

Minutes

Control Protocols Working Group

Saturday 03 August 2013

D/FW Marriott Solana

Westlake, TX

Working group leaders:

Michael Lay; Philips Color Kinetics; Royal Philips; P; MP
Kimberly Corbett Oates; Schuler Shook; Schuler Shook; P; DE

Recording secretaries:

Erin Grabe; PLASA North America
Karl G. Ruling; PLASA North America

Members attending:

Kevin Loewen; Pathway Connectivity Inc.; Acuity Brands Inc.; P; MP
Philip Nye; Acuity Brands Lighting; Acuity Brands Inc.; A; MP
Bill Ellis; Candela Controls, Inc.; O; U
Bob Toms; Catalyst Microsystems LLC; O; G
Paul Kleissler; City Theatrical, Inc.; P; MP
Edward A. (Ted) Paget; Daktronics Automated Rigging Solutions; Daktronics Inc. ; P; G
Larry Schoeneman; DesignLab Chicago, Inc.; P; DR
Milton Davis; Doug Fleenor Design, Inc.; A; MP
Steve Terry; Electronic Theatre Controls; A; MP
Maya Nigrosh; Electronic Theatre Controls, Inc.; A; MP
Insu Kim; ETRI; Electronics and Telecommunications Research Institute; A; G
Sang-Kyu Lim; ETRI; Electronics and Telecommunications Research Institute; P; G
Scott M. Blair; Full Throttle Films/ VER; P; DR
Victoria Tisdale; Colby College; Google Summer of Code 2013; O; G
Ed Garstkiewicz; Harting Inc., North America; Harting KGAA; P; G
Edwin S. Kramer; I.A.T.S.E. Local 1; P; U
Roger Lattin; I.A.T.S.E. Local 728; P; U
Ken Vannice; Ken Vannice LLC; I; G
Michael Karlsson; LumenRadio AB; P; MP
Simon Newton; Open Lighting Project; P; G
Sean Sill; Open Lighting Project; O; DE
Ben Peoples; Pittsburgh Hoist & Sandbag Company; O; CP
Charles Reese; Production Resource Group; P; DR
Mitch Hefter; USITT; P; U

Visitors:

None

1 Opening remarks

Kimberly Corbett Oates called the meeting to order with a railroad whistle at 9:00. She welcomed everyone to Texas, instructed everyone to seek air conditioning, and also asked that cell phones be silenced or set to vibrate.

2 Attendance

2.1 Introductions of those present and circulation of attendance sheet

A green sign-in sheet was passed around counter clockwise. Self-introductions took place clockwise.

2.2 Determination of a quorum

Kimberly asked voting members present to raise a hand. She announced a supermajority present.

2.3 Recognition of alternate voting members

Kimberly asked Alternate voters present to raise a hand for recognition.

3 Membership

3.1 Requirements for membership

The following statement was read aloud to the assembly by Kimberly Corbett Oates:

Membership is open to all who are affected by the work of the group. People and companies that would be in any interest category other than a manufacturer interest category are at this time particularly encouraged to apply for membership. Voting members are required to attend meetings and to vote on letter ballots. Voting members and their alternates may not miss three consecutive meetings without a loss of voting status.

3.2 Changes to observer status due to lack of attendance

Voting members who have missed the previous two meetings and will be moved to observer status if this meeting also is missed:

There are currently no members in jeopardy of a change to Observer status

3.3 Processing of new membership requests and reaffirmation of members with new companies

As of 01 July 2013, the following applications have been received and logged:

Fraser Connolly; Artistic Licence Engineering, Ltd.; A; MP
Ken Bruns; Lumenpulse Lighting Inc.; O; MP
Ben Peoples; Pittsburgh Hoist & Sandbag Co.; O; CP
Victoria Tisdale; Google Summer of Code 2013 (Colby College); O; G
Kenneth Vannice; Kenneth Vannice LLC; I; G

The applicants were read aloud by Kimberly Corbett Oates and recognized. Ted Paget moved that the applications be accepted. The motion was seconded and unanimously approved by a show of hands.

3.4 Consensus body

The full consensus body during this meeting, including those not present, was:

Name	Representing (This is the sort field.)	Voting status	Int. cat.
Jean-Francois Canuel	A.C. Lighting Ltd.	P	CP
Reza Khanmalek	A.C. Lighting Ltd.	A	CP
Kevin Loewen	Acuity Brands Inc.	P	MP
Robert Bell	Acuity Brands Inc.	A	MP
Gary Douglas	Acuity Brands Inc.	A	MP
Philip Nye	Acuity Brands Inc.	A	MP
Garrett Gallant	Acuity Brands Inc.	A	MP
Wayne David Howell	Artistic Licence Holdings	P	DE
Fraser Connolly	Artistic Licence Holdings	A	DE
Paul Kleissler	City Theatrical, Inc.	P	MP
Larry Dunn	City Theatrical, Inc.	A	MP
Edward A. (Ted) Paget	Daktronics Inc.	P	G
Larry Schoeneman	DesignLab Chicago, Inc.	P	DR

Name	Representing (This is the sort field.)	Voting status	Int. cat.
Ulrich Kunkel	DIN, NVBF Committee	P	U
Doug Fleenor	Doug Fleenor Design, Inc.	P	MP
Milton Davis	Doug Fleenor Design, Inc.	A	MP
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	P	MP
Steve Terry	Electronic Theatre Controls, Inc.	A	MP
Maya Nigrosh	Electronic Theatre Controls, Inc.	A	MP
Sang-Kyu Lim	Electronics and Telecommunications Research Institute	P	G
Insu Kim	Electronics and Telecommunications Research Institute	A	G
Scott M. Blair	Full Throttle Films/ VER	P	DR
Robert Goddard	Goddard Design Co.	P	MP
Ed Garstkiewicz	Harting KGAA	P	G
Howard Forryan	Harting KGAA	A	G
Peter Willis	Howard Eaton Lighting Ltd.	P	CP
Edwin S. Kramer	I.A.T.S.E. Local 1	P	U
John Huntington	I.A.T.S.E. Local 1	A	U
Roger Lattin	I.A.T.S.E. Local 728	P	U
Dennis Grow	I.A.T.S.E. Local 728	A	U
Alan M. Rowe	I.A.T.S.E. Local 728	A	U
Hamish Dumbreck	James Embedded Systems Engineering	P	MP
Ken Vannice	Ken Vannice LLC	I	G
Tyrone Mellon_Jr.	Lex Products Corp.	P	CP
Joshua Liposky	Lex Products Corp.	A	CP
Michael Karlsson	LumenRadio AB	P	MP
Marcus Bengtsson	LumenRadio AB	A	MP
Hans Lau	LumenRadio AB	A	MP
Peter Kirkup	LumenRadio AB	A	MP
Simon Newton	Open Lighting Project	P	G
Gordan Rancic	Phoenix Service srl	P	MP
Charles Reese	Production Resource Group	P	DR
Michael Lay	Royal Philips	P	MP
Kimberly Corbett	Schuler Shook	P	DE
Mitch Hefter	USITT	P	U
Jeff T. Miller	Walt Disney Company	P	U
Christopher Tilton	Westlake Reed Leskosky	P	DE

	Total
CP (Custom-market Producer)	3
DE (Designer)	3
DR (Dealer or Rental company)	3
G (General interest)	5
MP (Mass-market Producer)	9
U (User)	5
Total votes possible	28

4 Approval of the minutes from the March meeting

See *CPmin03-2013.pdf*

Ted Paget moved to approve March minutes, Larry Schoeneman seconded the motion, and they were approved by a show of hands with 5 abstentions.

5 Reading of the call for patents

The following statement was read aloud to the assembly by Kimberly Corbett Oates:

PLASA intends not to publish any standard that contains protected intellectual property, unless that information can be licensed by anyone for a reasonable fee. PLASA uses a process of open patent and copyright disclosures to implement its intent. PLASA does not conduct patent or copyright searches and does not warrant that its standards contain no protected intellectual property.

In keeping with the open disclosures policy, I ask if anyone present wishes to notify this working group of the existence of a patent or copyright or other intellectual property that might protect material in a standard being developed by this working group. You need not be the holder of the patent or copyright to notify this working group of its existence.

Nothing was reported.

6 Reading of the anti-trust statement

The following statement was read aloud to the assembly by Kimberly Corbett Oates:

The PLASA Board of Directors, the Technical Standards Council, and the leadership of this working group will reject or nullify any actions that unlawfully restrain trade. Anyone who feels that such an action is being or has been taken is requested to bring that matter to the attention of the chairs immediately. Anyone who feels that actions in restraint of trade have been taken and not properly annulled is requested to notify the TSC chair or PLASA chair immediately.

PLASA legal counsel has informed us that violations of the anti-trust laws can have serious consequences. Individuals engaged in certain unlawful conduct can be found criminally liable. An individual convicted of a criminal violation of the Sherman Act may be fined as much as \$1,000,000 and imprisoned for up to ten years. An easy to read pamphlet describing restraint of trade issues is available from the Technical Standards Manager.

Erin Grabe held up a copy of the pamphlet. No restraint of trade issues were reported.

7 Approval of agenda

Scott Blair added the CPWG co-chair vote under new business (New item 9.1). Mitch Hefter moved that the amended agenda be approved. The motion was seconded and approved by a show of hands.

8 Old business

8.1 Standards Maintenance

Any news or action needed on any of these standards? This is a placeholder in the agenda, so we don't forget to maintain them.

ANSI E1.3 – 2001 (R2011), Entertainment Technology - Lighting Control Systems - 0 to 10V Analog Control Specification & Application Guide For ANSI E1.3 – 2004 Lighting Control Systems 0 to 10V Analog Control Specifications. Revision, reaffirmation or withdrawal in 2016.

ANSI E1.11 – 2008 (R2013), Entertainment Technology - USITT DMX512-A, Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories. Revision, reaffirmation, or withdrawal in 2018.

ANSI E1.17 - 2010, Architecture for Control Networks. Revision, reaffirmation or withdrawal in 2016.

ANSI E1.20 - 2010, Remote Device Management over USITT DMX512. Revision, reaffirmation or withdrawal in 2016.

ANSI E1.27-1 – 2006 (R2011), Entertainment Technology - Standard for Portable Control Cables for Use with USITT DMX512/1990 and E1.11 (DMX512-A) Products. Revision, reaffirmation or withdrawal in 2016.

ANSI E1.27-2 – 2009, Entertainment Technology - Recommended Practice for Permanently Installed Control Cables for Use with ANSI E1.11 (DMX512-A) and USITT DMX512/1990 Products. Revision, reaffirmation, or withdrawal in 2014.

ANSI E1.30-1 - 2010, EPI 23, Device Identification Subdevice. Revision, reaffirmation or withdrawal in 2016.

ANSI E1.30-3 – 2009, EPI 25, Time Reference in ACN Systems Using SNTP and NTP. Revision, reaffirmation, or withdrawal in 2014.

ANSI E1.30-4 – 2010, EPI 26, Device Description Language (DDL) Extensions for DMX512 and E1.31 Devices. Revision, reaffirmation, or withdrawal in 2015.

ANSI E1.30-7 – 2009, EPI 29, Allocation of Internet Protocol Version 4 Addresses to ACN Hosts. Revision, reaffirmation, or withdrawal in 2014.

ANSI E1.30-10 – 2009, EPI 32, Identification of Draft Device Description Language Modules. Revision, reaffirmation, or withdrawal in 2014.

ANSI E1.37-1 - 2012, Additional Message Sets for ANSI E1.20, Remote Device Management. Revision, reaffirmation, or withdrawal in 2017.

Kimberly asked for news or discussion. No news. Question from Blair about the lack of an E1.37-1 action date on the agenda. Karl Ruling reminded him and the group that each standard is up for revision, reaffirmation, or withdrawal five years from the publication date. The action date for E1.37 was added.

Milton Davis asked if the demise of EIA 485-A as an American National Standard affects our standards that we would need to revise them to reflect this. He volunteered that he didn't think it would, and Karl Ruling concurred. The document is no longer an ANS, but it still exists and is available.

8.2 ANSI E1.17 - 2010, Architecture for Control Networks

From the March draft minutes:

Maya Nigrosh said that an EPI 19 draft will be out to members in a month or so.

Update?

Maya Nigrosh said that work issues kept her from finishing the draft. She will be drafting the EPI and will have it out to the group within the required two weeks before the November meeting.

8.3 BSR E1.31 with Universe Synchronization

From the March draft minutes:

Ulrich Kunkel reported that the task group has been working on merging the universe synchronization protocol into E1.31, and making some other updates to E1.31.

Ulrich Kunkel moved that the revised E1.31 be offered for public review, with the vote to be conducted by letter ballot, when the draft standard is available. Ted Paget seconded the motion.

There were no objections from the working group members to this plan. The public review vote will be by letter ballot.

Paul Kleissler read Ulrich Kunkel's email regarding the project status to the working group and recommendations to the working group:

Dear colleagues,
as I cannot be with you for the Dallas meeting today here is the latest status on E1-30-12_EPI34 "Universe Synchronization" which will now become an update to the existing E1.31 officially. I strongly recommend to have another task group meeting during the LDI CPWG session this year.

Here are my notes from the last task group meeting:

1. As the former BSR_E1-30-12_EPI34 is now being incorporated into E1.31 by opening up this standard again other pending changes to E1.31 are to be carried out at the same time.

2. We are aiming for a single controller setup only – don't care about multiple controllers, this is out of the scope of this standard. Single controller per universe. But multiple controllers on same network. Within a system there shall only be one source of sync packets to a given sync group.

3. We are only synchronizing to packets received from the same controller as the universe data packets.

4. A universe to synchronized is to be identified by a option bit 5 set to "1" (octet 112).

5. The address of the sync packet shall be transmitted as HI/LO byte in octet 109/110. This will stop receivers waiting for sync packets forever and will stop them from joining every single universe's multicast group just in case it might be "the" sync universe.

6. The sync packet is identified by the vector in the framing layer (octet 40-43) to "SYNC PACKET" (0x0000000a) and shall be transmitted with no data (no DMP-layer).

7. The configuration for universe synchronization shall be carried out on the controller side only.

8. The calculation of the multicast group for the sync packets stays the same as if it was a complete universe.

9. Multiple Sources for Sync Packets

In the condition that multiple sources for Sync Packets occur on the same network (all transmitting sync packet for the same given universe), the receivers must handle this. A rule for that still needs to be defined.

A receiver which is only capable of processing one source of data will encounter a sources ex-

ceeded condition when two or more sources are present.

Many devices are capable of combining, merging or arbitrating between the candidate sources by some algorithm (see below), but such algorithms frequently limit the number of concurrent sources which can be handled due to resource limitations, or encounter situations where there are still multiple candidate sources meeting some specified condition, and then, once again, a sources exceeded condition arises which requires resolution.

10. Transmission Rate

A change to E1.31 to allow higher frame rates (exceeding the max. DMX update rate) still needs to be defined: New wording from Scott still to come.

11. All changes already done by the BSR_E1-30-12_EPI34 draft document are merged into E1.31 by Ulrich with Maya following up to correct the wording.

Have a good and constructive meeting, see you all again at LDI this year.

Regards
Ulrich

Scott Blair suggested that we need someone else to lead the task group because Uilly is often absent. Maya Nigrosh said that as co-chair of the task group she will take action.

Ted Paget moved that we rescind the letter ballot motion. The motion was seconded, and unanimously approved by a show of hands.

Scott Blair asked Maya Nigrosh to have a draft document for the LDI meeting that incorporates the changes from the January meeting. Group consensus was to do this and Maya agreed to attempt to have a document ready for a conference call in one month's time. Paget suggested that Blair and Nigrosh tag-team the draft. This was acceptable to both parties and they agreed to continue work through the reflector.

8.4 BSR E1.33, Transport of ANSI E1.20 (RDM) in an E1.31 environment

Public review ended 15 May 2013. Comment summary plus proposed EPI went out to the working group on 28 May. Update?

Scott Blair reported. Many of the comments were a straight forward "Accept", but there are about 80 comments that will take work to resolve, beginning in their meeting later today. People are not happy with SLP, so maybe we should move away from it. The task group is also trying to write a document that will guide people on how to implement the standard. SLP makes this difficult because that standard is a mess and does not provide all the services we need.

Blair said that perhaps another draft document will be ready for the working group by January, but more likely by the USITT Conference.

8.5 BSR E1.37-2, Additional Message Sets for ANSI E1.20 (RDM) – Part 2, IPv4 & DNS Configuration Messages

From the draft March minutes:

Simon Newton was not present. There was no progress report.

Update?

Simon Newton reported that he addressed all the comments and sent them to the working group.

Newton moved that we accept the comment resolutions (document CP/2013-1013). The motion was seconded. There was discussion in which the resolution document and draft standard (CP/2012-1001r2)

was modified (CP/2012-1001r3). The motion was modified to accept the revised comment resolutions (CP/2013-1013r1). The motion was approved with a show of hands, with the chairs and one other member abstaining. This was a supermajority.

Simon Newton moved that the revised document be offered for public review. The motion was seconded and then approved with a unanimous show of hands, except for the chairs' abstentions, constituting a supermajority.

8.6 BSR E1.37-x, Additional Message Sets for ANSI E1.20, LED walls and video displays

From the draft March minutes:

Scott Blair was not present. There was no progress report.

Update?

Scott Blair reported that he has been working on it. He mentioned that when BSR E1.33 is completed it will be easier to complete BSR E1.37. Blair has consulted with Carallon in the UK on the project and is making progress, but probably will really start making progress by next summer.

8.7 BSR E1.45, Visible Light Communication control protocol proposal

Update. It is on the TSC agenda.

Karl Ruling reported the results of the letter ballot, including one comment, and reminded the group that the document was on the TSC agenda. He asked the group if there were any more revisions here and now; There were none.

8.8 BSR E1.49-x, DMX512 Extensions for Architectural Lighting

From the draft March minutes:

Kimberly Corbett appointed a task group for the project: Gordan Rancic, Jeff Miller, Kevin Loewen, Larry Schoeneman, Chris Tilton, San-Kyu Lim, Maya Nigrosh, Ulrich Kunkel, and with Paul Kleissler as the leader.

Update?

Paul Kleissler reported that the task group had met, and decided that there is no need for a new standard. Feedback could be handled by some new RDM PIDs, and EIA-485-A wire installation issues by a document that describes simplified good wiring practices.

Paul Kleissler moved that we abandon the BSR E1.49 project. The motion was seconded. The motion was approved by a supermajority on a roll call ballot.

Name	Representing (This is the sort field.)	Voting status	Int. cat.	Vote
Jean-Francois Canuel	A.C. Lighting Ltd.	P	CP	
Reza Khanmalek	A.C. Lighting Ltd.	A	CP	
Kevin Loewen	Acuity Brands Inc.	P	MP	Y
Robert Bell	Acuity Brands Inc.	A	MP	
Gary Douglas	Acuity Brands Inc.	A	MP	
Philip Nye	Acuity Brands Inc.	A	MP	
Garrett Gallant	Acuity Brands Inc.	A	MP	
Wayne David Howell	Artistic Licence Holdings	P	DE	
Fraser Connolly	Artistic Licence Holdings	A	DE	
Paul Kleissler	City Theatrical, Inc.	P	MP	Y

Name	Representing (This is the sort field.)	Voting status	Int. cat.	Vote
Larry Dunn	City Theatrical, Inc.	A	MP	
Edward A. (Ted) Paget	Daktronics Inc.	P	G	Y
Larry Schoeneman	DesignLab Chicago, Inc.	P	DR	Y
Ulrich Kunkel	DIN, NVBF Committee	P	U	
Doug Fleenor	Doug Fleenor Design, Inc.	P	MP	
Milton Davis	Doug Fleenor Design, Inc.	A	MP	Y
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	P	MP	
Steve Terry	Electronic Theatre Controls, Inc.	A	MP	
Maya Nigrosh	Electronic Theatre Controls, Inc.	A	MP	Y
Sang-Kyu Lim	Electronics and Telecommunications Research Institute	P	G	Y
Insu Kim	Electronics and Telecommunications Research Institute	A	G	
Scott M. Blair	Full Throttle Films/ VER	P	DR	Y
Robert Goddard	Goddard Design Co.	P	MP	
Ed Garstkiewicz	Harting KGAA	P	G	Y
Howard Forryan	Harting KGAA	A	G	
Peter Willis	Howard Eaton Lighting Ltd.	P	CP	
Edwin S. Kramer	I.A.T.S.E. Local 1	P	U	N
John Huntington	I.A.T.S.E. Local 1	A	U	
Roger Lattin	I.A.T.S.E. Local 728	P	U	Y
Dennis Grow	I.A.T.S.E. Local 728	A	U	
Alan M. Rowe	I.A.T.S.E. Local 728	A	U	
Hamish Dumbreck	James Embedded Systems Engineering	P	MP	
Ken Vannice	Ken Vannice LLC	I	G	Y
Tyrone Mellon_Jr.	Lex Products Corp.	P	CP	Y
Joshua Liposky	Lex Products Corp.	A	CP	
Michael Karlsson	LumenRadio AB	P	MP	Y
Marcus Bengtsson	LumenRadio AB	A	MP	
Hans Lau	LumenRadio AB	A	MP	
Peter Kirkup	LumenRadio AB	A	MP	
Simon Newton	Open Lighting Project	P	G	Y
Gordan Rancic	Phoenix Service srl	P	MP	
Charles Reese	Production Resource Group	P	DR	Y
Michael Lay	Royal Philips	P	MP	Y
Kimberly Corbett	Schuler Shook	P	DE	N
Mitch Hefter	USITT	P	U	Y
Jeff T. Miller	Walt Disney Company	P	U	

Name	Representing (This is the sort field.)	Voting status	Int. cat.	Vote
Christopher Tilton	Westlake Reed Leskosky	P	DE	

	Yes	No	Abstain	Not present	Total
CP	1	0	0	2	3
DE	0	1	0	2	3
DR	3	0	0	0	3
G	5	0	0	0	5
MP	6	0	0	3	9
U	2	1	0	2	5
Totals	17	2	0	9	28

8.9 European Plugfest *Report?*

Simon Newton, Milton Davis, and Scott Blair were present at the plugfest, which was held 25th-27th April at Gatwick Manor, just south of Gatwick Airport in the UK. Blair reported that the event was well organized. There is an outreach to manufacturers that helps highlight what the protocols do so they can decide if they want to get involved. Milton said that Simon Newton had done a very good demonstration of the responder testing with the Raspberry Pi.

8.10 Texas Plugfest *Report from 1st day?*

Blair reported that it is going well. A few people did not make it because of the change in weekends. They had planned for it to be last weekend, but we moved the meeting date and they had scheduling conflicts

9 New business

9.1 Co-chair election

Kimberly Corbett Oates reminded the group that the position was a two-year commitment and opened the floor to nominations for her seat. Michael Lay nominated Oates. Larry Schoeneman seconded that motion. There were no other nominations.

With no further nominations, Kimberly was the working group's choice for co-chair for an additional two year term by acclamation.

10 Other business

Kimberly Corbett Oates mentioned the Rigging Working Group show files project (BSR E1.44), as well as a possible new project for temporary rigging of LED walls. These may be of interest to CPWG members.

11 Next meeting

Kimberly Corbett Oates announced that the next meeting is scheduled for Thursday 21 November 2013 at 9am at the Las Vegas Hotel in Las Vegas, NV.

12 Adjournment

Ted Paget moved that that the meeting adjourn. The motion was seconded and approved by a show of hands. Kimberly Corbett Oates declared the meeting adjourned at 10:13.

Membership as of 6 August 2013

Name	Company	Representing	Voting Status	Interest Category
Simon Alpert	Lighttech Event Technologies	Lighttech Event Technologies	O	CP
Klaus Amling	Licht-Technik	Licht-Technik	O	MP
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	MP
Matthew Ardine	IATSE Local 728	IATSE Local 728	O	U
Avraham Mendall Mor "Avi"	Lightswitch	Lightswitch	O	U
Timothy Baarsch	Artistic Licence Engineering Ltd.	Artistic Licence Holdings	O	DE
Robert Barbagallo	Solotech Inc.	Solotech Inc.	O	U
Robert Bell	Acuity Brands Lighting	Acuity Brands Inc.	A	MP
BenDarrington	Wireless Solutions Sweden AB	Wireless Solutions Sweden AB	O	MP
Marcus Bengtsson	LumenRadio AB	LumenRadio AB	A	MP
Adam Bennette	Electronic Theatre Controls Ltd.	Electronic Theatre Controls, Inc.	O	MP
David Bertenshaw	David Bertenshaw	David Bertenshaw	O	G
Stephen Bickford	T. Kondos Associates	T. Kondos Associates	O	U
Torrey Bievenour	Vision Quest Lighting	Vision Quest Lighting	O	G
Scott M. Blair	Full Throttle Films/ VER	Full Throttle Films/ VER	P	DR
Lee J. Bloch	Bloch Design Group, Inc.	Bloch Design Group, Inc.	O	G
David A. Boller	Organic Machines LLC	Organic Machines LLC	O	CP
Ron Bonner	PLASA Technical Resources Office	PLASA EU	O	G
André Broucke	André Broucke	André Broucke	O	G
Ken Bruns	Lumenpulse Lighting Inc.	Lumenpulse Lighting Inc.	O	MP
John (Javid) D. Butler	Integrated Theatre, Inc.	Integrated Theatre, Inc.	O	CP
Jean-Francois Canuel	Spectrum Manufacturing Inc.	A.C. Lighting Ltd.	P	CP
Steve Carlson	High Speed Design, Inc.	High Speed Design, Inc.	O	MP
Nyasha Chigwamba	Dept. of Computer Science	Rhodes University	O	U
Soo-Myong Chung	Bloch Design Group, Inc.	Bloch Design Group, Inc.	O	G
Paul J. Clark	HxDx	HxDx	O	CP
Edward R. Condit	Edward R. Condit	Edward R. Condit	O	G

Name	Company	Representing	Voting Status	Interest Category
Fraser Connolly	Artistic Licence Engineering Ltd.	Artistic Licence Holdings	A	DE
Eric Cornwell	West Side Systems	West Side Systems	O	U
Stuart Cotts	Oregon Shakespeare Festival	Oregon Shakespeare Festival	O	U
Klas Dalbjorn	Labgruppen AB	TC Group	O	MP
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP
Jeremy Day	Philips Color Kinetics	Royal Philips	O	MP
Gilray Densham	CAST Software	CAST Group Inc	O	MP
Gary Douglas	Acuity Brands Lighting	Acuity Brands Inc.	A	MP
Gary Dove	Dove Systems	Dove Systems	O	MP
Yongshun Duan	Macostar Physics Application Technology Development (Wuhan) Ltd.	Macostar International Ltd.	O	CP
Hamish Dumbreck	JESE Ltd.	James Embedded Systems Engineering	P	MP
Jerry Durand	Durand Interstellar, Inc.	Durand Interstellar, Inc.	O	CP
James Eade	PLASA	PLASA EU	O	G
Andrew Eales	Wellington Institute of Technology	Rhodes University	O	U
Bill Ellis	Candela Controls, Inc.	Candela Controls, Inc.	O	U
Paul K. Ericson	Syska Hennessy Group Lighting Design	Syska Hennessy Group Lighting Design	O	U
Jon R. Farley	Sixteenth Avenue Systems	Sixteenth Avenue Systems	O	CP
Martin Farnik	Robe Show Lighting s.r.o.	Robe Show Lighting s.r.o.	O	MP
Doug Fleenor	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	MP
Trevor Forrest	Helvar Lighting Control	Helvar Lighting Control	O	MP
Howard Forryan	Harting Ltd.	Harting KGAA	A	G
Steve Friedlander	Auerbach Pollock Friedlander	Auerbach Pollock Friedlander	O	U
Garrett Gallant	Pathway Connectivity Inc.	Acuity Brands Inc.	A	MP
Ed Garstkiewicz	Harting Inc., North America	Harting KGAA	P	G
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	MP
Jerry Gorrell	Theatre Safety Programs	Theatre Safety Programs	O	G
Tom Grimes	High End Systems, Inc.	Barco	O	MP
Dennis Grow	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A	U

Name	Company	Representing	Voting Status	Interest Category
Josh Gubler	Josh Gubler	Josh Gubler	O	CP
Rob Halliday	Rob Halliday	Rob Halliday	O	U
Sean Harding	High Output, Inc.	High Output, Inc.	O	G
Mitch Hefter	Mitch Hefter	USITT	P	U
Douglas Heriot	Douglas Heriot	Douglas Heriot	O	MP
Bill Hewlett	Hewlett Electronics	Hewlett Electronics	O	CP
Helge Hoffmann	JB Lighting	JB Lighting	O	MP
Jim Holladay	Luxence	Luxence	O	G
Wayne David Howell	Artistic Licence Engineering Ltd.	Artistic Licence Holdings	P	DE
John Huntington	City Tech, Ent Tech Department	I.A.T.S.E. Local 1	A	U
Sierk Janszen	Kiss Box	Ground Zero	O	U
Eric Johnson	Eric Johnson	Eric Johnson	O	G
Rob Johnston	Interactive Technologies, Inc.	Interactive Technologies, Inc.	O	MP
Ed Jones	Edwin Jones Co., Inc.	Edwin Jones Co., Inc.	O	CP
Tyrone Mellon_Jr.	Lex Products Corp.	Lex Products Corp.	P	CP
Jussi Kallioinen	Eastway Sound & Lighting	Eastway Sound & Lighting	O	U
Tae Gyu Kang	ETRI	Electronics and Telecommunications Research Institute	O	G
Michael Karlsson	LumenRadio AB	LumenRadio AB	P	MP
Reza Khanmalek	Spectrum Manufacturing Inc.	A.C. Lighting Ltd.	A	CP
Insu Kim	ETRI	Electronics and Telecommunications Research Institute	A	G
Peter Kirkup	LumenRadio AB	LumenRadio AB	A	MP
Hiroshi Kita	Marumo Electric Co., Ltd.	Marumo Electric Co., Ltd.	O	MP
Phil Klapwyk	IATSE Local 891	IATSE Local 891	O	U
Paul Kleissler	City Theatrical, Inc.	City Theatrical, Inc.	P	MP
Mark T. Kraft	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	MP
Edwin S. Kramer	I.A.T.S.E. Local 1	I.A.T.S.E. Local 1	P	U
Ulrich Kunkel	E3 Engineering & Education for Entertainment GmbH	DIN, NVBF Committee	P	U
Jason Kyle	JPK Systems Ltd.	JPK Systems Ltd.	O	MP

Name	Company	Representing	Voting Status	Interest Category
Roger Lattin	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	P	U
Hans Lau	LumenRadio AB	LumenRadio AB	A	MP
Michael Lay	Philips Color Kinetics	Royal Philips	P	MP
Rick Leinen	Leviton Manufacturing Co., Inc.	Leviton Manufacturing Co., Inc.	O	MP
Hans Leiter	ETC GmbH	Electronic Theatre Controls, Inc.	O	MP
Jon Lenard	Applied Electronics	Applied Electronics	O	MP
Maarten Lepelaars	eldoLED	eldoLED	O	MP
Sang-Kyu Lim	ETRI	Electronics and Telecommunications Research Institute	P	G
Joshua Liposky	Lex Products Corp.	Lex Products Corp.	A	CP
Kevin Loewen	Pathway Connectivity Inc.	Acuity Brands Inc.	P	MP
Mark Manthei	Shure Inc.	Shure Inc.	O	G
Paul F. Mardon	Pulsar Ltd.	Pulsar Ltd.	O	MP
Mick Martin	ShowCAD Control Systems	ShowCAD Control Systems	O	MP
Paul Kenneth McEwan	Zero 88	Cooper Controls Ltd.	O	MP
John Mehlretter	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	MP
Jeff T. Miller	Worldwide Standards and Auditing	Walt Disney Company	P	U
John Musarra	John Musarra	John Musarra	O	U
Tobin Neis	Barbizon Companies	Barbizon Companies	O	DR
Simon Newton	Open Lighting Project	Open Lighting Project	P	G
Dan T. Nguyen	LynTec	LynTec	O	MP
Maya Nigrosh	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	A	MP
Philip Nye	Acuity Brands Lighting	Acuity Brands Inc.	A	MP
Kimberly Corbett Oates	Schuler Shook	Schuler Shook	P	DE
Lars F. Paape	Scientific Algorithms and Embedded Systems	Scientific Algorithms and Embedded Systems	O	U
Edward A. (Ted) Paget	Daktronics Automated Rigging Solutions	Daktronics Inc.	P	G
Ben Peoples	Pittsburgh Hoist & Sandbag Company	Pittsburgh Hoist & Sandbag Company	O	CP
Jason Potterf	Cisco	Cisco	O	MP
Gary Pritchard	LSC Lighting Systems (Aust) PTY Ltd	LSC Lighting Systems PTY Ltd	O	MP

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Gordan Rancic	Phoenix Service srl	Phoenix Service srl	P	MP
Torben Kaas Rasmussen	Martin Professional A/S	Martin Professional A/S	O	G
Charles Reese	Production Resource Group	Production Resource Group	P	DR
Charlie Richmond	Richmond Sound Design Ltd.	Richmond Sound Design Ltd.	O	CP
Bernardo Benito Rico	Ben-Ri Electronica S.A.	Ben-Ri Electronica S.A.	O	MP
Steve Roberts	Carr & Angier	Carr & Angier	O	G
Erwin Rol	Erwin Rol Software Engineering	Erwin Rol	O	G
Dietmar Rottinghaus	Connex GmbH	Connex GmbH	O	G
Alan M. Rowe	IATSE Local 728	I.A.T.S.E. Local 728	A	U
Richard Salzedo	Avolites Ltd.	Avolites Ltd.	O	MP
Yngve Sandboe	Sand Network Systems, Inc.	Sand Network Systems, Inc.	O	MP
Larry Schoeneman	DesignLab Chicago, Inc.	DesignLab Chicago, Inc.	P	DR
Martin Searancke	Dream Solutions Ltd.	Dream Solutions Ltd.	O	MP
Chuck Seifried	Phoenix Civic Plaza	City of Phoenix	O	U
John Sellers	AIM Northwest	AIM Northwest	O	G
Andrew Sherar	Lightmoves PLC	Lightmoves PLC	O	MP
Yehuda Shukram	Compulite Systems	Compulite Systems	O	MP
Sean Sill	Open Lighting Project	Open Lighting Project	O	DE
Storm K. Staley	Stormwerx	Stormwerx	O	U
Ralph Stillinger	Strand Lighting	Royal Philips	O	MP
Bart Swinnen	Luminex LCE	Luminex LCE	O	MP
Arnold Tang	Arnold Tang Productions	Arnold Tang Productions	O	U
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	MP
Geoffrey O. Thompson	Nortel Networks, Inc.	IEEE 802.3/Nortel Networks	O	G
Christopher Tilton	Westlake Reed Leskosky	Westlake Reed Leskosky	P	DE
Robert Timmerman	Philips Color Kinetics	Royal Philips	O	MP
David Timmins	Jands Electronics	Jands Electronics	O	MP
Victoria Tisdale	Colby College	Google Summer of Code 2013	O	G

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J. B. Toby	Avolites Ltd.	Avolites Ltd.	O	MP
Bob Toms	Catalyst Microsystems LLC	Catalyst Microsystems LLC	O	G
Robert Tooker	Robert Tooker	Robert Tooker	O	U
Tad Trylski	Tad Trylski	Tad Trylski	O	U
Stephen J. Tyrrell	Quantum Logic	Quantum Logic	O	MP
Tracy Underhill	4U Consulting	4U Consulting	O	G
Steve Unwin	Pulsar Ltd.	Pulsar Ltd.	O	MP
Samuli Valo	Picturall Ltd.	Picturall Ltd.	O	MP
Ken Vannice	Ken Vannice.	Ken Vannice LLC	I	G
Carlo Venturati	Clay Paky S.P.A.	Clay Paky S.P.A.	O	MP
Will Wagner	Carallon Ltd.	Carallon Ltd.	O	MP
Oliver Waits	Avolites Ltd.	Avolites Ltd.	O	MP
John Warwick	Philips Color Kinetics	Royal Philips	O	MP
Colin Waters	TMB	TMB	O	DR
Ralph Weber	ENDL Texas	ENDL Texas	O	G
Lars Wernlund	Lewlight	Lewlight	O	MP
Michael (Mike) Whetstone	Integrated Theatre, Inc.	Integrated Theatre, Inc.	O	CP
Peter Willis	Howard Eaton Lighting Ltd.	Howard Eaton Lighting Ltd.	P	CP
Loren Wilton	Showman Systems	Showman Systems	O	CP
Barbara Wohlsen	Barbara Wohlsen	Barbara Wohlsen	O	U
C. S. Wong	Macostar International Ltd.	Macostar International Ltd.	O	CP
Jiantong Wu	Beijing Special Engineering Design & Research Institute	Beijing Special Engineering Design & Research Institute	O	G
Kehang Wu	Shure Inc.	Shure Inc.	O	G
David Yellin	LightMinded Industries, Inc.	LightMinded Industries, Inc.	O	MP
Larry Zoll	Zoll Design & Consulting, LLC	Zoll Design & Consulting, LLC	O	U

Voting Status and Interest Category Legend

P principal voting member	CP custom-market producer
A alternate voting member	MP mass-market producer

I individual voting member	DE designer
O observer non-voting member	DR dealer/rental company
	U user
	G general interest