

**INTERNATIONAL ORGANISATION FOR STANDARDISATION
ORGANISATION INTERNATIONALE DE NORMALISATION
ISO/IEC JTC 1/SC 29/WG 11
CODING OF MOVING PICTURES AND AUDIO**

ISO/IEC JTC 1/SC 29/WG 11 N2647

March 1999

Source: Leonardo Chiariglione – Convenor
Title: Report of 47th WG 11 meeting
Status:

1 Opening

The 47th MPEG meeting was held in Seoul, KR at the kind invitation of KNITQ (Korean National Institute of Technology and Quality), Korean National Body of ISO and IEC, and KISI (Korean Industrial Standards Institute) on 99/03/15-19.

2 Roll call of participants

Annex 1 gives the attendance list.

3 Approval of agenda

This is given in Annex 2.

4 Allocation of contributions

Annex 3 gives the list of submitted contributions.

5 Communications from Convenor

There was no specific communication made.

6 Report of previous meeting

The report of the Atlantic City meeting was approved.

7 Processing of NB Position Papers

These were processed and a response given to each of them

8 MPEG Phase 1

Two corrigenda for 11172-1 and 11172-2 were initiated.

9 MPEG Phase 2

9.1 MPEG-2 parts

No MPEG-2 part was processed at this meeting

9.2 Verification of MPEG-2

No work was reported on this topic

9.3 Amendments

The following MPEG-2 amendments were processed at the meeting

13818-1/FDAM 5 Final text	WG11 N2654
13818-1/FPDAM 6 DoC	WG11 N2657
13818-1/FDAM 6 Final text	WG11 N2658
13818-1/PDAM 7 DoC	WG11 N2663
13818-1/FPDAM 7 Final text	WG11 N2664
13818-2/FPDAM 6 Final text	WG11 N2665
13818-4/PDAM 3 DoC	WG11 N2655
13818-4/FPDAM 3 Final text	WG11 N2656
13818-6/FPDAM 1 Revised DoC	WG11 N2667
13818-6/FDAM 1 Revised final text	WG11 N2659
13818-6/PDAM 2	WG11 N2660

9.4 Corrigenda

The following MPEG-2 corrigendum was processed at the meeting

13818-6/DCOR 2	WG11 N2661
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9.5 Workplan

This was approved

10 MPEG Phase 4

10.1 Version 1

10.1.1 Final Draft International Standard

Information was given that parts 1, 2, 3 and 6 had been sent to ITTF for IS ballot.

10.1.2 Reference software

Part 5 will be promoted in July to FDIS.

10.1.3 Verification Tests

10.1.3.1 Systems

No results were presented

10.1.3.2 Video

The results of the Formal Verification Tests On MPEG-4 Content Based Coding were presented and approved.

10.1.3.3 Audio

No results were presented

10.1.4 Quality of service

No work was reported.

10.1.5 Conformance Testing

A study of MPEG-4 version 1 "Conformance Testing" Committee Draft was produced.

10.2 Version 2

10.2.1 Patent statements

In spite of the request made by the Convenor very few patent statements were received. Unless a substantial number of statements are received at the July meeting, version 2 may not be promoted to FCD.

10.2.2 Requirements

A new version of the requirements document was produced.

10.2.3 Tools

New tools for version 2 were tested.

10.2.4 Verification Models

The following Verification Models were approved

MPEG-4 Systems ver. 2 VM	WG11 N2741
MPEG-4 Video ver. 2 VM	WG11 N2687
MPEG-4 Audio ver. 2 VM	WG11 N2767

10.2.5 Committee Draft

The following PDAMs were approved

MPEG-4 Systems PDAM (ver. 2)	WG11 N2739
MPEG-4 Visual PDAM (ver. 2)	WG11 N2688
MPEG-4 Audio PDAM (ver. 2)	WG11 N2670
MPEG-4 DMIF PDAM (ver. 2)	WG11 N2720

10.3 Workplan

This was approved.

11 MPEG Phase 7

11.1 Requirements

A new version of the requirements document was produced.

11.2 Call for proposals

The ad hoc group met at Lancaster University and screened the proposals.

11.3 Tools

A good repertory of candidate tools were derived from the proposals.

11.4 Experimentation Model

The MPEG-7 Core Experiments documents (WG11 N2690, 2691, 2676), the DDL document (WG11 N2731) and the visual portion XM document (WG11 N2695, 2716) were produced.

11.5 10.5 Workplan

This was approved.

12 Overall WG11 workplan

This was approved.

13 Explorations

A report on ALC tests was produced.

14 Liaison matters

Liaison documents were processed and responded to as appropriate.

15 Administrative matters

15.1 Schedule of future MPEG meetings

This was approved.

15.2 Promotion of MPEG

A proposal was aired to establish an MPEG-4 Forum.

16 Organisation of this meeting

16.1 Tasks for subgroups

Subgroup	Tasks
Requirements	<ul style="list-style-type: none"> • MPEG-4 ver. 2 <ul style="list-style-type: none"> • MPEG-4 Applications • MPEG-4 Requirements • MPEG-4 Overview • MPEG-4 profiles&levels • MPEG-7 <ul style="list-style-type: none"> • MPEG-7 Applications • MPEG-7 Requirements • MPEG-7 C&O • MPEG-7 roadmap • MPEG-7 DSs and DDL • Proposal of MPEG-7 standard structure • Press release
Delivery	<ul style="list-style-type: none"> • MPEG-2 <ul style="list-style-type: none"> • 13818-6 Corrigendum? • 13818-6 FPDAM • MPEG-4 ver. 1 <ul style="list-style-type: none"> • Study of conformance CD • MPEG-4 ver. 2 <ul style="list-style-type: none"> • MPEG-4 DMIF 2 CD • Contribution to MPEG-4 ver. 2 conformance WD • Contribution to press release
Systems	<ul style="list-style-type: none"> • MPEG-1 <ul style="list-style-type: none"> • Corrigendum? • MPEG-2 <ul style="list-style-type: none"> • FPDAM 13818/5.2 DoC & FT • 13818-1/FPDAM 6 DoC & FT • 13818-1/PDAM 7 DoC & FT • 13818-4/FPDAM 2DoC & FT • MPEG-4 ver. 1 <ul style="list-style-type: none"> • Part 5 status • IM1 workplan • Study of conformance CD • MPEG-4 ver. 2

	<ul style="list-style-type: none"> • MPEG-4 Systems ver. 2 CD • Contribution to MPEG-4 ver. 2 conformance WD • MPEG-7 <ul style="list-style-type: none"> • Systems tools • Contribution to press release
Video	<ul style="list-style-type: none"> • MPEG-1 <ul style="list-style-type: none"> • Corrigendum? • MPEG-2 <ul style="list-style-type: none"> • 13818-2/PDAM 6 DoC & FT • Decision on progressive display • MPEG-4 ver. 1 <ul style="list-style-type: none"> • Corrigendum • Study of conformance CD • MPEG-4 ver. 2 <ul style="list-style-type: none"> • MPEG-4 Visual ver. 2 CD • Contribution to MPEG-4 ver. 2 conformance WD • MPEG-4 beyond <ul style="list-style-type: none"> • FGS decision • Decision on ALC • Studio profile • MPEG-7 <ul style="list-style-type: none"> • MPEG-7 CE process • MPEG-7 Video CE • Contribution to MPEG-7 XM • Contribution to press release
Audio	<ul style="list-style-type: none"> • MPEG-2 <ul style="list-style-type: none"> • 13818-1/FPDAM 6 DoC & FT • 13818-4/PDAM 3 DoC & FT • MPEG-4 ver. 1 <ul style="list-style-type: none"> • Study of conformance CD • MPEG-4 ver. 2 <ul style="list-style-type: none"> • MPEG-4 Audio ver. 2 CD • Contribution to MPEG-4 ver. 2 conformance WD • MPEG-7 <ul style="list-style-type: none"> • MPEG-7 CE process • MPEG-7 Audio CE • Contribution to MPEG-7 XM • Contribution to press release
SNHC	<ul style="list-style-type: none"> • MPEG-4 ver. 1 <ul style="list-style-type: none"> • Study of conformance CD • MPEG-4 ver. 2 <ul style="list-style-type: none"> • MPEG-4 Visual ver. 2 CD • Contribution to MPEG-4 ver. 2 conformance WD • MPEG-7 <ul style="list-style-type: none"> • Role for SNHC • Contribution to press release
Test	<ul style="list-style-type: none"> • MPEG-4 ver. 1

	<ul style="list-style-type: none"> • Verification tests report • Verification test plan • MPEG-4 ver. 2 <ul style="list-style-type: none"> • Verification test plan • Contribution to press release
Implementation	<ul style="list-style-type: none"> • MPEG-4 ver. 2 <ul style="list-style-type: none"> • Video QoS • MB/s • texture coding • MPEG-7 <ul style="list-style-type: none"> • XM complexity • Contribution to press release
Reference SW	<ul style="list-style-type: none"> • MPEG-4 ver. 1 <ul style="list-style-type: none"> • MPEG-4 ver. 1 software FDIS? • MPEG-4 ver. 2 <ul style="list-style-type: none"> • MPEG-4 ver. 2 software CD? • Contribution to press release
Conformance	<ul style="list-style-type: none"> • MPEG-4 ver. 1 <ul style="list-style-type: none"> • Study of MPEG-4 ver. 1 conformance • MPEG-4 ver. 2 <ul style="list-style-type: none"> • MPEG-4 ver. 2 conformance WD • Contribution to press release
Liaison	<ul style="list-style-type: none"> • Liaison letters to <ul style="list-style-type: none"> • VRML • Contribution to press release
HoD	<ul style="list-style-type: none"> • Disposition of account surplus • Publication of MPEG standards on the web • Meeting schedule

16.2 Finalisation of meeting allocation

This was accomplished.

16.3 Joint meetings

Group1	Group2	What	Where	When
Requirements	Video, Audio, ISG	MPEG-7 kick off	Video	Mon 2:30-3
Systems	Requirements	Miscellanea	Systems	Mon 4-6
Systems	Audio, ISG	BIFS nodes	Systems	Tue 9-10
ISG	IPMP	IPMP implementation	ISG	Tue 11-12
Audio	Requirements	Audio transport	Audio	Tue 12:30-13
Audio	ISG	Norm. comp.	Audio	Tue 2-3
Systems	Delivery	Appl. Signal.	Systems	Tue 2-4
Systems	Delivery	4 on 2 / 4 on IP	Systems	Tue 4-6
Systems	Video, Delivery	Norm. ESI Error resil.	Systems	Wed 2-4
SNHC	Systems	Miscellanea	SNHC	Wed 2-4
Test	Video	ALC tests etc.	Test	Wed 4-6
Video	ISG	Miscellanea	Video	Thu 9-10

Requirements	SNHC	Profiles	Requirem	Thu 10:30-11:30
Requirements	Systems, Video	Chroma Key et al.	Video	Thu 10-10:30
Audio	Systems, DMIF	Audio Transport	Audio	Thu 11-12
Requirements	Systems	MPEG-7 Systems	Requirem.	Thu 4-7

17 Planning of future activities

The following ad hoc groups were established

2762	AHG on 3D Model Coding
2746	AHG on Advanced BIFS
2679	AHG on audio part of MPEG-4 Reference Software editing
2680	AHG on Audio part of MPEG-4 Version 1 and Version 2 Conformance
2717	AHG on Computational Graceful Degradation
2698	AHG on conformance in MPEG-4 video
2701	AHG on core experiments for Color/Texture descriptors in MPEG-7
2704	AHG on Core Experiments for Description Schemes in MPEG-7
2702	AHG on core experiments for Shape/Motion descriptors in MPEG-7
2708	AHG on core experiments in MPEG-4 video
2734	AHG on DDL development
2735	AHG on Description Schemes
2705	AHG on editing the document of the MPEG-7 Visual XM Version 1
2703	AHG on editing the documents of the MPEG-4 Visual PDAM and the MPEG-4 video verification model
2761	AHG on Face and Body Animation
2750	AHG on IM 1
2749	AHG on Intellectual Property Management & Protection within MPEG-4
2696	AHG on MPEG-2 Video and MPEG-4 visual Progressive Frame Amendments
2681	AHG on MPEG-4 Audio Version 2 CD Editing and Software Progression
2684	AHG on MPEG-4 Backchannel (Joint)
2751	AHG on MPEG-4 Content on MPEG-2 Systems and on the Internet
2748	AHG on MPEG-4 File Format
2682	AHG on MPEG-4 Version 2 Technical Matters
2707	AHG on MPEG-4 video encoder optimization
2714	AHG on MPEG-4 Video Verification tests
2683	AHG on MPEG-7 Audio Matters
2733	AHG on MPEG-7 Requirements
2747	AHG on MPEG-J
2699	AHG on object-based content creation for MPEG-7
2706	AHG on organizing the software integration of MPEG-7 Visual XM tools
2736	AHG on Requirements for Multi-user applications using MPEG-4
2760	AHG on SNHC Conformance
2697	AHG on software integration and verification in MPEG-4 video
2745	AHG on Systems Conformance
2718	AHG on Video Decoder Quality of Service
2719	AHG on XM Development

18 Resolutions of this meeting

These were approved.

19 A.O.B

There were no other businesses.

20 Closing

The meeting was closed with thanks to the hosting organisation.

Annex 1
Attendance list

First Name	Family Name	Company	Country
MICHAEL	FRATER	University of New South Wales	AU
Mikhail	SHNAIDER	MOTOROLA	AU
JIM	ANDREW	CISRA	AU
Igor	Kharitonenko	Motorola AU	AU
Matthew	Leditschke	Motorola AU	AU
David	Taubman	The University of New South Wales	AU
Mark	Pickering	University of New South Wales	AU
Peter	Schelkens	Vrije Universiteit Brussel	BE
JAN	BORMANS	IMEC	BE
ADAM	LINDSAY	STARLAB NV	BE
XIAOLIN	WU	University of Western Ontario	CA
JAEHAN	IN	University of British Columbia/ ImagePower Inc.	CA
ADRIANA	DUMITRAS	University of British Columbia, Vancouver	CA
Curtiss	Lacasse	Digital Accelerator Corporation	CA
Phil	Nerland	Digital Accelerator Corporation	CA
Brent	Simon	Digital Accelerator Corporation	CA
Meng	Wang	Digital Accelerator Corporation	CA
Xue Dong	Yang	Digital Accelerator Corporation	CA
Wen	Gao	Institute Computing Technology, Chinese Academ	CN
RIITTA	VAANANEN	Helsinki Universtiy of Technology	FI
VIKTOR	VARSA	Nokia Research Center	FI
Fehmi	Chebil	Nokia Research Center	FI
Roberto	CASTAGNO	Nokia Research Center	FI
MARC	GELGON	Nokia Research Center	FI
Mauri	Vaananen	Nokia	FI
Jean	BARDA	NETIMAGE	FR
D.	CURET	FR Telecom	FR
CECILE	DUFOUR	Philips Research FR	FR
Philippe	GUILLOTTEL	THOMSON multimedia R&D FR	FR
Laurent	HERRMANN	Philips - LEP	FR
Alain	Le Guyader	FR Telecom	FR
Guez Vucher	Marc	SCAPITPI	FR
Pascal	Faudermay	LIP6	FR
Claude	ROLLIN	SACD	FR
MARYLINE	CHARRIER	CANON RESEARCH CENTRE FR	FR
FELIX	HENRY	CANON RESEARCH CENTRE FR	FR
Catherine	LAMBERT.NEBOU	CNES	FR
ERIC	MAJANI	CANON RESEARCH CENTRE FR	FR
Renaud	CAZOULAT	FR Telecom	FR

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Bertrand	CHUPEAU	THOMSON multimedia R&D FR	FR
Sylvain	Devillers	Philips Research FR	FR
Jean-Claude	Dufourd	ENST	FR
Marc	GUEZ VUCHER	SCPP	FR
Philippe	Joly	ASIM-LIP6-UPMC	FR
Olivier	LESCURIEUX	Institut National de l'Audiovisuel	FR
Didih	MARY	FIAPF	FR
ERIC	NGUYEN-PHUC	Canon Research Centre FR	FR
Pierrick	PHILIPPE	CNET DIH/HDM	FR
Françoise	PRETEUX	INT	FR
Jean-Bernard	RAULT	FR Telecom	FR
Brigitte	Schuster	Alcatel	FR
Bertrand	THEBAULT	FR Telecom	FR
Dominique	Yon	CISAC	FR
Titus	ZAHARIA	INT	FR
Andreas	Aust	Thoson multimedia	DE
Fehn	Christoph	Meinrich-Meitz-Institut	DE
Torsten	Mlasko	Robert Bosch GmbH	DE
Jens-Rainer	Ohm	Heinrich Hertz iustitute	DE
Thomas	SIKORA	Heinrich-Hertz-Institut Berlin	DE
Bodo	Teichmann	Frannhofe Gosollsciaff/iis	DE
Hans L.	Cycon	FHTW Berlin	DE
Klaus	Jung	Technische Universitat Berlin	DE
OLIVIER	AVARO	DEUTSCHE TELEKOM.BERKOM	DE
Sven	Bauer	Robert Bosch GmbH	DE
Ulrich	Benzler	University of Hannover	DE
Karlheinz	Brandenburg	Fraunhofer	DE
Martin	Dietz	Fraunhofer	DE
Stefan	Gewinner	Fraunhofer Institut IIS-A	DE
Carsten	Herpel	Thoson multimedia	DE
Stephan	Herrmann	TU Munich	DE
Andreas	Hutter	TU Munich	DE
Andre	Kaup	Siemens AG	DE
Werner	Kriechbaum	IBM Deutschland Entwicklung GmbH	DE
Frank	Nack	GMD-IPSI	DE
Heiko	Purnhagen	University of Hannover	DE
Niels	Rump	Fraunhofer	DE
Ralph	Sperschneider	Fraunhofer	DE
Michael	Stepping	FTK Research Institute for Telecommunications	DE
UWE	FISCHER	IBM	DE
Martin	Wawra	Robert Bosch GmbH	DE
Noel	O'connor	Teltec Ireland	IE
Noam	Cohen	Vsoft	IL

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Zvi	Lifshitz	Triton R&D Ltd.	IL
VITTORIO	BARONCINI	F.U.B.	IT
Stefano	BATTISTA	ST Micro electronics	IT
Franco	Casalino	CSELT	IT
Leonardo	Chiariglione	CSELT	IT
Gianluca	De petris	CSELT	IT
Gianluca	Di Cagno	CSELT	IT
Giorgio	Dimino	RAI Research Centre	IT
Guido	FRschini	CSELT	IT
Pierangelo	MIGLIORATI	UNIV. of BRESCIA	IT
Tsutomu	Ando	Canon Inc	JP
Yoshihisa	Gonno	Information Broadcating Laboratories, Inc.	JP
Kenjiro	Kai	NHK	JP
Itaru	Kaneko	ASCII Corporation	JP
Yohihisa	Kawamura	COMPAQ COMPUTER CORPORATION	JP
Takeshi	Mori	NTT	JP
Takehiro	Moriya	NTT	JP
Toshiyuki	Nakagawa	Canon Inc	JP
Mayumi	Nakata	Matsushita Electric Industrial Co., Ltd.	JP
DAY	NEIL	RICOH	JP
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Masahiro	Shibata	NHK	JP
Yoshinori	SUGIHARA	EIAJ	JP
OSAMU	SUNOHARA	Sony Corporation	JP
KUNIAKI	TAKAHASHI	Sony Corporation	JP
Seishi	Takamura	NTT	JP
YOICHI	YAGASAKI	Sony Corporation	JP
Eiji	Atsumi	Mitsubishi Electronic Corp	JP
TAKAHIRO	FUKUHARA	Sony Corporation	JP
Shin-ya	Hasegawa	SHARP Corp.	JP
Hiroshi	Kajiwara	Canon Inc	JP
Akihiro	Mimoto	Canno Inc	JP
Yasuyuki	Nomizu	RICOH Company, LTD	JP
Fumitaka	Ono	Mitsubishi Electronic Corp	JP
Makoto	Sato	Canon Inc	JP
Shun-ichi	Sekiguchi	Mitsubishi Electronic Corp	JP
Hideya	Takeo	Fuji Photo Film Co., Ltd	JP
Ikuro	Ueno	Mitsubishi Electronic Corp	JP
Zhixiong	Wu	Oki Electric Industry Co., Ltd.	JP
Yoshiharu	DEWA	Sony Corporation	JP
TERUMASA	AOKI	Tokyo University	JP
Kohtaro	Asai	Mitsubishi Electronic Corp	JP
Neil	Day	Ricoh Co, Ltd.	JP
Koichi	Emura	Matsushita Electric Industrial Co., Ltd.	JP

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NARUMI	HIROSE	IPSJ/ITSCJ	JP
Osamu	Hori	Toshiba	JP
SANAE	HOTANI	NTT DoCoMo	JP
Daiji	Ido	Matsushita Electric Industrial Co., Ltd.	JP
Hiroyuki	Imaizumi	NHK	JP
Akira	Inoue	Sony Corporation	JP
NORIO	ITO	SHARP Corp.	JP
Masahiro	Iwadare	NEC corporation	JP
HIROYUKI	KATATA	SHARP Corp.	JP
TOSHIRO	KAWAHARA	NTT DoCoMo	JP
Yoshihiro	Kikuchi	Toshiba	JP
Hideaki	Kimata	NTT	JP
Takuyo	Kogure	Matsushita Electric	JP
Hitoshi	KOYAMA	NEC Corp.	JP
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SEONGSOO	LEE	University of Tokyo	JP
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TOSHIO	MIKI	NTT DoCoMo	JP
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Tokumichi	Murakami	Mitsubishi Electronic Corp	JP
Takefumi	Nagumo	Sony Corporation	JP
Takeshi	Nakamura	Pioneer Electronics	JP
Yuichiro	Nakaya	Hitachi	JP
Masayuki	Nishiguchi	Sony Corporation	JP
Toshiyuki	Nomura	NEC Corp	JP
Takauori	Senoh	Matsushita Electric Industrial Co., Ltd.	JP
Hiroataka	Shiiyama	Canon Inc	JP
Yoshinori	Suzuki	Hitachi	JP
Katsumi	Tahara	Sony Corporation	JP
Katsumi	TAHARA	Sony	JP
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Hee Jung	Sohn	LG Electronics Co. LTD.	KR
Lee	Youngjik	ETRI	KR
Dae Sung	Cho	Samsung AIT	KR
Euee-Seon	Jang	Samsung AIT	KR
Dae Gwon	Jeong	Dept. of Electrical Eng	KR
So Yeon	Kim	ICU	KR
Yong Man	Ro	ICU	KR
Ki Won	You	ICU	KR
Dong-Wook	Kim	Samsung SDS	KR
Chie Teuk	AHN	ETRI	KR
Young Lae	Bae	ETRI	KR
Keon Hoe	Cha	ETRI	KR
HONG-KYU	CHO	KAIST	KR
Hyunduk	CHO	LG IC	KR
DongSee	CHOI	ETRI	KR
Jin Soo	CHOI	ETRI	KR
Seong Jong	Choi	University of Seoul	KR
Yang Lim	CHOI	Samsung Electronics	KR
Jae Won	CHUNG	Hyundai Electronics Industries Co., Ltd	KR
Minsoo	Hahn	ICU	KR
Mahn Jin	Han	Samsung AIT	KR
Jin Woo	Hong	ETRI	KR
Je Woo	Kim	KETI	KR
Byeung woo	Jeon	Sungkyunkwan University	KR
Je Chang	JEONG	Hanyang University	KR
Sung Bae	Jun	LG Corporate Institute of Technology	KR
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Heung Nam	Kim	ETRI	KR
Hyeon Jun	Kim	LG Corporate Institute of Technology	KR
Hyun Jin	Kim	ETRI	KR
In Kwon	KIM	Hyundai Electronics Industries Co., Ltd	KR
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Yeon Bae	Kim	Samsung AIT	KR
Yong Han	Kim	Univ. of Seoul	KR
Yong Sung	Kim	Hanyang University	KR
Ji Heon	Kweon	Hyundai Electronics Industries Co., Ltd	KR
Bumsik	Lee	ETRI	KR
Han Kyu	Lee	ETRI	KR
Hee Youn	Lee	LG Corporate Institute of Technology	KR
Hyuk Sang	Lee	Read Time Visual	KR
Hyun A	Lee	ETRI	KR
Jae Yeon	Lee	ETRI	KR
Jin Soo	Lee	LG Corporate Institute of Technology	KR
Jocheung	Lee	LG IC	KR
Kwang Kee	Lee	Samsung Electronics	KR
Kyu Won	Lee	ETRI	KR
Nam Kyung	Lee	Hangkong University	KR
Sang Hoon	Lee	Daewoo Electronics Co. LTD.	KR
Sanggal	Lee	KRn Broadcasting System Technical Research Ins	KR
Yung Lyul	Lee	Samsung Electronics	KR
Young Kwon	Lim	ETRI	KR
Joo Hee	MOON	Hyundai Electronics Industries Co., Ltd	KR
Young shik	Moon	Hanyang University	KR
Seoung Jun	Oh	Kwangwoon University	KR
Cheol Soo	Park	Hyundai Electronics Industries Co., Ltd	KR
Jay Duke	Park	ETRI	KR
Soo Jun	Park	ETRI	KR
Sung Hee	PARK	Samsung AIT	KR
Cliff	READER	Samsung AIT	KR
Yoosok	Saw	LG IC	KR
Hyun Doo	SHIN	Samsung Electronics	KR
Jae Seob	Shin	Samsung AIT	KR
Dong Gyu	Sim	Sogang University	KR
Se Hoon	SON	Samsung AIT	KR
Dong Ho	Song	Hangkong University	KR
Joon Ho	Song	Hyundai Electronics Industries Co., Ltd	KR
Jung Min	Song	LG Corporate Institute of Technology	KR
Mun Sup	Song	Samsung AIT	KR
Doug Young	Suh	Kyunghee University	KR
Yong	Sukjin	KETI	KR

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Seoung Joon	Yoo	ETRI	KR
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Annex 2
Agenda

1. Opening
2. Roll call of participants
3. Approval of agenda
4. Allocation of contributions
5. Communications from Convenor
6. Report of previous meeting
7. Processing of NB Position Papers
8. MPEG Phase 2
 - 8.1 MPEG-2 parts
 - 8.2 Verification of MPEG-2
 - 8.3 Amendments
 - 8.4 Corrigenda
 - 8.5 Workplan
9. MPEG Phase 4
 - 9.1 Version 1
 - 9.1.1 Final Draft International Standard
 - 9.1.1.1 Reference software
 - 9.1.2 Verification Tests
 - 9.1.2.1 Systems
 - 9.1.2.2 Video
 - 9.1.2.3 Audio
 - 9.1.3 Quality of service
 - 9.1.4 Conformance Testing
 - 9.1.4.1 System
 - 9.1.4.2 Visual
 - 9.1.4.3 Audio
 - 9.1.4.4 DMIF
 - 9.2 Version 2
 - 9.2.1 Patent statements
 - 9.2.2 Requirements
 - 9.2.3 Tools
 - 9.2.3.1 DMIF
 - 9.2.3.2 Systems
 - 9.2.3.3 Natural Visual
 - 9.2.3.4 Synthetic Visual
 - 9.2.3.5 Natural Audio
 - 9.2.3.6 Synthetic Audio
 - 9.2.4 Verification Models
 - 9.2.4.1 System
 - 9.2.4.2 Video
 - 9.2.4.3 Audio
 - 9.2.4.4 SNHC
 - 9.2.5 Committee Draft
 - 9.2.5.1 Systems
 - 9.2.5.2 Video
 - 9.2.5.3 Audio
 - 9.2.5.4 Simulation software
 - 9.2.5.5 DMIF

- 9.3 Workplan
- 10. MPEG Phase 7
 - 10.1 Requirements
 - 10.2 Call for proposals
 - 10.3 Tools
 - 10.4 Experimentation Model
 - 10.5 Workplan
- 11. Overall WG11 workplan
- 12. Explorations
- 13. Liaison matters
- 14. Administrative matters
 - 14.1 Schedule of future MPEG meetings
 - 14.2 Promotion of MPEG
- 15. Organisation of this meeting
 - 15.1 Tasks for subgroups
 - 15.2 Finalisation of meeting allocation
 - 15.3 Joint meetings
- 16. Planning of future activities
- 17. Resolutions of this meeting
- 18. A.O.B
- 19. Closing

Annex 3

List of submissions

No.	Source	Title
4432	A. Murat Tekalp	Requirements for Multiple Region Parametric Object Motion Description
4544	A. Puri, R. L. Schmidt, B. G. Haskell	Applications needing MPEG-4 BIFS Chromakey functionality, and their Requirements
4464	Adam Lindsay	MPEG-7 Applications Document
4465	Adam Lindsay	MPEG-7 Core Experiment Protocol Suggestions
4593	AHG on display of interlaced material on progressive monitors	Proposed amendment to 13818-2 to carry SMPTE meta-data information
4416	Ajay Divakaran, Huifang Sun, Hiroshi Ito, Anthony Vetro, Padma Akella, Pradubkiat Bouklee, Tommy Poon	Extensive Test Results and Further Update on Bit Allocation Based Descriptor for MPEG-4/2/1 Compressed Video Sequences
4503	Akira Inoue, Masayuki Nishiguchi	Proposed modification on MPEG-4 Audio version 1 Reference Software
4504	Akira Inoue, Masayuki Nishiguchi	Alternative procedure to test HVXC decoder conformance without control interface
4505	Akira Inoue, Masayuki Nishiguchi	Proposed Revision of HVXC part in MPEG-4 Audio Conformance CD
4580	Alexis M. Tourapis, Oscar C. Au, Ming L. Liou	Status Report of Core Experiment on Fast Block-Matching Motion Estimation
4613	Alexis M. Tourapis, Oscar C. Au, Ming L. Liou	Testing Conditions for MPEG4 Core Experiment on Fast Block Motion Estimation Algorithms
4476	Alfred She, Sylvie Jeannin	Object Motion Trajectory
4561	Alvar Bray, Andrea Barbieri, Paul Garrett	PactPlayer 2.06 Release Notes
4562	Alvar Bray, Andrea Barbieri, Paul Garrett	PactPlayer 2.06
4563	Alvar Bray, Andrea Barbieri, Paul Garrett	PactPlayer 2.06 TestCode
4607	Andre Gueziec, Gabriel Taubin, Claudio Silva	Results of core experiment on stitching (M8)
4425	Andre Kaup	Support for Main-Plus Profile
4437	Andreas Hutter, Marco Mattavelli	Report of the AHG on Decoder QoS
4438	Anil M. Murching, Eric Paquet, T. Naveen, Ali Tabatabai	Binding-box based shape descriptor for 2-D and 3-D visual objects
4543	Bertrand THEBAULT	Support for Simple High Scalable (visual) profile
4600	Bing-Bing Chai, Iraj Sodagar	Status report of Error Resilience for Still Texture Coding
4426	Brigitte Schuster,, Bertrand Thébault,, Weiping Li,	Fine Granular SNR Scalability: target applications

	Yingwei Chen, Edouard François	
4565	Carsten Herpel	Report of AHG on MPEG-4 Content on the Internet
4566	Carsten Herpel	"Generic" multiplex considerations
4433	Charilaos Christopoulos, Touradj Ebrahimi, V V Vinod, John R Smith, Rakesh Mohan, Chung-Sheng Li	MPEG-7 Application- Universal Access Through Content Repurposing and Media Conversion
4513	Cliff Reader	Independent Verification of 3DMC M5 Method 2
4470	D.Curet, P.Christ, S.Wesner, C.Guillemot	Application signalling based on URLs in Scene descriptions
4485	D.Manoranjan, Ajay Divakaran, B.S. Manjunath, Ganesh R, V.V.Vinod	Requirements for an activity feature and descriptor in MPEG-7
4525	Dae-Sung Cho, Jae-Seob Shin	Normative composition of video objects in MPEG-4 ver.2 visual part
4383	DAVIC	Liaison Statement from DAVIC on MPEG-7 (SC 29 N 2948)
4384	DAVIC	Liaison Statement from DAVIC on MPEG-4 Version 2 Functionality (SC 29 N 2947)
4519	Do Kyoon Kim, Sung Jin Kim,, Mahn Jin Han, Seok Yoon Jung, Euee Seon Jang	Proposal for 3D Dynamic Mesh Coding Requirements
4461	Eishi Morimatsu	Support for Advanced Real Time Simple Profile
4512	Eishi Morimatsu	Status of Software Integration and Bitstream Exchange for Dynamic Resolution Conversion
4515	Eishi Morimatsu	An Experiment for Evaluation of Temporal Resolution Stability of Advanced Real Time Simple Object Type
4541	Eric Petajan	Report on 3D Model Coding CE9
4540	Eric Petajan, Tolga Capin	FBA adhoc Report
4584	Euee S. Jang	AHG report on Integration of Still Texture and 2D/3D Mesh coding
4583	Euee S. Jang, Visual Editors	Version 2 Visual WD rev 6.1
4581	Fan Ling, Xuemin Chen	Report on Fine Granularity Scalability experiment
4420	Feng Wu, Wen Gao	Tools for 2D mesh coding--mesh generation and fast tracking
4488	Francisco Morán	Hierarchical 3D mesh coding with subdivision surfaces
4409	Franco Casalino, Andrea Varesio	Watermarking in IM1 platform
4551	Francoise PRETEUX	Liaison CEN/ISSS/MMI - MPEG-7
4554	Francoise PRETEUX, Marius PREDA, Titus ZAHARIA	Predictive- versus DCT-based BAP Coding
4553	Francoise PRETEUX, Titus ZAHARIA, Sorin CURILA	Geometry coding of 3D meshes: Integration of the polygonal and hybrid prediction methods in the 3D mesh reference software
4534	Frank Bossen	Results of core experiments on 3DMC
4533	Frank Bossen (editor)	Descriptions of core experiments on 3DMC

4522	Frank Nack	MPEG-7 Requirements Document V.8
4523	Frank Nack	MPEG-7 Context and Objectives V.11
4524	Frank Nack, Jane Hunter	Report of the Ad Hoc Group on MPEG-7 Requirements
4471	French National Body	FGS support
4407	G. Heising, P. Kauff, M. Ozwar, M. Talmi	Evaluation of SA-DCT Hardware Complexity
4602	Gabriel Taubin, Andre Gueziec, Claudio Silva	3DMC reference software
4604	Gabriel Taubin, Andre Gueziec, Claudio Silva	Proposal for 3DMC WD update
4435	Gael RICHARD, Jerome KLAINE	Discrepancies between the MPEG-4 audio TTS reference software and written document (N2503, subpart 6)
4415	Gary Demos	ALC Comparison Test Tape Preparation
4406	Gauthier Lafruit, Bart Vanhoof	Comment on Technical Corrigendum for Still Texture Level Definitions
4454	Gauthier Lafruit, Peter Schelkens, Jan Bormans	Proposal of weighting factors for Scalable Texture Objects
4592	Gerard Fernando	Report of MPEG-J AHG
4460	Gianluca Di Cagno	IM-1 2D FDIS player
4428	Graham Thomas	Experiments on spline-based shape coding
4429	Graham Thomas	Proposal for normative composition of video objects in MPEG-4 Version 2
4430	Graham Thomas	Report of the AHG on normative composition of video objects
4559	Graham Thomas	A feathering algorithm based on simple filters
4468	Guido FRschini	Syntax proposal for the DMIF Application Interface
4431	H. Kalva, A. Akhtar, A. Eleftheriadis, J. Zamora	Implementation of Command Descriptor and CommandDescriptorNode
4556	Heiko Purnhagen, Bodo Teichmann	Report of the AhG on MPEG-4 Audio FDIS and Reference Software
4492	Heiko Purnhagen, Nikolaus Meine	Core Experiment Proposal on Improved Parametric Audio Coding (HILN)
4493	Heiko Purnhagen, Nikolaus Meine	Pre-Screening Results for CE on Improved Parametric Audio Coding
4484	Hideaki Kimata	Request of Advanced Real-Time Simple Object Type
4511	Hideaki Kimata, Shigeru Fukunaga	Results of software implementation and bitstream exchange of NEWPRED
4446	Hiroyuki Imaizumi, Shinichi Sakaida, Yoshiaki Shishikui, Yasuaki Kanatsugu	An extension of OCI descriptor for SMPTE 315M
4498	Hiroyuki Imaizumi, Shinichi Sakaida, Yoshiaki Shishikui, Yasuaki Kanatsugu	Requirements regarding syntax modification for MPEG-4 Studio Profile
4459	Hyun-Duk Cho, Yoo-Sok Saw, Hong-Sup Shin, and Chul-Heum Yon	Experiments of video communications via mobile networks supporting data re-transmission

4575	I. Moccagatta, H. Chen	Error Resilience for MPEG-4 Still Texture- application areas
4395	IEC SC 100C	IEC NP:Interfaces for non-linear PCM encoded audio bitstreams applying IEC 60958 - Part 2: Non-linear PCM bitstreams according to the DTS format(s)(SC29N2953)
4450	Iole Moccagatta, Iraj Sodagar, Jae-Seob Shin, Norio Ito, Weiping Li	A proposal of estblishing new scalable texture profile
4605	Iraj Sodagar, Hung-Ju Lee	Request of Scalable Wavelet Texture for Main-Plus profile
4370	ISO/TC 46/SC 9	ISO/CD 15707, ISWC - Part 1: Musical works
4424	Itaru Kaneko	Some views of MPEG-7 applications and requirements relate to content IP etc.
4385	ITTF	Table of Replies on ISO/IEC 13818-4/FDAM 1 (SC 29 N 2943)
4371	ITU-T SG 10	Liaison Statement from ITU-T SG 10 to ISO on Middleware Standardization (SC 29 N 2907)
4381	ITU-T SG 12	Liaison Response from ITU-T SG 12 on MPEG-4 Audio Test Results (SC 29 N 2931)
4413	ITU-T SG 16	Liaison statement from ITU-T SG 16 Q.12 (SC 29 N 2976)
4620	ITU-T/SG16/Q11-Q14	Liaison to ISO/IEC JTC1 WG11 SC29 MPEG-4 concerning support for MPEG-4 System in H.324 and MPEG-4 Audio in H.245
4442	Jae-Seob Shin, Norio Ito, Yoichi Yagasaki	A proposal of establishing Core Scalable Profile
4570	Jan van der Meer, Carsten Herpel	Report of AHG on Carriage of MPEG-4 over MPEG-2
4518	Jane Hunter, Resource Discovery Unit	An "Improved" Proposal for an MPEG-7 DDL
4449	Jean-Bernard Rault, Jean-Marc Jot	Refinements in the Perceptual Approach for the Environmental Spatialization of Audio
4411	Jean-Claude Dufourd	Report of AHG on Systems Conformance
4412	Jean-Claude Dufourd	Description of BIFS 2D test sequences
4487	Jean-Claude Dufourd, Souhila Boughoufalah, Frederic Bouilhaguet	MDS BIFS editor: FDIS update and Web site information package
4568	Jeff McVeigh	Report of the ad-hoc group on the display of interlaced material on progressive monitors
4453	Jens Spille	Report of Ad Hoc Group on MPEG-4 Audio Conformance
4539	Jens Vollmer, Hirokazu Tanaka	Request for support of a delayed contribution to ITU-T SG16 concerning MPEG-4 codepoints for H.324
4448	Jens-Rainer Ohm	Report of AHG on CE in MPEG-4 Video
4555	Jose M. Martinez	A proposal for MPEG-7 metadata categories
4558	Juergen Herre, Adam Lindsay	Report of Ad Hoc Group on Audio activities in MPEG-7
4560	Juergen Herre, Eric	Information & Proposed Enhancements for MPEG-4

	Allamanche, Ralf Geiger, Thomas Sporer	Low Delay Audio Coding
4618	Julien Signes	Report of the BIFS AHG
4619	Julien Signes	Report on the Web 3D Consortium Liaison
4500	Kai-Kuang Ma	SG National Body Comments on the ISO/IEC 14496-2 FDIS Final Text
4617	Katie Cornog, Michel Rynderman	Requirement for Uncompressed Media in MPEG-4
4436	Keith Hill	INDECS: A Standard for the Identification and Organisation of Intellectual Property Rights Data
4447	Kuniaki Takahashi, Takefumi Nagumo, Yoichi Yagasaki	Comparison of Advanced Layered Coding & Spatial Scalability
4421	Lansun Shen, Hai Wei, Xianglin Huang	Proposal of Scalability Based on Sub-band/wavelet Decomposition
4422	Lansun Shen, Kongqiao Wang, Xin Xing	Automatic Human Face Detection and Tracing in a complex Background
4521	Laurent Mocozet, Sunil Hadap	Detailed Hands and Clothes BAT Models for Body Animation
4564	Laurent Mocozet, Sunil Hadap	Detailed Hands and Clothes BATs for Body Animation
4516	Mahn Jin Han, Mun Sup Song, Sung Jin Kim, Euee Seon Jang	Result of M5 Core-Experiment
4397	Manish Singhal, Kevin O'Connell, Hung-Ju Lee, Iraj Soudagar	Technical Corrigendum for Still Texture Decoding
4612	Mark J Buxton, V V Vinod	Report of AHG on XM development
4585	Martin Dietz, Karlheinz Brandenburg	Report of the Adhoc group on MPEG-4 audio version 2 core experiments
4396	Martin Wawra	DMIF Signalling with RPC
4514	Masahiro Serizawa, Toshiyuki Nomura, Hironori Ito	A Proposal of a Silence Compression Tool for MPEG- 4/CELP and its Subjective Test Results
4595	Mauri Vaananen, Juha Ojanpera, Kalervo Kontola	Study on Finnish NB comments on the audio part of FCD 14496-4
4434	Michael A. Dolan	Getting Download Protocol Parameters in the Non-Flow Controlled Scenario
4456	Michael J Taylor, Simon M Rowe	Audio-Visual Conversation Description Scheme
4386	Michael J. Hu, Ye Jian	Multimedia Description Definition Language (MDDL)
4387	Michael J. Hu, Ye Jian	Multimedia Description Framework (MDF)
4388	Michael J. Hu, Ye Jian	Multimedia Description Definition Language (MDDL)
4507	Michael Stepping	DAI Syntax definition- several additions V1/V2
4508	Michael Stepping	DMIF Group and Broadcast Signalling- comments and DNI messages
4509	Michael Stepping	Monitoring DMIF
4582	Michael Vetter, Ed Hartley,	Report of the Ad-hoc Group on MPEG-7 Evaluation

	Philippe Salembier	Logistics
4621	Michael Vetter, Larry Pearlstein, Michael Rizkalla	Compression and Encapsulation of KLV Data Within MPEG-2 Video Elementary Streams
4463	Michel Rynderman	Proposal for Uniquely Identifying Content
4578	Michel Rynderman	Unique Identification of Content in Object Content Information
4579	Michel Rynderman	Requirement for Visual Effects in Advanced BIFS
4594	Michelle Kim, Peter Schirling, Peter Westerink	Streaming of MPEG-4 using a "HotMedia" based format as the TransMux
4427	Mike Vetter, Philippe Salembier	MPEG-7 Technology Proposals Submitted for AHG Evaluation
4379	MMA	Liaison Response from MMA (SC 29 N 2921)
4479	Munchurl Kim, Jinsuk Kwak, Jun Geun Jeon, Myoung Ho Lee and Chieteuk Ahn	Manual of the ETRI's user-assisted video object segmentation tool
4478	Munchurl Kim, Jinsuk Kwak, Jun Geun Jeon, Myoung Ho Lee, Chieteuk Ahn, Roland Mech, Michael Wollborn, Giuseppe Russo	Text for VOP generation tools in MPEG-4 Version 2 Visual Committee Draft
4414	Niels Rump	IPMP Ad-hoc Report
4571	NNI	Comments of NNI on PDAM-7 to ISO 13818-1
4451	Norio Ito	An application area of new profile including Wavelet Tiling
4572	O. Avaro	Reports of the AHG on MPEG-4 Version 2 Systems profiles and levels
4457	Olivier Avaro	Systems December 1998 (Rome) Meeting Report
4482	Osamu Sunohara, Yoichi Yagasaki	The requirement for MPEG4 studio profile, and the draft of video verification model for studio profile
4483	Osamu Sunohara, Yoichi Yagasaki	The experimental results on field structure for MPEG4 studio profile
4610	P. van Beek	Animated 2D mesh software for MPEG-4 part 5 FDIS
4601	P. van Beek, R. Qian, I. Sezan	MPEG-7 Requirements for description of users
4469	P.Christ,D.Curet,C.Guillemot ,S.Wesner	proposal for a normative ESI
4591	Pascal Faudemay, Philippe Joly, Cedric Thienot, Claude Seyrat	Constraints expression in a DDL based on XML and classes
4542	Pascal Faudemay, Philippe Joly, Cédric Thiénot, Claude Seyrat	An Extensible DDL Framework based on RDF and Ontologies
4368	Pete Schirling	Document Register for 47th Meeting in Seoul, KR
4462	Peter Gerken, Stefan Schultz, Gerald Knabe	IMAS - An Initial MPEG-4 Authoring System
4616	Peter Kauff, Klaas Schueuer	Multiple Copy Results for SA-DCT
4458	Philip Garner, Jason	Output of Automatic Speech Recognition System

	Charlesworth	
4611	Prabhudev I. Hosur and Kai-Kuang Ma	The Fourth Status Report of Core Experiment on Fast Block-Matching Motion Estimation (Q4a)
4467	Project Editor-Pete Schirling	Study Text and Proposed text for 13818-6/AMD1
4546	Q. Huang, A. Puri	Input for MPEG-7 Systems work
4423	Qi Wei, Yuzhuo Zhong, Shiqiang Yang	A New Robust Global Motion Estimation Approach
4548	R. Koenen	Draft of MPEG-4 Requirements, version 11 (Seoul revision)
4550	R. Koenen	Draft Revision of MPEG-4 Overview
4547	R. Koenen, O. Avaro	Proposal for Application Texture Requirement
4603	R. Qian, I. Sezan, P. van Beek	A Unified Video Description Scheme for MPEG-7
4475	Radu Jasinschi, Benoit Mory	Camera Motion Descriptor
4567	Ralph Sperschneider, Daniel Homm, Martin Dietz	Core Experiment Results on Reed Solomon Codes for EP Tool
4402	Ralph Sperschneider, Martin Dietz	Core Experiment Proposal on Error Resilient Section Data Coding for MPEG4-AAC
4403	Ralph Sperschneider, Martin Dietz	Core Experiment Proposal on Huffman Codeword Reordering Refinement for MPEG4-AAC
4399	Regis J. Crinon	Proposal for Amendment 2 to ISO/IEC 13818-6 for DTV Data Broadcast Services and DTV Data Interactive Services
4439	Regis J. Crinon	Encapsulation of MPEG-4 Systems Elementary Streams over MPEG-2 Packetization and Synchronization Layers.
4587	Riccardo Leonardi, Nicola Adami, Lorenzo Rossi	The TOCAI DS for Audio-visual Documents. Structure and Concepts
4586	Riccardo Leonardi, Nicola Adami, Pierangelo Migliorati, Lorenzo Rossi	The TOCAI DS for Audio-visual Documents. Structure and Concepts
4590	Riitta Vaananen, Jyri Huopaniemi	Update to Advanced AudioBIFS; Physical approach
4549	Rob Koenen	Contribution to MPEG-7 Requirements Document
4576	S. Fukunaga, I. Moccagatta, Y. Nakaya, S.H. Son	MPEG-4 Video Verification Model 12.2
4577	S. Fukunaga, I. Moccagatta, Y. Nakaya, S.H. Son	Report of the ad-hoc group on editing the MPEG-4 Video Verification Model
4440	S. R. Quackenbush	Information on the LaTeX Document Preparation System
4528	S.-H. Park, Y.-B. Thomas Kim and S.-W. Kim	Status on the provision of an Telenor IM1 Audio plug-in
4529	S.-H. Park, Y.-B. Thomas Kim and S.-W. Kim	Proposal for BSAC Complexity Reduction
4418	Sanae Hotani, Toshiro Kawahara, Toshio Miki	Test result of Error Resilient Section Data Coding for MPEG-4 AAC
4419	Sanae Hotani, Toshiro	Test result of Haffman Codeword Reordering

	Kawahara, Toshio Miki	Refinement for MPEG-4 AAC
4609	Sang-Wook Kim, Heiko Purnhagen	MPEG Audio Web Page related questions and work items
4606	Sang-Wook Kim, Heiko Purnhagen, Bernhard Grill	Report of the AhG on MPEG-4 Audio version 2 editing and software progression
4408	Sang-Wook Kim, Sanae Hotani, Juergen Herre	Proposed document for MPEG-4 Audio Version 2 CD preparation
4373	SC 29 Secretariat	Summary of Voting on ISO/IEC 13818-2/PDAM 6
4374	SC 29 Secretariat	Summary of Voting on ISO/IEC 13818-4/PDAM 3
4375	SC 29 Secretariat	Summary of Voting on ISO/IEC 13818-4/FPDAM 2
4376	SC 29 Secretariat	Summary of Voting on ISO/IEC 13818-1/FPDAM 6
4377	SC 29 Secretariat	Summary of Voting on ISO/IEC 13818-1/FPDAM 5.2
4378	SC 29 Secretariat	Summary of Voting on ISO/IEC 13818-1/PDAM 7
4496	Scott Levine, Tony Verma, Heiko Purnhagen	Time-varying, Signal Adaptive Switching Between Parametric and Transform Coding for MPEG-4 Audio
4608	Sehoon Son, Jae-Seob Shin	Extension of Scalable binary shape coding tool
4537	Sehoon Son, Sung-Gul Ryoo, Jae-Seob Shin	Extension of Scalable Binary Shape Coding tool
4494	Seishi Takamura (NTT)	Support of Main-Plus Profile and Object Type
4517	Seok Yoon Jung	Results of Color Property Coding
4502	Shigeru Fukunaga	Support for Proposed Advanced Real Time Simple Profile
4501	Shigeru Fukunaga, Hideaki Kimata	Evidences of Error Resilience for Proposed Advanced Real Time Simple Profile
4491	Shuichi Watanabe	The arrangement of visual descriptors by the difference of the level
4615	Stefano Battista	Player3d implementation status
4520	Sungul Ryoo, Jae-Seob Shin	B-VOP rate control Technique for Multiple Video Object(MVO)
4552	Sven Bauer	Support Statement for the Main-Plus Profile
4573	Sven Bauer, Ulrich Benzler, Michael Wollborn	Proposed test conditions for Main-plus profile evaluation tests
4536	T. Ebrahimi, P. Doenges	Report of ad hoc group on 3D model coding
4441	T. K. Tan, M. Frater	Report of the Adhoc group on Software Integration and Verification in MPEG-4 Video (N2557)
4444	Takefumi Nagumo, Se hoon Son, Yoichi Yagasaki, Jae Seob Shin	A proposal to modify VM12.1 & WD version6 for object based spatial scalability
4443	Takefumi Nagumo, Yoichi Yagasaki	Coding efficiency and functionality of ROI with object based spatial scalability
4445	Takefumi Nagumo, Yoichi Yagasaki, Se-Hoon Son, Dae-Sung Cho	Status report of object based spatial scalability software integration
4474	Teruhiko Suzuki	Multiple Version Management for the Systems Tools
4495	The National Body of JP	JNB Comment on Publication of Corrigenda for FDIS 14496-2

4497	The National Body of JP	Proposal for Technical Corrigenda to MPEG-1 Systems and Video
4499	The National Body of JP	JNB Comment on Implementation Procedure of Reference Software for Visual part Version 2
4506	The National Body of JP	Comments on MPEG-4 Audio version 1 Reference Software and Conformance CD
4510	The National Body of JP	Request to standardize a normative MPEG-4/Audio Transport Stream Syntax
4527	The National Body of JP	Request for revision of MPEG-4 Requirements Document
4569	Tihao Chiang, Huifang Sun	Report of Ad Hoc Group on Encoder Optimization
4401	Tim Addington Scientific-Atlanta +1.770.903.5642	Request for corrigendum to ISO/IEC 13818-6
4489	Tolga Capin	Proposal for Update to Body Animation Specification
4490	Tolga Capin	Experiment Results on Body Animation
4452	Tomoko Aono, Norio Ito, Hiroyuki Katata	Results of the verification test for temporal scalability in core profile
4538	Torsten Mlasko	Core experiment proposal on an error resilience scheme for CELP speech codecs
4574	Torsten Mlasko, Christian Mittendorf, Christian Meyer	Results on error resilience for speech codecs
4405	Toshiro Kawahara, Sanae Hotani, Toshio Miki	Core Experiment Proposal on Reed Solomon Codes for EP Tool
4417	Toshiro Kawahara, Sanae Hotani, Toshio Miki	Simulation result of Reed-Solomon Code for EP Tool
4404	Toshiyuki Nakagawa	IPMP Test Results
4535	Toshiyuki Nomura, Masahiro Iwadare	A Proposal for the MPEG-4 Audio Capability Description for ITU-T H.32x Terminals
4410	Tsutomu Ando, Toshiyuki Nakagawa	BIFS scene protection test result and problems
4400	UK National Body, Guy Hirson (NDS Limited)	Objection to changes in ISO/IEC13818-6/FPDAM1
4389	US National Body	USNB Contribution - New Work Item: Amendment 2 to 13818-6
4390	US National Body	USNB Contribution - New Work Item- Corrigenda to 13818-6
4391	US National Body	USNB Contribution - Work plan for Fine Grain Scalability
4392	US National Body	USNB Contribution - New Work Item- Corregenda to 14496-2
4393	US National Body	USNB Contribution - Modifications to MPEG-7 Source Code Requireme nt Policy for non-normative components
4394	US National Body	USNB Contribution - 13818-4 Test Bitstreams
4481	V. Baroncini, I. Moccagatta	Ad-hoc group on MPEG-4 Video Verification Tests
4369	Vahe Balabanian	DMIF December 1998 (Rome) Meeting Report
4588	Viswanathan Swaminathan,	Text for MPEG-J VM/WD

	Gerard Fernando	
4589	Viswanathan Swaminathan, Yihan Fang, Gerard Fernando	MPEG-J: Outstanding Issues and Implementation Status of Sun/Columbia
4472	Wade K. Wan, Jae S. Lim	Proposal for Scalability Based on Adaptive Prediction
4545	Webmaster	VACANT
4473	Weiping Li	Experiment Result on Fine Granularity Scalability
4614	Weiping Li	Verification of Core Experiment Results on Fast Motion Estimation
4466	Wes Curtis, Richard Hopper, Tracy Ormrod	BBC Standard Media Exchange Framework (SMEF)
4398	X. Chen, A. Luthra, B. Eifrig, K. Panusopone	Proposed editorial corrigendum for ISO/IEC 14496-2
4530	Y. Suzuki, S. Takamura, Y. Nakaya	Revision of specifications for Global Motion Compensation
4557	Yingwei Chen, Hayder Radha and Mihaela van der Schaar	Evaluation of Fine Granular Scalability for Internet Video
4455	Yoichi Yagasaki	A proposal of establishing Studio Profile
4480	Yoshihiro Kikuchi	RTP format for efficient MPEG-4 video delivery
4526	Yoshinori Matsui	STD model for ISO/IEC 14496-1 data stream
4531	Yoshinori Suzuki, Yuichiro Nakaya	Statement of support for Main Plus Profile
4486	Young-Kwon Lim, Chieteuk Ahn, Youngjik Lee	MPEG-4 TTSI upstream channel for stream control and decoding buffer management
4532	Young-Kwon Lim, Chieteuk Ahn, Youngjik Lee	MPEG-4 TTSI upstream channel for stream control and decoding buffer management
4477	Young-Kwon Lim, Joern Ostermann	Report of AHG on MPEG-4 backchannel
4372	Zvi Lifshitz	Version notes for IM1 Core code and Tools release 2.0
4382	Zvi Lifshitz	Agenda and Logistics for the February IM1 AHG Meeting
4596	Zvi Lifshitz	IM1 AHG report
4597	Zvi Lifshitz	IM1 Core code + authoring tools version 2.5
4598	Zvi Lifshitz	BIFS/OD Encoder version 2.5
4599	Zvi Lifshitz	TRIF multiplexer version 2.5

Annex 4
Requirements Group Report

Source: Rob Koenen

MPEG-4 Version 2 and beyond

Requirements

m4548 Draft of MPEG-4 Requirements, version 11 (Seoul revision) - R. Koenen

A new version was issued, correcting some editorial problems, updating a few issues on terminology and incorporating the decisions made during the week.

m4550 Draft Revision of MPEG-4 Overview - R. Koenen

A new Overview was issued, replacing the picture Akiyo with Bream to explain mesh coding. Also, it was brought up to date with respect to the stage MPEG-4 is at right now.

m4527 Request for revision of MPEG-4 Requirements Document - JNB

The Requirements Group has discussed the request on adding an MPEG-4 requirement pertaining video acquisition applications. The Group thanked the JNB for this contribution. The requirements Group agreed with the National Body of JP that real-time acquisition of content with a personal video camera is an important application area for MPEG-4.

The Requirements Group also shared the view the national body of JP that MPEG-4 should provide the capability to efficiently encode scenes with the intentional and unintentional camera movement that is inherent to this application area.

While the Requirements Group was of the opinion that this requirement has always been implicitly present in section 4.2.5 (as 'any given scene' is assumed to also include scenes with camera movement), the Group thought it was good to take away any possible misunderstanding in this respect. Therefore, the Group decided to add a note to requirement 4.2.5.

The note reads: *'Any given scene' includes scenes with intentional and unintentional camera motion.*

m4544, Applications needing MPEG-4 BIFS Chromakey functionality, and their Requirements - A. Puri, R. L. Schmidt, B. G. Haskell,

The group discussed the document and distilled one requirement for the MPEG-4 Requirements Document:

Requirement

It shall be possible to use (implicit) shape coding in combination with MPEG-1 and MPEG-2 objects.

Real-time encoding for (MPEG-1, -2, and -4) with (possibly implicit) shape information shall be supported.

Note

Implicit shape coding could mean that the shape can be easily extracted at the decoder, without explicit shape information present in the bitstream.

The decision as to whether Chroma Key fulfils the requirement with acceptable quality was left to the Video group. For this note to be useful, it will need to be included in a profile.

In spite of resolution 2.1.5 from the Roma meeting, no contributions were received on alternative ways to fulfil the requirement.

m4463 Proposal for Uniquely Identifying Content - Michel Rynderman

m4578 Unique Identification of Content in Object Content Information - Michel Rynderman

The group agreed with the author that a requirement exists for uniquely identifying content in OCI. There was a discussion on the desirability of extending SMPTE's unique material identifier, the candidate to fulfil the requirement, to the entire SMPTE metadata dictionary. Resolution 3.1.4 asks for input on this issue.

m4446 An extension of OCI descriptor for SMPTE 315M - Hiroyuki Imaizumi, et. al.

The request to add camera parameter info in OCI was supported.

m4547 Proposal for Application Texture Requirement - R. Koenen, O. Avaro

The proposal for an application texture requirement was supported, and added to the Requirements Document

m4579 Requirement for Visual Effects in Advanced BIFS - Michel Rynderman

The requirement for visual effects support was confirmed. In principle, the current BIFS nodes seem to allow implementation of the effects, but it was decided to investigate whether a separate node could support the effects better since it would allow a direct implementation.

m4617 Requirement for Uncompressed Media in MPEG-4 - Katie Cornog, Michel Rynderman

The Requirement for uncompressed media was supported. Fulfilling it entails defining the appropriate object types in MPEG-4 V.2 Systems. No profiles are anticipated with these object types, but they will be useful within the file format

m4623 Multi-users technology (Requirements and Applications) - Olivier Avaro et. al.

There was agreement that multi-user applications are an interesting and important application area for MPEG-4. An AHG was set-up to investigate further what is lacking from MPEG-4 at the moment (see N2736).

m4510 Request to standardize a normative MPEG-4/Audio Transport Stream Syntax - JNB

The request from the National Body of JP was welcomed and discussed. While the request essentially asked for a transport format instead of MPEG-4 Systems, the discussion revealed that the question contained actually two different issues:

1. Is MPEG-4 Systems suitable for very simple audio applications?
2. Does a separate, simple, audio-specific transport format need to be specified?

The following conclusions were drawn:

1. MPEG-4 has a special audio-only scene graph profile, designed for exactly these applications on the request of the audio people and several national bodies. The audio group seemed to be happy with it in the past, but will now re-assess the situation, in joint meetings with Systems
2. In spite of MPEG policy not to define transport layers in MPEG-4, there may indeed be a case for such a format. The audio group will investigate, a) what the applications are and b) what Systems and DMIF have to offer, in combination with existing transport protocols and formats.

Requirements for Fine Grain scalability were confirmed and a resolution was drafted stating that fulfilling it is urgently needed.

MPEG-4 V.2 Profiles

The Requirements group is thankful to the companies who have responded to the request to state support for Object Types and Profiles under definition.

Main Plus

m44 25 Support for Main-Plus Profile - Andre Kaup

Main+ would include improvements in quality and in error resilience, as planned:

- Gray scale + data partitioning & reversible VLC's
- Ditto for interlaced.

Requirements group thinks the functionality is useful, but expects assurance about whether these combinations will indeed be supported. Currently there exists no plan for checking whether the combinations are indeed supported.

m4494 Support of Main-Plus Profile and Object Type - Seishi Takamura (NTT)

m4531 Statement of support for Main Plus Profile - Yoshinori Suzuki, Yuichiro Nakaya

Both contributions expressed support for the Main-plus Profile, including application descriptions. Neither presenter had strong opinions on whether the sprite tool should be present. It was not needed, but its eventual presence in the profile would be no problem.

m4605 Request of Scalable Wavelet Texture for Main-Plus profile - Iraj Sodagar et. al.

Support was expressed for the presence of the scalable wavelet texture in Main-plus. Backward-compatibility was one of the reasons. In the discussion that followed, these considerations were voiced:

- the tool is not error-resilient
- backward compatibility is not so important; it is 'nice to have' but will not be pursued at all cost. Decoders may still implement both profiles if they wish. It was mentioned that currently there are no known implementations or plans for implementations of Main, but this does not mean that none exist.

Discussion on sprites in Main-plus

Several proponents of the Main-plus object type object to the presence of sprites. The presence of the sprite requires extra memory and so it comes at a cost. This is also the official position from ISG expressed in previous meetings. Also divisions per pixel are required (a personal comment from an ISG member). A problem is that conformance can currently not be specified. Work on this is ongoing. The group decided to remove the sprite from main-plus object type under definition.

m4573 Proposed test conditions for Main-plus profile evaluation tests - Sven Bauer, et.al.

Subjective testing is required to demonstrate that the Object Type and corresponding Profile indeed perform significantly better than Main Object Type and Profile. The group was pleased with this contribution, which proposes formal subjective tests for the new Profile.

There is a desire to have a better name for Main-plus. Resolution 3.1.11 asks for one.

Advance Real-Time Simple (ARTS)

m4484 Request of Advanced Real-Time Simple Object Type - Hideaki Kimata

m4461 Support for Advanced Real Time Simple Profile - Eishi Morimatsu

m4502 Support for Proposed Advanced Real Time Simple Profile - Shigeru Fukunaga

Support was expressed for this object type and profile, which would perform better in services that entail real-time encoding, notably in lossy environments. (Tools are as in Simple Object, plus Newpred plus DRC) The object type (and the envisaged services) assume the existence of a backchannel, and provide improved quality and functionality when it is present. Subjective testing is asked to determine if this indeed results in visible improvements.

m4450 A proposal of establishing new scalable texture profile - Iole Moccagatta et. al.

The profile only contains still texture objects, but the applications are apparently different and need moving video as well.

There seem to be some plans for deployment of still-only profiles; it was discussed that in principle it is undesirable that MPEG define still picture-only profiles, considering MPEG's mandate.

m4575 Error Resilience for MPEG-4 Still Texture- application areas - I. Moccagatta, H. Chen
The contribution shows the need for error resilient coding, also in texture coding.

m4451 An application area of new profile including Wavelet Tiling - Norio Ito

A discussion on wavelet profiles. resulted from this and the previous contributions. Again it was explained that the Visual Profiles in MPEG-4 should contain **all** the object types in the scene, and that profiles cannot be combined to some sort of 'Super Profiles'. This means that companies that intend to use the still picture object will need to think of all the object they intend to use, and to propose the appropriate profiles for them, according to the procedure agreed at the last meeting. The definition of the advanced scalable texture object type seems logical, but the group did not want to include in the Visual Version 2 CD yet, although because we anticipate its usage in future profiles, no such profiles have been defined or even proposed yet.

Which profiles are implemented?

The discussion revealed further that it would be desirable to know which profiles will be implemented in products. The group adopted a resolution (3.1.8) to ask companies to bring this information to MPEG. No (possibly confidential) details are expected, just information about which profile is planned to be used.

No new Object Types and Profiles in Visual CD

Currently, no basis exists to include new Object Types and Profiles in the Visual CD for version 2. Subjective testing will have to be performed. This means that NB comments will be required to include them at FCD stage.

m4543 Support for Simple High Scalable (visual) profile - Bertrand THEBAULT

The contribution contained interesting ideas on how many levels of scalability can be accommodated. The conclusion was that the functionality is urgently needed, while the ideas in the contribution were not yet ripe for standardization. The recommendation of the group was that the proponent(s) sit together with the people working on Fine Grain Scalability, and propose profiles jointly.

High Quality Requirements

m4455 A proposal of establishing Studio Profile - Yoichi Yagasaki

m4482 The requirement for MPEG4 studio profile, and the draft of video verification model for studio profile - Osamu Sunohara, Yoichi Yagasaki

High Quality Requirements were once again confirmed. A resolution (3.1.9) was adopted asking people to take part in the work and to check the requirements: *The Requirements Group recommends that work on utilizing MPEG-4 in the Studio be progressed, as requirements and application environments have been well established. The Requirements Group asks companies, that were not involved so far but have an interest in this work to state their support, take part in the work, and to help refining the requirements and defining the necessary profiles.*

The profiles under consideration can be found in document N2726, which now contains profiles for version 2 but also beyond.

Fine Grain Scalability

m4471 FGS support - French National Body

m4426 Fine Granular SNR Scalability: target applications - Brigitte Schuster et. al.

An interesting contribution was presented to the Requirements Group, detailing further how FGS is useful in many environments.

The Requirements Group further agreed with the contribution from the French NB, asking for FGS to be supported in MPEG-4. It is now a matter of the Video group carrying out the work, and determining the time schedule. The Requirements Group did however adopt a resolution to encourage the work (3.1.5): *(The Requirements Group recommends) that work be progressed urgently on Fine Grain Scalability, considering that the functionality it provides is urgently needed for many applications.*

SNHC Profiling

A joint session was held with the SNHC group to discuss possible new profiles and levels including SNHC Visual Object types. The discussion was useful, and the SNHC group will now continue developing possible profiles based on the exchange of ideas. Next steps are:

- Define object types, possibly using tools already present in the MPEG-4 tool set;
 - See how they can be combined (possibly with other, already existing object types) into useful profiles (bearing in mind the rules for defining new profiles);
 - See what parameters could be used for Level definitions;
 - Come up with suggestions for numbers for these levels
- Then include the proposals in the document 'Profiles under development'.
→ Note that requests for Profiles should be made by companies that have deployment plans.

Private transport for Audio?

m4510 Request to standardize a normative MPEG-4/Audio Transport Stream Syntax - JNB

The problem posed in the contribution was split in two different issues:

1. Is MPEG-4 Systems simple enough for low complexity audio-only applications?
2. Is a normative transport specification needed for audio-only applications?

Ad 1. On the request of some NB's, special Systems Profiles ('Audio-only') have been created to tackle this problem. It cannot be signaled because there are no levels, but this can and will be solved.

Ad 2.

Existing transport mechanisms do not seem to be a good solution. (e.g. MPEG-4 over MPEG-2 is not a good option). It was a deliberate choice of MPEG not to define transport mechanisms, but there may be a good reason for doing so after all. However, at this moment this problem is not yet well-understood, therefore the audio group will set-up a task force and discuss it with the systems group.

MPEG-7

Mike Vetter, Philippe Salembier, Ed Hartley and his team, the team leaders and the deputies, and all the evaluators were thanked for working hard on bringing the formidable task of evaluating the MPEG-7 proposals, leading to an extremely useful evaluation result. This massive amount of work has led to a very good starting position for the development of the standard.

General

A good start was made with work on MPEG-7, in spite of some (anticipated) confusion about 'what goes where?'. Much of the MPEG-7 work has moved to the other groups in MPEG, notably Audio, Video, and Systems. eXperimentation Model issues now reside in Implementation Studies. Some work still remains in Requirements:

- the 'usual' requirements work
- the DDL

- the things that do not fit naturally in the current MPEG structure.

The work division is not yet satisfactory, for the following reasons:

- some elements of the work deserve a place of their own (e.g. DDL)
- there are large potential overlaps between the groups, notably in the area of the more complex DSs.
- there are many links between different parts of the work (DSs ↔ DDL, DDL ↔ Systems, etc.)
- there is no natural home for some elements, such as multimodal DSs, or ‘generic’ Ds

In fact, there was quite a bit of concern that efforts would be duplicated or that even conflicting efforts could result. Therefore, the current organization was not considered optimal, and further thought is needed on finding a good way of dealing with all the issues.

Requirements

m4522 MPEG-7 Requirements Document V.8 - Frank Nack

m4524 Report of the Ad Hoc Group on MPEG-7 Requirements - Frank Nack, Jane Hunter

m4549 Contribution to MPEG-7 Requirements Document - Rob Koenen

A new version of the requirements document was produced (N2727), based on work in the AHG. This new version is already in a much better shape than the previous version. Fernando Pereira volunteered to be the editor of this important document (once again, since he had already fulfilled this role in the past).

m4523 MPEG-7 Context and Objectives V.11 - Frank Nack

The new version was accepted (N2729), and synchronized with the Requirements Document. The conclusion was also that we needed to explain, in this document, not only the context and objectives, but also the technical roadmap, so that one document can serve as an introduction to the whole of MPEG-7. Hence its new name: Context, Objectives and Technical Roadmap.

m4432 Requirements for Multiple Region Parametric Object Motion Description - A. M.Tekalp

The contributors feel that (global) motion is an important descriptor, but that the Requirements Document does not make this clear enough. The Requirements Group agreed, and the necessary clauses were added to the requirements document.

m4433 MPEG-7 Application- Universal Access Through Content Repurposing and Media Conversion - Charilaos Christopoulos et. al.

The document described many different clients/devices with different capabilities. The authors explained that the application of the descriptions in their case is not similarity, but repurposing of content. Input to the applications document will be provided to editor Adam Lindsay Adam. Requirements will be provided to Fernando Pereira.

m4555 A proposal for MPEG-7 metadata categories - Jose M. Martinez

It was argued that a taxonomy of the metadata categories is necessary in MPEG-7. The group agreed, and Jose Martinez volunteered to work on such a taxonomy between the meetings, in the context of the MPEG-7 requirements AHQ

m4601 MPEG-7 Requirements for description of users - P. van Beek, R. Qian, I. Sezan

The contribution proposes a user DS. Earlier, there was a recommendation was to bring requirements for the description of user preferences. This is the purpose of the contribution. The idea is to let user DSs talk same language as Content DS. The prototypical example was a smart card that you can take to another TV set, which would then know your preferences. There was considerable discussion, and three types of objections were raised:

1. “it’s out of the scope of the standard” - could be separate industrial standard
2. “don’t like labeling” - ethical objections to the standardized description of users.
3. “impossible to keep preferences within audiovisual realm” - the example of ‘address’ was already mentioned by the authors.

Originators of content should have rich set of ways to express target audience, but this probably does not require standardized preferences. A resolution was drafted asking NBs their opinion (3.1.12)

M4424 Some views of MPEG-7 applications and requirements relate to content IP etc. - Itaru Kaneko

The document summarized various requirement relates to the protection of content in case of MPEG-7 as well as new issues, e.g. privacy. The MPEG-4 IPMP task group chair mentioned that the MPEG-4 IPMP scheme may be applicable to support those requirements.

m4485 Requirements for an activity feature and descriptor in MPEG-7 - D.Manoranjan, et. al.

m4586 The TOCAI DS for Audio-visual Documents. Structure and Concepts - Riccardo Leonardi, Nicola Adami, Pierangelo Migliorati, Lorenzo Rossi

m4491: The arrangement of visual descriptors by the difference the level - Shuichi Watanabe
The presentations were heard. They had no direct consequences on the requirements.

DDL

A separate group working on the DDL met for almost the entire week, working very hard on, starting from the Lancaster recommendations. They produced the version 0.01 of the DDL. Unfortunately, the group was alarmingly small., and almost nobody from the original proposers or the Lancaster evaluation team was present in Seoul. This situation needs to change, and we hope it will indeed at the next meeting, because the basis for a good DDL seems questionable this way.

Description Schemes and related issues.

Work on description schemes was scattered throughout the Audio, Video and Requirements groups. Although for some types of description schemes the ‘home’ is clear, there was some confusion for a considerable amount of the work. In fact, it was very hard to get an overview of what DS work is going on where, and whether all the Lancaster recommendations are covered at all. For this reason, one single AHG was created that addresses ALL DS issues, with the following mandates:

1. To make a single overview of all Description Schemes under consideration, and how they relate to one another;
2. To see how all recommendations from Lancaster are addressed in ongoing work, and to initiate new activities if necessary;
3. To recommend how the work on DSs and generic descriptors can be carried out during and between MPEG meetings, and suggest a division into subtasks;
4. To start identifying generic MPEG-7 elements from the proposals
5. To make an overview of existing practices in archives, broadcast, rights management, etc., and to assess implications for MPEG-7 work;
6. To further the development of DSs in MPEG-7.

Mike Vetter kindly agreed to chair this very important AHG, Adam Lindsay and Philippe Salembier co chair the group for mandates 1 and 2, Werner Kriechbaum does the same for mandate 4, and Tracy Ormrod agreed to take on mandate number 5.

One of the results should be a recommendation on the organization of the work.

During the meeting, a break-out group looked at DSs that are not strictly Visual nor Audio, and at generic Descriptors. The group produced the DS document v. 0.01, a very drafty version indeed. The important message, however, is that DSs in MPEG-7 need to be developed as a consistent set, and should be kept together.

Organization of the Standard

The group discussed the organization of the MPEG-7 Standard into sub parts. The discussion started from the following proposal:

1. MPEG-7 Audio Descriptors
2. MPEG-7 Visual Descriptors
3. MPEG-7 Description Schemes
4. MPEG-7 Description Definition Language
5. MPEG-7 Systems
6. MPEG-7 Reference Software
7. MPEG-7 Conformance

The problem was raised of where to put descriptors that are neither Audio nor Visual. After some more discussion, in which it was again stressed that the coherence in MPEG-7 will be very important but also more difficult to achieve than in MPEG-4, it was concluded that there could better be only one part for Descriptors. This gives the following:

1. MPEG-7 Descriptors
2. MPEG-7 Description Schemes
3. MPEG-7 Description Definition Language
4. MPEG-7 Systems
5. MPEG-7 Reference Software
6. MPEG-7 Conformance

This must be considered as an initial proposal, to be further discussed.

Liaison issues

Having the right liaisons is considered crucial for the success of MPEG-7. A document (2757) was drafted that contains the existing and potential links and liaisons for MPEG-7. One of the most needed liaisons is that with the W3C, considering the decision that the DDL will start from XML.

m4551 Liaison from CEN/ISSS-IMM

The work in CEN was presented. The most useful elements for MPEG-7 are:

- The Classes, which could give input for description schemes.
- the taxonomy checklist.
- the Framework document, as general background reading.

The liaison with CEN was reconfirmed.

m4436 INDECS: A Standard for the Identification and Organisation IPR Data - Keith Hill

INDECS, which has developed a model for supporting automatic E-commerce, is doing some very interesting work to MPEG-7, and in return INDECS is interested in what MPEG-7 does. Much 'identification' is required in the INDECS view of the world. While we would like a liaison with INDECS, the project will end before a formal liaison will take effect. Rather, a longer term liaison with the International DOI Foundation is desired (DOI meaning Digital Object Identifier). Links with INDECS will be maintained by Keith Hill on a more informal basis.

They feel MPEG-7 should adopt a schema for managing right metadata. INDECS intends to make a submission to the July meeting, when their schema is stable.

In general, it is good to see interest from more rights people in the work of MPEG-7.

Other Contributions

m4466 BBC Standard Media Exchange Framework (SMEF) - Wes Curtis, Tracy Ormrod et. al.

SMEF is a standard within BBC that covers Radio, TV and on-line content, and a number of business processes: (Channel) strategy, Commissioning, Creation, Archiving, Play-out/transmit, Marketing, External acquisition. It was developed in a business-driven fashion, following workshops with all parts of the business. There are links to INDECS, SMPTE Metadata dictionary

(they have crossreference with this), EBU Metadata work. Currently, the BBC could not disclose the content of SMEF to MPEG. However, it seems that MPEG-7 could benefit from the work done in SMEF on the one hand, and that the BBC could benefit from having an international standard on the other. It is clear that MPEG would never even try to change SMEF, but - if allowed - SMEF elements could be adopted in MPEG-7. The BBC will seek permission internal to contribute a more detailed description of SMEF to MPEG.

Annex 5
DMIF group report

Source: Guido Franceschini

List of contributions presented in DMIF

General

Number	Source	Title
4369	Vahe Balabanian	DMIF December 1998 (Rome) Meeting Report

M4369: No comments, report approved

DMIF V2

Number	Source	Title
4396	Martin Wawra	DMIF Signalling with RPC
4468	Guido FRschini	Syntax proposal for the DMIF Application Interface
4507	Michael Stepping	DAI Syntax definition- several additions V1/V2
4508	Michael Stepping	DMIF Group and Broadcast Signalling- comments and DNI messages
4509	Michael Stepping	Monitoring DMIF

M4396: The usage of RPC for the carriage of DMIF Signaling messages was proposed. The advantages would consist in simpler implementation, relying on already existing software, available (and interoperable) between multiple platforms. The disadvantage would consist in the addition of a different signaling syntax, for no additional feature. Moreover, DMIF Signaling derives from DSM-CC U-N signaling, that also did not make use of RPCs (DAVIC choice). Further details on this topic are provided in a later section.

For the time being RPC is not being included in the DMIF V2 CD.

M4468: The C++ DAI Syntax as currently specified in DMIF WD5 is far from being acceptable. The proposal is to use as a starting point the IM1 syntax, which has been largely exercised and validated, and remove classes definitions which are not appropriate for a specifications (and that could be easily replaced in IM1 as well, in theory). The new C++ syntax will be inserted as informative Annex in DMIF V2. Also interest for a JAVA interface was shown, and is being included in DMIF V2. No other interfaces will be included (IDL).

M4507: This contribution highlights issues on the C++ DAI Syntax as currently specified in DMIF WD5, but the results of the discussion on M4468 solve the problems raised here.

M4508: The usage of “multicast” terminology in the modeling aspects should be substituted by a “group” terminology; the only incarnation currently applicable for the model would then be represented by the IP multicast technology, but this is not a sufficient reason to name the signaling model as “multicast” oriented.

M4509: New requirements for the monitoring of QoS performances are considered. A new syntax is proposed for the monitoring API. After some discussion some refinement to the current syntax to comply with the added requirements has been found.

ISO/IEC 13818-6 (DSM-CC)

Number	Date	Available	Group	Section	Source	Title
4389	99/02	19990223	MPEG-2	General?	US National Body	USNB Contribution – New Work Item: Amendment 2 to 13818-6

Number	Date	Available	Group	Section	Source	Title
4390	99/02	19990223	MPEG-2	General	US National Body	USNB Contribution – New Work Item-Corrigenda to 13818-6
4399	99/02	19990310	MPEG-2	DMIF	Regis J. Crinon	Proposal for Amendment 2 to ISO/IEC 13818-6 for DTV Data Broadcast Services and DTV Data Interactive Services
4400	99/02	19990302	All	General?	UK National Body, Guy Hirson (NDS Limited)	Objection to changes in ISO/IEC13818-6/FPDAM1
4401	99/02	19990305	MPEG-2	Systems	Tim Addington Scientific-Atlanta +1.770.903.5642	Request for corrigendum to ISO/IEC 13818-6
4434	99/03	19990310	MPEG-2	DMIF	Michael A. Dolan	Getting Download Protocol Parameters in the Non-Flow Controlled Scenario
4467	99/03	19990305	MPEG-2	DMIF	Project Editor-Pete Schirling	Study Text and Proposed text for 13818-6/AMD1

M4389, M4399: DSM-CC Amendment 2:

This amendment proposes the addition of 3 functionalities:

- PTS in Download Protocol, to allow synchronizing data contributions with the Audio Visual content
- more dsmcc resources added, essentially for ATSC use
- dsmccType assigned to SMPTE for Opportunistic data services

M4400, M4467: DSM-CC Amendment 1:

The UK NB (M4400) comments were considered, and one of the technical issues (sectionSyntaxIndicator) was solved by the study provided in M4467. The group felt that the other technical issue raised by the UK NB does not apply. However, an additional problem arose: the selection of the table_id. This value is not selected in the current text, and the more sensible proposal is to use value 0x3E (as in DVB) which is however currently reserved for Private use in DMS-CC. Decision is to stop the progress of amendment 1, and ask NB whether this choice would be acceptable.

M4390, M4401: DSM-CC Corrigendum 1:

A couple of problems have been discovered in DSM-CC. In one case (Continuous Feed Session), a simple addition (backward compatible) is proposed in the corrigendum, in order to effectively manage particular situations. In another case, an ambiguous semantic definition was discovered (StatusCount field) and fixed as appropriate (StatusCount now consistently counts the StatusBytes, no more Status Records).

M4434: This contribution describes a missing feature in the Non Flow Controlled Scenario of DSM-CC Download Protocol; however the experts say that a solution already exists, since the Flow Controlled Scenario with Window size = 0 degenerates to the Non Flow Controlled Scenario, and solves the exposed problem.

4onMobile

Number	Date	Available	Group	Section	Source	Title
4459	99/03	19990310	MPEG-4	DMIF	Hyun-Duk Cho, Yoo-Sok Saw, Hong-Sup Shin, and Chul-Heum Yon	Experiments of video communications via mobile networks supporting data re-transmission
4539	99/03	19990310	MPEG-4	Liaison	Jens Vollmer, Hirokazu Tanaka	Request for support of a delayed contribution to ITU-T SG16 concerning MPEG-4 codepoints for H.324
4620	99/03	19990310	MPEG-4	Liaison	ITU-T/SG16/Q11-Q14	Liaison to ISO/IEC JTC1 WG11 SC29

Number	Date	Available	Group	Section	Source	Title
						MPEG-4 concerning support for MPEG-4 System in H.324 and MPEG-4 Audio in H.245

M4459: This contribution has been presented at a joint meeting with Systems and Video, and showed the performances of recorded and live video communication over a real mobile network. The available bitrate was 14.4 Kb/s, one third of which was used for retransmission in order to reduce the overhead of error resilience tools in video, while preserving the effectively of the video quality. The net video bandwidth was therefore reduced to about 10 Kbit/s

M4539, 4620: The contribution M4539 has been reviewed, to make it fully compliant with the MPEG-4 Systems and DMIF architectures. Thorough remote communication with the authors, the changes have been agreed, and the text has been submitted as part of a liaison to ITU-T, in response to the ITU-T liaisons (M4620)

Other issues

DMIF URL registration

The work initiated by Vahe on the registration to ICANN of the DMIF URL has not been continued so far, since no volunteers have been found to deal with this topic. This topic will be re-proposed at the next meeting.

DMIF and DSM-CC U-N comparison

It has been noted that in the past MPEG only specified the message structure (DSM-CC U-N messages), while other bodies (DAVIC) selected the mechanism how to deliver those messages. DMIF as well defines the message structure of DMIF Signaling messages; however DMIF also specifies the “actual” delivery of such messages in the various cases. In doing this, DMIF also takes care of optimization in this delivery, by merging DMIF Signaling messages with native signaling messages whenever possible (e.g.: for ATM-Q.2931 in V1, and for H.245 for V2). The DMIF approach has been to separate the semantic information to be carried by the protocol from the actual syntax to be used, as well as from the transport protocol stack to deliver it. In DSM-CC U-N only the independence from the transport protocol stack was achieved. The DMIF approach has been to define a semantic interface (the DNI), whose mapping into the default syntax provides what in DSM-CC U-N was the “message structure”: this way, other mappings need not to maintain the same message structure (as in the case of ATM Q.2931 and H.245).

It is unclear what are the requirements on the bit/byte order specification. This issue has been raised in an e-mail prior the meeting, and again during the meeting at the time Amendment 2 to DSM-CC was edited: this amendment defines 4 new resource descriptors, also specifying their bit/byte order. Previous resource descriptors in DSM-CC U-N did not include this specification, nor did the DSM-CC U-N messages.

DMIF is also missing the bit/byte order specification: it is unclear whether this may affect interoperability.

DMIF V2 editing

Unfortunately, of the three appointed editors for DMIF V2, none has been able to attend the meeting. The group therefore assessed the candidate items for DMIF V2, and decided which ones were in a state to be approved as part of PDAM 1. Here is the list of candidate items, and the actions adopted with respect to each of them.

Support of H.324 terminals

Text has been edited for describing how to use MPEG-4 in H.324 terminals: the normative mapping of DNI messages to H.245 signaling has been specified, as well as an annex providing the detailed walk-through.

DMIF-to-non DMIF operation over heterogeneous networks

This item has not been introduced in PDAM1, since nobody in the group expressed an interest in implementing this part. The individuals and companies represented in Seoul are concentrating on simpler scenarios.

DMIF-to-DMIF operation over heterogeneous networks

This item has not been introduced in PDAM1, since nobody in the group expressed an interest in implementing this art. The individuals and companies represented in Seoul are concentrating on simpler scenarios.

Additional QoS metrics definitions

This item has been introduced in PDAM1, since it is the only base for the QoS Monitoring stuff. However, it needs a more solid theoretical background.

DMIF Multicast Signaling

Though doubts on the effectiveness and applicability of the DMS were raised, the group decided to insert this tool in PDAM1, since this could attract interest on this technology. The group felt that this tool is currently the only specified mechanism able to support the full flexibility of MPEG-4 Systems, in particular the addition/dropping of Elementary Streams during the life of a multicast session. It was suggested that the multicast IP technology be separated from the theoretical model of DMS, and to highlight this difference by making use of a “group” terminology in relation to the model in contrast to a “multicast” terminology related to the actual incarnation of the model.

DAI Syntax

It has been decided to make the DAI Syntax normative, since this is the only way to get the critical mass for the DMIF architectural concepts to be successful. In order to only define already tested and well-exercised syntax's, it has been decided to only specify the C++ Syntax, along the lines of the interface used in IM1. No full consensus was reached for the inclusion of Java Syntax, since no implementation exists so far. However a majority of the attendance expressed an interest in it, and the intention to provide an implementation by the next meeting. IDL descriptions have been instead not introduced in PDAM1, since nobody in the group expressed an interest in maintaining or using it.

QoS Monitoring addition to the DAI

This item has been reviewed and inserted in PDAM1.

Attendance List

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Systems group report

Source: Olivier Avaro

Overview

The main results of the MPEG meeting in Seoul from the Systems Sub-group perspective are:

1. MPEG-1 Systems: Initialization of a draft corrigendum on MPEG-1 Systems. This corrigendum is only editorial.
2. MPEG-2 Systems:
 1. FDAM 5 to 13818-1: Progression of the previous document (table entries for AAC).
 2. FPDAM 7 to 13818-1: Comments from National Bodies and contributions have been considered. All issues have been resolved and are documented in the Disposition of comment on PDAM 7 to 13818-1 and text for FPDAM 7 to 13818-1 (Carriage of MPEG-4 content on MPEG-2 transport). The text will be released within 7 days after the Seoul meeting to accommodate final text editing.
4. MPEG-4 Systems :
 1. MPEG-4 Version 1 Part 5: The completion of the Part 5 of MPEG-4 Version 1 has been postponed to July to provide better and more complete software. The OD framework needed to be restricted to become implementable and the mux code mode for FlexMux was missing. The OCR implementation will be part of the informative section of Part 5. The editors of the Systems part of MPEG-4 Version 1 Part 5 will release the FDIS by the July meeting. The document will be sent to the Part 5 editor and will be uploaded on the MPEG ftp site by 01/07.
 2. Working Draft of corrigendum for 14496-1 : The restrictions made to MPEG-4 Version 1 as well as corrections of identified bugs are documented in this working draft.
 3. MPEG-4 Version 2 Part 1 (ISO/IEC 14496-1/PDAM1): Text for Version 2 has been produced. It contains the specifications of advanced BIFS, MPEG-J, MP4 Format that have been implemented so far. The specification that are still under implementations are documented in the Version 2 Verification model. A template is provided to National Body so that their comments to PDAM1 can be taken into account more efficiently.
 4. Conformance : Very few comments have been received from the Nation Body on the conformance CD produce in Roma. This lead to minor improvements of this specification that should go to FCD in the next meeting in Vancouver. A Working Draft as been produced, as a very first starting point for Version 2 conformance.
 5. Implementation : A software implementation work plan, covering Version 1, Version 2 reference software as well as Im1 MPEG-4 integration and demonstration project has been produced. NIST made available to the MPEG community a repository for Im1 executable and bitstream in <http://mpeg4.nist.gov/IM1>.
5. MPEG-7 Systems : The activity was kicked off. Contributions posted to MPEG-7 Systems have been reviewed to the light of the Lancaster evaluation. These contributions addressed several issues that were dealt with also in other groups : proposal of Ds, DSs, DDL, XM. This made it difficult to make strong statements on these proposals during the meeting. Clarification of the MPEG-7 structure and the role of Systems in it needs to be clarified by July.

Detailed Report

Elementary Streams Management

The following contributions on ESM have been reviewed :

	V2 ESM	MPEG-4 V2 ESM
4378	Summary of Voting on ISO/IEC 13818-1/PDAM 7	MPEG-4 V2 ESM
4431	Implementation of Command Descriptor and CommandDescriptorNode	MPEG-4 V2 ESM
4439	Encapsulation of MPEG-4 Systems Elementary Streams over MPEG-2 Packetization and Synchronization Layers.	MPEG-4 V2 ESM
4446	An extension of OCI descriptor for SMPTE 315M	MPEG-4 V2 ESM
4463	Proposal for Uniquely Identifying Content	MPEG-4 V2 ESM
4469	Proposal for a normative ESI	MPEG-4 V2 ESM
4470	Application signaling based on URLs in Scene descriptions	MPEG-4 V2 ESM
4480	RTP format for efficient MPEG-4 video delivery	MPEG-4 V2 ESM
4510	Request to standardize a normative MPEG-4/Audio Transport Stream Syntax	MPEG-4 V2 ESM
4526	STD model for ISO/IEC 14496-1 data stream	MPEG-4 V2 ESM
4532	MPEG-4 TTSI upstream channel for stream control and decoding buffer management	MPEG-4 V2 ESM
4539	Request for support of a delayed contribution to ITU-T SG16 concerning MPEG-4 code points for H.324	MPEG-4 V2 ESM
4566	"Generic" multiplex considerations	MPEG-4 V2 ESM
4578	Unique Identification of Content in Object Content Information	MPEG-4 V2 ESM

The main focus of the activity has been to complete, jointly with DMIF, the mapping of MPEG-4 content on the most important transport protocols : MPEG-4 File Format (MPEG-4 Version 2 MP4) MPEG-4 Over IP (proposal for an Internet RFC) MPEG-4 Over MPEG-2 (Amendment to MPEG-2). The MPEG-4 over IP specification is probably the less advanced of these three specification. A phone meeting with IETF was held during the Seoul meeting and is planned for April.

Besides these mainstream activities the following points have been addressed:

A specification for application signaling and its integration with the BIFS framework has been produced, based on two initial contributions.

Extension of OCI have been accepted in order to include SMPTE descriptors. Comments from NB are expected in order to decide how much of these descriptors will be included in the MPEG-4 specification.

Extensions of OCI have been accepted in order to allow unique identification of content.

Scene Description

The following contributions on BIFS have been reviewed :

	BIFS	MPEG-4 V2 BIFS
4410	BIFS scene protection test result and problems	MPEG-4 V2 BIFS
4449	Refinements in the Perceptual Approach for the Environmental Spatialization of Audio	MPEG-4 V2 BIFS
4544	Applications needing MPEG-4 BIFS Chromakey functionality, and their Requirements	MPEG-4 V2 BIFS
4547	Proposal for Application Texture Requirement	MPEG-4 V2 BIFS
4579	Requirement for Visual Effects in Advanced BIFS	MPEG-4 V2 BIFS
4590	Update to Advanced AudioBIFS; Physical approach	MPEG-4 V2 BIFS
4619	Report on the Web 3D Consortium Liaison	MPEG-4 V2 BIFS

Pending issues on Version 1 have been clarified :

- The name space problem for Animation streams has been fixed in the Corrigendum,
- The timing issues in BIFS have been clarified in a FAQ.

The Version 2 BIFS specification made progress. More specifically :

- Integration between BIFS and SNHC Version 2 Tools,
- Further progress on advanced Audio BIFS,
- The Chroma Key node has been included in the MPEG-4 Systems Version 2 specification (N2739). This node requires expansion of the Systems profile table “BIFS nodes for visual objects”. Contributions from NB to expand such table are kindly requested.
- After clarification of timing issues in BIFS, Media Time Sensor appeared not to be needed in Version 2.
- The integration of the up channel design and BIFS has been clarified.
- Requirements for Application Texture have been accepted and a preliminary specification produced.

Finally, the following points should be noted :

- After the Paderborn VRML meeting, a project to align MPEG-4 and VRML’97 specification has been defined. This project would require at a minimum the support from MPEG to the W3D for the production of an amendment to VRML’97. This project could be extended to the merging and re-editing of the two specifications at the time MPEG-4 Version 2 is released. This last project requires editorial support from NBs.
- Julien Signes has been formally appointed as a liaison between VRML and MPEG.

MPEG-J

The following contributions on MPEG-J have been reviewed :

	V2 MPEG-J	MPEG-4 V2 MPEG-J
4588	Text for MPEG-J VM/WD	MPEG-4 V2 MPEG-J
4589	MPEG-J: Outstanding Issues and Implementation Status of Sun/Columbia	MPEG-4 V2 MPEG-J

The discussion with representative from Sun Microsystems Inc. has been recorded (N2744). MPEG members expressed concerns about the lack of openness of the conformance testing procedure regarding Sun Java packages that are referenced to by MPEG-J

Im1

The following contributions have been reviewed :

	Im1 Soft	MPEG-4 Im1
4372	Version notes for IM1 Core code and Tools release 2.0	MPEG-4 Im1
4382	Agenda and Logistics for the February IM1 AHG Meeting	MPEG-4 Im1
4409	Watermarking in IM1 platform	MPEG-4 Im1
4412	Description of BIFS 2D test sequences	MPEG-4 Im1
4460	IM-1 2D FDIS player	MPEG-4 Im1
4528	Status on the provision of an Telenor IM1 Audio plug-in	MPEG-4 Im1
4561	PactPlayer 2.06 Release Notes	MPEG-4 Im1
4562	PactPlayer 2.06	MPEG-4 Im1
4563	PactPlayer 2.06 TestCode	MPEG-4 Im1
4597	IM1 Core code + authoring tools version 2.5	MPEG-4 Im1
4598	BIFS/OD Encoder version 2.5	MPEG-4 Im1
4599	TRIF multiplexer version 2.5	MPEG-4 Im1
4615	Player3d implementation status	MPEG-4 Im1

The usual documents on Im1 status and implementation work plan have been produced. The following rules have been adopted for the adoption of technology in the Systems standard:

1. VM contains documented specifications with commitment for implementation.
2. Adoption of the technology in the CD requires implemented and tested technology with source code donated according to the MPEG policy.
3. Adoption of the technology in the FCD requires technology implemented and exercised in Im1.

The following demonstrations have been produced :

	Im1 Demonstration	MPEG-4 Im1/Demo
4404	IPMP Test Results	MPEG-4 Im1/Demo
4409	Watermarking in IM1 platform	MPEG-4 Im1/Demo
4410	BIFS scene protection test result and problems	MPEG-4 Im1/Demo
4449	Audio BIFS	MPEG-4 Im1/Demo
4462	IMAS - An Initial MPEG-4 Authoring System	MPEG-4 Im1/Demo
4487	MDS BIFS editor: FDIS update and Web site information package	MPEG-4 Im1/Demo
4594	Streaming of MPEG-4 using a "HotMedia" based format as the TransMux	MPEG-4 Im1/Demo

The importance of Im1 demonstrations have been reassessed, notably when the standard just defines interfaces with non-standardized systems like IPMP. These investigations should be pursued for further validation of the standard in the various environments that will be encountered by the MPEG-4 technology.

MPEG-7

The following contributions have been reviewed :

4546	Input for MPEG-7 Systems work	MPEG-7 DDL
4474	Multiple Version Management for the Systems Tools	MPEG-7 Ds and DSs

No further action points have been taken more than the one reported in the overview section of this document.

Next Targets

MPEG-4 Version 1

1. Delivery of Part 5.
2. Conformance and bitstream exchange.
3. Further validation of the standard and demonstrations.

MPEG-4 Version 2

1. Integration and editorial harmonization of the specification.
2. Software integration.
3. Profile and Levels definition.

*Annex 7***Video group report****Source: Thomas Sikora (Chairman MPEG Video Group)**

The video group addressed in its meeting issues related to MPEG-4 (Version 1 and Version 2), MPEG-7 and MPEG-2.

MPEG-2**Interlace Video on Progressive Displays**

At the meeting the display of interlace video on progressive displays was discussed. The problem arises in existing decoders which are not in the position to identify the source format in the bitstream. A possible amendment was discussed for MPEG-2 Video and an AdHoc was established to discuss the issue.

MPEG-4 (Version 1)**FDIS**

The video group evaluated comments issued on the FDIS draft of MPEG-4 and discussed possible revisions. Based on the outcome of the discussions and taking into account a number of minor technical problems found in the FDIS a corrigendum draft document was issued. As a major item the video group identified shortcomings in the definition of complexity bounds for video decoders. The corrigendum document was revised accordingly.

Software Integration and Verification

A schedule for continuing software integration and verification was developed. A detailed plan for testing combination of tools was issue.

Verification Tests

The results of the “Content-Based” verification tests were reviewed. The results demonstrated an excellent performance of the object-based MPEG-4 standard in comparison to the standard rectangular frame coding approach. As the basic outcome it is evident that it is possible to provide the object-based MPEG-4 functionalities with the same quality and compression efficiency than with the standard frame-based MPEG-4 coding.

Further verification tests are under preparation for extended Temporal Scalability and Coding Efficiency functionalities targeted for July 1999.

Conformance

Good progress was made for the specification of conformance of MPEG-4 video coding systems. The discussions in the video group identified that MPEG-4 video conformance could be defined in a similar way as specified for MPEG-2. The official software will introduce a new way of measuring conformance against a benchmark. Conformance points for MPEG-4 video were identified and bitstreams defined. A study on the MPEG-4 CD was released.

MPEG-4 (Version 2)

Tools to be supported

In order to finalize conclusions on the tools to be supported by Version 2 the Profiles under discussion were mapped to the tools currently under investigation in the video group. It became clear that the BBM tool was not supported in any Profile discussed for Version 2 and could thus not be considered further for Version 2. The tools that will enhance the coding efficiency of Version 1 in version 2 are:

MAIN+ Profile

- GMC
- ¼ pel MC
- SADCT

Advanced Low Delay Simple Profile

- Dynamic Resolution Conversion
- Newpred (Error Resilience)

The efficiency of these tools will be evaluated in the context of the specifications of the envisioned Profiles between the Seoul and Vancouver meeting in format subjective tests. Test results will be available prior to the Vancouver meeting. National Bodies are requested to comment on the performance of the Profiles.

Additional tools agreed to be supported by version 2 are listed below. These tools provide new functionalities compared to version 1:

- Object Spatial Scalability (Scalability)
- Multiple Alpha Channel Coding (Various)
- Error Resilience for Still Texture Coding (Error Resilience)
- Scalable Arbitrary Shape for Texture Coding (Scalability)
- Wavelet Tiling (Still Texture)

Output documents

A PDAM for Version 2 and a study on Syntax Extension for Tools for Version 2 were released.

Software integration and bitstream verification

No progress regarding software integration for Version 2 tools is foreseen.

MPEG-4 (Further)Normative composition

The video group identified the need to specify normative composition of video objects. An AdHoc group was established to discuss possible solutions for version 2. As a result good technology for feathering and composition was identified at the meeting. It is planned to arrive at clear specifications at the Vancouver meeting.

Implicit Coding of Shape

The video group evaluated the performance of chromakey shape coding proposed for implicit shape coding. Good performance of the tool for medium quality shape extraction was demonstrated. Video group proposed the inclusion of the tool in the Systems specification of Version 2.

Advanced Layered Coding

Subjective evaluation of ALC proposal compared to MPEG-4 Spatial Scalability suggest that MPEG-4 performed similar to the basic approach of ALC. Although it could be

worthwhile to also investigate some other components and aspects of the ALC approach, a decision was taken to not pursue any further comparisons on this subject, since the expected improvement is likely to be minor.

Fine Granularity Scalability

Various partners expressed the desire to explore the MPEG-4 video system for internet video applications using fine granularity scalability approaches. It was agreed that a fine granularity scalability system should be compatible to MPEG-4 Version 1 at the base layer. The results showed promising performance. More experimentation will be required to understand the trade-off between the number of levels and the overhead associated with the proposals. However, at the Vancouver meeting WD status is expected and PDAM in December 1999 or earlier.

Studio Applications

The need to provide MPEG-4 solutions for very high quality applications was expressed by a number of MPEG member companies. This would request the MPEG-4 video coding system to be extended to 4:2:2 and 4:4:4 formats with possible extension of the toolkit (scalability).

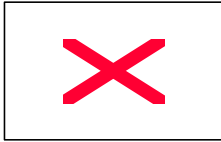
Results presented illustrated good performance also for transcoding MPEG-2 to MPEG-4. Further experimentation will be required to clarify the performance of MPEG-4 video at very high bit rates. PDAM is targeted for October 1999.

MPEG-7

MPEG-7 was one of the major activities in MPEG video. Results of the MPEG-7 Lancaster evaluation of proposals were reviewed and discussed in the video group. Very intensive work started on MPEG-7 descriptors and inclusion of first tools into the MPEG-7 XM version 1. As a result first descriptors for

- Color (Color Histogram Quantizer, Color Space Descriptor, Dominant Color Descriptor)
- Layout Structure (MxN grid)
- Motion (Global Motion, Object Trajectory)
- Scale/Shape of Objects (Bounding Box Descriptor)

were accepted for the XM.



Annex 8

Audio group report

Source: S. Quackenbush, **Chair** **Audio Subgroup**

Opening of the meeting

The MPEG/Audio Subgroup meeting was held during the 47th meeting of WG11 in Seoul, KR, March 15 through 19, 1999. The list of participants is given in Annex A-1. The Chair welcomed the delegates to the meeting and outlined the work for the five days.

Administrative matters

Approval of agenda

The agenda as presented in Annex A-II was discussed, edited and approved.

Rome meeting report

The Audio Subgroup Rome meeting report, December 1998, had been previously distributed by email and was approved.

Allocation of contributions

All contributions were listed (see Annex A-VI) and allocated to the agenda and were discussed in either the Task Groups or in Audio plenary. The Chair brought several relevant documents from Test, Systems, and Requirements to the attention of the group.

Communications from the Chair

The Chair summarised the detailed allocations and questions raised at the Chair's meeting held on the evening before the main meeting started.

Joint meetings

Joint meetings over the course of the week are listed here and are reported on below.

Topic	Subgroups
Audio BIFS	Audio and ISG at Systems
MPEG-4 Normative Audio transport	Requirements at Audio
MPEG-4 Normative composition levels	ISG at Audio
MPEG-4 Normative Audio transport	Systems and DMIF at Audio
MPEG-7 XM	ISG at Audio

Received National Body Comments and Liaison matters

Documents M4376, Comments to Summary of Voting on ISO/IEC 13818-1/FPDAM 6, and M4374, Comments to Summary of Voting on ISO/IEC 13818-4/PDAM 3, were presented by the Chair. Since these are comments associated with ballot items, the responses will be dealt with in the associated DoC, as indicated below.

Document M4394, USNB Contribution on 13818-4 Test Bitstreams, (AAC syntax with extension) was presented by the Chair. This new bitstream and associated description will be added to the Audio part of 13818-4, Conformance. A response was drafted for Liaison.

Document M4506, Comments on MPEG-4 Audio version 1 Reference Software and Conformance CD, was presented by Mr. Inoue. It was agreed that the action to take was to incorporate changes indicated in input documents M4504 and M4505 into the MPEG-4 Version 1 Conformance document and changes indicated in document M4503 into the MPEG-4 Reference Software. A response was drafted for Liaison.

Documents M4510, Request to standardise a normative MPEG-4 Audio Transport Stream Syntax, and M4620, Liaison to ISO/IEC JTC1 WG11 SC29 MPEG-4 concerning support for MPEG-4 System in H.324 and MPEG-4 Audio in H.245, were presented by Mr. Iwidare. There was some discussion, were it was agreed that this is an important topic. This topic was addressed in two joint meetings, one with Requirements and another with Systems and DMIF, as discussed below. On this topic, Mr. Nomura presented document M4535, A Proposal for the MPEG-4 Audio Capability Description for ITU-T H.23x Terminals. The document discussed the capabilities of H.23x terminals. Such terminals can exchange a “capability identifier” between H.23x and MPEG-4 Audio, which has such fields as capability class, capability value, maximum bit rate, etc. H.23x terminals support MPEG-4 through a generic code point. ITU might also give MPEG-4 its own code point. The proposal made the case that such codepoint interfaces would best use a synchronizing protocol such as MPEG-4 MATS, which informative in Version 1. This issue should be studied for Version 2.

Documents M4379, Liaison Response from MMA (SC 29 N 2921), and M4381, Liaison Response from ITU-T SG 12 on MPEG-4 Audio Test Results (SC 29 N 2931), were presented. Karlheinz Brandenburg will draft responses.

Document M4395, IEC NP: Interfaces for non-linear PCM encoded audio bitstreams applying IEC 60958. Part 2: Non-linear PCM bitstreams according to the DTS format(s)(SC29N2953) was presented. Although this input was interesting, it was concluded that this was actually misdirected to the Audio subgroup. It was decided to make no response.

Document M4370, ISO/CD 15707, ISWC - Part 1: Musical works was not reviewed due to lack of a PDF viewer.

Task group activities

To accomplish the large number of tasks to be performed by the Audio Subgroup, 11 task groups were formed as indicated in Annex A-V. The results of each of the task groups were presented to and discussed by the entire Audio Subgroup, including iterations as necessary. The conclusions of the task groups are presented elsewhere in this report and are included in the output documents.

Amendment to MPEG-2 Conformance, 13818-4 AMD3 (FPDAM Mar 99)

This was dealt with under National Body comments above, specifically input document M4374. The DoC and the text are presented in documents WG11/N2657 and N2658.

Amendment to MPEG-2 Systems, 13818-1 AMD6 (FDAM Mar 99)

This MPEG-2 item was allocated to the task group dealing with the other MPEG-2 amendment. It was dealt with under National Body comments above, specifically input document M4376. The USNB comment was not adopted verbatim, but was slightly changed to both correct a misstatement concerning calculation of the decoder buffer size and to change the number of channels in the buffer model memory allocation table from “3 to 7” to “3 to 8.” This would allow the important 7 channel surround application to be Main profile with an independent coupling channel for a total of 8 channels in the decoder buffer model. The DoC and the text are presented in documents WG11/N2655 and N2656.

MPEG-4 Conformance CD (FCD Jul 99)

Mr. Inoue presented documents M4504, Alternative procedure to test HVXC decoder conformance without control interface, and M4505, Proposed Revision of HVXC part in MPEG-4 Audio

Conformance CD. This new text was incorporated into document N2669, Study on Audio part MPEG-4 Conformance CD.

MPEG-4 Reference Software FDIS (Jul 99)

Mr. Purnhagen presented document N4556. This plan was summarized in document N2668 Workplan for the audio part of ISO/IEC 14496-5 MPEG-4 Reference Software. In this plan the natural audio codecs would have a merging phase, test period, bug fixes, and final verification. Young-Moo Kim will edit the Structured Audio software to bring it into compliance with the FDIS.

MPEG-4 Audio/Systems Issues

Mr. Park presented document M4528, Status on the provision of Telenor IM1 Audio plug-in. He proposed that this code be merged into the MPEG-4 Version 2 VM.

MPEG-4 Profiles and levels

Martin Dietz summarized the recommendations for version 2 profiles from the version 2 technical issues task group. Proposed version 2 profiles are:

Low delay audio profile This would include the HVXC, CELP and AAC Low Delay coders. Silence detection compression could be included if it is adopted. Applications for this profile are two way communications with either speech or audio bandwidths.

Scalable Internet audio profile This would include the version 1 Scalable profile coders plus BSAC and HILN. Applications for this profile are Internet radio with small step granularity, karaoke systems over the Internet (e.g. a music contest that requires traffic monitoring), and audio browsing at faster than real-time speeds using the time-scale modification feature of HILN

MainPlus Profile This would include all version 1 Main profile tools plus all version 2 tools.

The Error Resilience tool can be used on top of all other profiles, but it was concluded that doubling the number of proposed profiles (to add error resilience) would result in too many version 2 profiles. The Chair observed that since Main profile typically has all tools, a “Main without Error Resilience” doesn’t make much sense. Furthermore, since the Internet typically uses TCP/IP which is already an error protection transport, adding Error Resilience does not make much sense. Therefore it was concluded to have these additional profiles:

Low delay audio profile with error resilience

Version 1 Scaleable profile with error resilience

Version 1 Speech profile with error resilience

Mr. Dietz noted that the specific Error Protection tool of the Error Resilience tool set may present significant storage complexity in some applications. He suggested that there be a means to signal that the tool is or is not present in a MPEG-4 terminal that is of a profile including Error Resilience. After taking this issue to the Requirements Chair, Mr. Quackenbush reported that this was not feasible within the current concept of profiles. The way such intent is signaled is to have a new “No Error Protection” profile for every application in which it might be needed.

MPEG-4 Version 2 Technical Issues

Documents M4477, M4529, M4449, M4402, M4403, M4405, M4417, M4418, M4419, M4538, M4567, M4574, M4492, M4493, M4496, M4560, M4514, M4535 and M4590 were reviewed by this task group. The results of this task group were to recommend tools for inclusion in Version 2, as summarized in document N2673,

Martin Dietz summarized the recommendations of the version 2 technical issues task group. Issues raised were: should we include and use the new EP tool, and throw away the older EP tool? The new EP tool is approximately 5% more complex. How much is too much complexity? Can we verify the complexity measure? After some discussion, it was agreed conduct additional checks on the new EP tools and discuss this at the next meeting.

Young Kwon Lim presented document M4477, Report of AHS on MPEG-4 Backchannel. An upstream channel interface was defined in version 1 FCD but not included in FDIS because there was no implementation and no media using it. The recommendation of the AhG was to define a unified structure of MPEG-4 channel syntax and an efficient

framework. He also presented M4486, TTSI Upstream Channel. This outlined an application for which a backchannel is needed, such as program stream control (e.g play, pause, forward, backward) and decoder buffer management (e.g. to adapt the “push” scenario to story teller on demand applications, etc). In these scenarios the client needs to tell the server if its decoding buffer is full; if it is, it cannot consume any more content. In addition, the server needs to know the speed at which the client consumes the content.

MPEG-4 Version 2 Editing (PDAM Mar 99)

Sang-Wook Kim presented the draft text for the Version 2 CD (actually PDAM). This will be output document N2670, but this will have an editing period up until April 2. Prior to that date, the document will be posted on the mpegaudsg reflector for subgroup approval.

MPEG-4 Version 2 Conformance (WD Mar 99)

Ms. Hotani Mr. Mlasko lead the task group that produced document N2671, Contribution to MPEG-4 AMD1 Conformance WD. The Chair was very pleased that new faces came forward to lead this activity.

MPEG-4 Version 2 Reference Software WD (Oct 98)

Since the Version 1 and Version 2 software are a single integrated tree, it was agreed at the Thursday Chairs meeting that Version 2 software could also be delivered June 15.

Review of MPEG-4 version 2 Overview

The Chair assigned this as homework for the subgroup. No comments for revision were raised.

MPEG-7 Audio (15938 WD Dec 99)

Document M4558, Report of Ad Hoc Group on Audio activities in MPEG-7 was briefly presented. The audio recommendations of the Lancaster Ad-hoc group meeting (M4582) were presented. The results of evaluation teams D4, D5, D6 on audio descriptor results and recommendations were presented by Adam Lindsay, David Thom and Andy Collins, respectively. The results of evaluation team DS3 on descriptor schemes results and recommendations was presented by Adam Lindsay. Documents M4427 M4440 M4458 M4558 M4464 M4465 M4466 M4582 M4601 were presented to the MPEG- task group. The primary result of this task group’s efforts was document N2676, MPEG-7 Audio Core Experiment Methodology. This will guide the Audio subgroup’s first core experiments, and will be revised as experience dictates.

The Chair briefly presented document M4440, Information on the LaTeX Document Preparation System. The document was submitted with the thought that LaTeX might be a candidate for representation of all MPEG-7 documents. However remarks at the Sunday evening Chairs meeting indicate that Microsoft Word still enjoys wide support. Since information interchange between Word and LaTeX is not perfect, it seems that LaTeX will be unable to serve as a productive document representation system within WG11.

MPEG Audio FAQ/Web Page

Document M4609, MPEG Audio Web Page related questions and work items, was presented by Sang-Wook Kim.. He encourages MPEG audio members to subscribe and help to answer any questions

To be added to this reflector, send an e-mail to
 mpegaudio-request@tnt.uni-hannover.de
 with “subscribe” in the body of the mail.

Joint meetings

Audio and ISG at Systems on MPEG-4 Version 2 Audio BIFS

This meeting occurred, but the results were not reported back to audio plenary.

Requirements at Audio on MPEG-4 Normative Audio transport

Requirements suggested that Audio make a list of applications for which a self-contained audio transport is indicated. Applications mentioned were using MPEG-4 over PST, ISDN or satellite channels or carrying MPEG-4 over H.23x terminals using the Generic Codepoint.

ISG at Audio on MPEG-4 Normative composition levels

ISG requests that Table 4-2 in document N2590, Audio Profiles and Levels, be completed. We should consult Atlantic City input document M4110 for information on specifying levels for structured audio. ISG also pointed out that it is currently unclear how to insure synchronisation of decoded audio objects streams in composition.

Systems and DMIF at Audio on MPEG-4 Normative Audio transport

This was a very informative joint session in which experts from Systems were available to answer questions relating to audio transport. Mr. Iwidare begin the discussion by illustrating how a low-level synchronizing audio transport is needed for using MPEG-4 in H.23x terminals.

Jan Van Dermeer explained how MPEG-4 could be carried over MPEG-2. It was determined that if MPEG-4 audio did not have a synchronizing and framing protocol then the PES packets themselves would have to provide framing by carrying an integer number of MPEG-4 access units.. The PES packets can be of variable length, but an integer number must be loaded into the fixed-length (188-byte) Transport Packets resulting in an average loss of one-half of an MPEG-4 access unit. All agreed that this would not be efficient.

Other points raised were that a multiplexer function is needed for the scalable audio streams, but that multiplex is not an MPEG-4 system function. Dominique Curet shared some information about MPEG-4 FlexMux. If audio composition is required, as is the case with two audio objects that would be mixed, then MPEG-4 systems is required as it alone specifies audio composition. Carsten Herpel pointed out that if there are layers of transport (e.g. a synchronizing audio transport over MPEG-2 systems transport), then loss of synchronization at the systems level results in a re-synchronization delay equal to the delay of synchronizing both the systems layer and the audio layer. For a MATS header, there's about 20 bits per frame to give you packet length and synch word. This header is repeated for every frame (on the order of every 20 to 100 msec). If you use this, then you don't want to repeat this information elsewhere in another transport protocol (and generate synchronization in more than one level). It is the most efficient way (as opposed to MPEG-4 Systems) if you don't want object descriptors and if it is the only stream being sent. It would not work for audio compositing, or audio and video applications, but it would work for a simple application such as stereo music only. If you're using MPEG-4 Systems, the added overhead would be a minimum of approximately 15 bytes per frame.

ISG at Audio on MPEG-7 XM

Mark Buxton presented the architecture of the MPEG-7 XM. He indicated that all normative tools must be submitted in C++. XML is considered a data type inside the C++ domain, so XML can be used in a submission, however it was not that clear how this would work. All code submitted to the XM must make use of a unique identifier (UUID), which can be generated using the Microsoft UUIDGEN utility. It must also have the MPEG-7 copyright statement in each file. The Chair recommended to Mr. Buxton that perhaps ISG could put up a web site which would make these ID strings available.

ISG recommends JAVA be restricted to the user-interface components and non-normative tools
Send email to Mark.j.buxton@intel.com to get on the XM MPEG-7 adhoc group

Discussion of unallocated Contributions

All contributions had been assigned to specific agenda items.

Meeting deliverables

Press statement

The Chair prepared the Audio part of the press statement, which was approved.

Dispositions of Comments

The DoC matters are referred to above.

Responses to NB comments

Responses to the National Body comments were prepared and were approved.

Liaison statements

As reported above, these were prepared and approved.

Recommendations for final plenary

The Chair prepared the recommendations for approval at the final MPEG plenary meeting.

Establishment of new Ad-hoc Groups

The following ad-hoc groups were established:

Title	Chair	No.	Meeting
AHG on audio part of MPEG-4 Reference Software editing	Teichman, Purnhagen, Y-M. Kim	2679	No
AHG on Audio part of MPEG-4 Version 1 and Version 2 Conformance	Spille, Hotani	2680	No
AHG on MPEG-4 Audio Version 2 CD Editing and Software Progression	S-W. Kim, Purnhagen	2681	Sunday before Vancouver
AhG on MPEG-4 Version 2 Technical Matters	Dietz	2682	Sunday before Vancouver
AHG on MPEG-7 Audio Matters	Lindsay, Herre	2683	No
AHG on MPEG-4 Backchannel	Y. Lim, C. Herpel	2684	No

Approval of output documents

All output documents were presented to Audio plenary and were approved.

Future activities

Schedule of future meetings

The dates of the next MPEG meeting in Vancouver were confirmed. Dates for the ad-hoc group meetings had been previously discussed. All of the ad-hoc group meetings will occur on the Saturday or Sunday immediately preceding the MPEG meeting.

Agenda for next meeting

There was not sufficient time for the Chair to present the agenda for the MPEG Audio Subgroup meeting in July 12-16 at Vancouver, BC. However, the agenda is in Annex A-III of this report.

A.O.B.

There was none.

Closing of the meeting

The Chair thanked all in attendance for their hard work, especially those who led the task group activities. It was very

encouraging to see some new faces amongst that group. However he also noted that the Audio subgroup business progressed somewhat more slowly than it might have for lack of a subgroup secretary. The Chair did appoint a “secretary du jour” but the results lacked both consistency and the thorough documentation of people, discussion and conclusions that was previously provided by Mr. Meares. Therefore, the Chair threatened, pleaded and cajoled the members of the group to please consider taking on this important position. The meeting was closed at 13:55 hrs.

Annex A-I: Meeting Participants List

Name	First Name	Country	Affiliation	e-mail address
Aust	Andreas	DE	Thomson	Austa@thmulti.com
Brandenburg	Karlheinz	DE	FhG - IIS	bdg@iis.fhg.de
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Zhang	Tung	USA	Univ Southern Calif	tshang@sipi.usc.edu

Annex A-II: Agenda for the Seoul Audio Subgroup Meeting

1. Opening of the meeting
2. Administrative matters
 - 2.1. Approval of agenda
 - 2.2. Rome meeting report
 - 2.3. Allocation of contributions
 - 2.4. Communications from the Chair
 - 2.5. Joint meetings
 - 2.6. Received National Body Comments and Liaison matters 4370 4379 4381 4394 4395
4506 4510 4620
3. Task group activities
 - 3.1. MPEG-2 Conformance, 13818-4 /Amd 3 (FPDAM Mar 99) (4394)
 - 3.2. MPEG-4 Audio 14496-3 FDIS editing status 4556
 - 3.3. MPEG-4 Conformance 14496-4 (FCD Jul. 99) 4453 4504 4505 (4506)
 - 3.3.1. Audio
 - 3.3.2. Composition
 - 3.4. MPEG-4 Reference Software 14496-5 (FDIS Mar 99) 4435 (4506) (4556) 4503 4595
 - 3.4.1. Audio coder System interface
 - 3.4.2. Composition
 - 3.4.3.
 - 3.5. MPEG-4 Audio/Systems Issues
 - 3.5.1. IM1 Audio plug-in 4528
 - 3.5.2. Other
 - 3.6. MPEG-4 Profiles and levels
 - 3.6.1. Composition
 - 3.6.2. Version 2 Audio
 - 3.7. MPEG-4 Audio 14496-3 /Amd 1: Technical Issues
 - 3.7.1. Back channel 4477
 - 3.7.2. BSAC 4529
 - 3.7.3. Environmental spatialisation 4449S
 - 3.7.4. Error resilience 4402 4403 4405 4417 4418
4419 4538 4567 4574
 - 3.7.5. HILN 4492 4493 4496
 - 3.7.6. Low delay 4560
 - 3.7.7. Other 4514 4535 4590S
 - 3.8. MPEG-4 Audio 14496-3 /Amd 1:Editing Group (PDAM Mar 99) 4606 4408
 - 3.9. MPEG-4 Reference Software 14496-5 /Amd 1 (PDAM Mar 99)
 - 3.10. MPEG-4 Conformance 14496-4 /Amd 1 (WD Mar 99) 4572R
 - 3.10.1. Audio coding
 - 3.10.2. Composition
 - 3.11. Review of MPEG-4 version 2 Overview 4550R
 - 3.12. MPEG-7 Audio 15938-3 (WD Dec 99) 4427R 4440 4458 4558 4464R
4465R 4466 4582R 4601R
 - 3.12.1. Review Lancaster recommendations
 - 3.12.2. Develop workplan for task group
 - 3.12.3. Core Experiment process
 - 3.13. MPEG Audio FAQ/Web Page 4609

- 3.14. MPEG Audio - Preparation of press statement
4. Discussion of unallocated Contributions
5. Meeting deliverables
 - 5.1. Press statement
 - 5.2. Dispositions of Comments
 - 5.3. Responses to NB comments
 - 5.4. Liaison statements
 - 5.5. Recommendations for final plenary
 - 5.6. Establishment of new Ad-hoc Groups
 - 5.7. Approval of output documents
6. Future activities
 - 6.1. Schedule of future meetings
 - 6.2. Agenda for next meeting
7. A.O.B.
8. Closing of the meeting

Annex A-III: Agenda for the Vancouver Audio Meeting

1. Opening of the meeting
2. Administrative matters
 - 2.1. Approval of agenda
 - 2.2. Seoul meeting report
 - 2.3. Allocation of contributions
 - 2.4. Communications from the Chair
 - 2.5. Joint meetings
 - 2.6. Received National Body Comments and Liaison matters
3. Task group activities
 - 3.1. MPEG-2 Conformance, 13818-4 /Amd 3 (FDAM Oct 99)
 - 3.2. MPEG-4 Conformance 14496-4 (FCD Jul 99)
 - 3.2.1. Audio coding
 - 3.2.2. Composition
 - 3.3. MPEG-4 Reference Software 14496-5 (FDIS Jul 99)
 - 3.3.1. Composition
 - 3.4. MPEG-4 Profiles and levels
 - 3.4.1. Composition
 - 3.4.2. Version 2 Audio coding and composition
 - 3.5. MPEG-4 Version 2: Technical Issues
 - 3.5.1. Error resilience
 - 3.5.2. Silence compression
 - 3.5.3. Profiles and levels
 - 3.5.4. Transport
 - 3.5.5. Verification Tests
 - 3.5.6. Other
 - 3.6. MPEG-4 Audio 14496-3 /Amd 1:Editing Group (FPDAM Mar 99)
 - 3.7. MPEG-4 Reference Software 14496-5 /Amd 1 (PDAM Jul 99)
 - 3.7.1. Audio coding
 - 3.7.2. Composition
 - 3.8. MPEG-4 Conformance 14496-4 /Amd 1 (PDAM Dec 99)
 - 3.8.1. Audio coding
 - 3.8.2. Composition
 - 3.9. MPEG-7 Audio 15938-3 (WD Dec 99)
 - 3.9.1. Descriptors
 - 3.9.2. Description schemes
 - 3.9.3. Core experiment process
 - 3.9.4. Core experiments
 - 3.10. MPEG Audio FAQ/Web Page
 - 3.11. MPEG Audio press statement contribution
4. Discussion of unallocated Contributions
5. Meeting deliverables
 - 5.1. Press statement
 - 5.2. Dispositions of Comments
 - 5.3. Responses to NB comments
 - 5.4. Liaison statements
 - 5.5. Recommendations for final plenary
 - 5.6. Establishment of new Ad-hoc Groups
 - 5.7. Approval of output documents
6. Future activities

- 6.1. Schedule of future meetings
- 6.2. Agenda for next meeting
- 7. A.O.B.
- 8. Closing of the meeting

Annex A-V: Audio Task Groups and Mandates

In order to make the necessary progress during the Seoul meeting, the following task groups are proposed together with the mandates as listed. The intention is that the Task Groups are charged with working on the topics listed with the aim and delegated authority of making decisions and recommendations.

MPEG-4 Conformance, 14496-4, (Quackenbush)

Noting that this amendment is to progress to FPDAM at the March 99 meeting:

- To collect and address any National Body comments on this amendment.
- To progress the amendment text to add bitstreams and their descriptions to 13818-4
- To prepare 'Disposition of Comments' and a 'FPDAM' as output documents

MPEG-4 Conformance, 14496-4, (Quackenbush)

Noting that the conformance documentation (for MPEG-4 version 1) is to progress to FCD at the July 99 meeting:

- To collect and address any National Body comments by producing a 'Study on DOC' and 'Study on FCD'
- To work with members of the Systems subgroup to develop a workable approach to specify levels in Audio composition (see N2484 and N2590?)

MPEG-4 Reference Software, 14496-5, FDIS (Teichman)

Noting that the reference software (for MPEG-4 version 1) is to progress to FDIS at the March 99 meeting:

- To study all input comments on the MPEG-4 Reference Software FCD
- To review, thoroughly, all proposed changes to ensure consistency, particularly between software modules
- Working with the other Subgroups, to compare and align the reference software to the text parts of MPEG-4 14496 parts -1, -2 and 3
- To ensure that audio reference software have correct interface with systems software (e.g. access units, configuration data, composition units)
- To report the status of the reference software (i.e. what is complete, what is incomplete, what is tested, what is not tested).
- To produce a workplan to implement any incomplete functions.
- To prepare 'Disposition of Comments' and a 'FDIS' as output documents

MPEG-4 Audio/Systems Issues (YM Kim)

- To report the current status of IM1 and ASI software for audio BIFS
- To work with the reference software task group to report the status of a correct implementation of audio Nodes in the audio reference software
- To produce a workplan and locate resources to implement any unfinished aspects of the audio BIFS software.

MPEG-4 Version 2 Profiles and levels (Brandenburg / SW Kim)

- To consider any relevant WG11 documents on the subject
- To work with Systems to create profiles and levels for Version 2.
- To consider the needs of conformance in drafting profiles and levels.

MPEG-4 Audio, 14496-3, AMD1: technical issues (Dietz)

- To consider input documents relating to back channel, BSAC, environmental spatialisation, error resilience, HILN, low delay, and other matters as may be submitted.
- To consider any test results as may be reported to this meeting
- To recommend tools to be adopted into AMD 1.

- To contribute to the text of 14496-3 PAMD1 as appropriate.

MPEG-4 Audio, 14496-3, AMD1: editing group (SW Kim)

Noting that the amendment to MPEG-4 Audio is to progress to PDAM at this meeting:

- To review the content of the relevant WG11 output documents, e.g. Working Draft N2581
- To consider relevant input documents to the Seoul meeting and the considerations of the Task Group on MPEG-4 AMD 1 Technical Issues
- To integrate proven tools into the MPEG-4 VM
- To prepare the text of the PDAM as an output document.

MPEG-4 Conformance 14496-4, AMD1: editing group (Hotani Mlasko)

Noting that the conformance extension documentation (for MPEG-4 version 2) is to progress to WD at this meeting:

- To continue development of a conformance model for MPEG-4 Audio to cover the extensions required for the amendment
- To consider and propose appropriate test procedures and performance criteria as may be required by the various tools in MPEG-4 Audio AMD1.
- To work with members of the other subgroups, as required, in order to develop a unified approach to Conformance testing
- To draft the necessary conformance extension documentation as a WD

MPEG-4 Reference Software Extension, 14496-5, AMD1 (Purnhagen)

Noting that the reference software (for MPEG-4 version 2) is to progress to PDAM at the March 99 meeting:

- To study all input comments on the MPEG-4 Reference Software FCD
- To review, thoroughly, all proposed changes to ensure consistency, particularly between software modules
- Working with the other Subgroups, to compare and align the reference software to the text parts of MPEG-4 14496 parts -1, -2 and 3
- To prepare the PDAM as an output document

MPEG-7 (Quackenbush / Lindsay)

Noting that the first WD of this standard is required at the Dec 99 meeting:

- To review the recommendations of the Lancaster MPEG-7 Adhoc group
- To propose a model for MPEG-7 Audio core experiments, referring to in put document m4465 as appropriate.
- To propose a first set of core experiments with associated workplan
- To recommend one or more Adhoc groups to investigate aspects of the Lancaster results would benefit from further study.
- To revise the applications document for MPEG-7 as appropriate

MPEG Audio FAQ/Web Page (SW Kim)

- To consider new FAQs and propose answers to them
- To add MPEG-7 FAQs
- To review the web pages and propose updated pages
- To list tasks which will remain unfinished at the end of this meeting and to obtain undertakings to complete them.

MPEG Audio - Preparation of press statement (Quackenbush)

- To consider the state of development of the work delegated to the Audio Subgroup

- To prepare a press statement describing the highlights as of this meeting

Annex A-VI: Input and Output Documents

Contributed documents

The following documents were contributed to the Audio Subgroup and were considered during this meeting:

Number	Author	Title
4374	SC 29 Secretariat	Summary of Voting on ISO/IEC 13818-4/PDAM 3
4385	ITTF via the SC 29 Secretariat	Table of Replies on ISO/IEC 13818-4/FDAM 1 (SC 29 N 2943)
4402	Ralph Sperschneider, Martin Dietz	Core Experiment Proposal on Error Resilient Section Data Coding for MPEG4-AAC
4403	Ralph Sperschneider, Martin Dietz	Core Experiment Proposal on Huffman Codeword Reordering Refinement for MPEG4-AAC
4405	Toshiro Kawahara, Sanae Hotani, Toshio Miki	Core Experiment Proposal on Reed Solomon Codes for EP Tool
4408	Sang-Wook Kim (Samsung AIT), Sanae Hotani (NTT DoCoMo), Juergen Herre (FhG-IIS)	Proposed document for MPEG-4 Audio Version 2 CD preparation
4417	Toshiro Kawahara, Sanae Hotani, Toshio Miki	Simulation result of Reed-Solomon Code for EP Tool
4418	Sanae Hotani, Toshiro Kawahara, Toshio Miki	Test result of Error Resilient Section Data Coding for MPEG-4 AAC
4419	Sanae Hotani, Toshiro Kawahara, Toshio Miki	Test result of Huffman Codeword Reordering Refinement for MPEG-4 AAC
4435	Gael RICHARD, Jerome KLAINE	Discrepancies between the MPEG-4 audio TTS reference software and written document (N2503, subpart 6)
4440	S. R. Quackenbush	Information on the LaTeX Document Preparation System
4453	Jens Spille	Report of Ad Hoc Group on MPEG-4 Audio Conformance
4458	Philip Garner, Jason Charlesworth	Output of Automatic Speech Recognition System
4477	Young-Kwon Lim	Report of AHG on MPEG-4 backchannel
4486	Young-Kwon Lim, Chieteuk Ahn, Youngjik Lee	MPEG-4 TTSI upstream channel for stream control and decoding buffer management
4492	Heiko Purnhagen, Nikolaus Meine	Core Experiment Proposal on Improved Parametric Audio Coding (HILN)
4493	Heiko Purnhagen, Nikolaus Meine	Pre-Screening Results for CE on Improved Parametric Audio Coding
4496	Scott Levine, Tony Verma, Heiko Purnhagen	Time-varying, Signal Adaptive Switching Between Parametric and Transform Coding for MPEG-4 Audio
4503	Akira Inoue, Masayuki Nishiguchi	Proposed modification on MPEG-4 Audio version 1 Reference Software
4504	Akira Inoue, Masayuki Nishiguchi	Alternative procedure to test HVXC decoder conformance without control interface
4505	Akira Inoue, Masayuki Nishiguchi	Proposed Revision of HVXC part in MPEG-4 Audio Conformance CD
4506	The National Body of JP	Comments on MPEG-4 Audio version 1 Reference Software and Conformance CD
4510	The National Body of JP	Request to standardize a normative MPEG-4/Audio Transport Stream Syntax
4514	Masahiro Serizawa, Toshiyuki Nomura, Hironori Ito	A Proposal of a Silence Compression Tool for MPEG-4/CELP and its Subjective Test Results
4528	S.-H. Park, Y.-B. Thomas Kim and S.-W. Kim	Status on the provision of an Telenor IM1 Audio plug-in
4529	S.-H. Park, Y.-B. Thomas Kim and S.-W. Kim	Proposal for BSAC Complexity Reduction
4532	Young-Kwon Lim, Chieteuk Ahn, Youngjik Lee	MPEG-4 TTSI upstream channel for stream control and decoding buffer management

4535	Toshiyuki Nomura, Masahiro Iwadare	A Proposal for the MPEG-4 Audio Capability Description for ITU-T H.32x Terminals
4538	Torsten Mlasko	Core experiment proposal on an error resilience scheme for CELP speech codecs
4556	Heiko Purnhagen, Bodo Teichmann	Report of the AhG on MPEG-4 Audio FDIS and Reference Software
4558	Juergen Herre, Adam Lindsay	Report of Ad Hoc Group on Audio activities in MPEG-7
4560	Juergen Herre, Eric Allamanche, Ralf Geiger, Thomas Sporer	Information & Proposed Enhancements for MPEG-4 Low Delay Audio Coding
4567	Ralph Sperschneider, Daniel Homm, Martin Dietz	Core Experiment Results on Reed Solomon Codes for EP Tool
4574	Torsten Mlasko, Christian Mittendorf, Christian Meyer	Results on error resilience for speech codecs
4585	Martin Dietz, Karlheinz Brandenburg	Report of the Adhoc group on MPEG-4 audio version 2 core experiments
4595	Mauri Vaananen, Juha Ojanpera, Kalervo Kontola	Study on Finnish NB comments on the audio part of FCD 14496-4
4606	Sang-Wook Kim (Samsung AIT), Heiko Purnhagen (Univ. Hannover), Bernhard Grill (Univ. Erlangen)	Report of the AhG on MPEG-4 Audio version 2 editing and software progression
4609	Sang-Wook Kim (Samsung AIT), Heiko Purnhagen (Univ. Hannover)	MPEG Audio Web Page related questions and work items

Output Documents

The following output documents were produced in whole or part by the Audio Subgroup. Those shown in *Italics* were approved for public release.

Title	No.
DoC on ISO/IEC 13818-4/PDAM3	2655
Text of ISO/IEC 13818-4/FPDAM3	2656
DoC on ISO/IEC 13818-1/FPDAM6	2657
Text of ISO/IEC 13818-1/FDAM6	2658
Workplan for the audio part of ISO/IEC 14496-5 MPEG-4 Reference Software	2668
Study on Audio part MPEG-4 Conformance CD	2669
CD ISO/IEC 14496-3 Amd 1: MPEG-4, Audio Version 2	2670
Contribution to MPEG-4 AMD1 Conformance WD	2671
MPEG-4 Audio Version 2 Error Resilience Tool Summary	2672
Status Report on MPEG-4 Version 2 Core Experiments	2673
Report on MPEG-4 Audio Transport Issues	2674
Report on MPEG-4 Version 2 Profiles and Levels Issues	2675
MPEG-7 Audio Core Experiment Methodology	2676
Summary of MPEG-7 Audio Activities and Recommendations	2677
MPEG Audio web site information and work plan	2678

Annex 9
SNHC group report

Source: Peter Doenges

SNHC Meeting Summary

SNHC objectives for the Seoul meeting in Version 1 MPEG-4 were to prepare FDIS Reference Software for release, and make progress in development of Conformance bitstreams. For Version 2, objectives were to make final decisions for technology inclusions in the Visual CD and bring the text of the CD contributions up to standard. The integrity of Version 2 SNHC dependencies on Systems CD must also be ensured with final decisions on Reference Software developments needed to verify interworking of these parts, along with update of the Version 2 Reference Software Plan. A substantial framework for Version 2 Conformance was targeted for submission as part of the Visual Conformance WD. Objectives were met with excellent cooperation between groups to plan software implementation of IM1 with Version 2 functionalities. Some tough decisions were made not to evaluate certain technologies further to maintain schedule for Visual CD, and key contributors are to be acknowledged for the fine efforts they have made to refine the work. Possible Version 3 contributions were also discussed to identify candidate applications worth addressing, needed functionalities, and technologies that might satisfy requirements.

SNHC Objectives & Work Items

An outline of more detailed meeting objectives and work is given below:

MPEG-4 Version 1

A. Face Animation

1. Part 5 Reference Software FDIS
 - a. Conversion of test data streams to MP4 file format
2. Part 4 Conformance Study of CD
 - a. Test bitstream development
 - b. Bitstream verification (non-real-time)
 - c. Conversion of test data streams to MP4 file format
 - d. Systems status in utilizing scene graph dumps
3. IM1 integration status
 - a. FA data sets and evaluation of FBA system
 - b. Resolve integration of TTS bookmarks & Rockwell FBA coder
4. Status of face and body integration verification

B. 2D Mesh Animation

1. Part 5 Reference Software FDIS
 - a. Conversion of test data streams to MP4 file format
2. Part 4 Conformance Study of CD
 - a. Test bitstream development
 - b. Bitstream verification (non-real-time)
 - c. Conversion of test data streams to MP4 file format
 - d. Systems status in utilizing scene graph dumps
3. IM1 integration status
 - a. Recent contribution from Sharp Labs

C. Verification of Still Texture and BIFS Integration

1. IM1 demux/decode/BIFS/rendering, still texture decoder, 3D model
 - a. Still need end-to-end verification of 3D texturing
 - b. Single/multi-resolution download & decode of texture
 - c. BIFS image texture linkage to wavelet stream type
 - d. Single/multi-resolution texture in OpenGL 3D mesh rendering

MPEG-4 Version 2

A. 3D Model Coding

1. Progress on work items
 - a. Evaluate maturity of 3DMC tools
 - b. Update core experiment document
 - c. Consolidation of spec, software, data sets
 - i. Connectivity/topology compression
 - ii. Vertex geometry [x,y,z] compression
 - iii. Properties (normals, texture coordinates, color) compression
 - iv. Hierarchical topology compression for level of detail
 - v. Data partitioning - error resilience, progressive rendering
 - d. Accomplishment of key bitstream exchanges, 2nd implementations
 - e. Restoration of error resilience experiments with Michael Frater
 - f. Integration of hierarchical, progressive mesh with Systems/BIFS
 - g. Progress on vertex prediction complexity by INT (possible ISG help)
 - h. Content-adaptable vertex prediction (triangle & polygon prediction)
 - i. Status of integrating 3DMC tools with IM1 interface to hide details
 - j. Clean, modular decoder for nesting consistency, partitioning, stitching, mirroring
2. Core experiment progress
 - a. M2: Integration and evaluation of polygon prediction
 - b. M5: Data partitioning for error resilience
 - c. M8: Support for non-manifold meshes (stitching)
 - d. M9: Mirroring, instancing of multiple components
3. CD development/release
 - a. Verifying final bitstream exchanges
 - b. Quality of specification text
 - c. Need hierarchical, incremental mesh support in Systems/BIFS CD
4. IM1 integration status
 - a. Requires progress on hierarchical, progressive mesh support in Systems/BIFS to design & achieve integration with IM1
5. Part 5 Reference Software
 - a. Locking in baseline software (encoder/decoder)
 - b. Conversion of test data/streams to MP4 file format

B. Body Animation

1. Progress on work items
 - a. Planning and implementation of body nodes in IM1
 - b. Integration of BA decoder software and bitstreams with IM1
 - c. PROTO implementation for H-Anim joint motion in BIFS/IM1
 - d. Further progress in BAP decoding/quantization tests
 - e. Status of face and body integration verification
2. Proposals for BAP min/max values, BAP quant. for bitrate reduction
3. Profiles and levels for body animation jointly with face animation
4. Decision on inclusion in specification, maturity & bitstream exchanges:
 - a. Whether BAT tables should also contain transformation
 - b. Whether extendable BAPs bitstream syntax should be modified
 - c. Whether default joint center positions for default body to be included
 - d. Review latest H-Anim spec updates for inclusion in FBA spec
5. Core experiment progress
 - a. BA10: BAT Table Exchanges
6. CD development/release
 - a. Final bitstream exchanges (BAT)
 - b. Quality of specification text
 - c. PROTO support in BIFS in Systems CD
7. Part 5 Reference Software
 - a. Locking in baseline software (encoder/decoder)
 - b. Conversion of test data/streams to MP4 file format

C. Initial V2 Conformance Framework

1. Scope includes Body Animation & 3DMC
2. Develop initial concept of profiles & levels
3. Decoder-only and Systems issues (normative composition)
4. Testing of functional & performance capabilities
5. Test models to stress modes and throughput
6. Output document on recommended approach

D. Face Animation

1. Core experiment progress
 - a. FA1: Face mesh-based calibration
2. Advanced profiles with calibration?

E. Integration of 3D mesh coding and BIFS

1. Need closure on conceptual/node design for mesh updates in BIFS

MPEG-4 Version 3

A. 3D Model Coding

- a. Dynamic geometry / 3D Animated Mesh proposal
- b. Hierarchical 3D mesh coding with subdivision surfaces proposal

SNHC Contributions & Related Review

Most contributions were reviewed during Ad Hoc Group meetings before the WG-11 meeting:

FBA

Number	Available Date	Group Section	Title Source
4489	19990310 99/03	MPEG-4 SNHC	Proposal for Update to Body Animation Specification Tolga Capin
4490	19990310 99/03	MPEG-4 SNHC	Experiment Results on Body Animation Tolga Capin
4521	WD 99/03	MPEG-4 SNHC	Detailed Hands and Clothes BAT Models for Body Animation Laurent Mocozet, Sunil Hadap
4540	19990310 99/03	MPEG-4 SNHC	FBA Ad Hoc Report Eric Petajan, Tolga Capin
4554	19990310 99/03	MPEG-4 SNHC	Predictive- versus DCT-based BAP Coding Francoise PRETEUX, Marius PREDA, Titus ZAHARIA
4564	19990310 99/03	MPEG-4 SNHC	Detailed Hands and Clothes BATs for Body Animation Laurent Mocozet, Sunil Hadap

3DMC

Number	Available Date	Group Section	Title Source
4488	19990310 99/03	MPEG-4 SNHC	Hierarchical 3D mesh coding with subdivision surfaces Francisco Morán
4513	19990310 99/03	MPEG-4 SNHC	Independent Verification of 3DMC M5 Method 2 Cliff Reader
4516	19990310 99/03	MPEG-4 SNHC	Result of M5 Core-Experiment Mahn Jin Han., Mun Sup Song., Sung Jin Kim., Euee Seon Jang
4517	19990310 99/03	MPEG-4 SNHC	Results of Color Property Coding Seok Yoon Jung
4519	19990310 99/03	MPEG-4 SNHC	Proposal for 3D Dynamic Mesh Coding Requirements Do Kyoon Kim., Sung Jin Kim., Mahn Jin Han., Seok Yoon Jung., Euee Seon Jang
4533	19990310 99/03	MPEG-4 SNHC	Descriptions of core experiments on 3DMC Frank Bossen (editor)
4534	19990310 99/03	MPEG-4 SNHC	Results of core experiments on 3DMC Frank Bossen

4536	19990319 99/03	MPEG-4 SNHC	Report of Ad Hoc Group on 3D model coding T. Ebrahimi, P. Doenges
4541	19990310 99/03	MPEG-4 SNHC	Report on 3D Model Coding CE9 Eric Petajan
4553	19990310 99/03	MPEG-4 SNHC	Geometry coding of 3D meshes: Integration of the polygonal and hybrid prediction methods in the 3D mesh reference software Francoise PRETEUX, Titus ZAHARIA, Sorin CURILA
4584	19990315 99/03	MPEG-4 SNHC	AHG report on Integration of Still Texture and 2D/3D Mesh coding Euee S. Jang
4602	19990310 99/03	MPEG-4 SNHC	3DMC reference software Gabriel Taubin, Andre Gueziec, Claudio Silva
4604	19990310 99/03	MPEG-4 SNHC	Proposal for 3DMC WD update Gabriel Taubin, Andre Gueziec, Claudio Silva
4607	19990310 99/03	MPEG-4 SNHC	Results of core experiment on stitching (M8) Andre Gueziec, Gabriel Taubin, Claudio Silva

2D Animated Mesh

Number	Available Date	Group Section	Title Source
4610	19990310 99/03	MPEG-4 SNHC	Animated 2D mesh software for MPEG-4 part 5 FDIS P. van Beek

ISG

Number	Available Date	Group Section	Title Source
4406	19990227 99/02	MPEG-4 ISG/Video	Comment on Technical Corrigendum for Still Texture Level Definitions Gauthier Lafruit, Bart Vanhoof

Video

Number	Available Date	Group Section	Title Source
4397	19990303 99/02	MPEG-4 Video	Technical Corrigendum for Still Texture Decoding Manish Singhal, Kevin O'Connell, Hung-Ju Lee, Iraj Soudagar
4420	19990304 99/03	MPEG-4 Video	Tools for 2D mesh coding--mesh generation and fast tracking Feng Wu, Wen Gao
4421	19990304 99/03	MPEG-4 Video	Proposal of Scalability Based on Sub-band/wavelet Decomposition Lansun Shen, Hai Wei, Xianglin Huang
4451	19990310 99/03	MPEG-4 Requirements	An application area of new profile including Wavelet Tiling Norio Ito
4575	19990310 99/03	MPEG-4 Requirements	Error Resilience for MPEG-4 Still Texture- application areas I. Moccagatta, H. Chen
4600	19990310 99/03	MPEG-4 Video	Status report of Error Resilience for Still Texture Coding Bing-Bing Chai, Iraj Sodagar
4605	19990310 99/03	MPEG-4 Requirements	Request of Scalable Wavelet Texture for Main-Plus profile Iraj Sodagar, Hung-Ju Lee

Systems

Number	Available Date	Group Section	Title Source
4412	19990310 99/03	MPEG-4 Systems	Description of BIFS 2D test sequences Jean-Claude Dufourd
4460	19990310 99/03	MPEG-4 Systems	IM-1 2D FDIS player Gianluca Di Cagno
4579	19990310 99/03	MPEG-4 Requirements	Requirement for Visual Effects in Advanced BIFS Michel Rynderman
4590	19990310 99/03	MPEG-4 Systems	Update to Advanced AudioBIFS; Physical approach Riitta Vaananen, Jyri Huopaniemi
4615	19990315 99/03	MPEG-4 Systems	Player3d implementation status Stefano Battista
4618	19990310 99/03	MPEG-4 Systems	Report of the BIFS AHG Julien Signes

4619 19990312ftp://sc29wg11@drop.chip.s.ibm.com/afs/chips/u/sc29wg11/Seoul/contrib/m4618.zip MPEG-4 **Report on the Web 3D Consortium Liaison**
 99/03 Systems [Julien Signes](#)

Output Document Editors

Document	Editor
V1 FDIS Part 5 Reference Software	
Face Animation	Eric Petajan
2D Animated Mesh	Peter van Beek
Integration Still Texture & BIFS/IM1	Euee S. Jang, Julien Signes, Zvi Lifshitz
V1 SNHC Conformance CD Study	Pete Doenges
Face Animation	Eric Petajan
2D Animated Mesh	Peter van Beek
V2 SNHC Conformance Framework	Pete Doenges
Body Animation	Eric Petajan
3D Model Coding	André Guézic
V2 Visual CD editing	Euee S. Jang
Body Animation	Tolga Capin
3D Model Coding	Gabriel Taubin
Integration BA & BIFS/IM1	Tolga Capin, Julien Signes, Zvi Lifshitz
Integration 3DMC & BIFS/IM1	Frank Bossen, Julien Signes, Zvi Lifshitz
SNHC Ref. Software List & Work Plan	Mahn Jin Han, Tolga Capin
SNHC Core Experiments	Frank Bossen, Tolga Capin
SNHC V2 encoders text & software	in Reference Software
Press Release	P. Doenges

Editing Schedule for Meeting

Documents	Monday	Tuesday	Wednesday	Thursday	Friday
V1 FDIS Part 5 Reference Software				Preliminary	Approval
Face Animation					
2D Animated Mesh					
Integration Still Texture & BIFS/IM1			Meeting w/ Systems	Coord. w/ Systems	
V1 SNHC Conformance test bitstreams				Preliminary	Approval
Face Animation					
2D Animated Mesh					
V2 Visual CD editing		Draft	Preliminary	Refinement	Approval
Body Animation					
3D Model Coding w/ CGD					
Integration BA & BIFS/IM1			Meeting w/ Systems	Coord. w/ Systems	Approval
Integration 3DMC & BIFS/IM1			Meeting w/ Systems	Coord. w/ Systems	Approval
SNHC Ref. Software List & Work Plan				Preliminary	Approval
SNHC VM (for encoders)				Preliminary	Approval
Press Release				To Rob K.	

AHG Meetings and Reports

The following AHG meetings were held on Sunday before the WG11 meeting and the work progress was discussed to plan work for the main meeting:

Number	Available Date	Group Section	Title Source
4540	19990310 99/03	MPEG-4 SNHC	FBA Ad Hoc Report Eric Petajan, Tolga Capin
4536	19990319 99/03	MPEG-4 SNHC	Report of Ad Hoc Group on 3D model coding T. Ebrahimi, P. Doenges

The FBA group heard results on detail deformation of hand shape and clothes with BATs under Body Animation, and comparative results on predictive vs. DCT-based BAP coding for hand-signing the alphabet with min/max values transmitted in different ways while observing bitrate vs. quantization and distortion vs. bitrate. Also presented for Body Animation were the advantage of using a BAP quantization table index with predictive coding to increase quantization further while sustaining acceptable perceived motion quality at reduced bitrates, and the choice of BAP step sizes with the quantization table index that produce subjectively acceptable results. There was further definition of predictive default min/max values, and visual experiments verifying the use of BAT with 10-13 BAP combinations to produce acceptable body shape deformations for arm and leg movements. Based on the work done, updates to the Visual and Systems WD were proposed for quantized BAP min/max values.

The 3D Model Coding group made much progress in accomplishing bitstream exchanges and verifying most open items for decisions on CD. Independent verifications of component-based data partitioning (CODAP) for error resilience and of stitching for the case of non-manifold 3D meshes with acceptable bitstreams overheads were achieved. The CODAP scheme showed significantly better performance in overhead and recovery compared to the prior WD technique. Improvements were also achieved in constructing smarter encoding for error resilience with better partitioning, multiple partitions in the same packet, and better packet utilization with reduced padding. The stitching capability showed additional compression efficiency compared with breaking non-manifold meshes into manifold, and preserves the inherent topology of source models thus attracting additional content to use the standard. Mirroring, instancing and content-adaptive dual vertex prediction showed promising but inconclusive results with open issues about complexity, required crosschecks, and how the methods impact on tool integration. A major work item for the meeting was to bring CD text up to standard and to conform the Reference Software with the text for Vancouver. The open issues must be decided during the meeting.

SNHC & Joint Meetings

The following schedule of joint meetings and SNHC work was agreed:

Joint in	Monday	Tuesday	Wednesday	Thursday	Friday
	9:00am-1:30pm WG11 Plenary		9-11:00am WG11 Plenary		2-10:00pm WG11 Plenary
SNHC	3-4pm SNHC Plenary - meeting agenda, work plan, docs & deadlines, V1 Conformance bitstreams, V2 CD scope final decisions			9-10:30 SNHC Plenary - profiles & conformance	9-11:30 SNHC Plenary approval V1 RS, V2 docs, AHGs, V1/V2 work plan, Ref. Software list to MC, resolutions, output document submissions!
				4-7pm SNHC Plenary - document review, AHGs, work plan, contributions	

Joint in	Monday	Tuesday	Wednesday	Thursday	Friday
Systems	<u>Systems</u> - Demos Session 6-7pm 3D Player from Stephano B.		2-4pm <u>SNHC</u> , Systems BIFS & IM1 - V1 Still Texture & BIFS/IM1	11:30am-1pm SNHC, <u>Systems & IM1</u> - BA in Systems CD & IM1, Hier3Dmesh node in System VM & IM1, Still Texture in IM1, 3DMC in IM1	
			V2 BA PROTO & Body Nodes in BIFS/IM1		
			V2 3DMC & BIFS/IM1		
Software	Mike Colman: List of V1 FDIS Software & V2 CD Reference Software				
Delivery					
ISG					
Requirements				10:30-11:30am Requirements, SNHC, <u>Systems</u> - V2 profile introduction	
Video					
Audio					

Meeting Work & Results

Version 1 - FDIS Reference Software

The reference software for FA and 2DAM were releases to Mike Colman in line with the FDIS text.

Version 2 - CD Reference Software

The integration of the BA, 3DMC, and CGD Reference Software for Part 5 in alignment with the CD text needs to be completed but was close to being current. This will be a key priority for the Vancouver meeting. BA and 3DMC depend now on special nodes and the software completion of these nodes as well as other general nodes like PROTO. A detail plan for software completion and integration with Systems was agreed during the Seoul meeting.

Version 2 - Scope of CD Inclusions

Decisions were made about firm CD inclusions matching the process requirements for promotion of the technology. With some modest changes of WD bitstream syntax and semantics, the scope of Body Animation for submission in the Committee Draft remains as before:

BA:

- Full body & hand Body Animation Parameters
(BAP - predictive & DCT types)
- Body Definition Parameters (BDP)
- Body Animation Transform table (BAT)

Computational Graceful Degradation is embedded in bitstream headers:

- CGD: Model complexity parameters, projected surface sphere for 3D rendering
3D Model Coding capabilities supported by bitstream exchanges now include:

3D Model Coding:

- Main tools
 - Connectivity with triangle strip rendering efficiency
 - Vertex geometry with parallelogram prediction

- Properties (normals, texture coord., color)
- Hierarchical topology for level of detail
- Stitching for use with non-manifold meshes
- Data partitioning for error resilience
- Other features
 - Handles triangular & polygonal meshes
 - Handles one or more connected components
 - Incremental rendering for base & hierarchical meshes

Significant additions to the CD definitions, visual object descriptions, syntax and semantics were made as well as informative annex on FBA and the encoding of 3D meshes.

Version 1 - Conformance in Face Animation, 2D Animated Mesh

Partial progress was made prior to the Seoul meeting on conformance bitstream development, and updates to the Conformance text were made. The completion of bitstream development and cross checking is planned for the Vancouver meeting. There has been no further progress in the possible use of scene graph dumps with specific 3D models to test normative scene assembly in Systems, nor performance points agreed to accomplish such a task. Such an approach to BIFS instrumentation would make possible in Version 2 the use of specific face models to push a complete Predictable FA download and animation sequence through the testing pipeline at prescribed conformance points of FA update rates and model complexity. This is still a step short of normative composition with final renderings.

Version 2 - Conformance CD for BA, 3DMC

An output document was developed to provide a framework for conformance for Version 2 SNHC tools. At this point agreements with Requirements on profile and level structures with performance points, with supporting business cases or deployment commitments, have not been completed. So the document goes forward tentatively with suggested profile and level structure, along with supporting analysis of the logical grouping of tools and the recommended ways to test conformance from a functional and performance standpoint. The simpler case was Body Animation that is analogous to Face Animation. BA builds on FA with consideration for H-Anim, and tools are assembled according to a simple and a more complex profile, compatible with a broadcast mode and full downloading of BDPs, respectively.

3DMC is a new area for MPEG-4 in terms of profiling, since it involves downloading different kinds of 3D models. A given download may be a base mesh or the progressive/hierarchical build-up of a series of mesh expansions over time. Specifying profiles is generally a problem of collecting a core set of tools together to support decoding of connectivity, geometry and properties, with the simplest possible set of options to add hierarchical meshes, stitching, and data partitioning for error resilience. During the meeting a collection of potential applications were elaborated to try to understand the download issues and the speed with which typical model sizes by application class might be reconstructed for full display.

This generated much discussion and debate about bitrate limits, content characteristics, trickle-mode downloads with incremental rendering while a model is built up, latency at the user's display and how best to bound latency, etc. A central question emerging from this discussion was whether to specify decoder performance limits in terms of ranges of bitrates, or in terms of ranges of resultant 3D mesh complexity per unit time. The former technique provides a logical match between decoder power and the class of channel bandwidth to which the decoder is connected, but does not guarantee a specific model complexity per time since compression efficiencies vary. The later technique more nearly ensures a model throughput rate as measured by some metric of model complexity like triangles/sec. Specified model complexity per time thereby supports a minimum model delivery rate to the user if the inbound channel is sufficiently fast, while leaving bitrates variable according to the statistics of specific models.

Another aspect of decoding 3D models is the buffer sizes required to keep persistent structure and data, on which the decoding of subsequent elements of a 3D model depend, in decoder buffers until the use of such data is exhausted. The natural of working with triangle and vertex graphs and spanning trees is that triangle data can be dropped as soon as all the adjacency visits in the dual graph to a given triangle have been made. However, vertex data must still be kept around until all the cut paths that created the vertex tree have been explored. So buffers must be provided in the decoder that consider the "worst case" caching or stacking of

essential data that can not be flushed from the decoder until the whole 3D model has been received and output into an indexFaceSet. A mathematical model of the buffer size requirement was derived along with some other supporting metrics of decoding complexity. The granularity of model partitioning in the 3D content community, compared with practical partitioning of 3D models that can be enforced by the encoder (at some efficiency loss), will have to be considered to pick buffer sizes.

Industry input is strongly requested to make a thoughtful resolution of Level specifications for 3DMC. The conformance document records the recommended Profile structure and the prominent metric relationships needed to specify decoder performance once the Level issues are resolved.

Version 1 - Integration of Still Texture with BIFS in IM1

A joint meeting was held with Systems and SNHC about the integration of Still Texture and 2D/3D Mesh Coding with Systems BIFS:

Number	Available Date	Group Section	Title Source
4584	19990315 99/03	MPEG-4 SNHC	AHG report on Integration of Still Texture and 2D/3D Mesh coding Euee S. Jang

For Version 1, there has been an objective for some time (subject to priorities and resources on the MPEG-4 team) to verify end-to-end testing of the downloading of single 3D models with attached multi-resolution still texture. The IM1 system was confirmed to provide currently a one-layer texture rendering pipeline and the ability of BIFS to attach a wavelet-based still texture elementary stream to the scene graph for "wallpapering" the 3D mesh in an indexFaceSet. The PACT player was also noted for providing a full multi-level MIP map texture capability for 3D rendering. However the IM1 and PACT players have not yet integrated the wavelet decoder. The group agreed to obtain the proper tools from Sarnoff, and to create an integrated end-to-end verification with sample models and view variation by the time of the July Vancouver meeting.

Version 2 - Body Animation in Systems/BIFS CD, Integration with IM1

A joint meeting with Systems/BIFS and IM1 agreed to put the Body Animation nodes in the Systems CD based on the existence of independent implementations. Systems confirmed its ground rules for technology promotion: to VM/WD with a functional proposal, to CD with independent implementation, and to FCD with full IM1 integration. The PROTO node needed in Systems/BIFS by BA for custom joint and segment interpolators matching H-Anim conventions will be placed in the Systems VM. A detailed work plan was drawn up with commitment of specific resources to develop a compliant demonstration of BA BAP decoding and BDP/BAT downloads by the July Vancouver meeting. Assuming all goes well in Vancouver, the BA and PROTO system will be brought in step with FCD.

Version 1 - FBA and IM1 Integration

Significant time was spent at the WG11 meeting integrating and debugging FBA code with IM1 in a new version of the software system. Many thanks from the FBA team to Stefano Battista for making this progress possible!

Version 2 - 3DMC Integration with Advanced BIFS including Hierarchical 3D

A joint meeting was held with Systems and SNHC to merge the latest thinking about special requirements for mesh control beyond the downloading of single 3D base meshes (BIFS Version 1). The 3DMC features of particular interest included incremental rendering during the gradual build-up of an indexFaceSet within BIFS as a large 3D base mesh is received. Also of interest was the linkage of adjacent levels of detail in hierarchical mesh coding for the purpose of addressing applications that support betweening of geometry as mesh expansion proceeds.

Hierarchical mesh coding represents a single stream type that expands a base mesh by making distributed cuts in the base mesh followed by adding potentially arbitrary topological detail in the gaps opened within the base mesh. This expansion is accomplished in such a way that a forest of vertex trees is created to distribute mesh build-up evenly over disjoint regions within the previous simpler level of detail of the mesh. The method exhibits higher coding efficiency than other progressive mesh schemes that undergo simple vertex splits and edge collapses. As a new set of triangles and vertices are introduced into the previous

mesh, the initially coincident added vertex structure can be gradually revealed by moving new vertices from their parent positions to their final locations using non-normative animation to differentiate the finer emerging shape.

The VRML LOD node falls short of the mark for accomplishing the desired mesh expansion. VRML LOD partitions a 3D model into discrete representations without the topological connections between levels needed to achieve both efficient coding of mesh expansion and potential geometry between when desired by the application. The group agreed on the creation of a new node in BIFS for representing this connectivity, the hierarchical3Dmesh node. This node will go to Systems VM due to its proposal status without implementation, and will provide the infrastructure for the forest-split process.

Version 2 - 3DMC Integration with IM1

In joint meeting with Systems, the group agreed that the new hierarchical 3D mesh node will be implemented in BIFS. A newly updated decoder suite encompassing the 3DMC functionality promoted to CD in Seoul will be integrated into IM1. Test bitstreams that have been used in a standalone mode with 3DMC tools directly will be reformatted in MP4 for use with IM1. An end-to-end demonstration of some representative 3D Model Coding examples has been planned and will be implemented for the July Vancouver meeting. The availability of PROTO in Systems/BIFS could be used to interpolate or script the animation of vertex movement using exposed vertex data in the hierarchical3Dmesh node to implement gradual shape change. There is much work to do by the next meeting, so some of the finer capabilities will likely be prioritized.

Version 2 - Additional 3DMC Functionality and Decisions

Several ongoing and recent technology proposals required decisions in Seoul relative to their CD promotion and the integration of the technologies into the text and software with a clear understanding of their complexity, the side effects of integration, maturity of crosschecks, and net benefit. The following sections discuss the disposition of each item of work. The suite of 3DMC tools that were recommended for CD promotion have become increasingly inter-related in how efficiency gains are linked to structural and spatial coherence in the processing of connectivity and geometry. Consequently, the addition of certain tool refinements for incremental coding efficiency under specific data conditions had to be weighed against the added decoder complexity and adverse interactions with the rest of the tool set.

Dual-Mode Vertex Geometry Coding with Polygonal Prediction

For some meetings now, the group has been trying to come to terms with the polygonal vertex prediction scheme. This work and the parallelogram scheme were developed and individually cross-checked some time ago. The possibility of using polygonal prediction much earlier was sufficiently unclear that the WD has carried both methods forward for decision. Then INT brought a very interesting proposal in the last few meetings to adopt a content-adaptive dual vertex prediction scheme. The scheme switches between triangle prediction (parallelogram rule) and polygon prediction (weighted averages of the vertices in the topological neighborhood of the newly predicted vertex). This system switches method depending on the type of polygon encountered successively in the stream of mesh polygons. INT demonstrated an approximate 10% efficiency gain in their experiments with the combined dual methods of vertex prediction for the particular mix of 300 test models that the group has used.

In the mean time, ISG has cautioned in earlier computation complexity analysis to adopt the simplest vertex prediction scheme that satisfies the basic coding requirement because much of the complexity is concentrated in geometry decoding. ISG did not have access to polygonal prediction code for complexity profiling until very recently, and SNHC discussed with ISG in Seoul about the merits of attempting complexity analysis at this late stage. Other considerations eventually overshadowed further ISG work. This was due to concerns raised by the group about the interactions of polygonal prediction with other parts of the 3DMC decoder suite. Polygonal prediction works best when a set of nearest neighboring vertices is available corresponding with the edge valence of the vertex under prediction. This requires accumulation of mesh structure and vertex coordinates during decoding until neighbors of a new vertex are available, which potentially demands retention of more of the 3DMC stream before output of the next polygon. Several other parts of the 3DMC tools exploit triangle stripping, marching bits along strips, early output of triangles without waiting for surrounding triangles, etc. to enable incremental rendering and lower buffer size. Consequently the decision was made not to employ polygonal prediction.

The primary concern that emerged in the process was the need for integrated design and testing of the dual mode scheme harmonized optimally with the other tools so as not to surrender functionality or efficiency gained in the development of error resilience, incremental rendering and hierarchical rendering. Complexity remains a concern although that could be addressed without integration. If NBs see an overriding priority to complete an integration study and have specific approaches to harmonize the parts, then this will have to be addressed in comment on the CD. A commendation of unusual merit goes to INT for the value of their persistent work in helping understand the incremental coding improvement of the dual prediction system as well as their second implementation of polygonal prediction earlier.

Geometry Mirroring and Instancing

Since Atlantic City, Lucent and UTA have elaborated a proposal for object mirroring and instancing to take advantage of bilateral symmetries (in faces, cultural objects) and replication symmetries under successive affine transformations (lineal or rotational spacing of multiple objects of the same kind). This capability would be particularly useful for FBA model downloads, large CAD structures with embedded symmetries, and large landscape renditions involving tree lines, replicated cultural objects like power poles, houses, and the like. A further embellishment of the proposal (Geometry Delta Layer) allows for minor perturbations of a symmetric geometry to create object instances that vary statistically in shape by small amounts from a central thematic object. As mentioned in previous contributions and reports, VRML does not allow for these modes of model description.

Initial results shown were promising in Seoul but were not sufficiently conclusive with regard to complexity vs. efficiency gain, although in specific cases large compression gains approaching the reciprocal of the number of instanced objects are expected for very large numbers of objects. The central challenge raised in discussions was whether a sufficient share of the content base is oriented toward exploiting this feature while imposing added decoder complexity. Without cross checks and better understanding of benefit/cost, this capability was withheld from CD. Again, NBs need to make a compelling case with verification of gains vs. complexity and the likelihood of attracting content, and be willing to commit resources to resolve the impact of integration with the rest of the 3DMC tool suite.

Enhanced Color Property Coding

A proposal was explained and demonstrated for using an adaptive prediction scheme for color property coding. The technique observes that potentially low correlation exists between vertex prediction (like the triangle parallelogram rule) compared with the statistics of how color variation is distributed over a 3D model mesh. The essential proposal and results rely on first-order prediction instead to achieve experimental reductions in coded color bits per vertex of 3-17% depending on quantization level. A proposal was made to change mesh object semantics so that the prediction type (using tools already in the 3DMC tool suite) can be overridden as 1st-order prediction for the color property in the bitstream. This then becomes an encoder problem and decision without further decoder complexity.

Version 2 - Profile & Level for BA, 3DMC

A joint meeting with Requirements focused on recommended profile and level points where developed at this stage for the Version 2 SNHC functionalities, along with preliminary discussion of conformance issues. A commitment to deployment was summarized for FBA functionality; there was inadequate representation to verify deployment commitment in 3DMC. Industry is urged to contribute profiling concepts as input documents to Vancouver to help converge this important activity.

Version 3? - Market Demand, New Functionalities

The SNHC subgroup has discussed for some time the potential benefits of 3D animation coding to parallel 2D animated mesh coding. Two very interesting and thoughtful proposals were made to motivate further study and requirements development for backward-compatible coding techniques intended as part of a work item if Version 3 MPEG-4 is pursued by WG11. These proposals were:

- Proposal - 3D Mesh Animation Coding of Vertex Geometry/Properties (Samsung)
 - 3D characters, 3D movies, 3D animation storage efficiency
 - Morphing/shape/appearance changes, flip book effects/icons
- Proposal - Hierarchical 3D Mesh Coding with Subdivision Surfaces

- UPM Spain - mesh control, LOD automation, efficiency, content attractor

These contributions can be studied in M4519 and M4488 respectively. There was much (animated ☺) discussion about these proposals and the advantages that could follow in coding efficiency, interactivity, specific user services, modest complexity beyond what we have now, error resilience, extensibility, and so on. These proposals could bring added efficiency and expressive power to a broader range of animated or lifelike media compared to the static mesh modalities addressed by 3DMC now. Some central questions that were raised included whether the level of realism and animation implied by these functionalities will move into the domain of streaming media and its transport addressed by MPEG-4. Also questioned was whether such media streams will be fully exploited soon by lighting models and other rendering advances in 3D accelerators. Like some other increasingly specialized tools considered and later abandoned by SNHC before, we wonder if these functionalities are approaching a level of specialization vs. return that is justified. Industry input probably deserves a CFP I this goes forward.

Output Documents from Seoul

SNHC produced or contributed to the following output documents from Seoul:

Study of Conformance CD Text V1	N2721
Conformance WD V 2	N2722
- Analysis of applications & decoder issues	
- Framework for conformance testing described	
- Recommended baseline for Visual Objects/Profiles	
- Seeking industry comment, reality check	
SNHC Software Work Plan on	N2759
Reference Software & IM1 Integration	
- Update on all the software parts - Vancouver ho!	
Text of MPEG-4 Version 2 Visual CD	N2688
- Major decoder contributions in BA & 3DMC	
- Annex to help industry understand 3DMC encoding	
Text of MPEG-4 Version 2 Systems CD	N2739
- Body Animation BIFS nodes included	
Core Experiments on 3D Model Coding	N2631
- M9: Mirroring/instancing to exploit symmetry/replication	

Ad Hoc Groups for Vancouver

The following AHGs were established by SNHC to coordinate core experiments and documents:

Doc. No.	Title
N2760	AHG on SNHC Conformance
N2761	AHG on Face Body Animation
N2762	AHG on 3D Model Coding

AHG on SNHC Conformance	N2760
- Editing of MPEG-4 Study of Conformance CD/WD	
- Refine definitions, methods for bitstreams	
- Final test bitstream development & exchange	
AHG on Face Body Animation	N2761
- Verification of Body Animation, link to H-Anim	
- Produce additional FBA data sets, evaluate system	
- Continue software and bitstream contributions to IM1	
AHG on 3D Model Coding	N2762
- Administer work in core experiments (M9 - mirroring)	
- Ensure Reference Software integration for publication	
- Make software and bitstream contributions to IM1	

plus these AHGs sponsored by other MPEG-4 subgroups with related objectives and need for assistance:

Doc. No.	Title
N2684	Ad-hoc Group on MPEG-4 backchannel
N2703	AHG on editing the documents of the MPEG-4 video verification model, the MPEG-4 visual PDAM and MPEG-4 video conformance.
N2717	AHG on Computational Graceful Degradation (CGD)
N2736	AHG on Multi-user Applications
N2745	Ad Hoc Group on MPEG-4 Conformance
N2746	Ad Hoc Group on Advanced BIFS
N2750	Ad Hoc Group on IM1

Seoul Participants

Many thanks to the following individuals who participated in SNHC meetings in Seoul:

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Annex 10
Test group report

Source: Vittorio Baroncini, Chair

Introduction

At the 47th meeting of WG11, in Seoul, the results of one verification tests was presented and submitted for approval. The work-plan for the other verification tests has been updated. Finally MPEG-4 Version 5 formal tests has been foreseen to be necessary between the 47th and the 48th meetings.

MPEG-4 Version 1 video verification test

Pre-screening meeting

The Sunday before the beginning of the 47th meeting a pre-screening meeting was held, with the aim of properly analyse the outcomes of the work done during the previous weeks.

In spite of the many problems had during the preparation of the materials necessary to prepare the verifications tests this meeting showed good results and a huge amount of work in the preparation of the tapes for the forthcoming tests.

In detail the result of the Content Based verification test was retained valid and satisfactory. The tapes produced for the other tests was accurately analysed and lead to a number of technical consideration very useful during the 47th meeting.

Content Based Test

During the meeting the results of the formal verification tests of the Content Based functionality were presented to the Test and Video Group.

A careful analysis of the result lead to a report (contained in doc. N2711) that has been made public as formal MPEG output document.

In detail the results lead to the conclusion that MPEG-4 allows the availability of the Content Based functionality without introducing any overhead in terms of bit rate and loss of visual quality.

Temporal scalability in Core Profile

The pre-screening of the sequences produced for the test has been done in the pre-screening meeting and the results of the test sequences were provided at the Seoul meeting and have been judged satisfactory to proceed to the formal tests. The result of the test will be presented at the 48th meeting (CA).

Details about coding parameter settings and test methods are given in document W.2666.

Coding Efficiency

After a long and fruitful discussion on the technical parameters and test material to be adopted, it has been decided to split the tests into three different sessions:

- low bit rate;
- medium bit rate;
- high bit rate.

The result of the low and medium bit rate tests sessions will be presented at the 48th meeting (CA), while the test conditions for high bit rate test will be finalised at the 48th meeting and the tests results will be presented at the 49th meeting.

Details about above items are given in the document W.2710.

MPEG-4 Version 2 video verification test

Main Plus Profile

The Main Plus Profile will be tested in the following separate tests:

- Frame-Based – Low bit rate,
- Frame-Based – High bit rate,
- Object Based – Low bit rate,

The result tests sessions will be presented at the 48th meeting (CA).

Details about above items are given in the document W.2712.

Advanced Real Time Profile

The Advanced Real Time Profile includes two functionality:

- the error robustness;
- the temporal resolution stability

The two functionality will be tested in a formal performing two separate tests.

The result tests sessions will be presented at the 48th meeting (CA).

Details about above items are given in the document W.2713.

List of output documents

Title	Number
Revised test conditions and test plan for video verification test on Temporal Scalability in Core Profile	2666
Revised test conditions and test plan for video verification test on Coding Efficiency	2710
Report Of The Formal Verification Tests On MPEG-4 Content Based Coding	2711
Test conditions and test plan for video verification test Main Plus Profile in Version 2	2712
Test conditions and test plan for video verification test on Advanced Real Time Simple Profile (Error Robustness, Temporal resolution Stability)	2713

Ad hoc groups

Ad hoc group	Chair(s)	Number	Mtg
Ad-hoc group on MPEG-4 Video Verification tests	U. Benzler	2714	yes

Implementation Study group report

Source: Marco Mattavelli, Chair.

Generalities

The work of the Implementation Studies Group (ISG) during the 47th meeting in Seoul has addressed five main topics:

- 1) The answer to the US national body and the draft corrigendum for the correct application of scalable texture objects in the CVC and VMV models,
- 2) The definition of level and profiles of audio BIFS nodes,
- 3) The update of the video CGD syntax for version 2,
- 4) The analysis of MPEG-4 systems components, in particular some new results of the exercise and study of the IPMP interface,
- 5) The initial discussions for the definition of the MPEG-7 experimentation model XM enabling the integration of interfaces and automatic evaluation tools.

In addition to the traditional ad-hoc groups about CGD and Decoder QoS a new ad-hoc has been established to define the functionality, specify and build the MPEG-7 experimentation model (XM).

The answer to the US national body and the draft corrigendum for the correct application of scalable texture objects in the CVC and VMV models.

The US National Body proposed a corrigendum aiming at limiting the worst-case complexity of scalable texture decoder implementations. The corrigendum proposition was formulated in 5 items of which 4 concern the ISG mandate and activities. The first item is to refer to scalable texture objects for the definition of video profiles and levels that includes scalable texture objects. The second is to bound the complexity by defining a parameter “bound_max_byte” that define the maximum number of bit-planes. The third is to limit the number of SNR levels and the forth is to limit the “per second” number of pixels. The fifth concerned the syntax for the downloading of wavelet coefficients and was discussed by the video group only since it concerns the functionality of the tool.

The ISG group after having reviewed the document M4406 “Comment on Technical Corrigendum for Still Texture Level Definition” (Gauthier Lafruit, Bart Vanhoof) and several contributions from previous MPEG meeting agreed on:

- recommending the acceptance of the first two items
- refusing the further limitation of the number of SNR levels since the bound on the maximum number of bit-planes implicitly already constraints the worst case complexity, and hence a further bound not only is redundant, but might limit the multi-resolution functionality of the tool
- modify the per second pixel limitation into an equivalent global MB/s limitation provided by the VCV and VBV models used by the selected [profile@level](#). With such purpose maximum VCV and VMV model bounds for profiles including scalable texture objects have been modified and proposed to the video group.

The proposals of ISG have been approved by the video group and the appropriate text for both the Draft Corrigendum and response to the NB comments (N2715) has been edited.

Considering the problem found for the Scalable Texture Objects ISG made the video group aware of the fact that a similar problem can be found in the standard for the initial SPRITE. Therefore ISG recommended a clarification of the requirements of the use of SPRITEs so as to be able not to put to high constraints on decoder complexity.

The definition of level and profiles of audio BIFS nodes.

Two new audio BIFS nodes have been proposed at the Seoul meeting. Unfortunately the definition of levels for audio BIFS nodes and Systems profiles is not satisfactory for both new and existing audio BIFS nodes. No explicit indication of limiting parameters has been provided. Moreover, a simple complexity analysis is not sufficient to provide meaningful level definitions. Limiting parameters aiming at defining node levels within the node itself (such as for the AudioFX for instance) or specifying the maximum number of nodes within a given systems profile (such as the AudioMix node) must be provided considering the requirements of the various audio applications. ISG has recommended to the proposer of audio BIFS to provide such information by contributions to ad-hoc groups so as to define a level/profile unified framework for further discussion and progress during Vancouver MPEG meeting.

The update of the video CGD syntax for version 2.

Text for the update of the video CGD syntax according to document N2592 has been provided to the video group to be included in the version 2 CD. The modifications have been approved by the group, and the corresponding software integration will be scheduled during the Software Integration ad-hoc activity.

The analysis of MPEG-4 systems components, in particular some new results of the exercise and study of IPMP interface.

The activity of simulating and studying the possible synchronization problems of a System implementation based on a multi-thread platform having as master thread the IPMP SFC has continued. Contribution M4404: "MPEG-4 IPMP Test Result" reports a synchronization solution based on the use of the IPMP interface as master of the video decoder thread achieving processing of a protected audio stream by a non-normative tool and the correct synchronization of the non-protected video stream. The player used is the PACT player with a H.263 decoder. Open questions that need further work are: the validation of the approach for a MPEG-4 video decoder and the extension to multiple protected streams processed by different non-normative tools.

Another contribution M4409 and the associated demo presented during the joint ISG-IPMP meeting addressed the implementation of a watermarking application on the IM1 platform using the IPMP interface specification. The presented solution developed in the framework of the MIRADOR project provides a first version of near real-time audio and video watermark monitoring system applied on MPEG4 scenes. The solution provides an example of usage of the watermark for various applications including a copy Control one. The impact of the various applications on the IM1 platform are presented. Modifications to the IM1 architectures have also been proposed to enable all the watermarking possibilities. The system is open to upgrade/modification enabling the enhancements of the watermark algorithms, their speed performances (in order to reach the real time) and the porting of the whole integration into a standard environment (according to the IPMP modifications requested to MPEG4 system group).

Open issues remain the possibility of interfacing the IPMP system with an external interface such as a smart card and the possibility of interacting with the system layer from an external non-normative application.

Further work exercising the IPMP interface by non-normative application is necessary to verify the possible needs of extension of the normative interface so as to enable all functionality of the various non-normative tools and applications.

The initial discussions for the definition of the MPEG-7 experimentation model XM enabling the integration of interfaces and automatic evaluation tools.

A relevant portion of the ISG time has been spent in the discussions for the definition of the MPEG-7 XM. ISG proposed to extend the mandate so as to clearly include this new activity into its goals. The XM is intended to be the basic framework to execute core experiments and also the reference model for the MPEG-7 standard specification. The XM architecture should include both normative

and non-normative components. The goal of the XM architecture is to reduce implementation complexity and enhance implementation re-use relative to previous MPEG standards and tools.

The XM architecture is built in UML (Unified Modeling Language) and implemented in C++ to be a general framework, and it aims to be platform independent even though some tools (graphical user interfaces for instance) may be platform dependent. The needs to support binary interfaces and other developments code languages (e.g. JAVA) are not clear and will be discussed in the XM development ad-hoc and during next meeting.

Another goal of the XM is the capability of including evaluation and measurement tools for an automatic assessment of normative component features. The set of tools for the measurements and the requirements for normative components to be compatible with these evaluation procedures are still to be defined. The specification of first Core Experiments will provide examples useful to better understand and clarify these issues.

Document N2716 “MPEG-7 XM Software architecture Version 1.0” is the first draft of the XM approved in Seoul. The documents already contains the main architectural specifications and conventions for the collaborative development of the platform.

Annex 12

Liaison group report

The Liaison group considered the following Seoul input documents

	Source	Title	Number (if any)
1	ISO/TC 46/SC 9	ISO/CD 15707, Information and documentation - International Standards Work Code (ISWC) - Part 1: Musical works [ISO/TC 46/SC 9 N 253]	M4370
2	ITU-T SG 10	Liaison Statement from ITU-T SG 10 to ISO on Middleware Standardization	M4371
3	Midi Mfg Assoc	Liaison statement received in response to SC 29 N 2891, to be reviewed by WG 11.	M4379
4	ITU-T SG 12	Three MPEG-4 Audio Test Results	M4381
5	DAVIC	Liaison Statement from DAVIC on MPEG-7 (SC 29 N 2948)	M4383
6	DAVIC	Liaison Statement from DAVIC on MPEG-4 Version 2 Functionality (SC 29 N 2947)	M4384
7	IEC SC 100C	IEC NP: Interfaces for non-linear PCM encoded audio bitstreams applying IEC 60958 -- Part 2: Non-linear PCM bitstreams according to the DTS (Digital Theatre Systems) format(s) [IEC 100C/240/NP]	M4395
8	ITU-T SG 16 Q.12	Liaison statement from ITU-T SG 16 Q.12 (SC 29 N 2976)	M4413
9	Jens Vollmer, Hirokazu Tanaka	Request for support of a delayed contribution to ITU-T SG16 concerning MPEG-4 codepoints for H.324	M4539
10	CEN/ISSS/MMI	Liaison CEN/ISSS/MMI - MPEG-7	M4551
11	ITU-T SG 16 Q.11-14	Liaison to ISO/IEC JTC1 WG11 SC29 MPEG-4 concerning support of MPEG-4 System in H.324 and MPEG-4 Audio in H.245	M4620
12	INTELSAT	New liaison Rep	
13	ATSC	Email on synchronization	
14	Web3D	email	
15	Various MPEG7 members	Email on potential MPEG7 Liaisons	
16	ITU-R 3.5-4/11	Basic requirements for multimedia-hypermedia broadcasting	
17	ITU-R 238/11	Compression families to be used in networked television products	
18	Julien Signes	Report on Web3D consortium Liaison	M4619

List of current liaison representatives

AES	Karlheinz Brandenburg
AGICOA	
CEN	Francoise Preteux
IETF	
INTELSAT	Surendra Satija
ISO / TC 46 / SC 9	Albert Simmonds
ITU-T SG16 Q11	Yoshihiro Kikuchi (Mr. Harasaki and Mr. Vollmer for MPEG Systems)
ITU-R WP10C	Karlheinz Brandenburg
SMPTE	Mike Vetter and Stephen Long
W3C	
Web3D (VRML)	Julien Signes

The following output liaison documents were produced:

N2752	Liaison to ITU-T SG16/Questions 11 to 14 Regarding MPEG-4 Systems on H.32X
N2753	Liaison to DAVIC on MPEG-4 functionalities
N2754	Liaison to CEN/ISSS/MMI on MPEG-7
N2755	Request to JTC1 to appoint liaison officer to Web3D
N2756	Liaison to INDECS on Liaison with MPEG-7
N2757	List of bodies which are candidate for or already in Liaison with MPEG.
N2715	Responses to national Body Comments