

Minutes Control Protocols Working Group

Saturday, 21 January 2006
Dallas/Ft. Worth Airport Marriott South
Ft. Worth, Texas

Chairmen: Steve Terry; Electronic Theatre Controls; A; MP
Tracy Underhill; Electronics Diversified Inc.; P; MP

Recording secretary: Karl G. Ruling; ESTA

Members attending: Wayne David Howell; Artistic Licence (UK) Ltd.; P; CP
Tobin Neis; Barbizon Companies; P; DR
Doug Fleenor; Doug Fleenor Design, Inc.; P; MP
Daniel W. Antonuk; Electronic Theatre Controls, Inc.; P; MP
Ralph Weber; ENDL Texas; P; G (joined at this meeting)
Philip Nye; Engineering Arts; P; G
Robert Goddard; Goddard Design Co.; P; MP
Scott M. Blair; High End Systems Inc.; P; MP
Tom Grimes; High End Systems, Inc.; A; MP
Alan Martello; Horizon Control Inc.; P; MP
Peter Willis; Howard Eaton Lighting Ltd.; P; CP
Edwin S. Kramer; I.A.T.S.E. Local 1; P; U
Roger Lattin; I.A.T.S.E. Local 728; P; U
John (Javid) D. Butler; Integrated Theatre, Inc.; P; CP
Rick Leinen; Colortran (Leviton Manufacturing Co., Inc.); P; MP
Torben Kaas Rasmussen; Martin Professional A/S; P; G
Flemming Jensen; Martin Professional A/S; A; G
George Kindler; Kelley Technologies (Network Installation Corporation); P; DR
Gary Douglas; Pathway Connectivity Inc.; P; MP
Charles Reese; Production Resource Group; P; DR
Michael Lay; Strand Lighting; A; MP
Mitch Hefter; Entertainment Technology (Genlyte Group); USITT; P; U
John Sondericker III; Wybron, Inc.; P; MP

Visitors: None

1 Opening remarks

The meeting was called to order by Steve Terry at 09:00. He welcomed all to Ft. Worth.

2 Attendance

2.1 Introductions of those present and circulation of attendance sheet

A dull green attendance sign-in sheet was circulated. Karl Ruling asked those present to find their names and to indicate their presence.

While the sheet was circulated, those present introduced themselves.

2.2 Determination of a quorum

Steve Terry asked for a show of hands of the voters present. He quickly counted them and then announced that a quorum was present and business could be conducted.

2.3 Recognition of alternate voting members

Michael Lay was recognized as the designated voter for Strand Lighting. Steve Terry reminded the group that a company or other voting entity can have an unlimited number of alternate voters, but there is only one vote allowed per company or voting entity on a question.

3 Membership

3.1 Requirements for membership

The following statement was read aloud to the assembly by Steve Terry:

"Membership is open to all who are affected by the work of the group. People and companies that would be in the general interest, users, and dealer/rental companies interest categories 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 Processing of new membership requests

The following people had applied for membership:

Ralph Weber; ENDL Texas; principal; general interest
 Chuck Seifried; Phoenix Civic Plaza (City of Phoenix); observer; user
 Avraham Menal Mor "Avi"; Lightswitch; observer; user
 Edward R. Condit; (self); observer; general interest

Mitch Hefter moved that the applications be accepted. The motion was seconded. The motion was approved with a unanimous show of hands.

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

Name	Company	Representing	Voting status	Int. cat.
Arnold Tang	Arnold Tang Productions	Arnold Tang Productions	P	U
Wayne David Howell	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	P	CP
Simon Hobday	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	A	CP
Tobin Neis	Barbizon Companies	Barbizon Companies	P	DR
Doug Fleenor	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	MP
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP
Ken Wagner	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	MP
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	MP
Tracy Underhill	Electronics Diversified Inc.	Electronics Diversified Inc.	P	MP
Ralph Weber	ENDL Texas	ENDL Texas	P	G
Philip Nye	Engineering Arts	Engineering Arts	P	G
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	MP
Scott M. Blair	High End Systems Inc.	High End Systems Inc.	P	MP
Tom Grimes	High End Systems, Inc.	High End Systems, Inc.	A	MP
Jason Potterf	High End Systems Inc.	High End Systems Inc.	A	MP
Alan Martello	Horizon Control Inc.	Horizon Control Inc.	P	MP
Robert Bell	Horizon Control Inc.	Horizon Control Inc.	A	MP
Peter Willis	Howard Eaton Lighting Ltd.	Howard Eaton Lighting Ltd.	P	CP
Edwin S. Kramer	I.A.T.S.E. Local 1	I.A.T.S.E. Local 1	P	U
John Huntington	City Tech, Ent Tech Department	I.A.T.S.E. Local 1	A	U
Roger Lattin	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	P	U
Dennis Grow	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A	U
Alan M. Rowe	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A	U
John (Javid) D. Butler	Integrated Theatre, Inc.	Integrated Theatre, Inc.	P	CP

Name	Company	Representing	Voting status	Int. cat.
Michael (Mike) Whetstone	Integrated Theatre, Inc.	Integrated Theatre, Inc.	A	CP
Rick Leinen	Colortran	Leviton Manufacturing Co., Inc.	P	MP
Ken Vannice	Colortran	Leviton Manufacturing Co., Inc.	A	MP
Torben Kaas Rasmussen	Martin Professional A/S	Martin Professional A/S	P	G
Flemming Jensen	Martin Professional A/S	Martin Professional A/S	A	G
George Kindler	Kelley Technologies	Network Installation Corporation	P	DR
Gary Douglas	Pathway Connectivity Inc.	Pathway Connectivity Inc.	P	MP
Dave Higgins	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP
Kevin Loewen	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP
Nic Bowker	PLASA	PLASA	P	G
Charles Reese	Production Resource Group	Production Resource Group	P	DR
Hans Lau	Sand Network Systems	Sand Network Systems	P	MP
Michael A. (Sandy) Twose	Sand Network Systems	Sand Network Systems	A	MP
Yngve Sandboe	Sand Network Systems	Sand Network Systems	A	MP
Richard Lawrence	Strand Lighting Ltd.	Strand Lighting Ltd.	P	MP
Michael Lay	Strand Lighting	Strand Lighting Ltd.	A	MP
Mitch Hefter	Entertainment Technology (Genlyte Group)	USITT	P	U
John Sondericker III	Wybron, Inc.	Wybron, Inc.	P	MP
		Total votes possible	25	
		Votes by interest categories	3	CP
			11	MP
			3	DR
			4	U
			4	G

4 Approval of the minutes from the previous meeting (CP/2005-1017)

The minutes were revised to accommodate some concerns of Peter Willis expressed and to show that he is the head of the E1.11 Recommended Practice project. Javid Butler moved that the revised minutes be accepted. The motion was seconded, and then approved with a unanimous show of hands. The revised minutes are document number CP/2005-1017r1.

5 Reading of the call for patents

Tracy Underhill read the following statement aloud to the assembly:

"ESTA intends not to publish any standard that contains protected intellectual property, unless that information can be licensed by anyone for a reasonable fee. ESTA uses a process of open patent and copyright disclosures to implement its intent. ESTA 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."

No protected intellectual property was reported to the group at this meeting.

6 The reading of the anti-trust statement

Tracy Underhill read the following statement aloud to the assembly:

"The ESTA Board of Directors, the Technical Standards Committee, 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 chair 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 ESTA president immediately.

"ESTA 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."

Karl Ruling, the Technical Standards Manager, held up some of the easy-to-read pamphlets to show that they were available for the asking, but no one asked for one. No restraint of trade issues were brought to the attention of the assembly.

7 Approval of agenda (CP/2006-1000)

Peter Willis asked for a discussion of the management and attendance of task group meetings under Other business. Eddie Kramer moved that the agenda so modified be accepted. The motion was seconded and then approved with a unanimous show of hands.

8 Old business

8.1 Cabling

8.1.1 E1.27-1 Portable cabling

Ruling reported that the public review had ended on 3 January 2006. Three people had responded, with one responding "Yes," and two responding "Yes with comments." The report on the comments received is document number CP/2006-1001.

Javid Butler had drafted a suggested comment resolution document (document number CP/2006-1002). Butler moved that the comment resolution document be accepted. The motion was seconded by Wayne Howell. By a show of hands, the motion was accepted by a supermajority of the working group, with all present voting in favor, except for three abstentions.

It was pointed out comment resolution 1 had not been carried out fully in the draft proposed standard document distributed. The SI equivalent of 1/2-inch in 7.4 had not been given, and, although the order of the U.S. customary and SI units had been swapped in 4.5, they had not been swapped in 7.2, which would be needed to satisfy the commenter's request for consistency. The SI equivalent of 1/2-inch (12.7 mm) was added and the order of the units in 7.2 swapped. These changes were considered editorial and not substantive. (The revised document is document number CP/2003-1028r5.1.)

Butler moved that we accept BSR E1.27-1 as an American National Standard. The motion to accept E1.27-1 had been anticipated before the meeting and absentee ballots solicited. The motion was approved by a supermajority of the consensus body on a roll call ballot, with 22 out of a voting body of 25 voting "Yes" and one voting to abstain. There was one absentee ballot submitted.

Name	Company	Representing (This is the sort-field.)	Voting status	Int. cat.	Yes	No	Abstain
Arnold Tang	Arnold Tang Productions	Arnold Tang Productions	P	U			
Wayne David Howell	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	P	CP	X		
Simon Hobday	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	A	CP			
Tobin Neis	Barbizon Companies	Barbizon Companies	P	DR	X		
Doug Fleenor	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	MP	X		
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP			
Ken Wagner	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP			

Name	Company	Representing (This is the sort-field.)	Voting status	Int. cat.	Yes	No	Abstain
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	MP	X		
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	MP			
Tracy Underhill	Electronics Diversified Inc.	Electronics Diversified Inc.	P	MP	X		
Ralph Weber	ENDL Texas	ENDL Texas	P	G	X		
Philip Nye	Engineering Arts	Engineering Arts	P	G			X
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	MP	X		
Scott M. Blair	High End Systems Inc.	High End Systems Inc.	P	MP	X		
Tom Grimes	High End Systems, Inc.	High End Systems, Inc.	A	MP			
Jason Potterf	High End Systems Inc.	High End Systems Inc.	A	MP			
Alan Martello	Horizon Control Inc.	Horizon Control Inc.	P	MP	X		
Robert Bell	Horizon Control Inc.	Horizon Control Inc.	A	MP			
Peter Willis	Howard Eaton Lighting Ltd.	Howard Eaton Lighting Ltd.	P	CP	X		
Edwin S. Kramer	I.A.T.S.E. Local 1	I.A.T.S.E. Local 1	P	U	X		
John Huntington	City Tech, Ent Tech Department	I.A.T.S.E. Local 1	A	U			
Roger Lattin	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	P	U	X		
Dennis Grow	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A	U			
Alan M. Rowe	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A	U			
John (Javid) D. Butler	Integrated Theatre, Inc.	Integrated Theatre, Inc.	P	CP	X		
Michael (Mike) Whelstone	Integrated Theatre, Inc.	Integrated Theatre, Inc.	A	CP			
Rick Leinen	Colortran	Leviton Manufacturing Co., Inc.	P	MP	X		
Ken Vannice	Colortran	Leviton Manufacturing Co., Inc.	A	MP			
Torben Kaas Rasmussen	Martin Professional A/S	Martin Professional A/S	P	G	X		
Flemming Jensen	Martin Professional A/S	Martin Professional A/S	A	G			
George Kindler	Kelley Technologies	Network Installation Corporation	P	DR	X		
Gary Douglas	Pathway Connectivity Inc.	Pathway Connectivity Inc.	P	MP	X		
Dave Higgins	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP			
Kevin Loewen	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP			
Nic Bowker **	PLASA	PLASA	P	G	X		
Charles Reese	Production Resource Group	Production Resource Group	P	DR	X		
Hans Lau	Sand Network Systems	Sand Network Systems	P	MP			
Michael A. (Sandy) Twose	Sand Network Systems	Sand Network Systems	A	MP			
Yngve Sandboe	Sand Network Systems	Sand Network Systems	A	MP			
Richard Lawrence	Strand Lighting Ltd.	Strand Lighting Ltd.	P	MP			
Michael Lay	Strand Lighting	Strand Lighting Ltd.	A	MP	X		
Mitch Hefter	Entertainment Technology (Genlyte Group)	USITT	P	U	X		
John Sondericker III	Wybron, Inc.	Wybron, Inc.	P	MP	X		
		Total votes possible	25		22	0	1
		Votes by interest categories	3	CP	3	0	0
			11	MP	10	0	0
			3	DR	3	0	0
			4	U	3	0	0
			4	G	3	0	1

**Absentee ballot

8.1.2 Other E1.27 projects

Javid Butler reported that some progress had been made at LDI on the permanent cabling document. The task group will work on it today with a combined meeting with the E1.11 Recommended Practice task group.

8.2 BSR E1.20 Remote Device Management

8.2.1 Report on public review comment resolutions and document revision

Scott Blair reported that there had been five commenters with 28 comments or objections during the last public review. He reviewed the summary of the responses (document number CP/2005-1011).

Scott Blair had drafted a set of comment resolutions to the third public review comments and the continuing questions regarding the resolutions to the second public review comments (document

number CP/2005-1012). He moved that the suggested comment resolutions be accepted. The motion was seconded.

Peter Willis pointed out that the previous minutes suggested there would be a majority-minority report on the comment resolution document at this meeting. He said that the task group, in which he is a member, had worked hard to come to agreement and has removed the ambiguity about sub-IDs. Therefore, there is no majority-minority report needed because there is no disagreement.

The motion to accept the comment resolution document was accepted by a supermajority of the working group with a show of hands, with all voting in favor except for one abstention.

Ralph Weber asked that the task group be commended in the minutes for their work.

Scott Blair asked that an Alternate Start Code be assigned for BSR E1.20. The motion was seconded. Ruling suggested CCh as the RDM start code. The motion was accepted with a unanimous show of hands.

Scott moved that we approve BSR E1.20 (document number CP/2003-1003r4) as an American National Standard, with the CCh start code inserted. The motion was approved by a supermajority on a roll call ballot.

Name	Company	Representing	Voting status	Int. cat.	Yes	No	Abstain
Arnold Tang	Arnold Tang Productions	Arnold Tang Productions	P	U			
Wayne David Howell	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	P	CP	X		
Simon Hobday	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	A	CP			
Tobin Neis	Barbizon Companies	Barbizon Companies	P	DR	X		
Doug Fleenor	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	MP	X		
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP			
Ken Wagner	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP			
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	MP	X		
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	MP			
Tracy Underhill	Electronics Diversified Inc. (Colorado)	Electronics Diversified Inc.	P	MP	X		
Ralph Weber	ENDL Texas	ENDL Texas	P	G	X		
Philip Nye	Engineering Arts	Engineering Arts	P	G	X		
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	MP	X		
Scott M. Blair	High End Systems Inc.	High End Systems Inc.	P	MP	X		
Tom Grimes	High End Systems, Inc.	High End Systems, Inc.	A	MP			
Jason Potterf	High End Systems Inc.	High End Systems Inc.	A	MP			
Alan Martello	Horizon Control Inc.	Horizon Control Inc.	P	MP	X		
Robert Bell	Horizon Control Inc.	Horizon Control Inc.	A	MP			
Peter Willis	Howard Eaton Lighting Ltd.	Howard Eaton Lighting Ltd.	P	CP	X		
Edwin S. Kramer	I.A.T.S.E. Local 1	I.A.T.S.E. Local 1	P	U	X		
John Huntington	City Tech, Ent Tech Department	I.A.T.S.E. Local 1	A	U			
Roger Lattin	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	P	U	X		
Dennis Grow	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A	U			
Alan M. Rowe	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A	U			
John (Javid) D. Butler	Integrated Theatre, Inc.	Integrated Theatre, Inc.	P	CP	X		
Michael (Mike) Whetstone	Integrated Theatre, Inc.	Integrated Theatre, Inc.	A	CP			
Rick Leinen	Colortran	Leviton Manufacturing Co., Inc.	P	MP	X		
Ken Vannice	Colortran	Leviton Manufacturing Co., Inc.	A	MP			
Torben Kaas Rasmussen	Martin Professional A/S	Martin Professional A/S	P	G	X		
Flemming Jensen	Martin Professional A/S	Martin Professional A/S	A	G			
George Kindler	Kelley Technologies	Network Installation Corporation	P	DR	X		
Gary Douglas	Pathway Connectivity Inc.	Pathway Connectivity Inc.	P	MP	X		
Dave Higgins	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP			
Kevin Loewen	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP			
Nic Bowker **	PLASA	PLASA	P	G	X		
Charles Reese	Production Resource Group	Production Resource Group	P	DR	X		
Hans Lau	Sand Network Systems	Sand Network Systems	P	MP			
Michael A. (Sandy) Twose	Sand Network Systems	Sand Network Systems	A	MP			

Name	Company	Representing	Voting status	Int. cat.	Yes	No	Abstain
Yngve Sandboe	Sand Network Systems	Sand Network Systems	A	MP			
Richard Lawrence	Strand Lighting Ltd.	Strand Lighting Ltd.	P	MP			
Michael Lay	Strand Lighting	Strand Lighting Ltd.	A	MP	X		
Mitch Hefter	Entertainment Technology (Genlyte Group)	USITT	P	U	X		
John Sondericker III	Wybron, Inc.	Wybron, Inc.	P	MP	X		
		Total votes possible	25		23	0	0
		Votes by interest categories	3	CP	3	0	0
			11	MP	10	0	0
			3	DR	3	0	0
			4	U	3	0	0
			4	G	4	0	0

** Absentee ballot

The one "No" commenter in the last public review, Peter Willis, voted on this roll call ballot to accept the document, so his objections had been resolved.

8.2.2 Bulk data transfer

Scott Blair gave a report on the project, and said it was making progress. He hopes to have something to consider for first public review at the July meetings.

8.2.3 An RDM guidance website

An RDM guidance website was requested by Scott Blair. Steve Terry and Karl Ruling advised against having an official ESTA RDM guidance website. We have a procedure for giving interpretations of standards, but that is all. We do not render professional services, such as offering guidance to particular clients. However, Terry and Ruling said that they thought ESTA would have no objection to an unsanctioned site.

8.2.4 RDM plug-fest

It was suggested that ESTA publish a list of what equipment works when connected to what other equipment. Karl Ruling advised against this, since ESTA does not provide equipment certification.

Peter Willis suggested that PLASA sponsor a plug-fest or that a UK university conduct a student-lead plug-fest.

Ralph Weber noted that the University of New Hampshire provides such a service. Gary Douglas said it was expensive. Anyone wishing to participate needs to donate the equipment to the University of New Hampshire and pay \$7,000.

Steve Terry said that the plug-fest will be in the market.

8.3 E1.17 Multipurpose Control Network Protocol Suite

Dan Antonuk reported that the public review ends 14 February 2006.

8.4 E1.11/DMX512-A Recommended Practice

Peter Willis read a report on the project's progress. [The report is appended to these minutes.]

There was a discussion of the intended reader and how the document needs to be structured to serve the intended audience. The audience seems to be split. There is the end-user that needs a simple document to tell how to make stuff work. There is the manufacturer who needs to have explanatory material (which was considered for E1.11 but not included) to fully understand ANSI E1.11.

There was a discussion of hyperlinking the document.

Terry observed that there seems to be many ideas of the project's purpose. Said it is important that the scope be defined clearly so that the task group knows what to do.

Willis suggested that people look at the outline and send comments and objections via email to him.

8.5 ANSI E1.11 auf Deutsch

There has been no activity, Steve Terry reported, because of budgetary problems, but VPLT expects to publish the standard in German later in 2006.

8.6 Reaffirmation of ANSI E1.3-2001, 0 to 10V Analog Control Specification

Ruling reported that the TSC approved the public review.

8.7 BSR E1.30, Application level equipment interoperability for control of commonly encountered entertainment technology devices using E1.17

Dan Antonuk suggested that a shorter name for the task group was needed. Steve Terry suggested the "ACN Interoperability Task Group."

A presentation of how an Interoperability Profile is constructed and works was offered by Philip Nye, with a single movable lens being used as a model. [The presentation, which was a hypertext document, is appended to these minutes. Not all the links work and not all the graphics are included, but the appended file will give the reader a fair idea of what was presented at the meeting.]

There was a discussion of the complexity of the template. Decisions will have to be made on how complex or simple the templates must be, or how many different templates for devices of different levels of complexity there will need to be. Simple devices with few controllable parameters and little state or position information to send to a controller need simpler templates than complex devices that have many controllable parameters and can tell a controller much about the current state of the device.

The task group has an informal list of templates that need to be done in priority. Steve Terry asked the group to share the priority list with the working group.

The Interoperability Profiles are being written in an "extra-tutorial manner," said Antonuk. They will explain themselves fully and will not assume an understanding of how Interoperability Profiles work on the part of the human reader.

The consensus was that there should be the following action items:

ACTION ITEM: Interoperability Profile discussion document for march meeting.

ACTION ITEM FOR ALL MEMBERS: List all items for which you think an Interoperability Profile should be developed.

8.8 BSR E1.31, Lightweight streaming protocol for transport of DMX512-type data using ACN

Antonuk reported that the task group needs a chair. Wayne Howell volunteered. Howell suggested that interested parties meet with him tomorrow morning.

Tracy Underhill appointed Wayne Howell as task group leader, with the consent of the working group.

9 New business

Terry announced that the archived email reflectors are being discontinued. We'll have new reflectors, but just the ones we use. He asked for a list of needed reflectors by the end of the meeting.

10 Other business— Management and attendance of task group meetings

A discussion of the Sunday task group schedules was held, lead by Peter Willis. The problem of people needing to be in two places at once was addressed.

Tracy Underhill invited all to the ESTA suite at 12:30 for a toast to the completed projects.

11 Schedule for future meetings

Steve Terry Announced that the next meeting is scheduled for Thursday, 30 March 2006, from 09:00 to 18:00 at the Louisville Marriott Downtown, 280 West Jefferson, Louisville, Kentucky

12 Changes to observer status due to lack of attendance

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

Torben Kaas Rasmussen and Flemming Jensen of Martin Professional

Rasmussen and Jensen were present, so there was no change in status.

13 Adjournment

Dan Antonuk moved that the meeting adjourn. The motion was seconded. The motion was approved with a show of hands. The meeting was declared adjourned at 12:10 by Steve Terry.

Working Group Membership and Contact Information

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.
Jean-Francois Canuel	Spectrum Manufacturing Inc.	A.C. Lighting Ltd.	O	CP
Tim Bachman	A.C.T Lighting, Inc.	A.C.T Lighting, Inc.	O	DR
Andre Broucke	ADB - TTV Technologies	ADB-TTV Group	O	MP
John Sellers	AIM Northwest	AIM Northwest	O	G
Arnold Tang	Arnold Tang Productions	Arnold Tang Productions	P	U
Wayne David Howell	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	P	CP
Simon Hobday	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	A	CP
Steve Friedlander	Auerbach Pollock Friedlander	Auerbach Pollock Friedlander	O	U
J. B. Toby	Avolites Ltd.	Avolites Ltd.	O	MP
Shahid Anwar	Avolites Ltd.	Avolites Ltd.	O	MP
Richard Salzedo	Avolites Ltd.	Avolites Ltd.	O	MP
Barbara Wohlsen	Barbara Wohlsen	Barbara Wohlsen	O	U
Tobin Neis	Barbizon Companies	Barbizon Companies	P	DR
Jiantong Wu	Beijing Special Engineering Design & Research Institute	Beijing Special Engineering Design & Research Institute	O	G
Bernardo Benito Rico	Ben-Ri Electronica S.A.	Ben-Ri Electronica S.A.	O	MP
Lee J. Bloch	Bloch Design Group, Inc.	Bloch Design Group, Inc.	O	G
Soo-Myong Chung	Blue Sky Design, Ltd.	Blue Sky Design, Ltd.	O	G
Bradley Klinkradt	Bradley Klinkradt	Bradley Klinkradt	O	G
Bill Ellis	Candela Controls, Inc.	Candela Controls, Inc.	O	U
Will Wagner	Carallon Ltd.	Carallon Ltd.	O	MP
Steve Roberts	Carr & Angier	Carr & Angier	O	G
Marty Lazarus	Chicago Spotlight, Inc.	Chicago Spotlight, Inc.	O	G
Chuck Seifried	Phoenix Civic Plaza	City of Phoenix	O	U
Larry Dunn	City Theatrical, Inc.	City Theatrical, Inc.	O	CP
Fabiano Pina	Clay Paky S.P.A.	Clay Paky S.P.A.	O	MP
Ohad Ashery	Compulite Systems	Compulite Systems	O	MP
Simeon Aladjem	Compulite Systems	Compulite Systems	O	MP
Yehuda Shukram	Compulite Systems	Compulite Systems	O	MP
Dietmar Rottinghaus	Connex GmbH	Connex GmbH	O	G
David Bertenshaw	David Bertenshaw	David Bertenshaw	O	G
Larry Schoeneman	Designlab Chicago, Inc.	Designlab Chicago, Inc.	O	DR
Doug Fleenor	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	MP
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP
Ken Wagner	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP
Gary Dove	Dove Systems	Dove Systems	O	MP
Jerry Durand	Durand Interstellar, Inc.	Durand Interstellar, Inc.	O	CP
Jussi Kallioinen	Eastway Sound & Lighting	Eastway Sound & Lighting	O	U
Edward R. Condit	Edward R. Condit	Edward R. Condit	O	G
Ed Jones	Edwin Jones Co., Inc.	Edwin Jones Co., Inc.	O	CP
Joost van Eenbergen	ELC Lighting	ELC Lighting	O	MP
Bill Fehrmann	Electrol Engineering, Inc.	Electrol Engineering, Inc.	O	MP
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	MP
Hans Leiter	Transtechnik Lichtsysteme GmbH & Co. KG	Electronic Theatre Controls, Inc.	O	MP
Anders Ekvall	Transtechnik Lichtsysteme GmbH	Electronic Theatre Controls, Inc.	O	MP
Adam Bennette	Electronic Theatre Controls Ltd.	Electronic Theatre Controls, Inc.	O	MP
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	MP
Tracy Underhill	Electronics Diversified Inc.	Electronics Diversified Inc.	P	MP
Ralph Weber	ENDL Texas	ENDL Texas	P	G

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.
Philip Nye	Engineering Arts	Engineering Arts	P	G
Erwin Rol	Erwin Rol	Erwin Rol	O	G
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	MP
Sierk Janszen	Ground Zero	Ground Zero	O	U
Liao Wei Min	GuangZhou HeDong Electronic Co., Ltd.	GuangZhou HeDong Electronic Co., Ltd.	O	G
Paul J. Clark	Hacek Design Ltd.	Hacek Design Ltd.	O	CP
Alan P. Symonds	Harvard College	Harvard University	O	U
Trevor Forrest	Helvar Lighting Control	Helvar Lighting Control	O	MP
Bill Hewlett	Hewlett Electronics	Hewlett Electronics	O	CP
Scott M. Blair	High End Systems Inc.	High End Systems Inc.	P	MP
Jason Potterf	High End Systems Inc.	High End Systems Inc.	A	MP
Tom Grimes	High End Systems, Inc.	High End Systems, Inc.	A	MP
Steve Carlson	High Speed Design, Inc.	High Speed Design, Inc.	O	MP
Alan Martello	Horizon Control Inc.	Horizon Control Inc.	P	MP
Robert Bell	Horizon Control Inc.	Horizon Control Inc.	A	MP
Peter Willis	Howard Eaton Lighting Ltd.	Howard Eaton Lighting Ltd.	P	CP
Edwin S. Kramer	I.A.T.S.E. Local 1	I.A.T.S.E. Local 1	P	U
John Huntington	City Tech, Ent Tech Department	I.A.T.S.E. Local 1	A	U
Roger Lattin	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	P	U
Dennis Grow	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A	U
Alan M. Rowe	IATSE Local 728	I.A.T.S.E. Local 728	A	U
Gian Carlo C. Bartolotti	Ibeam SP / Banco de Eventos	Ibeam SP / Banco de Eventos	O	U
Geoffrey O. Thompson	Nortel Networks, Inc.	IEEE 802.3/Nortel Networks	O	G
John (Javid) D. Butler	Integrated Theatre, Inc.	Integrated Theatre, Inc.	P	CP
Michael (Mike) Whetstone	Integrated Theatre, Inc.	Integrated Theatre, Inc.	A	CP
Mark Jensen	Intelligent Control Devices	Intelligent Control Devices	O	CP
Rob Johnston	Interactive Technologies, Inc.	Interactive Technologies, Inc.	O	MP
David Timmins	Jands Electronics	Jands Electronics	O	MP
Helge Hoffmann	JB Lighting	JB Lighting	O	MP
Edward Paget	Jones & Phillips Associates, Inc.	Jones & Phillips Associates, Inc.	O	G
Christopher Purpura	Jones & Phillips Associates, Inc.	Jones & Phillips Associates, Inc.	O	G
Lawrence Neal	Lawrence Neal	Lawrence Neal	O	CP
John Mehlretter	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	MP
Mark T. Kraft	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	MP
Rick Leinen	Colortran	Leviton Manufacturing Co., Inc.	P	MP
Ken Vannice	Colortran	Leviton Manufacturing Co., Inc.	A	MP
Lars Wernlund	Lewlight	Lewlight	O	MP
Klaus Amling	Licht-Technik	Licht-Technik	O	P
Andrew Sherar	Lightmoves PLC	Lightmoves PLC	O	MP
Avraham Mendall Mor "Avi"	Lightswitch	Lightswitch	O	U
Simon Alpert	Lighttech Event Technologies	Lighttech Event Technologies	O	CP
Gary Pritchard	LSC Lighting Systems PTY Ltd	LSC Lighting Systems PTY Ltd	O	MP
Bart Swinnen	Luminex LCE	Luminex LCE	O	MP
J. P. Steiner	Lutron Electronics	Lutron Electronics	O	MP
Jim Holladay	Luxence	Luxence	O	G
Daniel Weiermann	Mainstage Theatrical Supply - Milwaukee	Mainstage Theatrical Supply	O	DR
Torben Kaas Rasmussen	Martin Professional A/S	Martin Professional A/S	P	G
Flemming Jensen	Martin Professional A/S	Martin Professional A/S	A	G

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.
Hiroshi Kita	Marumo Electric Co., Ltd.	Marumo Electric Co., Ltd.	O	MP
George Kindler	Kelley Technologies	Network Installation Corporation	P	DR
Petri Laine	Obelux Oy	Obelux Oy	O	CP
Stuart Cotts	Oregon Shakespeare Festival	Oregon Shakespeare Festival	O	U
David A. Boller	Organic Machines LLC	Organic Machines LLC	O	CP
William Benner	Pangolin Laser Systems	Pangolin Laser Systems	O	MP
Gary Douglas	Pathway Connectivity Inc.	Pathway Connectivity Inc.	P	MP
Greg Reimer	Pathway Connectivity Inc.	Pathway Connectivity Inc.	O	MP
Dave Higgins	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP
Kevin Loewen	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP
Nic Bowker	PLASA	PLASA	P	G
James Eade	PLASA	PLASA	O	G
Mac Perkins	PNTA Inc.	PNTA Inc.	O	G
Charles Reese	Production Resource Group	Production Resource Group	P	DR
Paul F. Mardon	Pulsar Ltd.	Pulsar Ltd.	O	MP
Steve Unwin	Pulsar Ltd.	Pulsar Ltd.	O	MP
Stephen J. Tyrrell	Quantum Logic	Quantum Logic	O	MP
Douglas Franz	QVC Network	QVC Network	O	U
Sean Harding	Rhode Island College	Rhode Island College	O	U
Charlie Richmond	Richmond Sound Design Ltd.	Richmond Sound Design Ltd.	O	CP
Martin Farnik	Robe Show Lighting s.r.o.	Robe Show Lighting s.r.o.	O	MP
Hans Lau	Sand Network Systems	Sand Network Systems	P	MP
Michael A. (Sandy) Twose	Sand Network Systems	Sand Network Systems	A	MP
Yngve Sandboe	Sand Network Systems	Sand Network Systems	A	MP
Kenneth Mockler	Sceno Plus	Sceno Plus	O	U
Mick Martin	ShowCAD Control Systems	ShowCAD Control Systems	O	MP
Loren Wilton	Showman Systems	Showman Systems	O	CP
Jon R. Farley	Sixteenth Avenue Systems	Sixteenth Avenue Systems	O	CP
Robert Barbagallo	Solotech Inc.	Solotech Inc.	O	U
Michael Gonzales	Spectrum Lighting Inc.	Spectrum Lighting Inc.	O	DR
Ujjal Kar	Standard Robotics & Lighting	Standard Robotics & Lighting	O	G
Richard Lawrence	Strand Lighting Ltd.	Strand Lighting Ltd.	P	MP
Michael Lay	Strand Lighting	Strand Lighting Ltd.	A	MP
Paul K. Ericson	Syska Hennessy Group Lighting Design	Syska Hennessy Group Lighting Design	O	U
Stephen Bickford	T. Kondos Associates	T. Kondos Associates	O	U
Tad Trylski	Tad Trylski	Tad Trylski	O	U
Klas Dalbjorn	Labgruppen AB	TC Group	O	MP
Pete Baselici	The Watt Stopper	The Watt Stopper	O	MP
Jerry Gorrell	Theatre Safety Programs	Theatre Safety Programs	O	G
Stéphane Jacob	TIR Systems Ltd.	TIR Systems Ltd.	O	MP
Colin Waters	TMB	TMB	O	U
Mitch Hefter	Entertainment Technology (Genlyte Group)	USITT	P	U
Torrey Bievenour	Vision Quest Lighting	Vision Quest Lighting	O	G
Eckart Steffens	SOUNDLIGHT	VPLT	O	G
Eric Cornwell	West Side Systems	West Side Systems	O	U
John Sondericker III	Wybron, Inc.	Wybron, Inc.	P	MP

Key to codes:

P principal voting member
A alternate voting member
I individual voting member
O observer, non-voting

MP mass-market producer interest category
CP custom-market producer interest category
DR dealer or rental company interest category
U user interest category
G general-interest interest category

Objectives

To create a replacement document to the existing “Recommended Practice for DMX512 – A guide for users and installers”, as currently published by PLASA.

The existing document does not refer to DMX512-A and thus must become obsolete. It is currently recognised as the definitive guide to DMX, and has been widely circulated.

To document a brief history of DMX512.

In keeping with current standards formats, the revised standard document cannot fully document the background to the standard, or detail its evolution. It is felt that knowledge of the standard’s history can be beneficial to users in understanding some of the limitations which continue to exist in the standard.

To give guidance in the choice of system topologies.

The need to provide backwards compatibility limits the use of some of the (technically) preferred system topologies. Choice of cable types and selection is also of paramount importance and should be explained in the RP.

To recognise that the Standard is targeted at manufacturers of equipment – and that a companion application document should be aimed at consultants, system integrators, installers and users.

The prime audience is to be the end-user of equipment incorporating data links in accordance with the standard. Specific sections will be devoted to product manufacturers in an attempt to explain what is new.

To pull together much of the useful “how to” information that exists in a number of formats and media types, review it and give it some form of validation and formal recognition.

For manufacturers, such information may include (but not be limited to) component selection, sample circuit designs and protection religions.

For others, such information may include (but not be limited to) general how-to information, system topologies, interfacing to legacy products and discussion of troubleshooting logic and test equipment.

To define the relationship between DMX512, DMX512-A, BSR E1-20 (RDM) BSR E1-27 (DMX Cabling) BSR E1-17 Advanced Control Network (ACN), and other lighting control protocols.

DMX512 products and systems are expected to continue to exist well beyond any introduction of more complex links such as ACN. In light of the emerging use of CAT5 cable schemes for DMX distribution, some guidance is advisable.

To meet the commitment given in the Report on Proposals (ROP) which resulted from the ESTA call for proposals on the revision and maintenance of the DMX standard.

The ROP stated that there would be a recommended practice to follow. The Recommended Practice would become the vehicle for publishing much of the existing guidance information removed from early drafts of the new standard.

Method

It is proposed that the document becomes a joint ESTA, PLASA, (but not ANSI) Recommended Practice.

Consideration shall also be given to producing an HTML FAQ for publication on the internet as a means of ensuring that the myriad of “home grown” pages relating to DMX512 are not misinterpreted as having

any form of validation by this task group. Due consideration must be given to the relationship between any such FAQ and the one currently published by Mitch Hefter on behalf of the USITT.

Driving force

A CPWG task group, comprising Roger Lattin, Peter Willis, Mitch Hefter, Richard Brown, Scott Blair and Wayne Howell was originally formed at the Jan 2001 meeting of the CPWG. Due in part to the commitments of many of the participants in the RDM project, this task group remained dormant for some years; the work was picked up by Tim Bachman again in 2004. Unfortunately Tim was forced to relinquish his involvement in the CPWG, October 2005, and so at the November 2006 CPWG meeting, a new task group was formed. This currently comprises Peter Willis (Howard Eaton Lighting Ltd), Bob Goddard (Goddard Design), Nic Bowker (PLASA), Javid Butler (Integrated Theatre, Inc), Roger Lattin (I.A.T.S.E Local 728).

Source Material

The project has been discussed with Adam Bennette (as author of the original document) who has declined to take an active role in the activities of the task group. Although he welcomes the decision to update the RP his current employment and European commitments prohibit a more hands-on involvement.

PLASA have been approached informally and agreed that portions of the existing document may be reproduced as required.

Action

As a first step, this Objective statement has been updated and re-issued.

The Task Group will then prepare an outline (Headings/Subheadings) for review.

Work will continue on preparing substantive text during the course of 2006.

Work will continue on preparing a FAQ list during the course of 2006, taking into due consideration the work of Mitch Hefter as published on the USITT web site.

Timescales

November 2005 : Task group reinstated by CPWG.

January 2006: Initial informal meeting of task group set to occur during Dallas meeting cycle.

Objectives statement to be presented to CPWG.
Work to review subject outlines and source material.

January 2007 : Target date for submission of document to CPWG for review!

Peter Willis

Jan 20th 2006

EPI 23. DDL Lens Focus Subdevice Template and Tutorial*E1.30 Profile for Interoperability*

This document forms part of ANSI BSR E1.30, Application level equipment interoperability for control of commonly encountered entertainment technology devices using E1.17

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ESTA TSP document ref. CP/2005-????

Revision History	
Revision 0pre1	2005-12-14

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ACN EPIs

E1.17 is the “ESTA Architecture for Control Networks” standard [[ACN](#)]. It specifies an architecture – including a suite of protocols and languages which may be configured and combined with other standard protocols in a number of ways to form flexible networked control systems.

E1.17 Profiles for Interoperability (EPIs) are standards documents which specify how conforming implementations are to operate in a particular environment or situation in order to guarantee interoperability. They may specify a single technique, set of parameters or requirement for the various ACN components. They may also specify how other standards (including other EPIs) either defined within ACN or externally are to be used to ensure interoperability.

Abstract

This EPI specifies a template device for a single lens focus control as typically encountered in an automated luminaire. The template is introduced and explained in a tutorial manner.

1. Introductory Discussion

Device Description Language [[DDL](#)] provides the facility to describe devices parametrically such that when a parametric device is included as a sub device in a parent, values for parameters may be specified. The parameterized device can be thought of as a template which provides the structure, and behavior of a device but allows some of the values to be filled in when it is instantiated.

This EPI includes a complete template device description of a focus mechanism as commonly encountered in automated lighting devices. The description is built up in a tutorial manner and broadly in a top down fashion.

Note

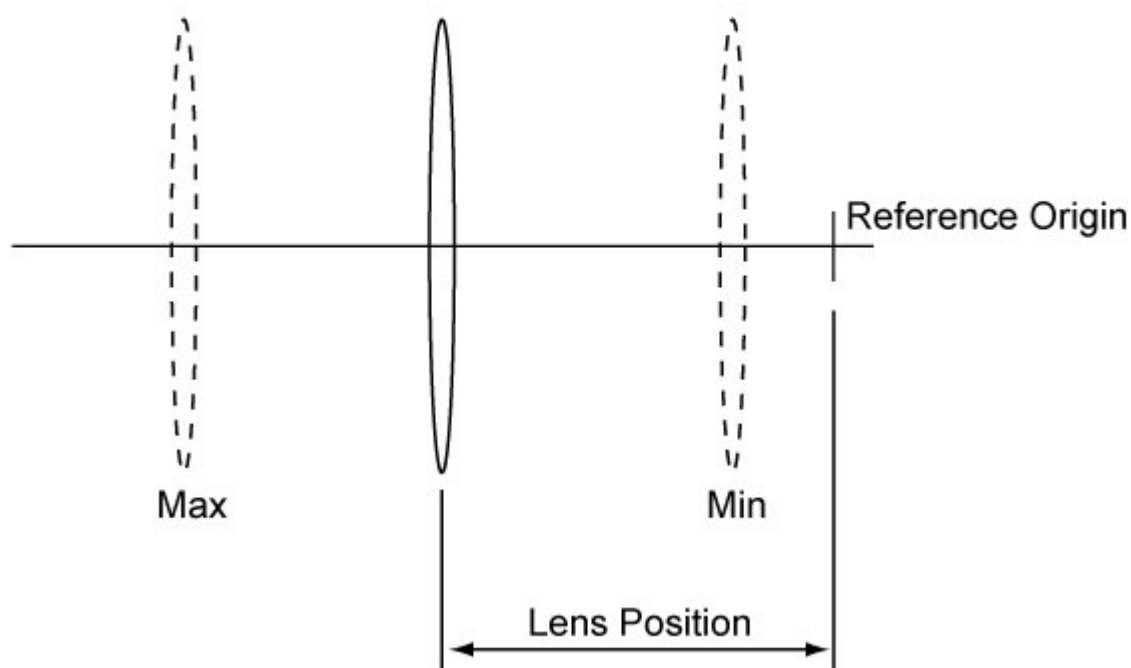
This EPI refers extensively to elements and constructions which are part of the DDL standard [[DDL](#)]. To understand this specification will require some knowledge of DDL and its terms. Also since DDL is founded on XML, that pervasive standard also needs to be understood.

2. Focus Device Model

This section summarises the model of the focus mechanism which a conforming device presents to a controller, without reference to specific DDL which will be shown in later sections.

2.1. The Lens Position Property

In most automated profile luminaires, focus operates very simply by moving one or more lenses along the optical axis of the fixture in a linear manner. The position of the lens is represented by a scalar numeric value. Which we'll call *LensPosition*.



2.2. Desired and Actual Position

Since the lens is driven by motor using some sort of real time algorithm, there are two values for its position – where it is and where we want it to be. Depending on how fast the motor goes and how far we need to move it, these two values are often very different. So, as well as *LensPosition* which tells us where the lens is, let's add *LensTargetPosition* which is where we are sending it to.

Table 1. Properties of focus control

Property	Notes
<i>LensPosition</i>	Read only value representing instantaneous actual position
<i>LensTargetPosition</i>	Writable value representing where the controller wishes the lens to be

2.3. Drivers and Driven Properties

In fact, there are a number of other factors involved in the real world control of the actual lens position at any given time. For example, the maximum motor speed and the motor acceleration. This motor drive case is not specific to focus control and is an example of an even more common scenario where a function which the user wishes to control depends on a set of input properties. In the DDL model the input properties are called *driver* properties while the resultant output is a *driven* property.

Table 2. lens Position is a driven property

	Property	Notes
<i>Driven property</i>	LensPosition	Instantaneous actual position – cannot be written directly (may not even be readable, e.g. under DMX512)
<i>Driver properties</i>	LensTargetPosition	Writable value representing where the controller wishes the lens to be
	SpeedLimit	Parameter of internal motion control. May be fixed by design or may be adjustable.
	Acceleration	Parameter of internal motion control. May be fixed by design or may be adjustable.

This driver/driven model is fundamental to the way many common constructs are represented in DDL.

Note

At this point many people ask the question “Why does it matter that the actual position differs from the target position? If the target value is the only one I can actually write to, why should I need to deal with all these others?”.

The answer is, that while many controller manufacturers are accustomed to making the assumption that the value they have set is where the function actually is, there are those who do not.

Motion control software needs to be acutely aware of the difference. People writing simulation or visualization software also model such motion in a lot of detail. Interestingly, it would actually be a special case to describe this function differently, because this model is very generic.

The presence of the extra information does not mean that the controller designer needs to use it, but it is there should they wish to.

2.3.1. Speed Control

As noted above, the maximum motor speed is often adjustable – sometimes to any value between certain limits or sometimes to one of a predefined set of values. In existing equipment a one-of-two speed limit selector is often described as a “quiet” setting. Let us allow the controller to set the speed between limits set by design. There are also luminaires which allow control of the acceleration parameter but we'll leave that as an extension for later.

2.3.2. Time Control

Another feature present in some fixtures and often desired is a timer. If it is desired to make the focus change more slowly than the maximum speed, then rather than sending a timed sequence of intermediate movement steps, the controller can simply set the timer and send the target value

and the fixture will handle the movement to ensure that the desired position is reached at the specified time with no further control inputs.

Because the request is unambiguous, the fixture can control its motor to generate the optimal smooth and quiet movement without the sluggishness, jerkiness or unpredictability often associated with smoothing algorithms which are necessary to handle DMX512 staircase waveforms.

Note that timed moves and transmitted fades are not mutually exclusive. If the timer is set to zero then a stepped fade can be transmitted to the target position alone to generate exactly the same result as if the timer were not present and if the timer is left at a small constant value then this imposes a first order smoothing filter on the staircase waveform.

2.4. Real World Values and Limits

In addition to knowing how the movement of the lens is controlled, we should really specify what sort of motion is produced. Does the lens move one millimeter or one mile? is any value allowable for the target or are there limits? What are the constraints on the adjustable speed.

Anybody who wished to predict what sort of image the lens would produce would also need to know the focal length of the lens and how the position relates to the gate of the luminaire and what the aperture is at the gate (the object distance).

Table 3. lens Position is a driven property

Property		Notes
focal length		a value fixed by the design.
<i>focal length parameters</i>	units of focal length	“mm” This is a constant string (defined in standardized DMP behaviors).
lens position <i>Driven property</i>		instantaneous actual position – cannot be written directly but readable via DMP
<i>position parameters</i>	units of lens position	“mm” This is a constant string
	scaling factor	e.g. “0.06” relates the number actually used for lens position to the given units. That is, the lens position in <i>units of lens position</i> is equal to <i>lens position</i> multiplied by <i>scaling factor</i> . This value is fixed by the design.
	minimum value	the minimum value which the lens position property can take
	maximum value	the maximum value which the lens position property can take
	datum offset	offset from a common reference position on the optical axis in units of lens position.
<i>driver properties</i>	target lens position	writable property representing where the controller wishes the lens to be. Units, scaling, minimum, maximum, and offset are the same as lens position.
	lens speed limit	writable property imposing maximum speed.
<i>speed parameters</i>	units of speed	“mm.s ⁻¹ ”

Property		Notes
	scaling factor	relates the number actually used for speed to the given units. A value fixed by the design.
	minimum speed	the minimum value for the maximum speed limit
	maximum speed	the maximum value for the maximum speed limit
	motor acceleration	fixed value
<i>acceleration parameters</i>	units of acceleration	"mm.s ⁻² "
	move timer	timer for movement changes
<i>time parameters</i>	units of time	"ms" fixed by the design.
	scaling factor	e.g. "10" fixed by the design. (time in milliseconds = moveTimer * scalingFactor)
	minimum time	value fixed by the design.
	maximum time	value fixed by the design

2.5. DDL Treatment of Constant Properties

[Table 3, "lens Position is a driven property"](#) lists 21 properties relating to a single movable lens, but it is obvious that only a few of these such as the target lens position are vital control inputs while many others are constant values which are fixed by the design of the luminaire and will not change over the lifetime of the device.

In terms of DDL's basic structure, all properties are treated the same and this is powerful because it means that while some devices may have certain parameters fixed by design, others may allow variability – one can envisage devices where even properties such as units and scaling may be variable.

DDL provides two ways to declare constant properties:

Constant Networked Property

Where a bidirectional access protocol such as DMP is used, the property can be a networked value which is declared constant and read-only. This is useful for properties such as a serial number which though constant, varies from one instance of a device to another.

Immediate Value

Where a property is constant across all instances of a device (e.g. units or focal length in this example) the value can be specified as an immediate value within the description.

The problem with immediate values is that the rules of DDL insist that they are constant across all instances of a device and this means that in the simple case, two devices may have the same structure but cannot share the same description unless they agree in every single immediate value. This is plainly untenable if we want to create a generic template device. The solution is

provided by DDL's ability to parametrize certain parts of a description and to supply different values for those parameters when the description is included in a parent device.

2.6. Deciding on Property Types

In considering our focus device we can now be more specific about what types of property we want to list and this needs some design decisions:

Table 4. lens property types

Property		Type	Notes	
focal length		immediate value	parameter – different parent devices may specify different values	
<i>focal length parameters</i>	units of focal length	immediate value	not parametrized since we want consistency across all users of this template	
lens position <i>Driven property</i>		network value	read-only	
<i>position parameters</i>	units of lens position	immediate value	not parametrized since we want consistency across all users of this template	
	scaling factor	immediate value	parameter	
	minimum value	immediate value	parameter	
	maximum value	immediate value	parameter	
	datum offset	immediate value	parameter	
<i>driver properties</i>	target lens position		network value read-write, this is the primary control property	
	motor speed limit		network value read-write	
	<i>speed parameters</i>	units of speed	immediate value	not parametrized since we want consistency across all users of this template
		scaling factor	immediate value	parameter
		minimum speed	immediate value	parameter
		maximum speed	immediate value	parameter
	motor acceleration		immediate value	parameter
	<i>acceleration parameters</i>	units of acceleration	immediate value	not parametrized since we want consistency across all users of this template
	move timer		network	read-write

Property		Type	Notes
		value	
<i>time parameters</i>	units of time	immediate value	not parametrized since we want consistency across all users of this template
	scaling factor	immediate value	not parametrized since we want consistency across all users of this template
	minimum time	immediate value	parameter
	maximum time	immediate value	parameter

The majority of the properties in our description turn out to be parameters. This means that the template must specify these values as parametric and any device which includes the template may supply its own values.

Choice as to which properties should be networked vs immediate and of the immediate values, which should be parametric involves a compromise between flexibility and managability. One object of template devices is to allow controller designers to optimise their control for known device structures and this becomes easier the more values which are fixed rather than unknown, but device designers will not use those templates at all if they are too restrictive of the design.

For example, in this template it has been decided to fix the units for all properties so users of the template will not be allowed to specify their focal lengths in inches (or Angstroms or rods, poles or perches). However, the scaling factor is parametrized so they will not be forced to choose a lead screw with a particular pitch or to constrain their design within a limited range.

2.7. DDL Use of Template Devices

We have now listed the properties of our template focus control. Before moving on to the detailed description of the structure of the template itself, here is sample DDL for a device which includes a lens control conforming to the template. This shows how well designed templates for common sub-sections simplifies design of complete devices which can make use of those templates.

Example 1. Example instantiation of focus device template

```
<?xml version="1.0" encoding="UTF-8"?>
<DDL version="1.0">
  <device
    UUID="U88e4c75c-7c5c-11da-a232-000d613667e2"
    date="2006-01-02"
    provider="http://www.engarts.com/ddl/testing/2006/">
    <useprotocol name="ESTA.DMP"/>
    <!-- This is the parent device declaration -->
    ...
    <!-- Focus subdevice from template -->
```

```

<includedev UUID="Ub667699e-dd80-11d9-900b-00e018a44101">
    <setparam name="focallength"> <fix field="#text">350</fix>
</setparam>
    <setparam name="lensPositionScale"> <fix field="#text">0.2</fix>
</setparam>
    <setparam name="lensPositionMin"> <fix field="#text">0</fix>
</setparam>
    <setparam name="lensPositionMax"> <fix field="#text">255</fix>
</setparam>
    <setparam name="lensPositionOffset"> <fix field="#text">1550</fix>
</setparam>
    <setparam name="lensSpeedScale"> <fix field="#text">0.196</fix>
</setparam>
    <setparam name="lensSpeedMin"> <fix field="#text">10</fix>
</setparam>
    <setparam name="lensSpeedMax"> <fix field="#text">255</fix>
</setparam>
    <setparam name="lensAcceleration"> <fix field="#text">500</fix>
</setparam>
    <setparam name="lensTimerMin"> <fix field="#text">1</fix>
</setparam>
    <setparam name="lensTimerMax"> <fix field="#text">65535</fix>
</setparam>
</includedev>
    . . .
</device>
</DDL>

```



This is the UUID of the parent device



Here we instantiate the template (by UUID) and specify all our parameters.



The name “focallength” is assigned to the parameter when creating the template

The seemingly over-complex use of “fix” nested within “setparam” is because property values are not the only parts of a description which can be parametrized. While property values are the only aspect discussed so far it is also possible to parametrize DMP addresses, property and device labels, array sizes and even behaviors (within constraints). Instantiation also allows parameters to be omitted or re-specified so that multiple templates can be combined and/or nested into larger templates.

3. Building The Template DDL






3.1. Document Skeleton

All DDL documents contain an outer DDL element which declares the version and may contain any number of modules. The module we are building is a device so lets start by creating a document containing an empty device:


```

<?xml version="1.0" encoding="UTF-8"?>
<DDL version="1.0">
  <device
    UUID="Ub667699e-dd80-11d9-900b-00e018a44101"
    date="2005-06-15"
    provider="http://www.engarts.com/ddl/testing/2005/">
    <useprotocol name="ESTA.DMP" />
    <label>Focus subdevice template</label>
  </device>
</DDL>

```

-  The XML declaration is not compulsory but is strongly recommended.
-  The DDL element declares the version of DDL used.
-  Each module (including a device) must have a UUID, a date and the name of its “provider” – the organization which has created or marketed the module.
-  Within the device, we must declare which access protocol(s) this description provides details for.
-  A label is a freeform text label which is intended for a human reader.




Now before moving into the detail of the device, let us look at the label. DDL provides a mechanism to allow labels to be present in multiple languages and it makes sense to use this mechanism in a template designed for widespread distribution, so rather than putting the text into the device directly we use a key and state which languageset the key can be resolved in. Since the languageset is identified by an unwieldy UUID, we give that UUID a name using a UUIDname element:

```

<?xml version="1.0" encoding="UTF-8"?>
<DDL version="1.0">
  <device UUID="Ub667699e-dd80-11d9-900b-00e018a44101" date="2005-06-15"
    provider="http://www.engarts.com/ddl/testing/2005/">
    <useprotocol name="ESTA.DMP" />
    <UUIDname UUID="Ua3b3bddc-6ccf-11da-8af8-000d613667e2" name="lbls" />
    <UUIDname UUID="Ua713a314-a14d-11d9-9f34-000d613667e2" name="DMPbase" />
    <UUIDname UUID="U9e497ab8-73db-11da-855b-00e018a44101" name="DMPadd" />
    <label key="fcsDev" set="lbls" />
  </device>

```

```
</DDL>
```

-  The *UUIDname* element means we can now refer to languageset module a3b3bddc-6ccf-11da-8af8-000d613667e2 by the shorter and more convenient name “lbls”.
-  While adding UUID names for our labelset, we also add them for the two behaviorsets we are to use.
-  The new label declaration uses the string key “fcsDev” and tells the application that that key can be resolved in the languageset “lbls”. When the application looks up the key, it may find versions of the label in multiple languages and selects which to display based on user preferences.

Before the template is complete, we must ensure that the languageset “a3b3bddc-6ccf-11da-8af8-000d613667e2” exists, is made available and contains label text for every key we use. Preferably in as many languages as possible.

3.2. Focus Device Model

We now move on to the description of the focus device itself. As we saw earlier, the main parameters required are the focal length of the lens and its position.

3.2.1. Focal Length

Basing our description on the DMP behaviorset [[DMPbaseDDL](#)], a lens is a form of *streamModifier* where the stream is the lightbeam. Refinements of the basic *beam* and *streamModifier* behaviors particular to light beams and lenses are provided in [[DMPaddBehavior](#)]. The value of the lens property is its focal length and this is to be a parametrized immediate value.

3.2.2. Lens Position

The base DMP behaviorset defines a system of geometrical properties which can assign positions to constituent elements using datum references. This allows the lens position to be expressed in a way which not only relates the positions of the lens and the gate of the lantern, but relates the two all the way back through any movement axes (e.g. pan and tilt) to a physical datum which can be identified and used for locating the luminaire when hanging it in the first place. The property defining the position of the lens with respect to the light beam must be a networked value.

Combining these two pieces allows us to begin defining our focus control:

```
...
<property valuetype="immediate">
  <label key="lens" set="lbls"/>
  <behavior name="lens" set="DMPadd"/>
  <value type="sint">350</value>
  <property valuetype="network">
    <label key="lensPosition" set="lbls"/>
  </property>
</property>
```

```

<behavior name="ordZ" set="DMPbase"/>
<protocol name="ESTA.DMP">
  <propref_DMP .../>
</protocol>
</property>
</property>
...

```

the value of a lens property is its (signed) focal length.

the “beam” behavior which defines the light-beam also defines a three dimensional coordinate reference system so the position and orientation of the lens can be specified using a single ordinate (unless the lens is not co-axial with the beam).

the *propref_DMP* element holds all the details on how to access the lens position using DMP

3.2.3. Parametrizing the Main Elements

Before elaborating this we now need to parametrize the focal length. this is done by preceding the value element which defines the length with a parameter element:

```

...
<property valuetype="immediate">
  <label key="lens" set="lbls"/>
  <behavior name="lens" set="DMPadd"/>
  <parameter id="focalLength" fields="#text" />
  <value type="sint">250</value>
  <property valuetype="network">
    <label key="lensPosition" set="lbls"/>
    <behavior name="ordZ" set="DMPbase"/>
    <protocol name="ESTA.DMP">
      <propref_DMP .../>
    </protocol>
  </property>
</property>
...

```

the *parameter* element defines an identifier used to specify values for attributes or content of the following element.

the *fields* attribute defines which field(s) in the next element are parameterized. A field may be an attribute name or the literal “#text” indicating that the text content of the element is parameterized.

the value element still has to specify a value which is the default if no value is assigned when the template is used.

Definitions

References

Normative

[ACN] Error: no bibliography entry: ACN found in Standards:/references.docbook

[DDL] Error: no bibliography entry: DDL found in Standards:/references.docbook

[DMP] Error: no bibliography entry: DMP found in Standards:/references.docbook

[DDLretrieval] Error: no bibliography entry: DDLretrieval found in
Standards:/references.docbook

[UUID] Error: no bibliography entry: UUID found in Standards:/references.docbook

[DMPbaseDDL] Error: no bibliography entry: DMPbaseDDL found in
Standards:/references.docbook

[DMPaddBehavior] Error: no bibliography entry: DMPaddBehavior found in
Standards:/references.docbook