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Accredited Standards Committee
INCITS, National Committee on
Information Technology Standards*
INCITS/L3, Audio/Picture Coding

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To: INCITS Secretariat, INCITS Board Members, and INCITS/L3 Committee Members
From: Mike Rubinfeld, Chairman, INCITS/L3
Subject: Annual Report for Technical Committee INCITS/L3 (Audio/Picture Coding) Covering the Period from May 2006 to June 2007
Purpose: INCITS Required Information
Attached:
INCITS/L3 Annual Report for Years May 2006 – June 2007

1 Executive Summary

The INCITS/L3 Technical Committee on Audio/Picture Coding serves as the U.S. TAG to ISO/IEC JTC 1/SC 29, "Coding of Audio, Picture, Multimedia, and Hypermedia Information", and its Working Groups (WG 1 and WG 11). Until 2007, all INCITS/L3 activities have been international liaison projects, i.e., there was no American National Standards in process, nor any concurrent development projects. INCITS/L3 is composed of three entities: The L3 Executive Committee. This committee oversees and approves the work of the other two sub-committees, and handles all the administrative affairs, such as meeting planning, venues, teleconferencing, and financial matters. The Chair of L3 resides over the Executive Committee, and has the responsibility of appointing the Heads of Delegation for the two sub-committees for each upcoming international meeting. The INCITS/L3/L3.1 (the Moving Pictures Experts Group (MPEG)) is responsible for Digital Moving Pictures and associated Digital Audio standardization. This sub-committee acts as the US TAG to the SC29/WG11 working group and was very much involved with the MPEG1,2,4,7,21, MPEG-A, MPEG-B, and MPEG-C Standardization projects as well as the involvement with the ISO/ITU joint video team in the development of the Advanced Video Codec (AVC). Many viable products were developed as a result of the technology that came out of the MPEG process. Such products as DVD, MP3 players, digital television, High Definition Digital TV (HDTV) and high definition movies, etc. were developed as a result of the various MPEG standards. The INCITS/L3/L3.2 sub-committee is often referred as the Joint Photographic Experts Group (JPEG), and acts as the TAG to SC29/WG1 still image working group. This group is widely recognized for the JPEG compressed image standard that is used ubiquitously throughout the digital image community. Virtually all digital cameras use the JPEG standard. More recently, this working group was responsible for the development of the JPEG2000 standard with its Part 2 tool kit. In recent times, both government and industry is taking a serious look at the advantages and robust functionality the JPEG2000 standard. For instance, both Interpol and the FBI are using the JPEG2000 standard for use in standardizing the format for digital fingerprints. Adobe's latest revision of Photoshop also imbeds the JPEG2000 functionality. More recently, the sub-committee was involved with the development of security functionality as part of JPEG2000 called JPSEC.

The approved Area of Work for SC 29, (Ref ISO/IEC JTC 1 N 2545) is:

Standardization of coded representation of audio, picture, multimedia and hypermedia information - and sets of compression and control functions for use with such information - such as:

- Audio Information
- Bi-level and Limited Bits-per-pixel Still Pictures
- Digital Continuous-tone Still Pictures
- Computer Graphic Images
- Moving Pictures and Associated Audio
- Audio Visual Interactive Scriptware

Excluded: Character Coding

The standards address requirements and guidelines covering:

1. Data compression methods and techniques used to transform digital data into equivalent, “compressed” representations;
2. Image and information interchange requirements within and across applications and services such as telecommunications and broadcast networks;
3. Product development, R & D activities including microchips and systems aspects;
4. Algorithm proposals, subjective tests, systems packages and implementations for the applications;
5. Encoding for representation of multimedia/hypermedia information objects, and audiovisual interactive script ware;
6. Testing via conformance and compliance of requirements and implementations.

2 Significant Accomplishments

2.1 L3 Executive Committee

L3 currently meets two times per year face to face and also schedules two teleconference meetings at the L3 level in between the two meetings. The task groups of L3 (L3.1 and L3.2) meet concurrently with L3, but are empowered to hold additional meetings if necessary. L3 initiated the use of a corporate sponsor for the face-to-face meetings with the elimination of the usual meeting fees that were originally used to offset the expense for having the meetings in a hotel complex. The primary accomplishment of the L3 Executive Committee has been the planning and execution of the US hosted joint international meeting of WG1, WG11, JVT, and SC29 in April/May 2007 in San Jose, California at the Doubletree Hotel. It was a very successful meeting that accommodated roughly 450 constituents. The social held at the Tech Museum in San Jose was also a great success. Other accomplishments include the upgrade of the L3 data site hosted by NIST, and the transition of the L3 reflectors to the INCITS organization. Also, L3 continued the hosting of the WG11 MPEG data site and continually made upgrades that led to a much greater flexibility in handling the multitude of documents in the data base. The committee also continued the oversight roll to the two subcommittees, L3.1 and L3.2. At the present time the membership of INCITS/L3 has 11 voting organization members with two advisory members. See Appendix 1, Membership lists for L3, L3.1 and L3.2.

2.2 L3.1 Sub-committee and TAG to WG11

Over the past year, the L3.1 committee handled an extraordinary amount of ballots for the MPEG process that is too numerous to mention here. Much work was accomplished in the JVT area, audio area and open faced fonts. Both MPEG 7 and 21 activities continued to make much progress along with a joint effort between MPEG and JPEG in the area called “JPSEARCH”.

2.3 L3.2 Sub-committee and TAG to WG1

There were a number of ballots dealing with amendments to JPEG2000 dealing with JP file format Security issues. A new codec proposal was presented by Microsoft at the San Jose Joint Meeting. This proposal, if accepted, would result in a major amendment to the JPEG2000 standard. Much work needs to be accomplished in order to evaluate the credence of the Microsoft proposal. The committee has a new challenge that will keep it ticking for some time.

3 Significant Challenges

L3 is faced with the new challenge of having to coordinate with INCITS on a much closer level. Such areas as closer coordination with respect to the status of L3, L3.1 and L3.2 members in the payment of their dues, attendance and associated voting status needs to be addressed and certain problems need to be fixed. With the resignation of NIST as the host to the L3 data site, a new volunteer needs to come forward, or INCITS will need to take the responsibility for the future of the data site. Also, NIST is resigning from the task as host to the WG11 data site. Although it is not the responsibility of L3, L3 needs to lend its support to finding a replacement host to the WG11 data site.

L3.1 and L3.2 needs to step up their involvement in various technical issues being addressed both in WG1 and WG11. Along with this involvement, L3 needs to find a way to entice more members to join the sub-committees.

Finally, with the resignation of the L3 Chair, L3 needs to find a viable replacement who will dynamically lead the committee into a bright future. This person needs to be able to motivate the members to be more contributing participants. This person needs to have great vision into the future projects related to both L3.1 and L3.2.

4 Expected Challenges

Over this next year, L3 expects to continue its role as the oversight committee to both L3.1 and L3.2. It will continue in its meeting planning functions with calls for corporate volunteers to host future L3 meetings. It will continue its venue for two face-to-face meetings per year with both sub-committees participating in those meetings, and have the authority to call for any other ad-hoc meetings on an "as needed" basis. With the increase in annual fees to INCITS, L3 expects to have a much greater participation by INCITS in the administration and coordination of its reflectors and membership database status. L3 must be able to track its membership more efficiently in order to keep accurate records of the voting membership and who is on "advisory" status. INCITS needs to start by giving us its latest status of the entire L3 membership, including an accounting of all the primary members and their alternates along with the sub-committees to which they are associated. Also, an accounting is needed for those who are current in paying their annual fees, and those who are delinquent.

Both L3.1 and L3.2 needs to instill more participation amongst the US delegates who are attending the international meetings. They also must find viable ways of justifying the costs to member organizations for sending delegates to the international meetings.

5 Committee Activities

L3 serves as the administrative body for all L3 Task Groups. All Task Group recommendations for National Body positions, Delegation Rosters, and other recommendations are reviewed and approved by L3 prior to forwarding to INCITS or other appropriate body. Meeting dates and venues are approved, with input from the Task Groups, by L3.

To support the activities of the committee, the INCITS secretariat maintains; 1) a database of name, affiliation, address, telephone, facsimile, and email information for each individual active in the committee; 2) email reflectors for INCITS/L3 and each of its task groups, plus a general reflector for all participants; 3) INCITS/L3 (Wo Chang – Webmaster) maintains a password protected Web site for TC and TG documents; and 4) a password protected web page for meeting information, agendas, automatic document numbering, and contact information.

5.1 Previous Year's L3 Meetings

A. 2006/2007 Meeting Schedule

Meeting	Date(s)	Location
INCITS/L3 #47	25 May 2006	Teleconference
INCITS/L3 #48	26 Jun 2006	Teleconference
INCITS/L3 #49	21 Sep 2006	Tucson, Arizona
INCITS/L3 #50	19 Dec 2006	Teleconference
INCITS/L3 #51	22 Feb 2007	Dolby, San Francisco
INCITS/L3 #52	21 Jun 2007	Teleconference
INCITS/L3 #53	27 Sep 2007	Mitre, Boston, MA
INCITS/L3 #54	21 Jun 2007	Teleconference

5.2 Next Year's L3 Planned Meetings

B. 2007/2008 Meeting Schedule

Meeting	Date(s)	Location
INCITS/L3 #55	27 Sep 2007	Mitre, Boston, MA
INCITS/L3 #56	13 Dec 2007	Teleconference
INCITS/L3 #57	Mar 2008	TBD, West
INCITS/L3 #58	Jun 2008	Teleconference
INCITS/L3 #59	Sep 2008	TBD, East
INCITS/L3 #60	Dec 2008	Teleconference

5.3 L3.2 Planned /meetings for WG1 in the Coming Years

L3.2 notes the following meeting plan approved by WG1 for WG1 meetings

23 – 27 April 2007 - Joint MPEG/JPEG meeting with SC 29	San Jose, Cal
02- 07 July 2007	Lausanne, Switzerland
12 – 16 November 2007	Kobe, Japan
March 2008	Los Angeles, Cal
July 2008	France or Greece
November 2008	China, TBD
March 2009	North America
July 2009	Europe
November 2009	Asia

6 Liaison Activities

All of the INCITS/L3 liaison active is informal in nature. Organizations that INCITS/L3 and its TGs regularly exchange information with include: ACR/NEMA, AIAA, AIIM, ATSC, DAVIC, DoD-NIFT, FCC, IEC TC100-TAG, IJUG, IMA, NAB, NAPM, NIST, SMPTE, TIA/TR29, T1A1, INCITS/H3, INCITS/V1, X9, and X12.

Information exchange is accomplished by document mailings, strong overlap in membership, informal reports, or formal liaison statements as appropriate.

7 Membership & Officers

7.1 Officers

Chairman, L3
Myron (Mike) Rubinfeld (NIST)
Last Training Date: May 2006

L3 International Representative (IR)
Andrew Tescher (Microsoft)
Last Training Date: 2004

L3 Treasurer
Pankaj Topiwala (FastVDO)

L3 Recording Secretary
Dr. Timothy Wilkinson (Aerospace Corporation)

Chairman, L3.1
Dr. Ajay Luthra (Motorola)

Co-Chair, L3.1
Mr. Wo Chang (NIST)

Chairman, L3.2
Mr. Bernard Brower (ITT Industries)

Co-Chair, L3.2
Dr. Timothy Wilkinson

7.2 L3 Membership. Also see [attached list](#) provided by Secretariat

Company	Name	Status
Adobe	Scott Foshee	Advisory
Brightscale	Lazar Bivolarsky	Voting
Dolby	Walt Husak	Voting
FastVDO	Pankaj Topiwala	Voting
Freescale	Yolanda Prieto	Voting
Hewlett Packard	Taek Kim	Advisory
Infoprint	Arianne Hinds	Advisory
ITT Industries	Bernie Brower	Voting
Microsoft	Andy Tescher	Voting
Motorola	Ajay Luthra	Voting
NIST	Wo Chang	Voting
Qpixel	Borna Ghavam	Voting
Qualcomm	Yuri Resnick	Voting
Ricoh Innovations	Martin Boliek	Advisory
Sony	Ed Barrett	Advisory
The Aerospace Corporation	Tim Wilkinson	Voting

7.3 L3.1 Membership

See Attachment 2. Also see [attached list](#) provided by Secretariat.

7.4 L3.2 Membership

See Attachment 3. Also see [attached list](#) provided by Secretariat.

8 Future Trends and Related Technical Activities

The demand for the immediate availability of specifications continues to grow. It has become clear that industry cannot afford to wait 3, 6 or more months from the time a specification is approved until it is available from ISO. New business models are needed which will satisfy this industry need while maintaining the ability of National Bodies to survive financially. In response to a request from SC 29, WG 11 suggested several means by which this could be achieved. These included corporate subscription licensing which is suitable to large organizations, making specifications available through on-line companies, and making overviews and summaries available free of charge.

The complexity of specifications continues to grow. More and more implementations are being dominated by software rather than hardware. The application of Intellectual Property to software based implementations is a much more complex issue than it was for hardware based implementations. New standardization efforts are much more complex than ones completed just a few years ago.

Because of the size and complexity of these new efforts, it is no longer possible for most organizations to develop and maintain their own reference software implementations. This has led to new policies within the Working Groups, which require that source code be supplied for all normative parts of the proposed standard. This allows one or two organizations (or federations of smaller organizations) to develop and maintain a reference software implementation for the Working Group. In some cases the requirement for source code donation has been extended to include non-normative elements of the specification (such as encoders). In MPEG-7 the US has requested that source code donations for non-normative parts be optional and that binary libraries could be substituted for source code. This is feasible since languages like JAVA permit cross-platform operation. The driving reason behind this change is that it is expected that US industry will utilize these non-normative elements in products which use the standard and that these non-normative elements would be key aspects of product differentiation.

There are two major trends that we have identified within the still image working group. First, increased functionality is a priority over increased compression efficiency. JPEG 2000 is the prime example where the compression efficiency is somewhere between 5 and 20% better than current JPEG but the functionality is so much greater and do what JBIG, JPEG lossless, and all 28 modes of JPEG DCT can do all within one bit stream.

The second is the increased collaboration with the advanced motion compression groups (MPEG 4, MPEG 7, and Motion JPEG).

9 Other Administrative Information

9.1 Bank Account

A bank account was set up at Bank of America under the name of ITI (INCITS) with Dr. Topiwala, M. Rubinfeld and Ms. Lynn Barra (INCITS) acting as signatories.

9.2 Training Seminars

Dr. Andrew Tescher (Microsoft), the IR of L3, continued to conduct a standards overview training seminar at each of the three L3 meetings each year. He also performs the crucial activity of relaying all the ballot items, resolutions and delegation rosters to the INCITS secretariat. Plus, he serves as US HoD at all the JTC1/SC29 meetings

9.3 INCITS Coordination

Because of a large amount of synchronization difficulties with respect to the membership database and associated reflectors, and after meetings with INCITS on these matters, it was decided that INCITS would take on the sole responsibility for the membership database and the reflectors. Wo Chang, Co-Chair of L3.1 is still the webmaster for the L3, L3.1 & L3.2 data repositories and other L3 information, but he is scheduled to terminate this activity by the end of 2007. L3 needs to quickly replace the webmaster activities with some other viable resource or place it in the hands of INCITS.

9.4 Administrative or Procedural Issues

There were difficulties in obtaining accurate and timely information regarding which individuals within L3 and its TGs has paid his or her membership dues and which ones have not. Part of this problem stems from the fact that there are two separately administered databases, one administered by the secretariat and one administered by the chairman of the committee. An additional problem occurred because the secretariat used a membership form which differed from the one used by the committee. While the staff at the secretariat has been very responsive in correcting errors in the database, the process by which these errors are detected was and is time consuming.

As a result of this issue, it was agreed between INCITS and L3 that the membership database will solely reside at INCITS, and L3 will be responsible for reporting changes to the database (inserted in its minutes) to the INCITS secretariat. Also, INCITS will be responsible for keeping the email reflectors for L3. Jeopardy Letters, based on attendance issues will still be the responsibility of L3. Jeopardy Letters based on "payment of annual dues" issues will be the responsibility of the INCITS secretariat.

9.5 Recommendations

L3 recommends that a viable replacement to NIST be approved to be the future host for the WG11 and L3 online data sites, both Web and ftp.

L3 recommends to INCITS that the RD2 be changed to reflect the greater amount of \$150,000 as a maximum for any sub-committee's treasury account.

L3 recommends that certain equipment such as projectors, printers and access points be purchased by L3 in order to save a great amount on meeting fees. This change should also be reflected in the RD2.

10 Financial Statement

The committee has approximately \$52,000 in reserves in the INCITS/L3 bank account. On average, each meeting of the committee costs \$13,500. Thus the current reserves are slightly less than the average cost of holding a meeting. The goal for 2007 was to build up the reserves in the INCITS/L3 account to a level approximately equal to the average cost of holding a meeting.

A complete set of financial statements for 2006/7 can be found in attachment 4.

Attachment 1 – INCITS/L3 Membership List as of 01 April 2005

Organization INCITS/L3 Voting

Position Status

KEY: PM=Principal Member PA=Principal Alternate AA=Additional Alternate X=Ex-Officio O=Observer L=Liaison N=Inactive
 V=Voting J=Jeopardy A=Applied

Committee: INCITS L3, Coding of Audio- Picture- Multimedia and Hypermedia Information

Organization	Representative	Participant Class	Membership Class
Adobe Systems, Inc.	<u>Dr Scott Foshee</u>	Principal	Voting
AIAA	<u>Mr Nicholas Beser</u>	Liaison	
<u>Apple Computer Inc.</u>	<u>Mr David Singer</u>	Principal	Advisory
Cisco Systems Inc	<u>Mr Fang Wu</u>	Principal	Advisory
Conexant Systems, Inc.	<u>Dr Dzung Hoang</u>	Principal	Advisory
Conexant Systems, Inc.	<u>Mr Feng Chi Wang</u>	Alternate	Advisory
CoWare, Inc.	<u>Mr Craig Demel</u>	Principal	Voting
Digimarc Corporation	<u>Dr Kenneth Levy</u>	Principal	Advisory
Dolby Laboratories Inc	<u>Mr Walter Husak</u>	Principal	Voting
Dolby Laboratories Inc	<u>Mr Dave Schnuelle</u>	Alternate	Voting
Eastman Kodak Company	<u>Mr Majid Rabbani</u>	Alternate	Voting
FastVDO, LLC	<u>Dr Pankaj Topiwala</u>	Principal	Voting
Freescale Semiconductor, Inc.	<u>Dr Zhongli He</u>	Additional Alternate	Advisory
Freescale Semiconductor, Inc.	<u>Dr Yolanda Prieto</u>	Principal	Advisory
Freescale Semiconductor, Inc.	<u>Dr Yong Yan</u>	Alternate	Advisory
<u>Hewlett-Packard Company</u>	<u>Mr Ullas Gargi</u>	Alternate	Voting
Hewlett-Packard Company	<u>Mr Taek Kim</u>	Principal	Voting
IBM Corporation	<u>Dr Michelle Kim</u>	Alternate	Voting
IBM Corporation	<u>Mr Peter Schirling</u>	Principal	Voting
ITT Industries	<u>Mr Bernie Brower</u>	Principal	Voting
Microsoft Corporation	<u>Dr Gary Sullivan</u>	Alternate	Voting
Microsoft Corporation	<u>Dr Andrew Tescher</u>	Principal	Voting
Motorola Inc.	<u>Mr Ajay Luthra</u>	Principal	Voting
NIST	<u>Mr Wo Chang</u>	Alternate	Voting
NIST	<u>Mr Mike Rubinfeld</u>	Principal	Voting
QPixel Technology, Inc.	<u>Mr Wen Hsu</u>	Alternate	Voting
QPixel Technology, Inc.	<u>Dr Hitoshi Watanabe</u>	Principal	Voting
Real Networks, Inc.	<u>Dr Atul Puri</u>	Principal	Advisory
Ricoh Innovations, Inc.	<u>Mr Martin Boliek</u>	Alternate	Advisory
Ricoh Innovations, Inc.	<u>Mr Michael Gormish</u>	Principal	Advisory
Sarnoff Corporation	<u>Dr Michael Isnardi</u>	Principal	Advisory
Sony Electronics, Inc.	<u>Ms Jean Baronas</u>	Alternate	Advisory
Sony Electronics, Inc.	<u>Dr Ali Tabatabai</u>	Principal	Advisory
Sorenson	<u>Mr Joe Romriell</u>	Principal	Advisory

*Operating under the procedures of the American National Standards Institute
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Sorenson	<u>Mr Richard Shields</u>	Alternate	Advisory
<u>Texas Instruments, Inc.</u>	<u>Dr Minhua Zhou</u>	Principal	Advisory
The Aerospace Corporation	<u>Mr Timothy Wilkinson</u>	Principal	Voting
Thomson, Inc.	<u>Mr Gregory Cook</u>	Additional Alternate	Advisory
Thomson, Inc.	<u>Mr Michael Deiss</u>	Principal	Advisory
Thomson, Inc.	<u>Mrs Peng Yin</u>	Additional Alternate	Advisory
Thomson, Inc.	<u>Dr Haoping Yu</u>	Alternate	Advisory
Unisys Corporation	<u>Mr David Concannon</u>	Principal	Advisory
Victa	<u>Dr John Nelson</u>	Principal	Voting
VWEB Corporation	<u>Mr Sho Long Chen</u>	Principal	Advisory
Xerox Corporation	<u>Mr Robert Buckley</u>	Principal	Advisory
Xerox Corporation	<u>Mr LLOYD MCINTYRE</u>	Alternate	Advisory
Xilinx	<u>Dr Wilson Chung</u>	Alternate	Advisory
Xilinx	<u>Mr Robert Turney</u>	Principal	Advisory
Yahoo! Inc	<u>Dr Daniel Lee</u>	Principal	Advisory

Attachment 2 – INCITS/L3.1 Membership List as of 18 April 2005

Organization INCITS/L3.1 Voting

Position Status

KEY: PM=Principal Member PA=Principal Alternate AA=Additional Alternate X=Ex-Officio O=Observer L=Liaison N=Inactive
 V=Voting J=Jeopardy A=Applied

Committee: INCITS L3.1, MPEG Development Activity

Organization	Representative	Participant Class	Membership Class
Advanced Micro Devices Inc	<u>Dr WEI-LIEN HSU</u>	Principal	Voting
AGFA Monotype Corporation	<u>Mr Vladimir Levantovsky</u>	Principal	Voting
AIAA	<u>Mr Nicholas Beser</u>	Liaison	
Apple Computer Inc.	<u>Dr Barry Haskell</u>	Additional Alternate	Voting
Apple Computer Inc.	<u>Mr Roger Kumar</u>	Additional Alternate	Voting
Apple Computer Inc.	<u>Mr David Singer</u>	Principal	Voting
Apple Computer Inc.	<u>Mr Hsi-Jung Wu</u>	Alternate	Voting
ATI, Inc	<u>Mr Larry Pearlstein</u>	Principal	Voting
Audio Research Labs	<u>Mr Schuyler Quackenbush</u>	Principal	Voting
Avid Technology, Inc.	<u>Ms Katherine Cornog</u>	Alternate	Voting
Avid Technology, Inc.	<u>Mr Michel Rynderman</u>	Principal	Voting
Brigham Young University	<u>Mr Merrill Hansen</u>	Alternate	Voting
Brigham Young University	<u>Dr Alan Melby</u>	Principal	Voting
Broadcom Corporation	<u>Mr Sherman Chen</u>	Principal	Voting
Broadcom Corporation	<u>Mr Stephen Gordon</u>	Additional Alternate	Voting
Broadcom Corporation	<u>Mr Tom McMahon</u>	Additional Alternate	Voting
Broadcom Corporation	<u>Mr Shawn Zhong</u>	Alternate	Voting
C-COR Broadband Management Solutions, LLC	<u>Dr Guy Cherry</u>	Principal	Voting
Cable Television Laboratories	<u>Dr Mukta Kar</u>	Principal	Voting
Cable Television Laboratories	<u>Dr Yasser Syed</u>	Alternate	Voting
Cisco Systems Inc	<u>Ms Aimee Zhang</u>	Principal	Voting
Cisco Systems Inc	<u>Mr Simon Zhao</u>	Alternate	Voting
Conexant Systems, Inc.	<u>Dr Dzung Hoang</u>	Principal	Voting
Conexant Systems, Inc.	<u>Mr Feng Chi Wang</u>	Alternate	Voting
ContentGuard	<u>Mr Thomas DeMartini</u>	Additional Alternate	Voting
ContentGuard	<u>Mr Bradford Gandee</u>	Principal	Voting
ContentGuard	<u>Dr Xin Wang</u>	Alternate	Voting
CoWare, Inc.	<u>Mr Craig Demel</u>	Principal	Voting
DCS Corporation	<u>Mr William Protzman</u>	Liaison	
Digimarc Corporation	<u>Dr Kenneth Levy</u>	Principal	Voting
DoCoMo Communications Laboratories USA Inc	<u>Dr Frank Bossen</u>	Alternate	Voting
DoCoMo Communications Laboratories USA Inc	<u>Mr Gerald Powell</u>	Principal	Voting
Dolby Laboratories Inc	<u>Mr Matthew Fellers</u>	Principal	Voting
Dolby Laboratories Inc	<u>Mr Walter Gish</u>	Additional Alternate	Voting

Dolby Laboratories Inc	<u>Mr Walter Husak</u>	Alternate	Voting
Dolby Laboratories Inc	<u>Mr Alan Seefeldt</u>	Additional Alternate	Voting
Dolby Laboratories Inc	<u>Mr Mark Vinton</u>	Additional Alternate	Voting
Eastman Kodak Company	<u>Mr Scott Houchin</u>	Alternate	Voting
Eastman Kodak Company	<u>Mr Majid Rabbani</u>	Principal	Voting
Euclid Discoveries	<u>Mr Charles Pace</u>	Principal	Voting
Euclid Discoveries	<u>Mr Richard Wingard</u>	Alternate	Voting
FastVDO, LLC	<u>Dr Pankaj Topiwala</u>	Principal	Voting
Fox Digital	<u>Mr Jim DeFillippis</u>	Principal	Voting
Freescale Semiconductor, Inc.	<u>Dr Zhongli He</u>	Additional Alternate	Voting
Freescale Semiconductor, Inc.	<u>Dr Yolanda Prieto</u>	Principal	Voting
Freescale Semiconductor, Inc.	<u>Dr Yong Yan</u>	Alternate	Voting
Harmonic Inc	<u>Mr Andrew Johnson</u>	Principal	Voting
Hewlett-Packard Company	<u>Dr John Apostolopoulos</u>	Principal	Voting
Hewlett-Packard Company	<u>Dr Susie Wee</u>	Alternate	Voting
Hughes Electronics Company	<u>Mr Ashish Banerji</u>	Principal	Voting
Hughes Electronics Company	<u>Dr Kumar Swaminathan</u>	Alternate	Voting
IBM Corporation	<u>Mr Marco Hurtado</u>	Additional Alternate	Voting
IBM Corporation	<u>Dr Michelle Kim</u>	Alternate	Voting
IBM Corporation	<u>Mr Peter Schirling</u>	Principal	Voting
Idaho National Engineering Laboratory	<u>Dr L. Eric Greenwade</u>	Principal	Voting
Industrial Technology Research Institute, Inc. (ITRI)	<u>Dr Hsueh-Ming Hang</u>	Alternate	Voting
Industrial Technology Research Institute, Inc. (ITRI)	<u>Dr Chris Lee</u>	Additional Alternate	Voting
Industrial Technology Research Institute, Inc. (ITRI)	<u>Dr Chung-Jr Lian</u>	Additional Alternate	Voting
Industrial Technology Research Institute, Inc. (ITRI)	<u>Mr Wen-Hsiao Peng</u>	Additional Alternate	Voting
Industrial Technology Research Institute, Inc. (ITRI)	<u>Dr Chun-Jen Tsai</u>	Principal	Voting
Industrial Technology Research Institute, Inc. (ITRI)	<u>Mr Yi-Shin Tung</u>	Additional Alternate	Voting
Industrial Technology Research Institute, Inc. (ITRI)	<u>Dr Jhing-Fa Wang</u>	Additional Alternate	Voting
Intel Corporation	<u>Dr Yi-Jen Chiu</u>	Additional Alternate	Voting
Intel Corporation	<u>Mr Munsu Haque</u>	Principal	Voting
Intel Corporation	<u>Dr Fai Yeung</u>	Alternate	Voting
Intertrust Technologies Corporation	<u>Mr Rob Koenen</u>	Principal	Voting
KNK-MPEG.COM	<u>Ms Kristine Kneib</u>	Principal	Voting
Metta Technology	<u>Dr Caspar Horne</u>	Principal	Voting
Microsoft Corporation	<u>Mr James Johnston</u>	Additional Alternate	Voting
Microsoft Corporation	<u>Mr Mike Ksar</u>	Additional Alternate	Voting
Microsoft Corporation	<u>Ms Martha Nalebuff</u>	Additional Alternate	Voting
Microsoft Corporation	<u>Mr Florian Pestoni</u>	Additional Alternate	Voting
Microsoft Corporation	<u>Dr Gary Sullivan</u>	Principal	Voting
Microsoft Corporation	<u>Dr Andrew Tescher</u>	Alternate	Voting
Mitsubishi Electric	<u>Dr Manspeter Pfister</u>	Additional Alternate	Voting

Mitsubishi Electric	<u>Mr Huifang Sun</u>	Principal	Voting
Mitsubishi Electric	<u>Dr Anthony Vetro</u>	Alternate	Voting
Mobilygen Corporation	<u>Mr Jose Alvarez</u>	Alternate	Voting
Mobilygen Corporation	<u>Dr Lulin Chen</u>	Additional Alternate	Voting
Mobilygen Corporation	<u>Mr Sorin Cismas</u>	Principal	Voting
Mobilygen Corporation	<u>Dr Jiangtao Wen</u>	Additional Alternate	Voting
Mood Logic, Inc.	<u>Dr Elion Chin</u>	Principal	Voting
Mood Logic, Inc.	<u>Mr Benjamin Dorn</u>	Alternate	Voting
Motion Picture Association of America	<u>Mr Scott Dinsdale</u>	Alternate	Voting
Motion Picture Association of America	<u>Mr Chris Russell</u>	Principal	Voting
Motorola Inc.	<u>Mr Ajay Luthra</u>	Principal	Voting
Motorola Inc.	<u>Dr Sam Narasimhan</u>	Alternate	Voting
MPEG LA, LLC.	<u>Dr Marina Bosi</u>	Principal	Voting
MPEG LA, LLC.	<u>Ms Michelle Ott</u>	Alternate	Voting
Neural Audio Corporation	<u>Mr Robert Reams</u>	Alternate	Voting
Neural Audio Corporation	<u>Mr Geir Skaaden</u>	Principal	Voting
Nielsen Media Research	<u>Mr Alan Bosworth</u>	Alternate	Voting
Nielsen Media Research	<u>Mr ARUN RAMASWAMY</u>	Principal	Voting
NIST	<u>Mr Wo Chang</u>	Principal	Voting
NIST	<u>Mr Charles Fenimore</u>	Alternate	Voting
NJR Corporation	<u>Mr Kwok Chau</u>	Principal	Voting
NJR Corporation	<u>Mr Hau-Yung Chen</u>	Alternate	Voting
NVidia Corporation	<u>Mr Stephen Lew</u>	Alternate	Voting
NVidia Corporation	<u>Dr Iole Moccagatta</u>	Additional Alternate	Voting
NVidia Corporation	<u>Mr Philip Zheng</u>	Principal	Voting
Packetvideo Corporation	<u>Mr Muhammed Coban</u>	Principal	Voting
QPixel Technology, Inc.	<u>Dr Mingming Gu</u>	Alternate	Voting
QPixel Technology, Inc.	<u>Mr Dengzhi Zhang</u>	Principal	Voting
Qualcomm, Inc.	<u>Mr Peisong Chen</u>	Additional Alternate	Voting
Qualcomm, Inc.	<u>Mr Seyfullah Oguz</u>	Additional Alternate	Voting
Qualcomm, Inc.	<u>Ms Viji Raveendran</u>	Principal	Voting
Qualcomm, Inc.	<u>Mr Phoom Sagetong</u>	Additional Alternate	Voting
Qualcomm, Inc.	<u>Mr Amnon Silberger</u>	Alternate	Voting
Real Networks, Inc.	<u>Dr Atul Puri</u>	Principal	Voting
Real Networks, Inc.	<u>Mr Yuriy Reznik</u>	Alternate	Voting
Recording Industry Association of America	<u>Mr Bruce Block</u>	Principal	Voting
Recording Industry Association of America	<u>Mr Carlos Garza</u>	Alternate	Voting
Sarnoff Corporation	<u>Dr Hui Cheng</u>	Alternate	Voting
Sarnoff Corporation	<u>Dr Michael Isnardi</u>	Principal	Voting
Scientific Atlanta, Inc.	<u>Mr Allen Ecker</u>	Alternate	Voting
Scientific Atlanta, Inc.	<u>Dr Arturo Rodriguez</u>	Principal	Voting

Sharp Laboratories of America	<u>Dr Shawmin Lei</u>	Additional Alternate	Voting
Sharp Laboratories of America	<u>Mr M. Ibrahim Sezan</u>	Principal	Voting
Sharp Laboratories of America	<u>Dr Shijun Sun</u>	Additional Alternate	Voting
Sharp Laboratories of America	<u>Dr Peter Van Beek</u>	Alternate	Voting
Sony Electronics, Inc.	<u>Dr Ali Tabatabai</u>	Principal	Voting
Sony Electronics, Inc.	<u>Mr Mohammed Visharam</u>	Alternate	Voting
Sorenson	<u>Mr Joe Romriell</u>	Alternate	Voting
Sorenson	<u>Mr Richard Shields</u>	Principal	Voting
Sun Microsystems, Inc.	<u>Dr Gerard Fernando</u>	Principal	Voting
Sun Microsystems, Inc.	<u>Dr Viswanathan Swaminathan</u>	Alternate	Voting
Texas Instruments, Inc.	<u>Dr Minhua Zhou</u>	Principal	Voting
Thomson, Inc.	<u>Mr Michael Deiss</u>	Principal	Voting
Thomson, Inc.	<u>Dr Haoping Yu</u>	Alternate	Voting
TVT Systems	<u>Mr Peter Borgwardt</u>	Principal	Voting
TVT Systems	<u>Dr Mayer Schwartz</u>	Alternate	Voting
United States Air Force	<u>Dr David Hench</u>	Principal	Voting
University of Miami	<u>Mr Benjamin Fields</u>	Alternate	Voting
University of Miami	<u>Mr Kurt Jacobson</u>	Principal	Voting
VBrick Systems, Inc.	<u>Mr Andrew Krupiczka</u>	Principal	Voting
VBrick Systems, Inc.	<u>Mr Sassan Pejhan</u>	Alternate	Voting
Vela Research	<u>Mr David Lindsay</u>	Principal	Voting
Vela Research	<u>Mr Steve Mann</u>	Alternate	Voting
Victa	<u>Dr John Nelson</u>	Principal	Voting
Vidiator Technology (US) Inc.	<u>Mr Lalit Sarna</u>	Alternate	Voting
Vidiator Technology (US) Inc.	<u>Dr Dai Tracy Yang</u>	Principal	Voting
VWEB Corporation	<u>Mr Sho Long Chen</u>	Principal	Voting
VWEB Corporation	<u>Dr Qunshan Gu</u>	Alternate	Voting
Web3D	<u>Mr Aaron Walsh</u>	Liaison	
Xilinx	<u>Dr Wilson Chung</u>	Alternate	Voting
Xilinx	<u>Mr Robert Turney</u>	Principal	Voting

See document "rolodex.pdf"

Attachment 3 – INCITS/L3.2 Membership List as of 22 September 2000

Organization INCITS/L3.2 Voting

Position Status

KEY: PM=Principal Member PA=Principal Alternate AA=Additional Alternate X=Ex-Officio O=Observer L=Liaison N=Inactive

V=Voting J=Jeopardy A=Applied

04/18/2005

INCITS L3.2

Still Image Coding

AccuSoft Company	<u>Mr Gena Vyazmitinov</u>	Principal	Voting
Adobe Systems, Inc.	<u>Dr Scott Foshee</u>	Principal	Voting
Apple Computer Inc.	<u>Mr David Singer</u>	Principal	Voting
Aware, Inc.	<u>Mr Ron Gut</u>	Alternate	Voting
Aware, Inc.	<u>Dr Alexis Tzannes</u>	Principal	Voting
Cisco Systems Inc	<u>Mr Fang Wu</u>	Principal	Voting
Conexant Systems, Inc.	<u>Dr Dzung Hoang</u>	Principal	Voting
Conexant Systems, Inc.	<u>Mr Feng Chi Wang</u>	Alternate	Voting
CoWare, Inc.	<u>Mr Craig Demel</u>	Principal	Voting
DCS Corporation	<u>Mr William Protzman</u>	Liaison	
Dolby Laboratories Inc	<u>Mr Walter Husak</u>	Principal	Voting
Dolby Laboratories Inc	<u>Mr Dave Schnuelle</u>	Alternate	Voting
Eastman Kodak Company	<u>Mr Scott Houchin</u>	Principal	Voting
Eastman Kodak Company	<u>Mr Majid Rabbani</u>	Alternate	Voting
Freescale Semiconductor, Inc.	<u>Dr Zhongli He</u>	Additional Alternate	Voting
Freescale Semiconductor, Inc.	<u>Dr Yolanda Prieto</u>	Principal	Voting
Freescale Semiconductor, Inc.	<u>Dr Yong Yan</u>	Alternate	Voting
Hewlett-Packard Company	<u>Mr Taek Kim</u>	Principal	Voting
Hewlett-Packard Company	<u>Dr Susie Wee</u>	Alternate	Voting
IBM Corporation	<u>Ms Joan Mitchell</u>	Principal	Voting
Idaho National Engineering Laboratory	<u>Dr L. Eric Greenwade</u>	Principal	Voting
ITT Industries	<u>Mr Bernie Brower</u>	Principal	Voting
Kromos Technology	<u>Dr Matthew Cushman</u>	Principal	Voting
Mitre Corporation	<u>Ms Margaret Lepley</u>	Principal	Voting
Mitre Corporation	<u>Dr Jack McDonald</u>	Alternate	Voting
NIST	<u>Mr Mike Rubinfeld</u>	Principal	Voting
Picture Elements Inc.	<u>Mr MICHAEL D OTT</u>	Alternate	Voting
Picture Elements Inc.	<u>Mr Louis Sharpe</u>	Principal	Voting
QPixel Technology, Inc.	<u>Dr Hitoshi Watanabe</u>	Alternate	Voting
QPixel Technology, Inc.	<u>Mr Dengzhi Zhang</u>	Principal	Voting
Ricoh Innovations, Inc.	<u>Mr Michael Gormish</u>	Principal	Voting
Sarnoff Corporation	<u>Dr Michael Isnardi</u>	Principal	Voting
Sorenson	<u>Mr Joe Romriell</u>	Alternate	Voting
Sorenson	<u>Mr Richard Shields</u>	Principal	Voting
Texas Instruments, Inc.	<u>Dr Karen Oehler</u>	Alternate	Voting

Texas Instruments, Inc.	<u>Dr Minhua Zhou</u>	Principal	Voting
The Aerospace Corportion	<u>Mr Val Vaughn</u>	Alternate	Voting
The Aerospace Corportion	<u>Mr Timothy Wilkinson</u>	Principal	Voting
Titan Corporation	<u>Mr John Smith</u>	Principal	Voting
Unisys Corporation	<u>Mr David Concannon</u>	Principal	Voting
University of Arizona	<u>Dr Ali Bilgin</u>	Alternate	Voting
University of Arizona	<u>Dr Michael Marcellin</u>	Principal	Voting
University of Texas	<u>Dr Sergio Cabrera</u>	Principal	Voting
University of Texas	<u>Dr Bryan Usevitch</u>	Alternate	Voting
Xerox Corporation	<u>Mr Robert Buckley</u>	Principal	Voting
Xerox Corporation	<u>Mr LLOYD MCINTYRE</u>	Alternate	Voting
Xilinx	<u>Dr Wilson Chung</u>	Alternate	Voting
Xilinx	<u>Mr Robert Turney</u>	Principal	Voting

See Document rolodex.pdf

Attachment 4 INCITS/L3 Financial Reports

**Accredited Standards Committee
INCITS, National Committee on
Information Technology Standards*
INCITS/L3, Audio/Picture Coding**

**Document: INCITS/L3007-161
Date: 2007-06-28
Project: Annual Report**

**Reply to:
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Cell: (703) 626-3616
E-mail: L3Chair@msn.com**

To: INCITS Secretariat, INCITS Board Members, and INCITS/L3 Committee Members
From: Mike Rubinfeld, Chairman, INCITS/L3
Subject: Annual Treasurer's Report for Technical Committee INCITS/L3 (Audio/Picture Coding) Covering the Period from May 2006 to June 2007
Purpose: INCITS Required Information

Attached:

INCITS/L3 Annual Treasurer's Report for Year 2006/7

See [HTTP://INCITS.NIST.GOV](http://INCITS.NIST.GOV)

L3 Document # L3007_0154 (Latest L3 Treasury Report)