat	L	CBEMA	311 First St., N. W.	Suite 500	Washington, DC 20001	(202) 737-8888
Mr. Phil Devin	L	Dataquest	1290 Ridder Park Dr.	San Jose, CA 95131		(408) 971-9000
Mr. Del Shoemaker	L	Digital Equipment Corp.	1311 Pennsylvania Ave	NSuite 600, MS: WNP	Washington, DC 20004	(202) 383-5622
Mr. D. Hekimi	L	ECMA	Rue du Rhone 114	CH-1204 Geneva		
Mr. I. Dal Allan	L	ENDL	Vice Chair, XJT9.3	14426 Black Walnut Ct.	Saratoga, CA 95070	(408) 867-6630
Mr. Pat Lannan	L	Lannan Associates	XJT9 IR	6435 Clearwater Dr.	Irvine, CA 92715	(714) 851-9422
Mr. Carl Warren	L	Mini-Micro Systems	18818 Teller Ave.	Suite 170	Irvine, CA 92715	(714) 861-3339
Mr. Joe Molina	L	SCSI Forum Advisory Board	23409 Coyote Springs	Dr.Diamond Bar, CA 91765		
Mr. C. Van Der Sel	L	Siemens AG/ECMA-TC30	St. Martin-Strasse 76	P. O. Box 801701	D-8000 Munich 80, Germ	01149-89-4133-4
Mr. Richard Barrett	L	Adven Group	261 Oakhurst Ln	Arcadia, CA 91006		(818) 447-3816
Mr. Alan Ebright	L	Priam	20 W. Montague Exprwy.	San Jose, CA 95134		(408) 946-4600
Below are XJT9.2 Observers as of 31 DEC 1986						
Mr. Raymond Lee	O	AST Research, Inc.	2121 Alton Ave.	Irvine, CA 92714		(714) 863-1333
Ms. Maria Martinez	O	AT&T Information Systems	1100 E. Warrenville Rd.	NWIF4J7	Naperville, IL 60566	(312) 979-7180
Mr. David A. Hatch	O	AUGAT INC.	33 Perry Ave.	Attleboro, MA 02703		(617) 222-2203
Mr. Govind Kamath	O	Advanced Micro Devices	2130 Woodward St.	Mail Stop 536	Austin, TX 78744	(512) 488-9817
Mr. Moshe Segal	O	Advanced Micro Devices	Mail Stop 70	901 Thompson Pk.	Sunnyvale, CA 94086	(408) 732-2400
Mr. William J. Casey	O	Advanced Storage Concepts	9660 Hillcroft Ave.	Houston, TX 77096		(713) 729-6388
Ms. Lyn Bresnen	O	Allied Amphenol Products	454 Carson Plaza Dr.	St. 204	Carson, CA 90746-3248	(312) 918-3691
Mr. Ed Cieniawa	O	Allied Amphenol Products	4300 Commerce Ct.	Lisle, IL 60532		(312) 898-2234
Mr. H. Dorris	O	American Bell	Headquarters Plaza - W	1 Speedwell Av Rm 0966 Morristown, NJ 07960		(201) 898-2234
Mr. Ali Kosrowpour	O	Applied Data Communications	1472 Chambers Rd.	Tustin, CA 92680		(714) 777-0808
Mr. Kim Le	O	Aspen Peripherals	1680 Lefthand Cir.	Longmont, CO 80501		
Mr. Attn: F2009-ST	O	Aspen Peripherals	5827 Columbia Pike	Suite 306	Falls Church, VA 22041	(303) 678-0808
Mr. R. A. Stokken	O	Compugraphic Corp.	5700 Lombardio Center	Suite 220, Center Bldg Seven Hills, OH 44131	(216) 642-9060	
Mr. Peter Johansson	O	Congruent Software, Inc.	435 Oakmead Pkwy.	Sunnyvale, CA 94086	(408) 737-7373	
Mr. Thomas A. Fiers	O	Connor Peripherals, Inc.	20555 FM 149	Sunnyvale, CA 94086		
Mr. Steve Finch	O	Consultant	435 Oakmead Pkwy.	Houston, TX 77070		(612) 789-1694
Mr. Douglas C. Johnson	O	Control Data Corp.	20555 FM 149	Wilmington, MA 01877	(617) 658-5607	
Mr. David M. Young	O	Data General Corp.	200 Ballardvale St.	Oakland, CA 94602	(415) 511-281	
Mr. Dave Cressman	O	Data General Corp.	1998 Whittle Ave.	Longmont, CO 80501	(303) 458-809	
Mr. Charles Fannin	O	Data General Corp.	P. O. Box 479	Lake Forest, CA 92630	(714) 458-809	
Mr. Ken Machado	O	Datacopy Corp.	21581 Via Invierno	Data Sys., Roseville Div 2401 North Fairview Av St. Paul, MN 55113	(603) 862-6255	
Mr. John Farnsworth	O	Datapoint Corp.	Data Sys., Roseville Div 2401 North Fairview Av St. Paul, MN 55113			
Mr. James Barnett	O	Dept. of Navy	Technology Dr.	Durham, NH 03824		
Mr. Ulrich Kuhn	O	Digirede Informatica Ltda	Technology Dr.	Durham, NH 03824		
Mr. Bill Grace	O	Distributed Logic Corp.	Technology Dr.	Durham, NH 03824		
Mr. Jim Mulligan	O	Dupont Connector Systems	1555 S. Sinclair St.	9725 Datapoint Dr.	San Antonio, TX 78284	(415) 965-7900
			Anaheim, CA 92806	Springfield, VA 22153	(512) 699-5067	
			01228 San Paulo SP	Brazil	(714) 937-5700	
			New Cumberland, PA 17070	Mt. View, CA 94039	(717) 938-7671	

XJT9.2 Summary Membership List for the Year Ending 31 DEC 1986

Name	S Company Name	Address1	Address2	Address3	Phone
Mr. Vince Stanton	O Electronic Processors,	InP. O. Box 569	Englewood, CO 80117		
Mr. Tom Fitzgerald	O Electronic Processors,	In261 W. Dartmouth Ave.	Englewood, CO 80112	Rosemead, CA 91770	+44 61 499 3355
Mr. Ken Ng	O Everex Systems, Inc.	2218 San Gabriel Blvd.	Suite 12	England	(714) 966-2344
Mr. A. Buckley	O Ferranti Computer Systems	Simonsway, Wythenshawe	Manchester M22 5LA		
Mr. Michael Rudy	O FileNet Corp.	3510 Hyland Ave.	Costa Mesa, CA 92626		
Mr. Jeff Gallup	O Gallup and Associates	2111 University Ave.	Berkeley, CA 94708		
Mr. Don Loughry	O Hewlett-Packard Co.	11000 Wolf Rd.	Cupertino, CA 95014		(408) 257-7000
Mr. Tom Moore	O Hewlett-Packard Co.	Disc Memory Division	MS 345, POB 39	Boise, ID 83707	
Mr. Kenji Nishimura	O Hitachi America, Ltd.	950 Elz Ave	San Bruno, CA 94066		(415) 872-1902
Mr. Kris Kowal	O Honeywell, Inc.	300 Concorde Rd.	Billerica, MA 01821		(617) 671-3333
Mr. Gary R. Stephens	O IBM Corp.	9000 S. Rita Rd.	Tucson, AZ 85744		(602) 799-2246
Mr. Richard Coulson	O Intel Corp.	HPI-1-108	5200 Elam Young Pkwy.	Hillsboro, OR 97121	(503) 681-5287
Mr. Bruce Brunette	O Introl Corp.	2855 Anthony Ln.	Minneapolis, MN 55418		(612) 789-2421
Mr. Eric J. Halvorsen	O Iomega Corp.	1821 West 4000 South	Roy, UT 84067	Bldg. # 6	(801) 778-1000
Mr. Mr. Bill Aycock	O Kennedy Co.	1600 Shamrock Ave.	Monrovia, CA 91016		
Mr. Paul Boulay	O LMSI-OSI	4425 Arrowstreet Dr.	Colorado Spr., CO 80907		(303) 593-4123
Mr. Doug Mitchell	O Laserdrive Ltd.	1101 Space Park Dr.	Santa Clara, CA 95054		(408) 970-1607
Mr. Art Turney	O Lawrence Berkeley Lab.	Bldg. 46, Rm. 148	Berkeley, CA 94720		(415) 486-5571
Mr. Nick Livote	O MILTOPE Corp.	1770 Wait Whisman Rd.	Melville, NY 11747		
Mr. Robert Bellino	O Madison Cable Con.	125 Goddard Memorial	DWorchester, MA 01603		(617) 752-7320
Mr. Steve Heisenbuttel	O Matsushita Technology ChtOne	Panasonic Way	Secaucus, NJ 07094		(201) 348-7000
Mr. Roger Barnes	O Memorex Corp. -14-47	San Tomas at Central	ExSanta Clara, CA 95052		(408) 987-0441
Mr. Roger Corte	O Metier Management Systems	3 Foundation St.	Ipswich IP41BG	England	
Mr. Chuck Campbell	O Miniscribe	1861 Leftbank Cir., bdg9Longmont	CO 80501		(303) 678-2140
Mr. Peter Murray	O Miniscribe	1841 Leftbank Cir.	Longmont, CO 80501		(303) 678-2611
Mr. Jeff Siegle	O Miniscribe	1861 Leftbank Cir., bdg9Longmont	CO 80501		(303) 678-2613
Mr. Toshio Hashimoto	O Mitsubishi Electronics Am	991 Knox St.	Torrance, CA 90502		(213) 515-1993
Mr. Pat Laviolette	O Motorola	3501 mEd Bluestein Blvd	Austin, TX 78700		
Mr. Cousy Maher	O Motorola Micro Systems	Mail Drop DW220	2900 S. Diablo Way	Tempe, AZ 85282	(602) 438-1286
Mr. Paul Rosen	O Motorola Microsystems	2900 S. Diablo Way	Tempe, AZ 85282		(602) 438-3150
Mr. John Zillinski	O N. E. C. I. S.	110 Rio Robles	San Jose, CA 95134		(408) 433-1390
Mr. Harry Mason	O NCR	1635 Aeroplaza	Col. Springs, CO 80916		(303) 596-5794
Ms. Joan French	O NEC Systems Laboratory	1414 Massachusetts Ave	Boxboro, MA 01719		(617) 262-2627
Mr. George E. Clark	O Nat. Bureau of Standards Room A-216	Bldg. 225	Gaithersburg, MD 20899		(301) 921-3723
Mr. Nobuy Yawata	O Nissho Electronics (USA)	Inwood Park, Suite 200	17310 Red Hill Ave.	Irvine, CA 92714	(714) 261-8811
Mr. Prentiss Smith	O Nissho Iwai	American Corp.	700 S. Floer St.	Los Angeles, CA 90017	(213) 688-1120
Mr. Paul Clement	O North Atlantic Industries	J5 South St. (Area E-1)	Hopkinton, MA 01748		(617) 435-9011
Mr. Max Sadowski	O Northern Telecom, Inc.	Memory Systems Division	100 Phoenix Dr., POB DAnn Arbor, MI 48106		(313) 973-4000
Mr. David Huminski	O OKIDATA	532 Fellowship Rd.	Mc. Laurel, NJ 08054		(609) 235-2600
Mr. Wayne Baldwin	O Olivetti	2300 Stevens Creek Blvd	Cupertino, CA 95014		(408) 996-3867
Mr. Ishtiyaq Syed	O Optimem Inc.	435 Oakmead Pkwy.	Sunnyvale, CA 94086		(408) 737-7373
Mr. Jerry Laws	O P. O. Box 2909	Mail Stop 2214	Austin, TX 78769		
Mr. Ara Nazarian	O PTI	685 East Cochran St.	Simi Valley, CA 93065		(805) 581-1000
Mr. Thomas Steury	O Pacific Electro Data Sys.	26712 Carritas Dr.	Mission Viejo, CA 92691		
Mr. Stephen S. Francisco	O Palantir Corp.	2455 Augustine Dr.	Santa Clara, CA 95054		(408) 986-8006
Mr. Mike Williams	O Panasonic	1930 Junction Ave.	San Jose, CA 95111		(408) 436-8540
Mr. James A. Whitworth	O Peripheral Bus Technology	525 Robin Dr.	Corte Madera, CA 94925		(415) 927-0839
Mr. Bert Gall	O Phillips Subsystems	Bldg 2, Suite 401	111 Northshore Dr.	Knoxville, TN 37919	(615) 558-5110
Mr. Ken Darlan	O Phillips	100 E. 42nd St.	New York, NY 10017		(212) 850-5588
Mr. Michael Fitzpatrick	O Prime Computer, Inc.	500 Old Connecticut Pat	Framingham, MA 01701		(617) 879-2960
Dr. Jim Marx	O Programming Sciences, Inc.	4651 Park Blvd.	San Diego, CA 92116		
Mr. Robert Wachob	O Rogers Corp	One Technology Dr.	Rogers, CT 06263		(203) 774-9605
Mr. Roger Shelton	O SEQUEL Computer Systems	14360 N. W. Science Par	Portland, OR 97229		(503) 627-9818

XJT9.2 Summary Membership List for the Year Ending 31 DEC 1986

Name	S Company Name	Address1	Address2	Address3	Phone
Mr. Dexter Anderson	O Scientific Micro Systems	339 N. Bernardo Ave.	P. O. Box 7777	Mtn View, CA 94039	(415) 962-5416
Mr. K. Ota	O Seiko Epson Corp., 2L GroSuaminami Factory	1010 Fujimi-Machi, Suwagano-Ken, Japan			
Mr. Norm Ream	O Self	511 Avenida San Juan E. San Clemente, CA 92672			(714) 492-2438
Mr. Helmut Dittmar	O Siemens Information Sys.	5655 Lindero Cn Rd #325Westlake, CA 91362			
Mr. Rafael Orsini	O Sony Corp. of America	15 Essex Rd.	Paramus, NJ 07652		(201) 368-5151
Mr. Joe J. Huang	O Sysgen, Inc.	47853 Warm Springs BlvdFremont, CA 94539			(415) 490-6770
Mr. Dave Allan	O Tallgrass Technologies	1100 W. 82nd St.	Overland Pk., KS 66214		
Mr. Ned N. Mayrath	O Telex Computer Products	6422 E. 41st St.	Tulsa, OK 74135		(918) 628-2370
Mr. Harry Tucker	O Terminal Data Corp.	2800 N. Madrigal Rd.	Simi Valley, CA 93065		(805) 584-0500
Mr. Clarence Lewis	O Texas Instruments	P. O. Box 655474	M/S 8209	Dallas, TX 75265	(214) 997-3396
Mr. Skip Strang	O Texas Instruments	P. O. Box 655474	M/S 8209	Dallas, TX 75265	(214) 997-3394
Mr. Harvey Altman	O Thorn EMI Technology	8601 Dunwoody Pl.	Atlanta, GA 30307		(404) 587-0017
Mr. Tom Duffy	O Tropion Inc.	185 Tr. 34	PO Box 995	Matawan, NJ 07747	(201) 290-0080
Mr. William G. Klehm	O UNISYS	Burroughs Pl.	Detroit, MI 48232		(313) 972-7932
Mr. Rama Voddi	O UNISYS	P. O. Box 19335	Dowtown, PA 19335		
Mr. Louis H. Sharpe	O Vidar Systems Corp.	520 Herndon Pkwy.	Herndon, VA 22070		(703) 471-7070
Mr. Ken Bledden	O Vodavi Technologies	8300 Raintree	Scotsdale, AZ 85260		
Mr. Hooshang Shamish	O Wang Laboratories	Mail Stop 1219	1 Industrial Dr.	Lowell, MA 01851	
Mr. Fred Richardson	O Wangtek	41 Moreland Rd.	Simi Valley, CA 93065		(805) 583-5255
Mr. Kenji Eigner	O Wangtek	41 Moreland Rd.	Simi Valley, CA 93065		(805) 583-5255
Mr. Marshal Lee	O Western Digital	2445 McCabe Way	Irvine, CA 92714		(714) 474-2033
Mr. Ken Hallam	O Western Digital	2445 McCabe Way	Irvine, CA 92714		(714) 863-7740
Mr. Michael A. Brown	O Western Digital	2445 McCabe Way	Irvine, CA 92714		(714) 863-7891
Mr. Stan Keeler	O XEBEC	3579 Hwy 50 East	Carson City, NV 89701		(702) 883-4000

Below are No Mailing Alternates (N) and Special Interest, who don't get most mailings

Mr. K. Van de Poel	SSAgfa Gevaert EBS	Mechelsesteenweg 30	B-2520 Edegem	Belgium	3-444-62.23
Mr. John Stine	STCII	Valley Forge Corp. Cntr2621 Van Buren Av.	Norristown, PA 19403		(215) 666-5000
Mr. Ron Fenn	STCipher Data Products	10101 Old Grove Rd.	San Diego, CA 92118		(619) 578-9100
Mr. Ray Gill	SSCompuScan, Inc.	900 Huylar St.	Teterboro, N. J. 07608		(201) 288-6001
Mr. Richard P. Lenardos	STComputer Peripherals, Inc	Tape Products Div.	2621 Van Buren Av.	Norristown, PA 19403	(215) 666-4645
Mr. Robert L. Johnston	STComputer Peripherals, Inc	InTape Products Div.	2621 Van Buren Av.	Norristown, PA 19403	(215) 666-4705
Mr. Bill Feagin	STDEC ML01-5/B94	146 Main St.	Maynard, MA 01754-2571		
Mr. David C. Epps	STElectronic Processors, In	1165 W. Dartmouth Ave.	Englewood, CO 80110		(303) 761-8540
Mr. Randy Weber	STEmulex Corp.	3545 Harbor Blvd.	Costa Mesa, CA 92626		(714) 662-5600
Mr. Nashed Vashl	STFarchild	313 Fairchild Dr.	MS 4-370	Mt. View, CA 94039	(415) 962-4027
Mr. Marlin Klumpp	STIwin Magnetics	2311 Green Rd.	Ann Arbor, MI 48105		(313) 996-3323
Mr. Monte Evans	MS 19STCR Corp	1718 N. Rock Rd.	Wichita, KS 67226		(316) 688-8706
Mr. Duane Draving	STHCR Corp.	3718 N. Rock Rd.	Wichita, KS 67226		(316) 688-8720
Mr. Terry Johnson	N HCR Corp.	3718 N. Rock Rd.	Wichita, KS 67226		(316) 688-8647
Mr. Dave Skinner	STHCR Corp.	3718 N. Rock Rd.	Wichita, KS 67226		(316) 688-8707
Mr. Floyd Ross	N Sperry	Mail Stop EB-106	P. O. Box 500	Blue Bell, PA 19424	(205) 542-2518
Mr. John Sondergaard	STTandberg data Inc.	1590 S. Sinclair	Anahelm, CA 92806		(714) 978-6771
Mr. Ned N. Mayrath	STTflex Computer Products	6422 E. 41st St.	Tulsa, OK 74135		(918) 628-2370
Mr. Bob Brush	N Thomas and Betts	920 Route 202	Raritan, NJ 08869		(201) 469-4000
Below are terminated members (usually for nonpayment of service fees)					
Mr. Robert W. Rollings	Burndy Corp.	Mail Stop 520	Richards Ave.	Norwalk, CT 06856	
Mr. Ervin Reeves	P ByMo Technologies	7913 Edinburgh Drive	Springfield, VA 22153		
Mr. Edward Van Deusen	O CC Exchange	Box 1251	Laguna Beach, CA 92652		(714) 494-4310
Mr. Robert G. Voss	O Irwin Magnetics	2311 Green Rd.	Ann Arbor, MI 48105		
Mr. Meir Guttmann	O Ordain, Inc.	20775 S. Western Ave.	Torrance, CA 90501		(213) 618-1777
Mr. David Ray	O Positronic Industries	423 N. Campbell	Springfield, MO 65804		(417) 866-2322

X3T9.2 Summary Membership List for the Year Ending 31 DEC 1986

Name	Company Name	Address1	Address2	Address3	Phone
Mr. Don Rodgers	P Reference Technology, Inc	1832 N. 55th	Boulder, CO 80301		(303) 449-4157
Below are members who were replaced or left their companies during 1986					
Mr. Daryl Walton	O AST Research, Inc.	2121 Alton Ave.	Irvine, CA 92714		(714) 863-1333
Mr. Kenneth R. Webb	R AT&T Information Systems	1100 E. Warenville Rd.	Room 1A-220	Naperville, IL 60566	(312) 979-7413
Mr. Mark Forbes	R Adaptec, Inc.	580 Cottonwood Dr.	Milpitas, CA 95035		(408) 946-8600
Mr. Jeff Stai	P Adaptive Data Sys., Inc.	224 Cary Lane	Pomona, CA 91767		(714) 594-5858
Mr. Ralph H. Bolen	A Adaptive Data Sys., Inc.	2627 Pomona Blvd.	Pomona, CA 91768		(714) 594-5858
Mr. J. L. Armstutz	P Applied Circuit Technologies	2931 La Jolla St.	Anaheim, CA 92806		(714) 632-9230
Mr. Claude R. Cardot	P Bull Peripheral Corp.	766 San Aleso	Sunnyvale, CA 94086		(408) 745-0855
Mr. Billy Brown	O COGITO Systems	2355 Zanker Rd.	San Jose, CA 95131		(408) 942-4691
Mr. Robert Barter	P Cipher Data Products, Inc.	101 Old Grove Rd.	Mail Stop D-14	San Diego, CA 92131	(619) 578-9108
Mr. James Patton	O Control Data Corp.	HQNDBT	P. O. Box 1903	Twin Cit. Apt., MN 55111	
Mr. Don Case	O DEST Corporation	1202 Cadillac Court	Milpitas, CA 95035		(904) 686-4476
Mr. Mark Gembarowski	O Hewlett-Packard	700 71st Ave.	Greeley, CO 80864		(303) 350-4234
Mr. Craig Fix	O Hewlett-Packard Co.	Disc Memory Division	MS 345, POB 39	Boise, ID 83707	
Mr. Yoshio Yukawa	O Hitachi America, Ltd.	950 Elm Ave	Monrovia, CA 91016		(415) 872-1902
Mr. Curtis Krueger	P Kennedy Company	1600 Shamrock Ave.	San Bruno, CA 94066		(818) 303-8114
Mr. John A. Klonick	P Maxtor Corp.	150 River Oaks Pkwy	San Jose, CA 95134		(408) 942-1700
Mr. Hank Meyer	P Hissei Sangyo (Hitachi)	460 E. Middlefield Rd.	Mt. View, CA 94043		(415) 969-1100
Mr. Mario DeFede	P North Atlantic Industries	60 Plant Ave.	Hauppauge, NY 11788		(516) 582-6060
Mr. Marinus Monen	V Optical Storage, Int.	1050 S. Academy Blvd.	Colorado Spr., CO 80910		(303) 570-5707
Mr. Jim Bowby	A Ricoh Systems, Inc.	2071 Concourse Dr.	San Jose, CA 95124		(408) 946-6200
Mr. Robert S. Jerritts	A Seagate Technology	920 Disc Drive	Scotts Valley, CA 95066		(408) 438-6550
Mr. Marshal Lee	A Western Digital	2445 McCabe Way	Irvine, CA 92714		(714) 474-2033
Mr. Bill Bailey	STWestern Digital Corp	2445 McCabe Way	Irvine, CA, 92714		(714) 816-0102
X4	Mr. Wolfgang Appuhn	STWestern Digital Corp	2445 McCabe Way	Irvine, CA. 92714	(714) 863-7838
Below are Visitors to X3T9.2 Meetings during 1986					
Mr. Giles Frazier	V				
Mr. Bill Garn	V Aspen Peripherals				
Mr. Franc Krulc	P Data Technology Corp.	2775 Northwestern Pky	Santa Clara, CA 95051		(408) 496-0434
Mr. Duncan McDonald	V Distributed Logic Corp.				
Mr. Jeff Slayton	V Motorola Semiconductor				
Mr. Fred F. Meadows	V NCR Corp.	16550 W. Bernardo Dr.	San Diego, CA 92064		(619) 485-3228
Mr. L. Schwartz	V Phillips Subsystems				
Mr. D. Kilcourse	V Standard Micro Systems				
Mr. Steve Brightman	V Texas Instruments				