CCITT SGXV
Working Party XV/1
Experts Group for ATM Video Coding

Document AVC-66
July 27, 1991

SOURCE : ISO/IEC JTC1/SC2/WG11 (MPEG)
TITLE : REPORT OF THE 11TH MPEG MEETING IN PARIS (27-31 May 1991)
Purpose: Report

The following MPEG documents are contained for consideration of the Experts Group meeting in Santa Clara (14-23 August):

N0066 Recommendations of the 14th WG11 meeting
N0067 Fourteenth WG11 meeting report.

END

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
ORGANISATION INTERNATIONALE DE NORMALISATION
ISO/IEC JTC1/SC2/WG11
CODING OF MOVING PICTURES AND ASSOCIATED AUDIO

ISO/IEC JTC1/SC2/WG11 N0066
MPEG91/
June 1991

Source: **Leonardo Chiariglione - Convenor**
Title: **Recommendations of 14th WG11 meeting**

1. WG11 recommends the approval of the 13th (Berlin) meeting report (WG11 N0033)

2. WG11 recommends the approval of the Paris meeting reports from the following groups:

Video	(MPEG91/097)
Audio	(MPEG91/096)
System	(MPEG91/095)
Test	(MPEG91/093)
Requirements	(MPEG91/094)
Implementation	(MPEG91/098)
DSM	(MPEG91/092)
Liaisons	(MPEG91/091)

3. WG11 recommends the approval of the recommendations from the following subgroups:

Video

1. The new terms of reference for MPEG video be approved.
2. No action be taken to bring the MPEG Intra and JPEG representations closer, since the differences come from different applications requirements.
3. Contributions to the MPEG Report be made at the next meeting with the purpose of producing rev. 1 of the report and comments be made to B. Astle, the regional coordinator and the Video chairman.
4. The Paris revision of the Video part of the MPEG CD be approved. The normative content of the draft is frozen and can be modified only for demonstrated inadequacies and inaccuracies. Comments on the CD are to be made to the regional coordinators and the Video chairman.
5. Contributions to the work on conformance testing are solicited and should be made to the regional coordinator and the Video chairman.

Audio

1. The conclusions I, II and III drawn from the verification test results be approved
2. The ISO audio coding standard be formally submitted for consideration and testing by CCIR
3. The proposed changes of the CD 11172-3 Version 3.1 be approved
4. The proposed procedure for CD revision until next MPEG meeting be approved
5. A methodology for conformance testing is considered be elaborated
6. The nomination of Prof. Noll as chairman of the audio group for MPEG-2 be accepted subject to some problems to be clarified

System

1. Rev. 8 of the System part of the MPEG CD be approved

Test

1. A call for pre-registration be issued by the Convenor as soon as possible
2. Final schedule for Kurihama test be confirmed at the next meeting
3. Registration date for the proposed document (description) be determined.

Requirements

1. General requirements be identified from various applications as well as technical characteristics of various media
2. These requirements be covered by the final standard
3. Submission of video coding algorithm for the Kurihama test be according to the agreements obtained at this meeting, which are contained in the meeting report
4. proposal package description be finalized at the next meeting

Implementation

1. The outline complexity evaluation process devised and proposed by the Implementation Studies Group be accepted.

4.WG11 thanks Prof. Musmann for his efforts in establishing the Audio Group and conducting its activity to its present level of perfection and regretfully accepts his resignation. WG11 appoints Prof. Noll as Chairman of the Audio Group and asks Prof. Musmann to continue his assistance on the current work item for MPEG Audio.

5. WG11 thanks Messrs. Aharon Gill, John Morris, Juan Pineda, Cliff Reader, Mark Veltman, Adrian Wise and Jun Yonemitsu for their efforts in editing and integrating the MPEG CD.

6. WG11 recommends the approval of Rev. 2 of the MPEG CD (WG11 N0063).

7. WG11 thanks AT&T, Bellcore, JVC, Mitsubishi and Symbionics for providing patent statements related to the use of the MPEG standard and reminds the other companies that the MPEG CD cannot be sent out for ballot if all necessary patent statements are not received.

8. WG11 thanks the Implementation Group for its study of real-time hardware verification of the MPEG CD and urges MPEG members to give the necessary support for the execution of the verification.

9. WG11 thanks Mr. Brian astle for his contribution to the MPEG Report and urges its members to contribute to the other parts of the report.

10. WG11 thanks the contributors to the important topic of Conformance Testing and urges its members to actively contribute at the next meeting.

11. WG11 recommends the establishment of the following ad-hoc groups:

1. Editorial group on CD Integration
2. Editorial group on 11172-3
3. Ad-hoc group on Audio Software Simulation

Mandate, membership, chairman and duration are specified in WG11 documents N0062, 68 and 70 respectively. No meetings shall be held.

12. WG11 recommends the adoption of the report on the relationship between MPEG Video and JPEG (WG11 N0071).

13. WG11 thanks the Requirement Group Chairman for his preparation of the draft of the Proposal Package Description and acknowledges the contributions to the document brought by the Implementation, Test, Requirement and Video group. Rev. 1 of the Proposal Package Description is adopted (MPEG91/100). Contributions to the Audio and System parts of the document are solicited.

14. WG11 asks the Convenor to issue a Call for Registration on Intention to submit a proposal of video coding algorithm to be tested following the guidelines of the Proposal Package Description.

15. WG11 thanks the DSM Chairman for his efforts in conducting the DSM group and solicits its members to actively contribute to the work of the group.

16. WG11 thanks the members of the CCITT Experts Group on ATM Video Coding, its appointed representatives Messrs. Bjoentegaard, Haskell and Morrison and the Chairman Mr. Okubo for their constructive contributions to the joint sessions on Video, System, Implementation, Test and Requirements.

17. WG11 recommends the adoption of the MPEG workplan (WG11 N0073) for Video and urges the Audio and System Groups to provide theirs.

18. WG11 recommends the issue of a letter (WG11 N0069) in response to the US National Body resolutions (MPEG91/009).

19. WG11 recommends the issue of liaison letters to:
Mr. Probst, Chairman of CCITT WP XV/2 (WG11 N0065)
informing of plans to start work on audio coding at 64 kbit/s and below
Mr. Nasse, Chairman of EBU V1/RDB (WG11 N0072)
in response to his letter (MPEG91/013) following the guidelines contained in the report of the Test group
Mr. Komly, Chairman of CCIR TG 10/2 (WG11 N0061)
informing of the intention of WG11 to submit a proposal of audio coding.

20. WG11 recommends the adoption of the terms of reference of WG11 and its subgroups (WG11 N0060)

21. WG11 recommends the adoption of the revised 5-year meeting schedule (WG11 N0056).

22. WG11 recommends that JTC1, when reviewing its directives, clarifies the subject of meeting notices for specific task working groups in such a way as to enable working groups to cope with the needs of timely developments of the work items assigned to them.

23. WG11 nominates the Convenor as one representative of JTC1 to the ISO/IEC TAG 2 on Image Technology.

24. WG11 reiterates the needs to follow recommendation 17 of the Berlin meeting concerning:
a. distribution of contributions to Convenor and Group Chairmen at the latest 2 working days in advance of the meeting
b. provision of sufficient copies of their own contributions at the meeting.
WG11 further recommends that a contribution bear indication of the groups to which the contributions are intended to be addressed.

25. WG11 thanks Messrs.

J. Yonemitsu of Sony

D. Mead of Hughes

for copying and distributing the Paris meeting MPEG document binder to their respective regions.

26. WG11 thanks Telecom Paris University for their hospitality and support of the meeting hosted at so short a notice, in particular Prof. Francis Jutand, Mme Michelle Aribaud and Mme Annie Roland.

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
ORGANISATION INTERNATIONALE DE NORMALISATION
ISO/IEC JTC1/SC2/WG11
CODING OF MOVING PICTURES AND ASSOCIATED AUDIO

ISO/IEC JTC1/SC2/WG11 N 0067
MPEG91/
June 1991

Source: **Leonardo Chiariglione - Convenor**
Title: **Fourteenth WG 11 Meeting Report**

Fourteenth WG 11 Meeting Report

1. The Fourteenth WG11 meeting was held in Paris, France, 27-31 May 1991 at the Ecole Nationale Superieure des Télécommunications (ENST). The meeting was opened at 14:00 on 27 May by a welcome speech delivered by Mr. Jean Herr, director of ENST.

Subsequently the Convenor let know the delegates of the difficulties experienced by himself because of the collapse of all plans caused by the Persian Gulf War and of the difficulties in resuming the activity, some of which not perceived with sufficient depth by some National Bodies. Resuming the activity was possible by the kind help of Prof. Francis Jutand who had kindly undertaken the heavy task of hosting a WG11 meeting at a short notice.

2. The list of participants appears as Annex I. For the purpose of speeding up some organisational matters heads of delegation (HoD) were identified:

Australia:	T. Davies
Belgium:	O. Poncin
Canada:	M. Fortier
Germany:	T. Kummerow
Spain:	J. Oest
France:	Y.-F. Dehery
United Kingdom:	O. J. Morris
Italy:	M. Guglielmo
Japan:	H. Suzuki
Korea:	J. Kim
Norway:	G. Bjoentegaard
Netherlands:	E. Schylander
Sweden:	H. Brusewitz
USA:	C. Reader

HoDs met once for the purpose of discussing items as detailed below.

3. The agenda (WG11 N0055) was approved (Annex II).

4. Some contributions had been received by the Convenor within the time limit agreed at the Berlin meeting but still a considerable number were delivered in Paris. This caused some logistic problems. Delegated were strongly invited, in their own interested to have their contributions duly considered, to comply with the recommendation 17 of the Berlin meeting. A new recommendation to that effect was adopted.

Document MPEG91/003 by D. Le Gall and C. Reader was brought to the attention of the meeting. This document on conformance testing, showing the collaboration on standards between two individuals belonging to companies in competition on the market place, in the best spirit of international standardisation, was very important in progressing this item of work.

5. The Convenor gave some information on items of interest to WG11.

- UNINFO, the National Body of Italy holds the secretariat of WG11.
- At the meeting of JTC1/AG in February several important decisions were taken. Among them:
  - Request to give comments to the report of ISO/IEC Advisory Board on Technological Trends. The matter was discussed at the HoD meeting but no comments could be produced because of lack of time.
  - Acceptance of the recommendations of TSG on Multimedia and Hypermedia. WG12 work is characterised by its real-time nature of information interchange and is disctinct from the work of SC18 on document architecture.
  - Proposal to JTC1 to establish SC29 on Coded Representation of Picture, Audio and Multimedia/Hypermedia Information.
  - Request to JTC1 subcommittees to nominate representatives to the ISO/IEC TAG2 on Image Technology. The matter was discussed at the HoD meeting and the Convenor was asked to be nominated in that group.
  - Encouragement to continue collaboration with CCITT. WG11 is well in line with this resolution as proved by its 14th meeting, some sessions of which are joint with the CCITT Experts Group (EG) on ATM Video Coding.
- A letter of formal complaint had been issued by the US National Body to the Chairman of SC2 and to Convenors of WG7-12 on two items:
  - all meetings, including ad-hoc group meetings have to be called with 4 month advance notice;
  - notification of acceptance for meeting a country is to be received from the National Body of the hosting country.

  The first item was discussed at the HoD meeting where the proposal of clarification to the current text of the JTC1 directives produced by Italy (MPEG91/052) was discussed and considered to be a reasonable compromise between the need for the National Bodies to keep under strict control the technical work of TCs, SCs and WGs and the need to respond to the new challenges of timely standardisation.
- A liaison letter had been sent by the Convenor to Mr. Terzani, Chairman of CCIR SG10 (WG11 N0055) on the occasion of a meeting in Geneva of some Task Groups of SG10.
- The need to have a press release to be used by MPEG members in their contacts with the press was highlighted. Group Chairmen were asked to produce appropriate portions of text to be merged in a single document. This appears as WG11 N00).

In this context Mr. K. McCann (NTL) informed that the European VADIS project announced at the Berlin meeting had been approved by the competent authorities. VADIS is now EU 625 and is actively working in support of the international standardisation of audiovisual coding addressed by WG11.

6. The 13th meeting report was approved.

7. MPEG91/009 was a position paper contributed by the US National Body. The document addressed specific matters for the Audio group. This was asked to produce a response that was approved at the last plenary (WG11 N0069).

8. The expanding role played by WG11 in audiovisual coding matters and the considerable time elapsed since the Berlin meeting called for a thorough review of liaison matters. This was carried out by a dedicated group of members under the Chairmanship of T. Davies (Australia).

9. The April 1990 meeting of SC2 had resolved to leave finalisation of the terms of reference of SC2/WG7-12 to the individual WGs. There following are the actions undertaken in compliance to that resolution:

- Groups were asked to review their terms of reference in the overall context provided by MPEG91/001.
- The HoDs discussed the definition of the birate and time frame of the third work item. This was agreed to be up to 40 Mbit/s in the period 1993-1995. The addition of a fourth work item targeted at very low bitrate (e.g. 10 kbit/s) audiovisual coding was also discussed. Some HoDs, however, felt the need to get the view of their NBs before committing such a text. The matter will be addressed at the next meeting.
- The need was identified to have a permanent group in charge of Requirement matters. This was established and a Chairman will be appointed at the next meeting.
- Prof. Musmann resigned from the chairmanship of the Audio Group. Prof. Noll was appointed chairman of the group. Prof. Musmann will continue offering his services for the completion of the current work item on audio coding.

The revised Terms of Reference were approved (WG11 N0060).

10. A few more patent statements were collected. The Convenor reiterated the need to get statements from all organisations holding one or more patents needed for the use of the MPEG CD.

11. At the Berlin meeting two ad-hoc groups were formed. The first one on CD integration could not carry out any work because of the Persian Gulf War and the second one met three times. MPEG91/101 is the Chairman report of the work of the ad-hoc group. This latter report was approved.

Because of the US National Body position on ad-hoc groups and the conflict with the interpretation of other National Bodies, the Convenor stated that no ad-hoc groups having in their terms of reference a meeting plan would be established in the future, unless JTC1 clarifies the matter.

12. This was the first meeting with joint sessions with the CCITT EG. It was decided that the Video, System, Implementation, Test and Requirements sessions would be joint.

13. The 14th meeting was organised as detailed in Annex III. Coordination of the work was done by the MPEG Chairmen Group established at the Berlin meeting having in mind the following targets:

- Approval of the MPEG CD. This prompted the following actions:
  - Hardware verification of the MPEG CD. This was entrusted to the Implementation Studies Group.
  - Integration of the CD. This exercise was started by a small group led by C. Reader. The was will be continued a c correspondence ad-hoc group led by him.
  - Conformance testing. Although the work had already started for the Video Group, nothing was available yet from the Audio and System Groups. Their Chairmen were actioned to start the study of the problem. It was decided that the MPEG CD will contain a part 4 on "Conformance Testing".
- Proposal Package Description (PPD). This applies for the second phase of MPEG and should be patterned along the lines of MPEG89/128. A requirement document had already been produced but more items needed to be solved:
  - A workplan for Video, Audio and System (Video, Audio and System Groups);
  - Implementation complexity issues (Implementation Group);
  - Verification of proposals (Video Group);

- Call for preregistration. The Convenor was asked to issue the call as soon as the meeting was over. The deadline of 30 June for responses was indicated as a target in view of the strict preparation time needed by JVC.
- S. Okubo was asked to continue his valuable work of updating the PPD between the 14th and 15th WG11 meetings and produce a draft.

- Taking off of the DSM Group. Half a day was dedicated to this item.
- Review of liaisons.

14. The result of one week of intense work is summarised by the the reports of the groups:

Video	(Annex IV)
Audio	(Annex V)
System	(Annex VI)
Test	(Annex VII)
Requirements	(Annex VIII)
Implementation	(Annex IX)
DSM	(Annex X)
Liaisons	(Annex XI)

15. This enabled the approval of Rev. 2 of the MPEG CD (WG11 N0063).

16. Work will continue in between the 14th and 15th meeting through several correspondence specific task working groups:
Editorial group on CD Integration (WG11 N0062)
Editorial group on 11172-3 (WG11 N0068)
Ad-hoc group on Audio Software Simulation (WG11 N0070).
Progression of work on other issues, e.g. Conformance Testing, was encouraged.

17. The 5-year meeting plan of WG11 was reviewed. The July 1992 meeting was still without a host, since the Canadian National Body, requested by the Convenor through Mr. Fortier had declined. There being no other volounteer country, the invitation of the Brazilian National Body (a P-member of JTC1) for July 1992 was accepted. Also the need of a meeting in January, just after the Kurihama tests, was identified. The Singapore National Body an O-member of JTC1 and a long time active participant in WG11 offered to host the meeting on 6-8 January 1992. The revised 5-year meeting plan is given in WG11 N0056.

18. The recommendations of the 14th meeting are given in WG11 N0066.

19. Mr. J. Yonemitsu of Sony and Dr. D. Mead of Hughes will distribute the MPEG document binder in their regions. There will be no European distributor this time.

20 and 21. There being no other business the meeting was closed at 16:00 of 31 May.

Annex I

Attendance list

T. Davies	Aussat Pty Ltd.	AUS	+61 2 238 7895
M. Biggar	Telecom Australia	AUS	+61 3 543 6026
L. Elewaut	Alcatel Bell Telephone	B	+32 3 240 9932
W. Verbiest	Alcatel Bell Telephone	B	+32 3 240 9932
O. Poncin	Universite Catholique de Louvain	B	+32 10 452272
M. Fortier	Bell Northern Research	CDN	+1 514 769 7301
D. Lemay	Bell Northern Research	CDN	+1 514 876 3681
M. Vakalopoulou	DETECON/BERKOM	D	+49 30 46701 444
F. May	Daimler-Benz	D	+49 731 505 4104
U. Wuestenhage	Deutsche Bundespost Telekom	D	+37 2 676 1539
G. Zedler	Fernmelde Technische Zentralamt	D	+49 6151 83 4630
H. Gerhaeuser	FhG	D	+49 9131 776 399
G. Schamel	HHI	D	+49 30 392 7200
B. Butera	ITT - Intermetall GmbH	D	+49 761 517 880
F. Witte	ITT - Intermetall GmbH	D	+49 761 517 880
G. Stoll	Institut fuer Rundfunktechnik GmbH	D	+49 89 32399 351
B. Hammer	Siemens AG	D	+49 89 636 2393
P. Noll	Technische Universitaet Berlin	D	+49 30 314 22514
T. Kummerow	Telenorma GmbH	D	+49 69 266 3315
D. Hepper	Thomson Consumer Electronics	D	+49 511 418 2483
E. Schroeder	Thomson Consumer Electronics	D	+49 511 418 2483
K. Brandenburg	Universitaet Erlangen Nuernberg	D	+49 9131 302951
H. Fuchs	Universitaet Hannover	D	+49 511 762 5333
H. Musmann	Universitaet Hannover	D	+49 511 762 5333
J. Oest Sanchez	RTVE	E	+34 1 555 5892
Y. Dehery	CCETT	F	+33 99 02 40 98
J. Henot	CCETT	F	+33 99 02 40 98
G. Madec	CCETT	F	+33 99 02 40 98
G. Eude	CNET	F	+33 1 4529 5435
J. Guichard	CNET	F	+33 1 4529 5435
B. Loret	CNET	F	+33 1 4529 5435
T. Fautier	Laboratoires d'Electronique Philips	F	+33 1 4569 40 88
M. Haghiri	Laboratoires d'Electronique Philips	F	+33 1 4569 4088
P. Cintract	Motorola	F	+33 40 95 5901
M. Henry	SGS-Thomson Microelectronics	F	+33 76 58 56 01
A. Komly	Telediffusion de France	F	+33 1 4554 7852
F. Lauze	Telediffusion de France	F	+33 1 4554 7852
M. Fujita	Thomson Consumer Electronics	F	+33 88 67 24 24
J. Vial	Thomson-CSF	F	+33 99 25 43 34
G. Morrison	BT Laboratories	GB	+44 473 64 3791
M. Nilsson	BT Laboratories	GB	+44 473 64 3791
C. Smith	Brooktree Limited	GB	+44 454 614700
A. Wise	Brooktree Limited	GB	+44 454 613174
Y. Tsuboi	Imperial College	GB	+44 71 823 8125
K. McCann	National Transcommunications Ltd.	GB	+44 962 822378
O. Morris	Philips Research Laboratories	GB	+44 293 776495
R. Bramley	SGS-Thomson Microelectronics	GB	+44 454 617910
J. Gooding	SGS-Thomson Microelectronics	GB	+44 454 617910
P. Ransome	Symbionics Ltd.	GB	+44 223 421 031

L. Chiariglione	CSELT	I	+39 11 2169 520
M. Guglielmo	CSELT	I	+39 11 2169 520
G. Scafuro	Olivetti Ricerca	I	+39 81 853 3485
M. Barbero	RAI - Radiotelevisione Italiana	I	+39 11 619 3779
G. Dimino	RAI - Radiotelevisione Italiana	I	+39 11 619 3779
A. Gill	Zoran Corp.	IL	+972 4 517516
K. Matsuda	Fujitsu Laboratories Ltd.	J	+81 44 754 2582
Y. Katayama	GCT	J	+81 3 3498 7543
T. Sakaguchi	GCT	J	+81 3 3498 7543
M. Wada	Kokusai Denshin Denwa Co., Ltd.	J	+81 492 66 7512
T. Yukitake	MATSUSHITA	J	+81 45 934 8765
T. Takahashi	Matsushita Electric Industrial Co.	J	+81 6 947 2218
K. Asai	Mitsubishi Electric Corp.	J	+81 467 47 1251
S. Hattori	Mitsubishi Electric Corp.	J	+81 467 47 1251
T. Murakami	Mitsubishi Electric Corp.	J	+81 467 47 1251
M. Ohta	NEC Corp.	J	+81 44 856 2232
A. Sugiyama	NEC Corp.	J	+81 44 856 2229
M. Yano	NEC Corp.	J	+81 44 856 2232
H. Koyama	NEC Corporation	J	+81 44 548 7910
H. Matsumoto	NEC Home Electronics, Ltd.	J	+81 44 856 8169
Y. Shishikui	Nippon Hoso Kyokai	J	+81 3 5494 2238
S. Okubo	Nippon Telegraph and Telephone Co	J	+81 468 59 2829
H. Watanabe	Nippon Telephone and Telegraph Co	J	+81 468 59 2829
N. Kako	Sharp Co.	J	+81 7436 5 0694
K. Kitamura	Sharp Co.	J	+81 287 43 3383
H. Koyanagi	Sony Corp.	J	+81 3 3448 5611
Y. Oikawa	Sony Corp.	J	+81 3 448 5617
H. Suzuki	Sony Corp.	J	+81 3 3448 7811
M. Veltman	Sony Corp.	J	+81 3 3448 5611
J. Yonemitsu	Sony Corp.	J	+81 3 3448 5611
T. Odaka	Toshiba Corp.	J	+81 44 549 2276
T. Hidaka	Victor Company of Japan, Ltd.	J	+81 468 36 8540
H. Onoe	Victor Company of Japan, Ltd.	J	+81 468 36 9974
K. Ozawa	Victor Company of Japan, Ltd.	J	+81 468 36 8540
K. Sugiyama	Victor Company of Japan, Ltd.	J	+81 468 36 8540
S. Park	KAITECH	K	+82 2 554 8017
J. Kim	KAIST	K	+82 2 960 2103
J. Song	SAIT	K	+82 2 744 6217
J. Kim	Samsung Electronics	K	+82 331 281 6153
G. Bjoentegaard	Norwegian Telecom Research Est.	N	+47 6 810076
H. Sandgrind	NTA	N	+47 6 810076
A. Koster	PTT Research	NL	+31 70 332 6477
D. Schinkel	PTT Research	NL	+31 70 332 6477
L. Van de Kerkhof	Philips Consumer Electronics	NL	+31 40 7 42630
J. Van der Meer	Philips Consumer Electronics	NL	+31 40 7 33762
E. Schylander	Philips International B.V.	NL	+31 40 7 35919
J. Huang	Industrial Technology Research Inst.	ROC	+886 35 953587
D. Lin	National Chiao Tung University	ROC	+886 35 723283
L. Hui	Asia Matsushita Electric (S) Pte. Ltd.	RS	+65 285 7237
T. Kogure	Asia Matsushita Electric (S) Pte. Ltd.	RS	+65 285 7237
P. Tan Ah	Asia Matsushita Electric (S) Pte. Ltd.	RS	+65 285 7237
C. Grewin	Swedish Broadcasting Corp.	S	+46 8 662 6546

AVC-66

T. Ryden	Swedish Broadcasting Corp.	S	+46 8 662 6546
H. Brusewitz	STA	S	+46 8 713 1027
R. Aravind	American Telephone and Telegraph	USA	+1 908 949 3697
B. Haskell	American Telephone and Telegraph	USA	+1 908 949 3697
N. Jayant	American Telephone and Telegraph	USA	+1 201 582 7308
J. Johnston	American Telephone and Telegraph	USA	+1 201 582 7308
A. Puri	American Telephone and Telegraph	USA	+1 908 949 3697
B. Aspromonte	Apple Computer	USA	+1 408 974 5855
K. Wang	Apple Computer, Inc.	USA	+1 408 974 3103
J. Pineda	Apple Computers	USA	+1 408 974 6615
B. Yung	Apple Computers	USA	+1 408 974 6615
J. Huffman	Aware, Inc.	USA	+1 617 577 1710
A. Tabatabai	Bell Communications Research	USA	+1 908 758 0889
A. Wong	Bell Communications Research	USA	+1 201 829 7019
J. Nelson	Brooktree Corp.	USA	+1 619 452 1249
J. Fritsch	C-Cube Microsystems	USA	+1 408 944 6314
D. Le Gall	C-Cube Microsystems	USA	+1 408 944 6314
D. Anastassiou	Columbia University	USA	+1 212 749 0518
J. Porter	Commodore Business Machines	USA	+1 215 431 9156
H. Davis	Commodore Technology	USA	+1 215 431 9156
J. Zingman	Compression Labs, Inc	USA	+1 408 922 4608
C. Reader	Cypress Semiconductor Corp.	USA	+1 408 943 2949
J. Zdepski	David Sarnoff Research Center	USA	+1 609 734 2049
A. Deutermann	Delta Information Systems, Inc.	USA	+1 215 657 5273
B. Szabo	Digital Equipment Corp.	USA	+1 508 493 3377
D. Pan	Digital Equipment Corporation	USA	+1 508 493 3377
M. Bosi	Dolby Laboratories, Inc.	USA	+1 415 863 5144
S. Forshay	Dolby Laboratories, Inc.	USA	+1 415 376 5144
P. Romano	Fluent Machines Inc.	USA	+1 508 820 1106
M. Tayer	General Instrument	USA	+1 619 535 2485
R. Burns	Hughes Aircraft Co.	USA	+1 714 858 6714
J. Hargrove	Hughes Aircraft Co.	USA	+1 714 858 6699
E. Kelley	Hughes Aircraft Co.	USA	+1 213 536 6610
D. Mead	Hughes Aircraft Co.	USA	+1 213 414 5545
T. Lynch	Hughes Aircraft Company	USA	+1 703 243 7469
J. Godwin	Hughes Communications	USA	+1 213 607 4612
I. Rabowsky	Hughes Communications Inc.	USA	+1 213 606 9562
E. Viscito	IBM Corp.	USA	+1 914 784 6288
C. Gonzales	IBM Research	USA	+1 914 784 6288
B. Astle	Intel Corp.	USA	+1 609 936 7700
A. Korenjak	Intel Corp.	USA	+1 609 936 7878
A. MacInnis	International Business Machines	USA	+1 512 823 4762
Y. Yamada	JVC Labs. of America	USA	+1 408 988 2687
P. Ang	LSI Logic Corp.	USA	+1 408 954 4880
D. Bailey	LSI Logic Corp.	USA	+1 408 434 6457
A. Lippman	Massachusetts Institute of Technology	USA	+1 617 258 6264
P. McLean	Massachusetts Institute of Technology	USA	+1 617 258 6264
B. Lindsley	Motorola	USA	
K. O'Connell	Motorola	USA	
K. Dallas	National Semiconductor	USA	+1 408 732 9742
A. Jue	National Semiconductor	USA	+1 408 739 6204
P. Chao	PRISM Interactive Products	USA	+1 708 469 1452

J. Yogeshwar	PRISM Interactive Products	USA	+1 708 469 1452
W. Carter	PRISM Interactive Products Co., Ltd.	USA	+1 708 469 1452
P. Alexander	PictureTel Corp.	USA	+1 508 977 9481
R. Reynolds	PictureTel Corp.	USA	+1 508 977 9481
G. McLaughlin	Sun Microsystems	USA	+1 415 965 4903
J. Liu	Sun Microsystems Inc.	USA	+1 415 965 4903
A. Riccomi	Texas Instruments	USA	+1 214 997 6301
I. Wang	Texas Instruments	USA	+1 214 917 7487
F. Laczko	Texas Instruments Inc.	USA	+1 214 997 5763
C. Read	Texas Instruments Inc.	USA	+1 713 274 2558
T. Savatier	Thomson Consumer Electronics	USA	+1 213 568 9002

Annex II

Agenda

WG11 Plenary:

1. Opening of meeting
2. Roll call of participants
3. Approval of agenda
4. Allocation of contributions
5. Communications from the Convenor
6. Thirteenth MPEG Meeting Report
7. Processing of National Bodies Position Papers
8. Liaison matters
9. Terms of reference of WG 11 and its Subgroups
10. Patents for MPEG CD
11. Report of Ad-hoc Group on CD 11172 integration
12. Joint sessions with CCITT Experts Group
13. Organisation of Thirteenth meeting
14. Reports of subgroup activities
15. Approval of CD 11172
16. Planning of subgroup activities
17. Schedule of future MPEG meetings
18. Recommendations of Fourteenth meeting
19. Distribution of MPEG documents
20. A.O.B.
21. Closing

Video

Review of 11172-2
Discussion on conformance testing
Technical inputs to video coding up to 10 Mbit/s
MPEG Video report
Interaction with other WG11 groups
Contribution to Proposal Package Description
A.O.B

Audio

1. Opening of the meeting
2. Approval of the agenda
3. Allocations of contributions
4. Communications from the chairman
5. Berlin meeting report
6. Report of the Audio ad-hoc group "Verification Testing"
7. Review of CD
8. Review of the software simulation
9. Recommendations of meeting
10. A.O.B.
11. Close of the meeting

Systems
CD document review
Discussion on unresolved technical issues
Review of simulation results
Joint meeting with Video group
Discussion on audio matters with MPEG/Audio representatives
Joint meeting with MHEG
Approval of CD 11172-1
A.O.B.

Implementation
Approval of Berlin meeting report
Actions (if any) on outstanding implementation issues from Video, Audio and System CD
Planning of hardware tests for CD verification
Contribution to Proposal Package Description
Working method for the second phase of MPEG
A.O.B.

Tests
1. Opening
2. Approval of agenda
3. Allocation of contributions
4. Berlin meeting report
5. Finalisation of the boundary conditions for the Kurihama tests
6. Final clarification of the subjective assessment procedure (Double-stimulus test)
7.Final selection of test sequences out of the set agreed in Berlin
8. Format of D1-tape to be used for delivery of test inputs to Kurihama
9. Final schedule for Kurihama tests
10. Discussion on next steps in MPEG decision process, ranking of criteria
11. Recommendations from San José meeting
12. A.O.B.

Requirements
1. Approval of agenda, target outcomes
2. Guidance from higher bodies
3. Review of Berlin meeting report
4. Discussion and finalization of requirements
5. Drafting of Proposal Package Description
6. Future work

DSM
1. Confirm status of DSM meeting
2. Report previous activities of DSM meeting
3. Report of survey of announced DSM technology up-to-dated
4. Making a list of recommended features and report to Video and System Groups
5. Discussion about recommended interface between MPEG-2 bitstream and DSM
6. Activity plan, confirmation

Annex III

Meeting Allocation

MPEG	Plen.	Video	Audio	Syst	Impl	Req	Tests	DSM	Liais	HoD	Chm
Mon.27/05 10:00-13:00											X
Mon.27/05 14:00-16:00	X										
Mon. 27/05 16:00-18:00		X		X							
Tue. 28/05 09:00-13:00				X		X	X				
Tue. 28/05 14:00-18:00		X		X		X	X				
Tue. 28/05 19:00-20:00										X	
Wed. 29/05 09:00-10:00	X										
Wed. 29/05 10:00-11:00		X	X								
Wed.29/05 11:00-13:00			X	X		X	X				
Wed.29/05 14:00-18:00			X	X	X	X	X				
Wed. 29/05 18:00-20:00									X		
Thu. 30/05 09:00-13:00			X	X	X	X	X				
Thu. 30/05 14:00-18:00								X			
Thu. 30/05 18:00-20:00											X
Fri. 31/05 9:00-10:00		X	X	X							
Fri. 31.05 10:00-13:00			X	X							
Fri. 31/05 13:00-16:00	X										

Annex IV

MPEG Video meeting report

Source: Didier le Gall, Chairman MPEG-Video

The MPEG-Video meeting took place in Paris, France, from May 27th to 31st.

A significant milestone was achieved at the (September 1990) Santa Clara meeting including the decision to freeze the technical content of the draft, and consolidated at the Berlin meeting (December 1990), the Paris meeting focused on a very detailed very careful reading and editing of the Committee Draft Document.

The results of the Paris Meeting represent a necessary step in the path toward a standard. In addition to producing a revision of the CD, the committee focused on conformance testing, the production of a MPEGVideo report and the preparation of the second phase of work.

1. Review of MPEG-Video Committee Draft

The Committee Draft produced at the Santa Clara meeting and Revised in Berlin was carefully read by the MPEG members, and while most of the changes were of editorial nature either to make the text of the CD more accurate or improve the presentation for a first time reader, some changes resulted in minor modifications of the technical content of the CD; those changes were approved unanimously and resulted in a cleaner, better CD.

Definition of End_of_Sequence Start Code

After the Berlin Meeting the End_of_sequence start code was left without a semantic. The new CD precisely define the use of the End_of_Sequence Start code as well as precise the semantic of the Sequence_start_code : in particular when a Sequence_start code is encountered in the bit stream the parameters of the sequence layer are unchanged except possibly for the quantization matrices.

Motion Representation: Forward_F_code

The MPEG syntax at it stood in the previous version of the CD had a provision for very large pictures and very large bitrates, the range of the motion vectors however was inconsistent with these feature and was barely adequate for pictures of size 352*288 (for very fast pans). It was decided to use only the values 1, 2, 4, 8, 16,.. for the Picture layer parameter Forward_f and to replace the field forward_f (resp. backward_f) in the bitstream by a field forward_f_code (resp. backward_f_code), where forward_f is now 2^(forward_f_code -1). This change while only minimally changing the bitstream's semantic at the picture layer, allows for large motion vectors.

In order to keep the range of the motion vectors consistent with the previous decisions for the core bitstream, the parameter forward_f shall never exceed the value 8 in constrained parameter bitstreams.

One notes that as a side effect, the decoding process is somewhat simplified since variable lenth code are no longer used to represent the remainder modulo forward_f of the differential motion vectors. This simplification was not hovewer the reason for the change of the CD semantics, since in itself the presence of this variable length code was neither inconsistent nor inadequate.

2. Procedure for continued revision of the CD

The frozen (i.e. no new technical ideas) character of the video CD was reaffirmed and the procedure to report possible errors or inadequacies is the same as after the Berlin meeting, i.e., inadequacies and inconsistencies are reported to the regional coordinators and the video chairman.

It is to be expected that because of the very extensive review process that took place since the Santa Clara meeting, the Video CD will no longer undergo substantial editorial changes.

3. Discussion of conformance testing

Conformance testing is a very important problem that started being adressed within MPEG at the Berlin meeting. The technical issues of conformance testing are challenging and the membership of MPEG-Video discussed testing methodology, items to be tested and possible test patterns. It is expected that a lot more technical work along the line of the methodology outlined in Paris will be presented and discussed at the next (Santa Clara 91) meeting.

Another question, essentially independant from the program of technical work for testing conformance of a decoder was raised, and can be rephrased in those terms : since MPEG is a generic standard (i.e. defined by a syntax, a decoding process and a range of parameters consistent with the syntax and the decoding process) what does it means for an application that uses only a small and possibly fixed set of the parameters to be compliant with MPEG. The Core (constrained parameter) bitstream was defined in order to establish a common target for co-decoding devices and judging from the interest it always generates, the goal has been met. Compliance issues do not however stop at the boundaries of the Core bistream and the question needs to be adressed in more depth. MPEG Video sollicits its members as well as the other groups within WG11 to give full attention to these issues.

Discussion of technical inputs for the second phase of MPEG work.Video tapes and oral presentation were mades of possible technical solution for the work of "MPEG II". More than a dozen of decoded sequences at the rate of 4 and 9 Mbits/s were presented. The MPEG-video group contributed to the proposal package description, for the testing to take place in Fall 1991.

4. MPEG Video report

The MPEG-Video CD, was written with accuracy and unambiguity in mind, it is by no means a tutorial on the technology promoted by MPEG. The committee approved the idea that another document, the MPEG-Video report, be put together to complement the CD and provide tutorial and insight to members of the technical community that first encounter the work of the MPEG committee. Unlike the CD, the report will cover technical subjects that are not normative, such as pre- and post- processing, motion estimation and encoding. A preliminary version of this report was circulated Paris, comments are to be sent to the author(s) so that the committee can issue its first revision of the report at the end of the Santa Clara meeting.

Annex V

MPEG Audio meeting report

Source: **Hans Georg Musmann - Chairman of MPEG-Audio**

1. Opening of the meeting

The MPEG-Audio group meeting was held at the "Ecole Nationale Superieure des Telecommunications" (ENST) in Paris, France on May 29-31, 1991. The list of participants is given in Annex I.

2. Approval of the agenda

The Agenda as given in Annex II was approved.

3. Allocations of contributions

Beside the main contribution, the SR Report on Verification Testing, several documents have been submitted, most of them concerning comments and questions on the Audio-CD.

4. Communications from the chairman

The chairman briefed the group about the development since the Berlin meeting and the current status of the audio coding standard.

5. Berlin meeting report

The meeting report was approved.

6. Report of the Audio ad-hoc group "Verification Testing"

The SR-Report on the MPEG-Audio Subjective Listening Test, Stockholm April/May 1991 (document MPEG 91/010) was presented in detail by Messrs. Ryden and Grewin. According to a statement of Mr. Dehery, at 128 kbit/s Layer II and Layer III are fulfilling the sound quality requirements of EBU for distribution and emission.

The discussion of the test results concentrated on two main issues, the gap in performance quality between Layer III and ASPEC at 64 kbit/s and the question wether or not joint stereo coding should be part of the standard. During the discussion of the first mentioned issue, the meeting had to be interrupted for some hours because the American delegation needed time to analyze the test results and agree on a common position. The results of this delegation conference and the ensuing discussion within the MPEG-Audio group were the "conclusions drawn from the verification test results" as given in Annex IV.

7. Review of CD

As a result from the discussions of the joint stereo coding issue, some changes in the semantic meaning of the Header (section 3.3.3 Header) of the CD have been agreed. On page 17 of CD 11172-3 V3.1, the line

extension_bit - reserved for future use, '0' for the time being.

is replaced by

private_bit - bit for private use.

On page 16 of CD 11172-3 V3.1, the two lines

Layer - 2 bits to indicate which layer of the algorithm is used. The bits should be regarded as an unsigned integer, specifying the layer.

is replaced by

Options - 2 bits to indicate which option of the algorithm is used, according to the following table.

'00'	other joint stereo
'01'	Layer III
'10'	Layer II
'11'	Layer I

Together with this new definition of 'Options', the definition and meaning of the two 'mode' bits and the two 'mode_extension' bits on page 17 of CD 11172-3 V3.1 have to be changed and extended according to the table given in Annex VI.

In order to prepare a revised version of CD 11172-3 that could be distributed before the next meeting, the following procedure was agreed:

- Identification of responsible editors:

* Layer I	van de Kerkhof
* Layer II	Stoll
* Layer III	Brandenburg (with assistance of Messrs. Johnston, Stoll, Dehery)
* Psychoacoustical Model I	Stoll
* Psychoacoustical Model II	Johnston

- All members of the group have been encouraged to submit documents containing comments, questions and proposals for corrections and revisions of the CD until June 24, 1991. These documents should be sent to the chairman for registration of the documents for the next meeting and also to all responsible editors (see above).
- Until July 22, 1991 all editors should send their revised parts of the CD to Mr. Rabowski (Hughes CI) who will include all changes into CD 11172-3 V3.1.
- Until August 1, 1991 Mr. Stoll (IRT) should have received the revised CD from Mr. Rabowski. Mr. Stoll will do the final editing as soon as possible and send one copy of the new revision to the chairman, one to the convener (Dr. Chiariglione), one to Mr. Rabowski (Hughes CI) who will take care of the distribution in America, one to Mr. Sugiyama (NEC) who will take care of the distribution in Japan and Far East and one to Mr. Schroeder (DTB) who will take care of the distribution in Europe to all delegates that have participated in the Berlin and/or the Paris meeting.

8. Review of software simulation

Mr. Pan (DEC) reported on the progress of the software simulation group. The current status of this work is summarized in the report of Mr. Pan which can be found in a separate document submitted at the Paris meeting.

9. Recommendations of the Paris meeting

A list of recommendations has been prepared for approval at the MPEG plenary meeting (see Annex VII).

10. A.O.B.

- The resolutions of the US National Body (MPEG 91/009) have been discussed and a response as given in Annex VIII was agreed.
- Mr. Komly (TDF) introduced document MPEG 91/029 submitted by CCIR TG10/2. The CCIR intends to perform tests in order to prepare recommendations for the selection of low bit-rate audio coding systems . In response to this document, the group agreed on the statements given in Annex VI. The CCIR tests will be used to verify the performance of all open options of the audio coding standard. Messrs. Komly, Stoll and Brandenburg have been nominated as contact persons between ISO MPEG-Audio and CCIR TG 10/2.
- During the Paris meeting, the problem of conformance testing has been discussed for the first time. It has been decided that this issue has to be considered in more detail in the future. Conformance testing is constrained to testing of the decoder by using objective measurements. Messrs. Pan (DEC), Fritsch (C-Cube) and Dehery (CCETT) offered to work on this problem keeping close contact to the Video group via Mr. Reader (Cypress). Conformance testing will be a topic of the agenda of the San Jos# meeting.
- According to a request of SR concerning the distribution of the test results, the group agreed that

  * the results should not be published before in each figure of MUSICAM and ASPEC the value of "bit rate" is corrected by adding the sentence "including X bit for error protection", where the value of X has to be provided by the originators

  * the tapes with the coded sequences should not be distributed before a positive check-off by the originators

  * the test data base may be distributed together with the tapes.
- An agenda of the next MPEG-Audio meeting has been drafted, see Annex III.

11. Close of the meeting

The meeting was closed with thanks of the chairman to the members of the group. The next meeting will be during the week from 19 - 23 August 1991 in San Jose, USA.

Annex I

List of Participants

(Paris, France, 29-31 May 1991)

U. Wuestenhagen	Deutsche Bundespost TELEKOM	D
E.F. Schroeder	DTB Deutsche Thomson-Brandt GmbH	D
H. Gerhaeuser	FhG Fraunhofer Gesellschaft	D
G. Stoll	Institut fuer Rundfunktechnik GmbH	D
F.O. Witte	ITT Intermetall	D
P. Noll	Universitaet Berlin	D
K. Brandenburg	Universitaet Erlangen	D
H.G. Musmann	Universitaet Hannover	D
H. Fuchs	Universitaet Hannover	D
Y. Dehery	CCETT	F
P. Cintract	Motorola	F
A. Komly	TDF	F
F. Lauze	TDF	F
A. Sugiyama	NEC	J
S. Park	Korea Academy of Industrial Technology	K
L. van de Kerkhof	Philips CE	NL
C. Grewin	Swedish Broadcasting Corporation	S
T. Ryden	Swedish Broadcasting Corporation	S
T.A. Peng	Asia Matsushita Electric	RS
B. Aspromonte	Apple Computer	USA
K. Wang	Apple Computer	USA
N. Jayant	AT&T Bell Laboratories	USA
J.D. Johnston	AT&T Bell Laboratories	USA
J. Nelson	Brooktree Corporation Ltd.	USA
J.G. Fritsch	C-Cube Microsystems	USA
C. Reader	Cypress Semiconductor	USA
D. Pan	Digital Equipment Corporation	USA
S. Forshay	Dolby Laboratories, Inc.	USA
M. Bosi	Dolby Laboratories, Inc.	USA
I. Rabowsky	Hughes CI	USA
E. Kelley	Hughes Aircraft	USA
D. Bailey	LSI Logic Corporation	USA
B. Lindsley	Motorola	USA
W. J. Carter	PRISM Interactive Products Company	USA
G. Benbassat	Texas Instruments	USA
F. Laczko	Texas Instruments	USA
A. Riccomi	Texas Instruments	USA

AVC-66

Annex II

Agenda

(Paris, France, 29-31 May 1991)

1. Opening of the meeting
2. Approval of the agenda
3. Allocations of contributions
4. Communications from the chairman
5. Berlin meeting report
6. Report of the Audio ad-hoc group "Verification Testing"
7. Review of CD
8. Review of the software simulation
9. Recommendations of meeting
10. A.O.B.
11. Close of the meeting

Annex III

Draft of the next MPEG-Audio Meeting Agenda

1. Opening of the meeting
2. Approval of the agenda
3. Allocations of contributions
4. Communications from the chairman
5. Paris meeting report
6. Review of CD
7. Review of the software simulation
8. Conformance testing
9. MPEG-Audio report
10. Recommendations of meeting
11. A.O.B.
12. Close of the meeting

Annex IV

Conclusions drawn from the verification test results

I. The investigation of Layer III is continued during the MPEG-I time period with the aim of improving the audio quality at 64 kbit/s. The work will place emphasis on a hybrid filterbank with entropy coding, with a fall-back to a non-hybrid solution. The algorithm finally defined for Layer III shall perform as close as possible to the best results obtained in the SR tests of April 1991 at 64 kbit/s.

The fall-back solution of Layer III should be avoided as far as possible to maintain the spirit of the original proposal package. Depending on the result of this work the parts of the CD concerning Layer III may be changed.

II. Layer I and Layer II are going to be finalized on the basis of the current syntax and as tested at SR. Layer I and Layer II are frozen.

III. A code is included in the audio coding standard in order to provide the capability of an extension to joint stereo coding. Specification of the joint stereo coding is subject to a successful verification test.

Annex V

Collaboration with CCIR

The MPEG-Audio group recommends a formal submission of the finalized Layer I and Layer II codec and up to two candidates of Layer III as defined in conclusion (I) drawn from the test results (see Annex V) to CCIR testing. This includes testing of tandem coding as well as testing of tandem coding with additional processing.

The MPEG-Audio group is confident that the audio coding standard will withstand the additional tests as well as other codecs.

The publication of the test results has to be approved by ISO MPEG.

The ISO MPEG group appreciates the collaboration and the offered support by CCIR.

Annex VI

Change in the Header Definition of CD 11172-3, V3.1

Options		mode		mode extension	
11	Layer I	11	single channel	XX	not used
		10	dual channel	XX	not used
		01	joint stereo	11	intensity stereo
				10	as described in
				01	CD 11172-3
				00	version 3.1
		00	stereo	XX	not used
10	Layer II	11	single channel	XX	not used
		10	dual channel	XX	not used
		01	joint stereo	11	intensity stereo
				10	as described in
				01	CD 11172-3
				00	version 3.1
		00	stereo	XX	not used
01	Layer III	11	single channel	XX	not used
		10	dual channel	XX	not used
		01	joint stereo	11	combined stereo
				10	as described in
				01	CD 11172-3
				00	version 3.1
		00	stereo	XX	not used
00	other joint stereo	11	Layer I, combined stereo	11	table as in CD 11172-3 V 3.1
				10	for layer I & II, but
				01	- above bound intensity stereo
				00	- below bound ms stereo
		10	Layer II, combined stereo	11	table as in CD 11172-3 V 3.1
				10	for layer I & II, but
				01	- above bound intensity stereo
				00	- below bound ms stereo
		01	reser'd for other joint stereo	XX	reserved
		00	reser'd for other joint stereo	XX	reserved

Annex VII

Recommendations of the MPEG-Audio group

Paris Meeting, May 31, 1991

The MPEG-Audio group recommends to approve
- the conclusions I, II and III drawn from the verification test results
- that the ISO audio coding standard is formally submitted for consideration and testing by CCIR
- the proposed changes of the CD 11172-3 Version 3.1
- the proposed procedure for CD revision until next MPEG meeting
- that a methodology for conformance testing is considered to be elaborated
- the nomination of Prof. Noll as chairman of the audio group for MPEG-2 subject to some problems to be clarified

Annex VIII

Draft response of MPEG to the US National Body

The ISO MPEG-Audio group has discussed the resolutions of the US National Body (document MPEG 91/009) and has agreed to the conclusions stated in the attachment. The conclusions are part of the official meeting report.

It is the believe of the audio subgroup that these conclusions meet all of the concerns of the US National Body.

Attachment: Conclusions drawn from the verification test results (see Annex IV)

Annex VI

MPEG System meeting report

Source: **Sandy MacInnis**

The 14th MPEG meeting was held 27 - 31 May, 1991 in Paris. The Systems committee met during part or all of each of these 5 days.

The meeting was chaired by A G (Sandy) MacInnis of IBM in Austin Texas, USA. Participation varied considerably through the week; in addition to the core group of delegates there were many newcomers present only on the first two days.

Fifteen documents were registered at the Systems meeting. Four in particular were studied as input to the subsequent activity:

- Morris, "Demultiplex buffering in MPEG"
- Van der Meer, "MPEG Systems reference model 0"
- MacInnis et al, "Change Proposal ..."
- Pineda "Formal Semantics ..."

The Systems committee thoroughly reviewed the issues of (decoder) buffer size and pack construction. Other significant items studied included:

- Fixed rate models
- Variable rate models
- Start code emulation
- Decoder time stamps / start-up delay
- System time clock definition
- Editing facilities
- Semantics from revision 7
- System reference model, which parts should be normative
- Outstanding issues from revision 7
- Stuffing in packet headers
- 90 kHz clock specification
- Private data stream definition

As a result of this work, the following agreements were reached by consensus:

1. A System Target Decoder (STD) for the fixed rate case was adopted. (Note: this is a reference model that encompasses a demultiplexor, decoder buffers for each decoder, and idealized individual decoders).

2. All rules concerning pack and packet construction in revision 7 are removed for the fixed rate case except as constrained by the STD above. (Note: this means that the buffers in the STD constitute the constraint on packet construction and placement in the interleaved data stream).

3. Start Codes which were labeled as "Other data streams" in revision 7 were re-named as "Reserved streams" (Note: these had been previously been committed for use by MHEG).

4. A proposal to specify a JPEG packet start code was withdrawn. (Note: Private streams can be used for JPEG).

5. A proposal for a start code allocation table was not adopted. (Note: multiple private data streams can be specified as sub-streams within the Private stream type).

6. A future work item was identified: identify a specific extension mechanism for multiple private data streams.

7. The Length field in the Packet header was moved as in the Change Proposal document, section 2.6

8. The proposal section 2.7 in the Change Proposal to insert marker bits in SCR and PTS was adopted.

9. Packet Time Stamps are re-named Presentation Time Stamps as per the change proposal section 2.5.

10. The data in packets is now called Packet Data instead of Coded Data.

11. Decoder Time Stamp (DTS) now replaces Start Up Delay (SUD)

12. Stuffing is allowed in packet headers, from 0 to 16 bytes. (Note: there is a Stuffing data stream type already specified; it has a minimum packet length of less than 16 bytes).

13. There was some disagreement on two items in the proposed packet header syntax:
a. Inclusion of an explicit Buffer Size field was not unanimous (see below)
b. At least one delegate would prefer to allow private data streams to bypass all of the packet header syntax after the start code and length.

14. Revision 8, drafted during the meeting, was adopted, with the following provisions:
a. Section 3.1.1 (STD definition) applies only to fixed rate cases
b. Section 3.1.2 (STD definition) applies to variable rate cases, and it has not been fully agreed to and is subject to revision. (Note: 3.1.1 and 3.1.2 are very similar in content, except for the variable byte rate Ri in 3.1.2. It is of special significance that the Systems specification now directly supports variable bit rate operation.)

Revision 8 of the Systems Specification was produced by the committee, and copies were distributed. Additional copies are available from Sandy MacInnis or Juan Pineda.

Presentation of information and discussion for the definition of variable rate cases was not completed due to lack of time.

Additional work items identified for the 15th MPEG meeting include:

1. {Bi} buffer size field definition and inclusion (from the STD model)
(Note: it has been proposed to make this field explicit in the syntax. There is an alternate proposal not to include it, i.e. to communicate or assume it by other means, outside of MPEG).
2. {Bi} size maximum limitations
3. Variable rate cases
4. SCR (System Clock Reference) maximum interval definition
5. Maximum packet rate definition
6. Tolerance on the 90 kHz time reference for SCR, PTS and DTS
7. Syntax for private streams

The agenda for the 15th MPEG meeting includes:

1. Review revision 8 and simulations of it; revise if necessary.
2. Additional work items from MPEG 14.
3. Define conformance testing for MPEG1.
4. Define request for input for develop the Proposal Package Description.
5. Liase with the Requirements and DSM groups for verification of MPEG1 Systems and for requirements for future work items.
6. Produce an MPEG Systems Report
7. Additional Orders of Business

Annex VII

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
ORGANIZATION INTERNATIONALE NORMALISATION

ISO/IEC JTC1/SG2/WG11

CODING OF MOVING PICTURES AND ASSOCIATED AUDIO

June 1991

Source: Tsuneyoshi Hidaka (JVC), Chairman of MPEG/Test
Title: MPEG/Test Paris Meeting Report
Purpose: Report

MPEG/Test Paris Meeting Report

1. General

The MPEG/Test meeting took place at ENST, Paris in three sessions (29 May 91 11:30 - 13:00, 29 May 91 14:00 - 17:00, 30 May 91 9:00 - 10:30).

The requirements, PPD for MPEG-2 were discussed under the chairmanship of S.Okubo (NTT).

2. Approval of agenda

The proposed agenda was approved as listed below,

(1) Opening
(2) Approval of agenda
(3) Allocation of contributions
(4) Berlin meeting report
(5) Finalization of the boundary conditions for Kurihama tests
(6) Final clarification of subjective assessment procedure
(Double-stimulus Continuous Quality-scale method)
(7) Final selection of test sequences out of the set agreed in Berlin
(8) Format of D-1 tape to be used for delivery of test inputs to Kurihama
(9) Final schedule for Kurihama tests
(10) Discussion on next steps in MPEG decision process, ranking of criteria
(11) Recommendations from San Jose meeting
(12) A.O.B.

3. Allocation of contributions

The following documents were contributed relevant to MPEG/Test.

Doc. No.	Sources	Title
019 May	D. Hepper	Test sequence for MPEG-2
021 May	K. Asai	Coding simulation of software generated pictures (VCR demonstration)
023 May	Chair/Test	Data Processing for MPEG-2
024 May	Chair/Test	Actual MPEG-2 assessment
025 May	Chair/Test	D-1 tape editing for MPEG-2 assessment
026 May	Chair/Test	Schedule for MPEG-2 assessment
027 May	Chair/Test	Format of MPEG-2, D-1 test tape
028 May	Chair/Test	Subjective assessment procedure for MPEG-2

4. Berlin meeting report

MPEG/Test meeting in Berlin were kindly chaired by Mr. D. Westerkamp. The meeting report was accepted with minor modification in accordance with proposed document, MPEG 91/019 May.

5. Finalization of the boundary conditions for the Kurihama test

The items related with requirements were clearified by Okubo's meeting.

6. Final clarification of subjective assessment procedure (DS-CQS)

The documents 024 and 028 were introduced in detail for the method of subjective assessment procedure and evaluation environments.

A sample D-1 tape of subjective assessment test has been demonstrated during tape viewing session.

7. Final selection of test sequences out of the set agreed in Berlin

The meeting confirmed test sequences as in table 1.

Table 1. DISTRIBUTION of COMMON PICTURE (◎ : COMMON ○ : EACH)

No. of common pictures	2		3		4	
Picture / Bit rate	4M	9M	4M	9M	4M	9M
A : Flower Garden	◎	◎	◎	◎	◎	◎
B : Suzie	○		○		○	
C : Popple		○		○	◎	◎
D : Table Tennis		○	◎	◎	◎	◎
E : Mobile and Calendar	◎	◎	◎	◎	◎	◎
F : Tempete	○		○		○	
G : Edit		○		○		○
H : Football	○		○			○
NUMBER of TEST PICTURES	5	5	6	5	6	6

There were some discussions about the necessity of test in 9Mbps transfer rate. Some members of the meeting felt that the picture quality in 9Mbps simulation were good as reference picture in most cases as the results of tape viewing session. So that the opinion was proposed to change bit rate from 9Mbps to 6Mbps and 4Mbps to 3Mbps for Kurihama test. However, there is still some degradation in 9Mbps pictures can be observed. The meeting agreed to stay in original decisions of 9Mbps and 4Mbps transfer rate.

The time codes with respect to the CCIR IWP 11/7 library tapes are given in table 2.

Table 2. Time code of test sequences

sequence	50Hz	60Hz
Table Tennis frames of 10 seconds already used time code	1 - 53 + 74 - 102 + 121 - 163 01:28:00:00 - 02:02 + 04:17 - 05:20 + 12:15 - 14:07	1 - 67 + 90 - 119 + 149 - 201 01:28:00:14 - 02:20 + 05:07 - 06:06 + 13:04 - 14:26
Flower Garden	01:14:23:08 - 28:07	01:14:17:17 - 22:16
Susie	01:15:06:00 - 10:24	01:15:07:00 - 11:29
Popple	01:27:05:00 - 09:24	01:27:05:00 - 09:29
Mobile & Calendar	01:29:19:00 - 23:24	01:29:17:15 - 22:14
Tempete without + with noise	01:43:07:00 - 09:12 + 44:11:00 - 13:11	01:43:07:00 - 09:15 + 44:07:00 - 09:13
Football	suppl. by Thomson/LER	01:37:13:23 - 18:22
Edited sequence: Table Tennis + Flower Garden + Susie + Popple + Mobile & Calendar	 frames 1 - 23 1 - 29 1 - 23 1 - 29 1 - 21	 frames 1 - 29 1 - 31 1 - 29 1 - 29 1 - 32

8. Format of D-1 tape to be used for delivery of test inputs to Kurihama

Document 027 for D-1 tape format has been agreed by the meeting.

Format for the proposed D-1 tape shall be edited as specified on document MPEG 91/027 May, "FORMAT of MPEG-2 D-1 TEST TAPE". In the proposed D-1 tape where contains eight different test sequence beside the test signals. Those test sequence shall be recorded on the proposed D-1 tape in order of list on tablel.

9. Final schedule for Kurihama tests

The question was asked to the members that how many organizations would intend to propose for MPEG-2 Kurihama test. There were 26 proposal will be expected at Kurihama test, 4 from USA, 10 from Europe and 12 from Japan.

•Schedule for Subjective assessment test at Kurihama

May 31	PPD Finalized Check the number of PAL/NTSC participate company.
June 30	Pre Registration
Oct. 1	D-1 tape Reception start
Oct.18	Dead Line for D-1 tape reception D-1 tapes from registrators must arrive at Kurihama by Oct.18, 1991.
	Video editing in random order
Nov.18 - Nov.22	MPEG-2 SUBJECTIVE TEST

10. Discussion on next steps in MPEG decision process, ranking of criteria

There is a comment on the statistical analysis of the subjective test results. Considering the high number of algorithms expected to be tested at the Kurihama test, it is likely that some algorithms will not be significantly different from other ones.

To determine which algorithms are in the first position, it was suggested to use an analysis of variance (such as the Duncan's multiple range test), and to define a confidence level (e.g. 90%).

Documents 023 was accepted at the meeting.

11. Recommendations from Paris meeting

1) A call for pre-registration should be issued by WG11 Convinor as soon as possible.
2) Final schedule for Kurihama test shall be confirmed at next San Jone meeting.
3) Registration date for the proposed document (description) shall be determined.

12. A.Q.B.

MPEG-1 quality assessment

The subject has been discussed at two short meeting of MPEG/Test.

Summary of the meeting

1. MPEG-1 is core standard for coding of Moving Pictures.
2. Picture quality of MPEG-1 can be improved by adding such pre-processor, post processor.
3. The performance improvement shall be done at the practical applications.

Conclusion

MPEG is a subordinate organization of ISO/IEC to establish the core standard but not on performance matter. Under the circumstance, we are not able to provide such simulation tape in official bases.

Annex VIII

MPEG Requirements meeting report

Source: **Sakae Okubo**

1. Documentation

1.1 General requirements - Section 3/016
MPEG91/011,012,021,042,056,060,065,071,075,076,079

1.2 Compatibility - Section 3.4 11)/016
MPEG91/011,017,071,081

1.3 Kurihama test conditions - Section 6.2.1/016
MPEG91/021,049

1.4 Test methods for picture quality - Section 6.2.1 2)/016
MPEG91/019,023,024,025,026,027,028

2. Discussion schedule

- Requirements	(Okubo)	Tuesday	9-13, 14-18
- Test methods	(Hidaka)	Wednesday	10-13, 14-18
- PPD	(Okubo)	Thursday	9-13

3. Agreements

3.1 General requirements

1) We will incorporate all the requirements identified in various documents (011,012,042,Section 2/060,071,075,076,079)) into Section 3 of PPD, as far as they are not contradictory. If there may be any contradictory requirements, they should be solved in the application standards.

2) We have confirmed that these requirements be met by the standard for high quality video coding as a log range target, namely in the course of Committee Draft development.

3) The following tests are to be be considered in the collaboration phase work;

- Artificial patterns to check particular elements in the coding algorithm such as presented in MPEG91/021.
- Coding performance for progressively scanned materials. For this purpose, provision of test sequences and monitors should be further considered.
- Conversion from CMTT to MPEG coding as in MPEG91/065.

4) Layered coding is suggested in MPEG/056,071,076 for realizing compatibility with existing standards, flexibility to the quality/bit rate tradeoff, and flexibility to the differing characteristics of transmission/storage media.

5) An editorial work was carried out by several volunteers to extract appropriate materials in the received contributions which should be reflected in the PPD document (MPEG91/016). The outcome is given as part of the meeting report.

3.2 Compatibility

1) We will use the terminology given in AVC-32 for future discussion of the compatibility issue.

2) We have confirmed the following previous decisions toward defining the first "Test Model", thus toward developing the standard;

- We seek "compatibility" to the maximum extent.
- For competition purpose, we will initially concentrate on the picture quality. If we succeed to narrow down the number of candidates from the picture quality measurement, we will apply functionality criteria including compatibility.
- Every coding algorithm proposal should describe what compatibility features it has and demonstrate the processed pictures in the claimed compatibility mode(s) such as illustrated in Figure 1 (a).

3) The greatest degree of compatibility would be achieved by a core MPEG1 decoder operating on a bit stream in the range of 1.0 - 1.5 Mbit/s.

3.3 Kurihama test conditions

1) Selection of test sequences

According to the feel for difficulty of coding, the agreed 8 test sequences were ordered as in Figure 2.

We gave priority to the four sequences which are to be used commonly for both of 4 Mbit/s and 9 Mbit/s.

We selected test sequences for the three cases where 2, 3 and 4 overlapped sequences as in Table 1 according to the guideline to pick up other necessary number of sequences from easy ones for 4 Mbit/s and difficult ones for 9 Mbit/s.

The selection of the number of overlapped sequences depends upon the number of proposals, namely the capacity of testing facilities and testing hours.

After having reviewed various coded pictures, there were raised some questions whether bit rate values and selected sequences in Table 1 produce sufficient difference among proposed algorithms, particularly at 9 Mbit/s. This matter may be reconsidered if achievements by August indicate no difference at all between original and coded pictures.

2) Resolution

For the Kurihama test purposes, the input and output signals are both CCIR 601 4:2:2 ones. Some coding algorithms may subsample the input signal, which should be stated in the coding algorithm description. Different parameters or even different algorithms may be switched for 4 Mbit/s and 9 Mbit/s, but the bit stream should contain all the necessary bits for the purpose so that the decoder can correctly identify these parameters and operate.

Note: This conclusion is based on the technical settlements at a joint session between the Video and Requirement/Test subgroups on Wednesday. Since this interpretation differs from the one agreed at the Tuesday session of the Requirement/Test subgroup which was based on the approved report of the Berlin meeting, the final decision supporting the above mentioned settlements was made at the WG11 plenary on Friday.

3) Coding and decoding delay should be stated.

4) Random access delay addresses "frame (2 fields in a set)".

3.4 Materials to be submitted

1) Description

- Algorithm including block diagram and syntax diagram
- Compatibility feature
- Random access feature
- Coding/decoding delay
- Any other functionalities

- VLC, FLC tables employed for coding of classification related overhead, motion vectors, coefficient data, various synchronization words, etc.
- Statistics

  *number of bits and SNR for each frame

  *cumulative bit count once every 0.4 second (excluding the last 0.2 second) for each sequence

  *several items (such as motion vector count, luminance and chrominance bit counts, overhead bits) averaged over each sequence following the formats in SM3/RM8 tables as a guideline

2) D-1 tape for subjective tests of normal playback for agreed test sequences at 4 Mbit/s and 9 Mbit/s

3) D-1 tape for demonstration excluding the normal playback pictures
- fast forward
- fast reverse
- compatibilities if claimed
- low coding/decoding delay mode pictures if claimed
- any other functionalities if claimed

4) Verification of decoded pictures

Each picture to be tested at Kurihama should be reconstructed from a coded bit stream. A paper listing should be given for each sequence which indicates the corresponding coded bit stream file in a format such as UNIX "ls -l" output.

Decoder executable codes should be made available upon request of MPEG. If this requirement is not met, the proposal can not be considered as part of promising schemes.

5) Implementation aspects

See the report of Implementation Sub-group.

Table 1. Test sequences

Picture \ No. of common pictures / Bit rate	2		3		4	
	4 M	9 M	4 M	9 M	4 M	9 M
A : Flower Garden	X	X	X	X	X	X
B : Suzie	X		X		X	
C : Popple		X		X	X	X
D : Table Tennis		X	X	X	X	X
E : Mobil and Calender	X	X	X	X	X	X
F : Tempete	X		X		X	
G : Edit		X		X		X
H : Football	X		X			X
NUMBER of TEST PICTURES	5	5	6	5	6	6

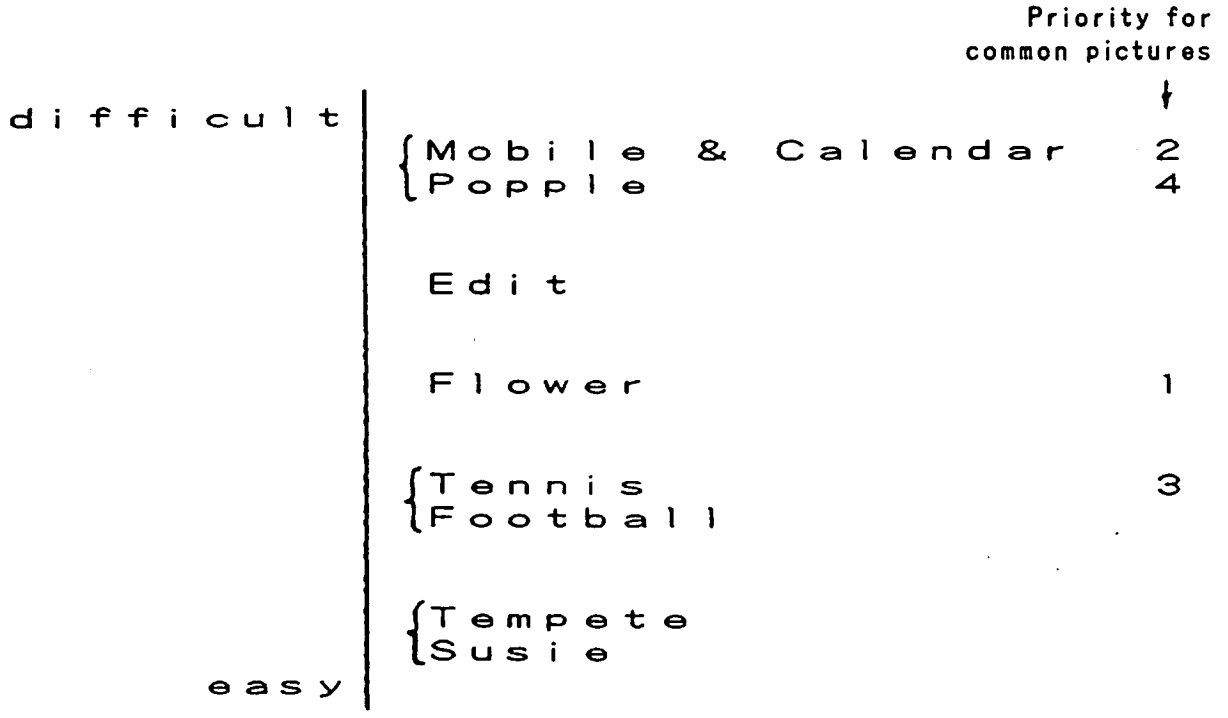
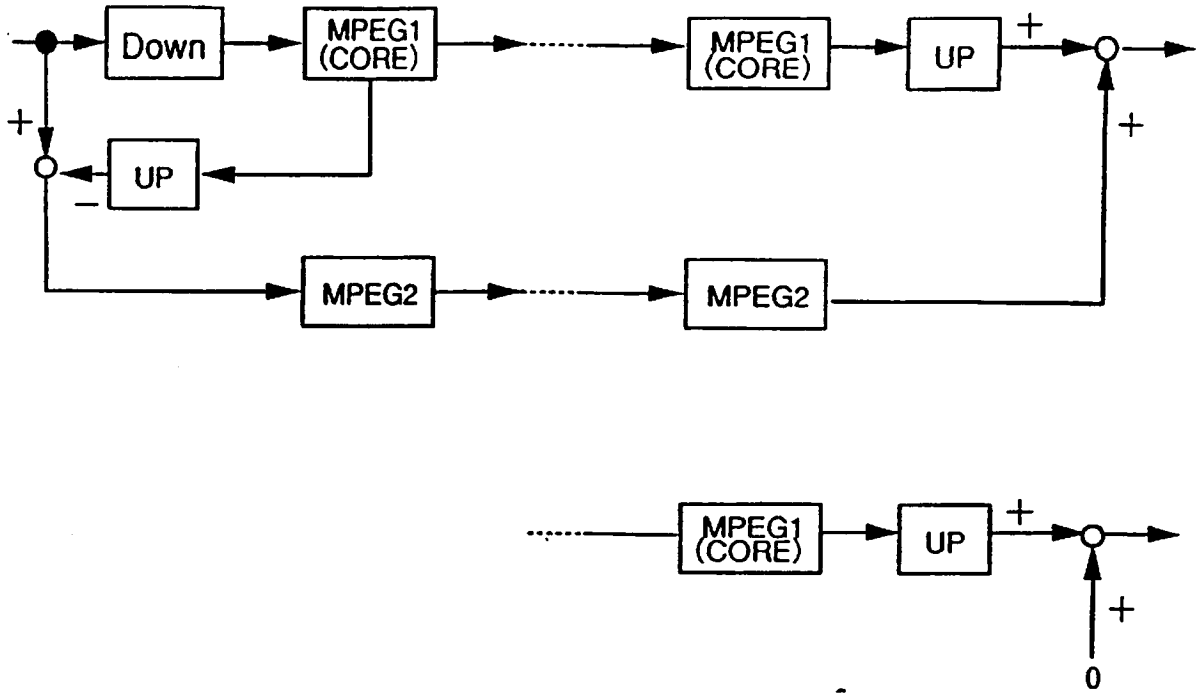
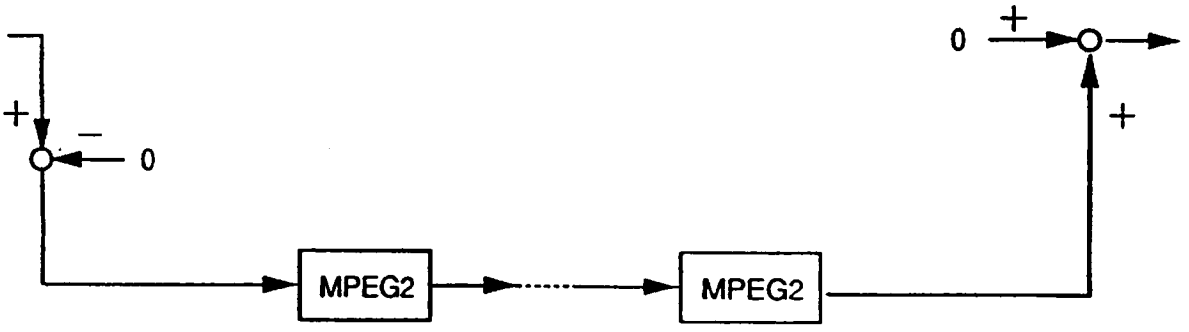


Figure 2 Feel for order of coding difficulty



a) Compatible mode



b) Non-Compatible mode

Figure 1 Operational modes

Annex IX

MPEG Implementation meeting report

Source: **G. Morrison - Chairman of Implementation Studies Group**

The group met in the afternoon of 29 May 1991 and in the morning of the 30th. The participants were:

Geoff Morrison	BT Labs (chair)
Brian Astle	Intel
Cesar Gonzales	IBM
Jun Yonemitsu	Sony
John Gooding	SGS-Thomson
Osvaldo Colavin	SGS-Thomson
Michel Henry	SGS-Thomson
R Aravind	AT&T
Colin Smith	Brooktree
Iberrakene Areski	Telecom Paris
Michel Fortier	Bell-Northen Research
Jay Yogeshwar	Prism Interactive Products
Takuyo Kogure	Asia Matsushita Electric
Jae-Kyoon Kim	KAIST
Harald Brusewitz	Televerket
Eric Visito	IBM
Al Korenjak	Intel
Peng Ang	LSI Logic
Jung-Hee Song	Samsung
Jae Ho Kim	Samsung

The following items were on the agenda:

1. Berlin meeting report
2. Implementation issues affecting MPEG-1
3. Verification of the MPEG-1 CD
4. Working method for MPEG-2 and contribution to the Proposal Package Description
5. AOB

1. Berlin meeting report

The Berlin meeting had been sparsely attended and only one participant at it, apart from the chaiman, was at the Paris meeting. That person had not seen the meeting report which had been distributed with the Berlin MPEG documents. The chairman had received no comments or corrections.

2. Implementation issues affecting MPEG-1.

In the Video Group, Savatier had proposed an amendment to the coding of extended range motion vectors. After confirming that there was a real possibility of such a change being adopted if the Implementation Studies Group supported it, the topic was discussed.

It was recognised that implementations would be simplified except that the possible range of motion vectors which a decoder would have to accept would be larger. It was suggested that for

bitstreams with the constrained parameters flag set, the vectors could be limited to the range available under the old scheme. With this proviso, the change was supported.

There was a short discussion on buffering. The Video Buffer Verifier (VBV) in the CD is only required to be met between sequence headers. A decoder may not be able to play continuously across a sequence boundary if the buffer conditions on each side of it are unfavourable. It was also pointed out that editing of coded video using cut and paste techniques could generate material which did not satisfy the VBV even though the originals did. Failure of systems under these circumstances should not be blamed on decoders. The group wished to ensure that these facts were known and appreciated by MPEG generally and so they were specifically highlighted in the closing plenary on the afternoon of 31 May.

3. CD Verification

This item was generated by the wish of MPEG to have real time verification of the CD before releasing it for general comment. The implementation studies group agreed with this desire but did not accept that fulfilment of it was the responsibility of the group. They would however act as an information and coordination point.

To this end, an analysis was done of the current situation. A decoding system operating in real-time is essential. A real-time encoder would be an advantage but is not essential.

The possibility of a decoder was examined. For the video part, no organisation claimed to have a hardware decoder which conformed to the latest version of the CD. Several decoders were known to exist which approached the CD to a greater or lesser extent, but only for one was a date offered as to when it might be fully conformant. This was the programmable decoder decoder being put together by some COMIS partners and the end of August was the target date.

For the system part, essentially the demultiplexing function, the only declared activity was again the COMIS project and it was envisaged that this would be ready in the same timeframe as the video decoder.

For MPEG audio the situation appeared somewhat better with two hardware decoders identified. One of these was followed up in more detail and this revealed that interacing it to the COMIS demultiplexer would require some extra interfacing circuitry extending beyond simple level shifters to clock generators/phase locked loops and buffering between intermittent and continuous data rates. It was not known if such work was in progress or planned.

On the encoder side, it was thought that coded video could be produced fairly easily by computer simulation, although some minor changes to the CD had been made at the Paris meeting. It had become recommended practice in the Video group to produce bitstreams and several participants had successfully exchanged these. No activity on the system multiplexer was known to be in progress. This was thought to be of low computational complexity (but see later).

For the audio encoder both the options of a real-time hardware encoder and an off-line computer simulation appeared available. However, it was found that the simulation programs had not been written to produce coded bitstreams, only decoded audio, and the hardware encoder had never been interfaced to a storage device. A floppy disk or tape cartridge containing a coded audio bitstream did not exist.

Another potential problem identified concerned the synchronisation of audio and video by the system multiplexer. Unlike the video specification, the audio one does not have timecodes embedded in the compressed bitstream. Thus there is no method currently available to get the timecodes relating to the uncompressed audio tracks accompanying the video on a D1 recorder to the output side of the audio encoder. This will cause difficulties for the multiplexer which must combine appropriate sections of video with audio. The simple method will be to assume that the separately encoded audio and video bitstreams begin at the same time point and then to work forward by dead reckoning.

There was a definite feeling that the issue of hardware verification of the draft CD had been left rather late in the day and information was sought from those with experience of the CCITT H.261

activity on the timescale and procedure adopted there. The validity of such a comparison was questionable because of MPEG's target of a much more highly integrated silicon solution. Nevertheless sufficient time for the verification phase should be built into the MPEG programme.

As the Implementation Studies group has no power to produce a hardware demonstrator, the group's view was that it could not accept responsibility for the verification of the CD. It was suggested that this function should fall elsewhere within MPEG. However this was not pursued because shifting the work to another group would not solve the underlying problems and it would still be the same individuals who were involved.

4. MPEG-2 complexity analysis

The previous meeting in Berlin had come to the conclusion that the complexity assessment procedure used for MPEG-1 should not be repeated for MPEG-2. It had been an objective process which produced hard numbers. However, there were severe doubts about the accuracy of such numbers. There would also be the difficulty of converting these numbers into agreed units which could be combined with the results from the picture quality tests etc.

The meeting agreed to use a subjective process in which the proposals would be rank ordered. The first stage would involve assessment by implementation experts working individually. Their rankings would then be compared. Hopefully these would be similar but if not, discussions would take place to reach a common view.

It was thought to be too demanding to assess in detail all the candidates as some 20 to 30 are expected. Some preselection will therefore be required. The group felt strongly that simply taking those which did best in the picture quality tests should not be the preselection method.

The aim of the complexity assessment would be to provide information to enable MPEG to progress after the November tests. The Implementation Studies group would in effect seek to classify proposals into three groupings:

- algorithms which are much simpler than average to implement. Even if their picture quality were not among the best these should not automatically be discarded. The collaborative efforts of MPEG might be able to improve their quality while retaining some or all of their simplicity.
- algorithms which are much more complex than average to implement. Even if their picture quality were among the best these should not automatically be retained. MPEG would have to decide whether the extra picture quality was worth the extra complexity and whether other simpler approaches could be improved to be competitive.
- algorithms which are of average complexity to implement. For these the implementation complexity would not be a major factor in deciding to retain or discard them.

In addition to the descriptions, block diagrams, flow charts etc which will accompany proposals some other information could be helpful to assessors. It was suggested that the group devise a questionnaire for proposers to complete.

Further work on the details of the process were left to be worked out at the next meeting subject to approval of the outline proposed methodology by MPEG in plenary session.

5. Other business

Astle raised the interesting hypothesis that processing was moving towards architectures employing parallelism and that some algorithms could be more or less favourable for these implementations. This topic was placed on the agenda for the next meeting and written contributions invited.

Annex X

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
ORGANISATION INTERNATIONALE DE NORMALISATION
ISO/IEC JCT1/SC2/WG11
CODING OF MOVING PICTURES AND ASSOCIATED AUDIO

May 1991

Source: Takuyo Kogure
Title : DSM Paris Meeting Report

1; Chairman's report of previous meeting

DSM(digital storage media) is a fundamental component and is the basic philosophy of MPEG and chairman suggested that start point MPEG originates for the purpose of DSM and without it MPEG does not exist in this field.
We can easily observe that if we keep this consideration, then MPEG would not have any conflict with other International Organization. So we, MPEG members should not forget about the intended application for DSM of this standard, as we try to set the generic coding standard.
Under these considerations, chairman asked the participants for opinions of this item at the previous meeting. However,there are no particuler response.
Chairman set aside this time for meeting as an extension of previous discussion at the last DSM meeting.

2;Discussion on above comments

At the start time of the discussion, chairman asked for comments on this point from the participants of this group. However there was no specific opinion against above concept. So the chairman continued the discussion by concentrating on the generic coding algorithm.
After having some discussion about this point, chairman suggested we should discuss the interface condition between DSM and generic coding (signal processing)block, and the high level language for DSM which is controlled by the MPEG system.

41
AVC-66

3: Area of work at this DSM group

Chairman showed the figure in this report and asked the participants about this item.

Followings were example at the discussion.

(1) MPEG DSM group should not discuss about storage media itself or hardware specifications.

(2) This group can discuss about the interface issue between MPEG composite bit stream and storage media, and also interface code conversion standard.

(3) Joint working group with [system group] was recommended. This joint working group will discuss about total integrated system including AV input signal to the storage media.

(4) High level language which can handle total MPEG system should be discussed in this group. This high level language related to the normal AV system operating language, e.g.[play][stop][FF]etc.

(5) It may be useful to discuss among this group members the error distribution on digital storage media or storage data protection methodology.

(6) It may be meaningful to show our DSM group activity to the other standardized activity group.

3;Plan for next step

After finishing above discussion, chairman proposed following items for next step of DSM group activity and approved.

(1)Consider integrated MPEG system and summarize common sense of the high level language in order to operate MPEG total system.

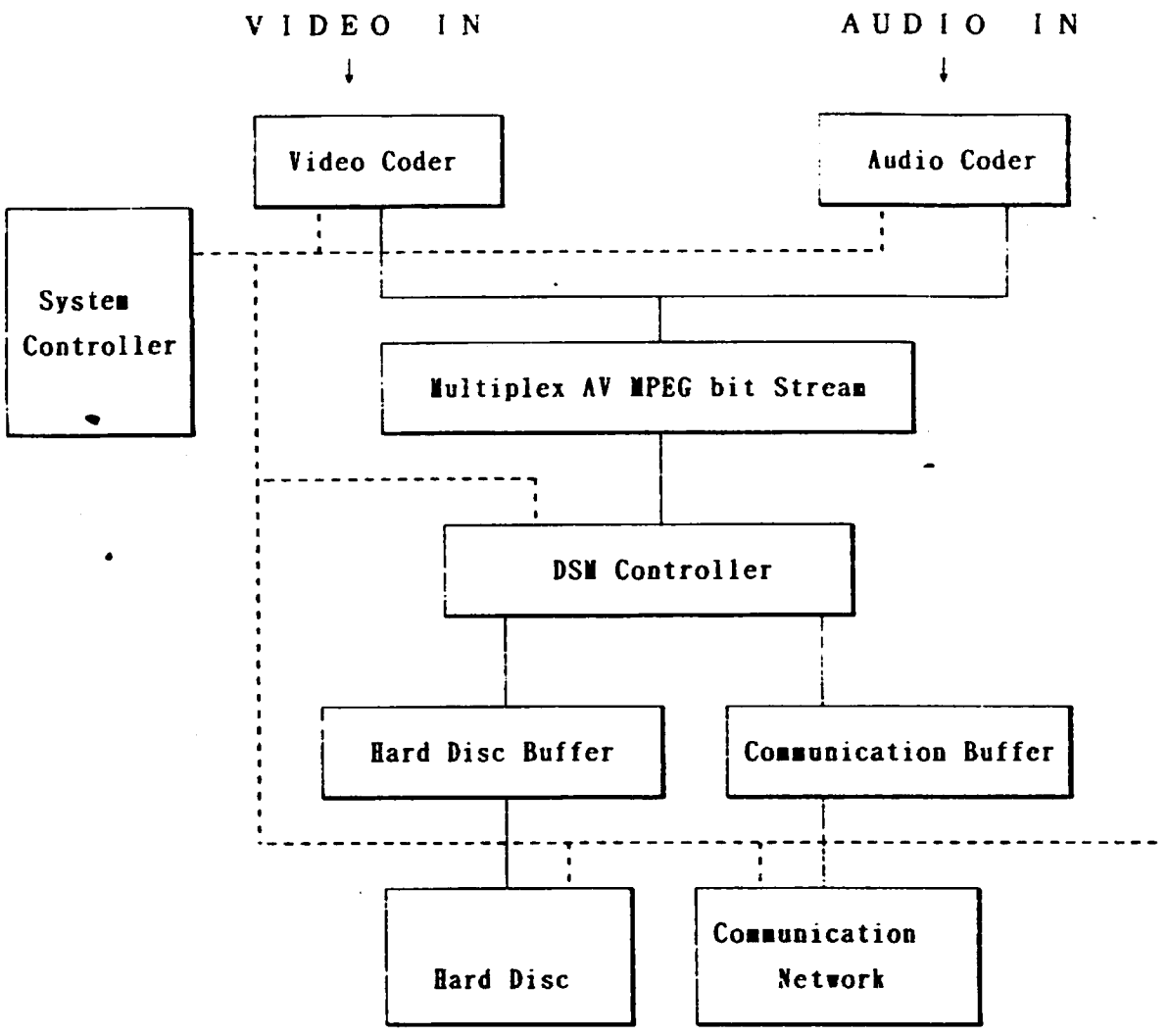
(2)Consider operating function commands of above system and harmonize to the high level language.

(3)Consider MPEG system controller and construct the structure of integrated MPEG control command.

(4)Investigate interface standard of each DSM system.

(5)Then propose the recommendation including above issue.

[EXAMPLE OF MPEG SYSTEM CONSTRUCTION]



4:Conclusion

Chairman asked the participants to provide suggestions and proposals at the next DSM meeting regarding further steps about [item 3] in this report and adjourned the meeting.

Annex X1

INTERNATIONAL ORGANISATION FOR STANDARDISATION
ORGANISATION INTERNATIONALE DE NORMALISATION

ISO/IEC JTC1/SC2/WG11

CODING OF MOVING PICTURES AND ASSOCIATED AUDIO

ISO/IEC JTC1/SC2/WG11
MPEG 91/091

30 May 1991

TITLE : REPORT - MINUTES OF THE LIAISON MEETING
(HELD WED 29/05/91 18:00-20:00 HRS)

FROM : T. DAVIES

ATTENDANCE LIST :-

Y.	DEHERY	CCETT
M.	BARBERO	TG-CMTT/2 SPECIAL RAPPORTEUR
S.	OKUBO	CHAIR CCITT WPXV/1 EG ATM VC
E.	SCHYLANDER	PHILIPS NETHERLANDS
T.	KOGURE	MATSUSHITA
T.	DAVIES	AUSSAT
B.	HASKELL	AT&T
A.	TABATABI	CCITT WPXV/1
M.	BIGGAR	CCITT WPXV/1
A.	KOMLY	CHAIR CCIR TG 10/2
G.	DIMINO	R.A.I.

Status of liaison activities with the following standards bodies are :-

1) CCITT WPXV/1 - Video coding for ATM

It was agreed that sufficient liaison is occurring through the joint meetings with MPEG experts groups and this is encouraged to continue.

2) CCITT WPXV/2 - Audio coding in 16-64 kBit/s range

The Convenor will write to advise on current MPEG Audio developments towards lower bit rates noting the potential commonality of applications.

3) CCIR SG 11 -Two Draft questions on generic coding for TV/EDTV/HDTV for Terrestrial and Satellite broadcasting

Two new questions on generic video coding have been produced by SG11(Doc. MPEG 91/031 and 91/032). The MPEG Convenor has already established communications with SG11 and both bodies are now aware of each others activities.

A MPEG liaison representative to attend future SG11 meetings was felt desirable.

4) CCIR TG 10/2 - Low bit rate audio coding systems

MPEG has received correspondence from the chairman of TG 10/2 (Doc MPEG 91/029) inviting submission of the MPEG AUDIO system to be evaluated as a possible system for professional contribution and distribution applications. The group expressed concern that the audio algorithm would be tested for applications it was not designed for and hence receive potentially bad publicity. The Convenor was asked to liaise with the MPEG AUDIO group and seek their advice before a formal response to TG10/2 is done.

5) TG CMTT/2 - Secondary distribution of digital TV/EDTV/HDTV signals.

MPEG has received a liaison statement from TG CMTT/2 (Doc MPEG 91/042). Future TG CMTT/2 liaison to MPEG will be through a special appointed rapporteur Mr M Barbero. Terms of reference are described in Doc MPEG 91/043.

The liaison group felt it could be desirable to have a MPEG liasion member appointed to attend future TG-CMTT/2 meetings.

It was noted that TG-CMTT/2 members can attend MPEG meetings but would be considered as delegates of their counties' ISO National Body and not TG CMTT/2.

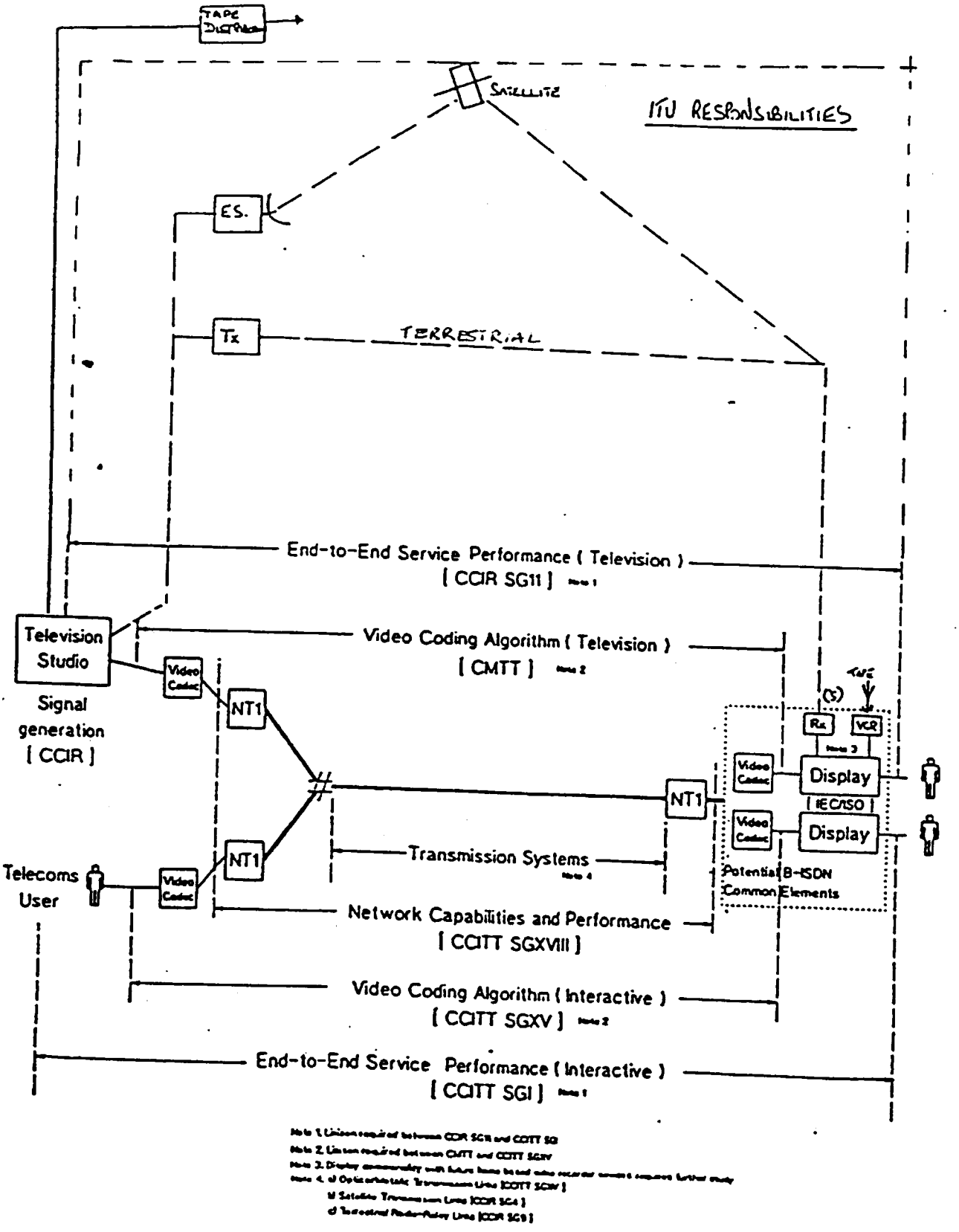
Should this also apply to CCITT WP XV/1 members attending MPEG or joint WP XV/1/MPEG meetings?

6) CCITT SGXV111 - B-ISDN network Capability

Current level of liaison through a distribution copy of the MPEG meeting documents to Mr Andrew Day, Vice Chairman CCITT SGXV111 was felt satisfactory.

A diagram depicting the ITU role relationships for video coding for secondary distribution was tabled to help explain the liaison activities between standards bodies with potential areas of overlapping applications.

END



ITU ROLE RELATIONSHIPS FOR VIDEO CODING IN THE SECONDARY DISTRIBUTION INCLUDING B-ISDN