To: Membership of X3T10  
From: R.K. Roberts
Subject: Minutes of X3T10 MMC Working Group - March 29 & 30, 1995

Agenda
1.0 Opening Remarks
2.0 Introductions
3.0 Document Distribution
4.0 Call for Patents
5.0 Approval of Agenda
6.0 Meeting Agenda
   6.1 KODAK presentation on CD-R methods (action item from 3/8) 1 hr
   6.2 Philips presentation (action item from 3/8) 1 hr
   6.3 Architecture and command flow decisions 4 hrs
   6.4 Methods of incorporating items into Document 2 hr
7.0 New Business
8.0 Review of Action Items
9.0 Future Meeting Schedule
10.0 Adjournment

1. Opening Remarks

Ron Roberts convened the meeting at 9:30AM. He thanked Kevin Ross sitting in for Bill McFerrin, sitting in for Sunil Nethisinghe of Philips Semiconduct for hosting the meeting and Liz Franklin for over-seeing and providing direction for us.

It was stated that the meeting had been authorized by X3T10 and would be conducted under the X3 rules. Ad hoc meetings take no final actions, but prepare recommendations for approval by the X3T10 task group. The voting rules for the meeting are those of the parent committee, X3T10. For the ad hoc, other than straw votes, the voting rules are: one vote per participating company.

---

*Operating under the procedures of The American National Standards Institute.

X3 Secretariat, Computer and Business Equipment Manufacturers Association (CBEMA)
1250 Eye Street NW, Suite 200, Washington, DC 20005-3922
Telephone: 202-737-8888 (Press 1 twice) FAX: 202-638-4922 or 202-628-2829
The minutes of this meeting will be posted to the SCSI Reflector, the MMC Reflector, the ATAPI Reflector, and will be included in the next X3T10 committee mailing.

As is customary, the people attending introduced themselves. A copy of the attendance list was circulated for attendance and corrections.

2. Attendance and Membership, Introductions

Attendance at working group meetings does not count toward minimum attendance requirements for X3T10 membership. Working group meetings are open to any person or company to attend and to express their opinion on the subjects being discussed.

See attendance list at end of this document.

6.1 Robert Reisch was not present to complete his action item from 3/8 but he sent an able replacement in Rick Bohn who presented an architectural flow as requested.

6.2 Ian Endering of Philips presented their architectural flow as requested in the 3/8 meeting. After he completed his presentation the group combined the Philips, Yamaha, RICOH, SONY, Eastman Kodak flows and developed the following Architecture flows and definitions.

6.3 Architecture and command flow decisions

As would be expected the majority of both days was spent on this agenda item.

DEFINITIONS

Definitions that were clarified during the meetings, and will be incorporated within the MMC document, are listed here:

SESSION - A contiguous area of a Disc that contains a Lead In (LIN), a Program Area (PA), and a Lead Out (LOUT). A session may or may not be appendable.

APPENDABLE DISC - A disc in which the last session has a pointer to the next possible session.

WRITABLE DISC - A disc that is blank or is appendable or contains an incomplete session.

INCOMPLETE SESSION - A session with partially recorded Program Area (PA) but without LIN and LOUT written.
A architectural flow for determining the status of a disc was defined during the meeting is listed below:

*************** DETERMINE DISC STATUS ***************

IS Disc Writable? ---> no -----> STOP

  | V
  yes

  | V
Is Disc ---> no -----> Is there an Blank?

  | yes                      | Incomplete ---> no ---> Interrupted Session?

  | yes
  | V
  Blank                             | Write Process

Blank Next
Disc Write Process

An architectural flow of the write process for a CD-R was defined during the meetings and is listed below. It was determined that this flow will be used as the master flow for determining the command structure to implement this flow.

*************** EXECUTE WRITE PROCESS ***************
The following information was identified as being required to perform the specified architectural flow of the write process operation. The Disc/Host designation identifies where the information originates from.

**UN-INTERRUPTABLE**

1. What is the capacity? Disc  
3. What is subcode information? Host  
4. What is synchronization information (in TOC)? Host  
5. What is Layout of Disc? Host  
6. What is UPC & ISRC? Host  
7. What is Index Number? Host

**INTERRUPTABLE - SESSION AT ONCE**

1. What is the capacity? Disc  
3. What is subcode information? Host  
4. What is synchronization information (in TOC)? Host  
5. What is UPC & ISRC? Host  
6. What is Index Number? Host  
7. Will Disc be appendable? Host  
8. What is First writable address? Disc  
9. What is the layout of the Session? Host

**INTERRUPTABLE - FORMAT TRACK**

1. What is status of track? Disc  
   Blank area or Empty Reserve?
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is capacity of area?</td>
<td>Disc</td>
</tr>
<tr>
<td>What is packet type? Fix? Variable?</td>
<td>Host</td>
</tr>
<tr>
<td>What is packet size?</td>
<td>Host</td>
</tr>
<tr>
<td>What is Data mode?</td>
<td>Host</td>
</tr>
<tr>
<td>What is track number?</td>
<td>Host</td>
</tr>
<tr>
<td>What is disc type?</td>
<td>Host/Disc</td>
</tr>
</tbody>
</table>

**Interruptable - Write Packet**

1. What is status of track?  
   Blank area or Empty Reserve?  
   Disc
2. What is capacity of area?  
   Disc
3. What is packet size?  
   Host/Disc
4. What is track number?  
   Host
5. What is First writable address?  
   Disc
6. What is maximum packet size?  
   Disc
7. User data?  
   Content?  
   Form?  
   Mode?  
   Host/Disc

**Interruptable - Track At Once**

1. What is status of track?  
   Blank area or Empty Reserve?  
   Disc
2. What is capacity of area?  
   Disc
3. What is track number?  
   Host
4. What is First writable address?  
   Disc
5. User data?  
   Content?  
   Form?  
   Mode?  
   Host

**Interruptable - Reserve Track**

1. What is status of track?  
   Disc
2. What is capacity of area?  
   Disc
3. What is track number?  
   Host
4. What is track length?  
   Host
5. Will it be a Track At Once or Packet Write?  
   Disc
6. What is Packet Type? Fix? Variable?  
   Disc
7. What is packet size? Disc

INTERRUPTABLE - COMPLETE SESSION
1. What is status of track? Disc
2. What is track number? Host

INTERRUPTABLE - COMPLETE SESSION
1. What is status of Disc? Disc
2. What is capacity of area? Disc
3. What is disc type? Host/Disc
4. What is status of all tracks in Session Disc
5. Leave Disc Appendable? Host

6.5 Methods of incorporating CD-R items into MMC Document
It was proposed and agreed to incorporate a CD-R Section of the MMC document. The section will be numbered 5.0 with the following sub-clauses
Clause 5.0 CD-RECORDABLE (CD-R)
5.1 Special Definitions
5.2 Architectural Model
5.3 Command Definitions (Unique Cmds)

7.0 Bill Bixby of LMS presented the PLAY AUDIO information from Bill McFerrin of LMS. The group decided to delete the Commands PLAY CD-ROM XA (Bdh) and PLAY CD-ROM XA ADPCM DATA (Bch) from the command set. The action item is for editor to remove these commands.

8.0 Review of Action Items:
1. Peter Brown to report back on Play Audio command decisions from ATAPI SFF meetings.
2. Ron Roberts to incorporate architectural flows in the MMC document for next meetings in Harrisburg PA
3. All working group review commands to identify those that need to be modified.

9.0 Future Meeting Schedule
It was decided that there will be no meetings in April and that we should try to review the commands and additions to the MMC document via the MMC reflector.

Next face to face will be held during X3T10 week in Harrisburg PA. This meeting will be a 5 hour time slot on Tuesday May 9, 1995 from 1PM to 6PM.

10.0 Adjournment ----- meeting adjourned at 3:30 PM on 3/30/95

List of Attendees  Please check the spelling of your name and E-mail addresses and send any corrections to editor.

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
<th>E-mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr. Norman Leung</td>
<td>Apple Computer Corp</td>
<td><a href="mailto:leung1@applelink.apple.com">leung1@applelink.apple.com</a></td>
</tr>
<tr>
<td>Mr. Florey Lin</td>
<td>Cirrus Logic</td>
<td><a href="mailto:florey@cirrus.com">florey@cirrus.com</a></td>
</tr>
</tbody>
</table>
Mr. Amrish Patel
Creative Labs, Inc
apatel@creaf.com

Mr. Rick Bohn
Eastman Kodak
bohn@sector.kodak.com

Mr. Rob Sims
Hewlett Packard
robsims@depeche.lvd.hp.com

Mr. Bill Kozlorsky
IBM Almaden Research Ctr
koz@almaden.ibm.com

Mr. ByronS Lee
IBM Almaden Research Ctr
bigby@almaden.ibm.com

Mr. Duncan Penman
IIX
penman@netcom.com

Mr. Bill Dong
Lion Optics

Mr. Mike Flora
Microsoft Corp
mikefl@microsoft.com

Mr. Neil Sugie
Mitsumi (Alpha Peripherals)
101122.1711@compuserve.com

Mr. Shigeto Itoh
Mitsumi (Alpha Peripherals)

Mr. Chris D’Iorio
NEC
cd-iorio@nectech.com

Mr. Mike Hetzel
Oak Technology
mikeh@corp.oak.com

Mr. Peter Brown
OAK Technology
peterb@corp.oaktech.com

Mr. Ted Fujikota
Panasonic/MKE
100207.2272@compuserve.com

Mr. Bill Bixby
Philips
bill_b@lms.com

Mr. Marc Severi
Philips
ms@behscses2.serigate.philips.nl

Mr. Jan Enderink
Philips Laser Optics
enderinj@am.umc.ce.philips.nl

Mr. Ganesh Swaminathan
Philips Semiconductor
ganesh@keymodules.philips.com

Mr. Kevin Ross
Philips Semiconductor
rossk@scs.philips.com

Mr. Charlie Chiba
Pioneer New Media Tech

Mr. Hamid Noorian
Pioneer New Media Tech

Mr. Tsutomu Ogishi
Sanyo Semiconductor Corp
ogishits@ix.netcom.com

Mr. Ron Roberts
SIERRA-PAC Technology
rkroberts@aol.com

Mr. Mike Yokoyama
SONY
masayuki@cpcsel.sony.com

Mr. Tatsuya Imokuchi
Sony
tatsuya@strg.sony.co.jp

Mr. Jonathan Hanmann
Western Digital
hanmann-j@a1.wdc.com

Mr. Nick Emoto
Yamaha
nick@yamaha.mhs.compuserve.com

Mr. Kazushi Tamai
Yamaha Corp
tama@lab1.yamaha.co.jp

Mr. Ken Takeshita
Yamaha Corp
take@lab1.yamaha.co.jp

Mr. Masa Morizumi
Yamaha Corp
mori@lab1.yamaha.co.jp