Minutes
CIE Division 3 Meeting

Thursday, October 26, 2017
14:30 – 18:45 KST (UTC+9)

Ramada 3, Ramada Plaza Jeju Hotel, Jeju, Korea

Abbreviations:
DD – Division Director
ADD – Associate Division Director (/EL – Electric Lighting; /DL – Daylighting)
DE – Division Editor
DS – Division Secretary
DO – Division Officer
CB – Central Bureau
JTC – Joint Technical Committee (with other Division(s))
LO – Liaison Officer
NC – National Committee Representative for CIE Division 3
TC – Technical Committee
TCC – Technical Committee Chairman

List of Attachments:
Annex 1: Action item list WebEx Midterm Meeting, Jeju Island, October 2017

Annex 2: Reports Received
Annex 2.1: DD3 report 2017 meeting
Annex 2.2: ADD Daylighting report 2017 meeting
Annex 2.3: ADD Electric Lighting report 2017 meeting
Annex 2.4: DE report 2017 meeting
Annex 2.5: TC 3-44 Lighting for older people and people with visual impairment in buildings
Annex 2.6: TC 3-48 CIE standard method of UF table calculation for indoor luminaires
Annex 2.7: TC 3-54: Revision of CIE 16-1970: Daylight
Annex 2.8: TC 3-55 Metrics for sunlighting and daylight passing through sunshading devices
Annex 2.9: TC 3-56 Assessment of discomfort glare from daylight in buildings
Annex 2.10: JTC 4 Visual, health, and environmental benefits of windows in buildings during daylight hours
Annex 2.11: JTC 7 Discomfort caused by glare from luminaires with a non-uniform source luminance
Annex 2.12: JTC 8 Terminology in light and lighting
Annex 2.13: JTC 9 Quantifying ocular radiation input for non-visual photoreceptor stimulation
Annex 2.15: Liaison report CEN TC169
Annex 2.16: Liaison report CEN TC169 WG 2 – Lighting of work places
Annex 2.17: Liaison report CEN TC169 WG 11 – Daylight
Annex 2.18: Liaison report ISO TC159 – Ergonomics
Annex 2.19: Liaison report ISO TC205 WG 7 – Indoor visual environment

**Annex 3: Material presented at the meeting**
Annex 3.1: Slides DD on PSDO ISO TC 274
Annex 3.2: Report ADD/EL and DD on CIE 60:1984 Vision and the visual display workstation
Annex 3.3: Slides Mr. McGowan on resilient lighting

**Annex 4: Current list of NCs, TCCs, DOs and LOs (status October 25, 2017)**

1. **Opening of meeting**
The Division Director, Dr. Jennifer Veitch, welcomed everyone to the meeting. The meeting was opened at 14:38 KST.

2. **Approval of agenda**
Agenda was sent around on October 3, 2017. The main agenda topics were presented by DD. Agenda was approved by consensus.

3. **Attendance**
The DS checked presence during the Division 3 WebEx meeting. The following is the list of people participating in the Division 3 WebEx meeting, with their roles within the division.

<table>
<thead>
<tr>
<th>Name</th>
<th>Country Abbreviation</th>
<th>Role</th>
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<tbody>
<tr>
<td>Dr. Yukio Akashi</td>
<td>JP</td>
<td>TCC 3-44</td>
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<td>Mr. Peter Dehoff</td>
<td>AT</td>
<td>NC Delegate</td>
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<td>Mr. Roman Dubnicka (representing Dr. Darula)</td>
<td>SK</td>
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<td>Dr. Veronica Garcia-Hansen</td>
<td>AU</td>
<td>NC Delegate</td>
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<td>Prof. Naoya Hara</td>
<td>JP</td>
<td>JTCC 7</td>
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<td>Mr. Tapio Kallasjoki</td>
<td>FI</td>
<td>NC Delegate</td>
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<td>Dr. Martine Knoop</td>
<td>DE</td>
<td>DS, LO CEN TC169 WG 2</td>
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<td>Prof. Etsuko Mochizuki</td>
<td>JP</td>
<td>NC Delegate</td>
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<td>Dr. Jennifer A. Veitch</td>
<td>CA</td>
<td>DD3, NC Delegate</td>
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<td>Dr. Gilles Vissenberg</td>
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<td>Dr. Jan Wienold</td>
<td>CH</td>
<td>JTCC 4, LO CEN TC169 WG 11</td>
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<td>Dr. Nozomu Yoshizawa</td>
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<td>ADD/EL</td>
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<td>Dr. Yuki Akizuki</td>
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<td>Ms. Anne Bay</td>
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<td>Dr. Seo Young Choi</td>
<td>KR</td>
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<td>Ms. Hou Dan Dan</td>
<td>CN</td>
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<td>Mr. Peter Hansen</td>
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<td>Mr. Matthieu Iodice</td>
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<td>Dr. Tae Hoon Lee</td>
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<td>Mr. Christophe Marty</td>
<td>FR</td>
<td>Guest</td>
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4. Apologies for absence

The following individuals had previously sent their regrets at being unable to attend the Division 3 meeting. The DS read the list:

Prof. John Mardaljevic (Associate Division Director Daylight, NC Great Britain), Peter Thorns (DE), Dr. Stanislav Darula (NC Slovak Republic – represented by Mr. Roman Dubnicka), Dr. Arnaud Deneyer (NC Belgium), Prof. Leyla Dokuzer Öztürk (NC Turkey), Dr. Matej Kobav (NC Republic of Slovenia), Sen. Eng. Wang Lei (NC China), Mr. Terry Mc.Gowan (NC USA), Dr. Piotr Pracki (NC Poland), Prof. Christoph Schierz (NC Germany), Mr. Jan Petter Skar (NC Norway), Dr. Yasuko Koga (TCC 3-53), Prof. Marc Fontoynont (TCC 3-55), Dr. Hillevi Hemphälä (Liaison ISO TC159 SC 4 and SC 5), and the following Division Associates: Dr. Dionýz Gašparovský, Prof. Terry Hartig, Prof. Warren Julian.

5. Division membership changes - welcome new members

The Division welcomed no new National Committee representatives since the Division WebEx Meeting in September 2016.

6. Review

a. Action items from 2016, WebEx meeting

DD went through the action item list of the 2016 WebEx meeting. Most action items were reviewed and resolved in 2016 and 2017. The action items are summarized in the slide to the right. Some action items were discussed in more detail:

With respect to A5: DS will lead a small Task Force to review the table of contents of CIE Proceedings, scanned by the DE, to identify key papers to make publicly available. Dr. Kirsch volunteered for this Task Force.

**Action 1:** DS to lead Task Force to review ToC of CIE Proceedings to identify key papers.

**Action 2:** DS to ask for volunteers for the review ToC of CIE Proceedings to identify key papers to make publicly available.

With respect to A9: DE asked Dr. Li-Chen Ou (DS Division 1): Division 1 would like to keep publication 103/2 Industrial Lighting and Safety at Work (1993), as it is useful historically. It will not be updated.
With respect to A11: Division 3 had a number of people interested in participation in the ISO/TC 274 committee on the revision of the ISO 30061:2007(E)/CIE S 020/E:2007: Joint ISO/CIE Standard: Emergency Lighting (Lou Bedocs, John Bullough, Igor Vidali, Robert Henderson, Yuki Akizuki, Yasuko Koga, Lei Wang). No ISO/TC 274 leader could be found, the standard was confirmed, no further action at the moment.

b. **Electronic Ballots since Sept 2016**

Following electronic ballots ran within Division 3 between September 2016 and October 2017:

- Ballot New JTC ISO/TC274/WG 2 Maintenance Factor (closed 03.2017)
- Ballot New Division 3 Liaisons: Liaisons ISO/TC 205 - Dr. Paule and Dr. Sutter, Liaison CEN/TC 169/WG 2 - Dr. Knoop, Liaison CEN/TC 169/WG 11 - Dr. Wienold (closed 04.2017)
- Ballot ISO/TC274/WG 2 JTC 11 Maintenance Factor Division 3 Co-Chair: Peter Thorns (closed 05.2017)
- Ballot Create Reportership on the CIE Stakeholder Workshop for Temporal Light Modulation Standards for Lighting Systems (closed 04.2017). The reportership was created and closed in the same year (document balloted by CIE CB)
- Ballot and commenting on ISO/TC 274 NWIP Descriptive and Expression Methods of the Adaptive Lighting Scene from Design to Operation (closed 08.2017, ballot partly through CIE CB)
- Ballot: LB D03 1707 Systematic Review ISO 8995 CIE 008 Lighting of indoor workplaces (start 10.2017, deadline 03.2018, on request of CIE CB)

DD pointed out to the importance to use expert knowledge in the balloting process. DD asks the Division 3 members to provide their expert opinion in the commenting process through their National Committees or through Division 3.

7. **Division Management Team Reports**

DD pointed out that all reports are available on Coll Tool (and included as Annex of these minutes).

a. **Division Director**

DD highlighted some topics from the DD report.

The role of DE is further clarified in the Code of Procedure. A Working Document with a unanimous positive vote will go to the DE first, who applies a checklist to edit the document. After editing, the document will send to CB for further processing.

DD presented details with respect to the new ISO-CIE PSDO and ISO/TC 274 Implementation Guide (IG) (slides in Annex 3.1). PSDO is under way, but not approved yet at ISO and CIE level. One of the aims is to clarify and streamline the work of the Joint Advisory Group (JAG). The IG will give recommendations about the route of collaboration and two separate ways of balloting on new work items. ‘Integrated Liaison’ is the default route; JTC 6 and JTC 11 are examples for that. DD stated that the CIE Code of Procedure is to be harmonized with the IG.

ADD/EL asked whether in collaboration option 3 ‘Integrated Liaison’ the members of ISO and CIE can completely overlap. Even though a complete overlap is seems not to be favourable,
DD and Mr. de Vries (JTC 11) stated that some overlap is good, it helps to get consensus, as long as expertise is leading the discussion in the committee.

b. ADD/EL

ADD/EL read his report (Annex 2.3).

Dr. Akashi thanked TC 3-44 members for writing the report and Division Officers for their support, DE for editing and reviewing the report. Dr. Akashi acknowledged the CIE CB and thanked Dr. Zwick for enthusiastically supporting him in finalizing the report.

ADD/EL presented two slides of JTC 9 (included in Annex 2.3 - ‘Two slider summary of progress’ JTC 9 report). DD stated that the JTC 9 report likely will have a shortened review period, the Division will be informed in due time.

Mr. Dehoff pointed out that the work of TC 3-49 was finalized, reported and published (CIE 222:2017).

c. DS

The DS briefly informed the participants about the typical tasks of a Division Secretary. In essence this is sending information to and keeping an eye on contact details of Division Members and Associates of the Division 3 roster (253 people of which 37 Division Members, being the National Representatives).

8. Activity Updates (Technical Committees, Reporters, Liaisons)

DD pointed out that all TC and JTC reports are available on Coll Tool (and included as Annex of these minutes).

a. Announce: Closure of TC 3-48

TC 3-48 is closed. The draft was rejected with the comment that it differed too far from existing document CIE 52-1982 "Calculations for Interior Lighting: Applied Method". The proposed solution was to retain the majority of the document but use the reference arrangements given in section 10.3.6 of CIE 52. This method does not use the luminaire SHR but uses fixed luminaire spacing's for each room index. Nonetheless, recent research has found that this approach penalizes modern optics designed for wider luminaire spacings. Therefore the recommendation is that this technical committee be disbanded and a new technical committee be formed with the remit to evaluate this assertion and either confirm the method given in CIE 52 or replace CIE 52 with a new method relevant for modern luminaires and design practice. The existing material will be archived for use by a new TC when formed.

DD asked those interested in starting up a new TC on this topic, to draw up a full TC proposal and contact ADD/EL, DD and / or DS.

b. Ballot: Extend term of TC 3-54 to 2020

Division 3 missed to extend the term when TCC changed in 2016.

Motion 1: Extend term of TC 3-54 ‘Revision of CIE 16-1970: Daylight’

Moved (Hansen Garcia / Vissenberg): that the deadline for TC 3-54 ‘Revision of CIE 16-1970: Daylight’ is extended to April 2020.

PASSED (in favour: 7, against: 0, abstain: 0)
c. **Ballot: Extend term of TC 3-55 to 2020**  
Due to European standardization activities in the last 2 years the TCC kept the TC activities somewhat on hold, which are now picked up again. TCC would like to extend the term of the TC.

*Motion 2: Extend term of TC 3-55 ‘Metrics for Sunlighting and Daylight Passing through Sunshading Devices’*  
Moved (Dehoff / Veitch): that the deadline for TC 3-55 ‘Metrics for Sunlighting and Daylight Passing through Sunshading Devices’ is extended to April 2020.  
PASSED (in favour: 7, against: 0, abstain: 0)

d. **Announce / Ballot: D3 co-chair of new JTC on Depreciation and Maintenance of Lighting Systems**  
A new JTC was initiated by Division 4, chaired by Dr. Dionýz Gašparovský. The JTC has five Division 3 members (Adrie de Vries, Peter Thorns, Wenli Wang, Georgios Paissidis and Peng Zhuang). ADD/EL will contact possible co-chair, DS will set up electronic ballot as soon as D3 co-chair has been found.

*Action 3: ADD/EL to clarify Division 3 co-chair JTC Depreciation and Maintenance of Lighting Systems.*  
*Action 4: DS to set up ballot to install Division 3 co-chair JTC Depreciation and Maintenance of Lighting Systems.*

e. **Activity update Reporterships**  
Division 3 currently has two open reporterships. R 3-29 Variable Transmission Glazing (VTG): Current Trends and Future Prospects for Uptake by the Building Sector and R 3-31 Available daylight metrics.

f. **Ballot: Appoint new Liaison Officers**  
Three new Liaison officers were proposed in commence of the meeting, resumes were included in the agenda and sent around on October 3, 2017. Dr. Kirsch was present at the meeting, and briefly introduced himself. The Liaison officers were installed after the following ballots:

*Motion 3: Liaison ISO/TC 163: Thermal performance and energy use in the built environment*  
Moved (Dehoff / Veitch): that Mr. Soheil Moghtader (DE) becomes the liaison officer for ISO/TC 163: Thermal performance and energy use in the built environment.  
PASSED (in favour: 7, against: 0, abstain: 0)

*Motion 4: Liaison CEN/TC 169/WG 3: Emergency lighting in buildings*  
Moved (Dehoff / Veitch): that Mr. Peter Thorns (GB) becomes the liaison officer for CEN/TC 169/WG 3: Emergency lighting in buildings.  
PASSED (in favour: 7, against: 0, abstain: 0)

PASSED (in favour: 7, against: 0, abstain: 0)
DD thanked all for standing for these roles.

g. **Announce: CIE Expert Tutorial & Workshop for Research Methods on Human Factors in Lighting**

DD stated that the Expert Tutorial & Workshop is announced on the website now (http://div3.cie.co.at/?i_ca_id=1040), in a couple of weeks, submission of abstracts will be possible.

h. **Announce: Cross-divisional Research Forum on Temporal Light Modulation**

A cross-divisional Research Forum on Temporal Light Modulation was approved by the DDs on October 21, 2017 (Division 1, 2, 3, 4 and 6). An announcement will follow in due time.

**Action 5: ALL interested in active participation in cross-divisional Research Forum on Temporal Light Modulation contact DD.**

9. **New work**

a. **Update to CIE 60:1984 – new Reportership?**

ADD/EL and DE looked into CIE 60:1984. ADD/EL summarized the outcome of the report (Annex 3.2). ADD/EL and DE proposed to update Part 3.3.3. Environmental requirements by CIE Division 3. Mr. de Vries proposed to ask Dr. Hemphälä, our Liaison to ISO TC159 SC 4 & SC 5. DD will discuss with Dr. Hemphälä and see if she or someone from the ergonomics network would be interested in this work item.

**Action 6: DD to contact Dr. Hemphälä to find reporter to update Part 3.3.3. Environmental requirements of CIE 60:1984.**

b. **Resilient Lighting – new Reportership?**

DD presented a few slides of Mr. McGowan on resilient lighting (see Annex 3.3).

Dr. Hansen-Garcia asked whether this is about lighting for homes. She indicated that it sounds that it is looked for an industrial design. DD stated that it is not about product specification but lighting specification. Dr. Akizuki offered to bring in her experience with resilient lighting in this reportership.

**Action 7: ALL interested in active participation in a reportership on resilient lighting contact ADD/EL, DD and DS.**

c. **Expert symposium: Glare & Discomfort**

TC 3-56 and JTC 7 will come to an end in the coming 1.5 – 2 years. The workshop on Monday, October 22 2017 was of great interest. DD proposed to host a focused expert workshop on glare, to reach out to experts not involved in CIE but interested in and/or engaged in glare. The idea to organise a symposium on glare & discomfort was welcomed. Ms. Bay stated that imaging opportunities seems to gear up the discussion and research possibilities, so a further focus on glare seems to be suitable.

Dr. Vissenberg brought forward that it would be good to share thoughts and material, even if it is too early to start a new TC, as there seems to be some overlap between glare from non-uniform light sources and daylight. Dr. Akashi reinforced this, addressing the overlap with TC
4-33. DD stated that the RF as such is intended to share ideas, but preferable after completion of the TCs.

**Action 8:** DD, ADD/EL, ADD/DL (and possibly other DDs) to discuss RF on discomfort to share common topics between TC 3-56, JTC 7, TC 4-33.

**Action 9:** DS to inform ALL about a possible symposium on glare & discomfort – those interested to think about it

**Action 10:** DD, ADD/EL, ADD/DL to discuss details of symposium on glare & discomfort with those interested in organising (Action 9)

Mr. Dehoff stated that we should not forget that Division 3 needs to focus on the glare evaluation system, whereas Division 1 could look into the physiological aspects, possibly in a more research-focused JTC between Division 3 and 1. Dr. Hara confirmed that a joined TC seems to be more suitable as it glare has many overlapping topics.

### d. Research strategy ideas - Post-occupancy evaluation guidelines

One of the research strategy ideas highlighted as ‘easy to do, not the highest priority’ is “Post-occupancy evaluation guidelines”. Dr. Garcia Hansen and Dr. Wienold offered to be reporters on this topic. Dr. Wienold indicated that this work could be combined with the work of Division 2 (possibly TC 2-86 Glare Measurement by Imaging Luminance Measurement Device (ILMD) and TC 2-59: Characterisation of Imaging Luminance Measurement Devices). It was decided to start with a Division 3 reportership for now.

**Action 11:** DD, ADD/EL, ADD/DL, Dr. Garcia Hansen and Dr. Wienold to write up a proposal for a Reportership on “Post-occupancy evaluation guidelines”.

**Action 12:** DS to set up a ballot to create a Reportership on “Post-occupancy evaluation guidelines”.

### 10. Any other business

#### a. Promotion of Division Research Strategy

The Division Research Strategy does not get the level of participation as hoped for. Approximately 40% of the Division Associates are Member of the Division 3 LinkedIn Group, and there is very little to no traffic. DD asked for input of the participants. Mr. de Vries asked if it would be possible to detail the research strategy in expected activities (Research Forum, discussion, Technical Committee ...), to have a clearer view on the required activities, as the research strategy as such is a nice collection of material but a somewhat static document.

It was proposed to identify three strategic topics and the possible way forward. Email will be used as communication tool and WebEx for smaller group discussions for those interested to start up activities.

**Action 13:** DD, ADD/EL, ADD/DL, DS, DE to identify three strategic topics and the way forward

#### b. Proactive announcement - 2019 Division Management Team recruitment

DD informed the participants about the change of (at least) the DD in 2019. A call for DD nomination will go out mid 2018.
c. **Proactive announcement - Test method and rating system for optically complex fenestration**

DD briefly informed that the Division supports activities on optically complex fenestration. Dr. Wienold stated that this is a topic addressed in the upcoming IEA Task. It was decided that DS will look at an overlap in Division 3 roster and IEA Subtask C members to see if we can have a contact that we can involve in this activity, and decide if this is something that needs to be picked up within CIE (possibly Division 3 and 2).

**Action 14:** DS to find Div 3 member in new IEA Task – Subtask C, to look at test method and rating system for optically complex fenestration.

d. **CIE Affiliation clarification**

DD clarified the CIE affiliation: those involved or interested in CIE Division 3 activities, but not National Members, are Division Associates.

e. **Any other business**

Peter Dehoff stated that the DD mentioned a number of topics that are important for the future. It is to be discussed how to bring this to the public. Marketing strategies have been discussed in the BA, focussing on “CIE and lit the environment better”. DD stated that support in marketing from those with experience in this would be appreciated. DD informed the attendees about the existence of a CIE YouTube channel¹. Additionally to that, the Division could work on developing design guides (both on lighting and lighting controls). This has been tried in the past, and is work that needs to be picked up again. DD indicated again, that addressing important topics still is all about manpower, volunteers are required.

11. **Next meetings**

2018: Webex, June

2019: CIE 29th Session, Washington, DC (June 17-23)

12. **Adjournment**

The meeting was concluded at 17:20 (KST)

Martine Knoop
Secretary Division 3

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¹ [https://youtu.be/qcQbCnFIE1E](https://youtu.be/qcQbCnFIE1E), [https://youtu.be/W0hlKeMCThQ](https://youtu.be/W0hlKeMCThQ)
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Annex 2.1: DD3 report 2017 meeting

CIE Division 3, Interior Environment and Lighting Design

Division Director’s Report – September 2017

This year has been as usual a busy one, but productive.

Accomplishments

This past year saw the publication of CIE 222:2017: *Decision Scheme for Lighting Controls in Non-Residential Buildings*. This was the output of TC 3-49, which has been closed.

The final report of TC 3-44, Lighting for Older People and People with Visual Impairment in Buildings is in the Approval Draft ballot at time of writing. The ballot closes on 2017-09-22, and it is likely that the document will have been published before the Jeju meeting. The TC will be closed upon publication.

During this year, Division 3 initiated and led the organizing committee for the CIE Stakeholder Workshop for Temporal Light Modulation Standards for Lighting Systems, which was held at NRC in Ottawa on Feb 8-9, 2017. This led to the creation and completion of a reportership, R 3-32, Reporter on the CIE Stakeholder Workshop for Temporal Light Modulation Standards for Lighting Systems. I was the reporter. The Reportership was closed in July upon the publication of CIE TN 008:2017 *Final Report CIE Stakeholder Workshop for Temporal Light Modulation Standards for Lighting Systems*.

Under the leadership of Dr. Ásta Logadóttir, we have made major strides in the planning for the CIE Expert Tutorial and Workshop on Research Methods for Human Factors in Lighting, to be held in Copenhagen in August 2018. Look for the official announcement and call for workshop contributions in the winter of 2018.

New Technical Work

Division 3 is a participant in the new JTC 11 (CIE-ISO): Light and Lighting – Maintenance factor – Way of working. The CIE leader of this activity is Nigel Parry (GB). The scope of this joint activity is:

This deliverable will provide a standardized way of working for determining the maintenance factor for both indoor and outdoor installations using the methodology as described in CIE 154:2003 & CIE 97:2005. The deliverable will combine insights from IEC standards with respect to product performance of luminaires and light sources currently in the market with the existing determination methodology from CIE technical reports. Furthermore, it will reference to the data in the CIE technical reports w.r.t. the impact of the environment on luminaires (accumulation of dirt on surfaces and luminaires).

Division 3 has also voted to participate in a new CIE Joint Technical Committee on Depreciation and Maintenance of Lighting Systems, which is to develop new fundamentals in this area. A D3 JTC Co-Chairman is sought to lead this activity together with CIE Division 4:

To revise CIE 97:2005 and CIE 154:2003 in order to bring them up to date by incorporating recently used approaches for determination of lumen maintenance of LED lamps, dealing with lamp and ballast/driver survival factor and upgrading the luminaire maintenance factor according to current technologies and environmental factors. To deal additionally with
distortion of luminous intensity distribution due to environmental influences. To extend the
document by maintenance of LED luminaires regarding their cooling specific requirements.

D3 will also vote at this meeting to establish several new liaisons with partner organizations where we
have overlapping interests, and we look forward to the new collaboration possibilities.

**Division 3 Strategy**

As a reminder, here is the list of priorities that emerged from our 2015 planning discussion and survey.
You can (and should!) read the full report on CollTool\(^1\). The list of our priorities is:

*Important but difficult topics:*
1. Recommendations for healthful lighting
2. Integrated glare metric

*Important, neither easy nor difficult topics:*
3. Conditional lighting recommendations
4. Retrofitting for improved daylighting
5. Post-occupancy evaluation and verification
6. Lighting and the Internet of Things

*Somewhat important, neither easy nor difficult*
7. Spectral sky models
8. Design guide for lighting controls in tertiary spaces
9. Lighting for display screens

I am concerned that we have not progressed far in either promoting these topics, nor in discussing new
work items related to them. Our LinkedIn discussion group has no traffic. If we believe these topics are
important to the future of lighting, we should be able to elicit some debate and discussion about them.

**Board of Administration Task Groups**

During the past year, in the role of Division Director, I have of course participated in various Board of
Administration (BA) activities, including...

- In support of the CIE Research Strategy, I wrote an article for LED Professional magazine, to be
  published shortly.
- I participated in the development of the Research Forum category of CIE activities. These are
  just now beginning to be used.
- I assisted in the development of agreements between CIE and ISO concerning their co-operative
  work, particularly in ISO/TC 274.
- I will deliver a talk titled “Achieving Good Lighting Quality with Integrative Lighting:
  Opportunities and Challenges” on behalf of CIE at the China Academy of Building Research
  International Healthy Lighting Forum just prior to the CIE 2017 conference.

**Increasing our Operational Efficiency**

This area is coming along, but a lot more slowly than I would like.

- **The LinkedIn group is not being used – why?** It is the most accessible forum we have, but has fallen into disuse.
- **The reporting templates for TCs to use for their annual summaries to the Division are operational, and the ADDs are requesting TCCs to use them—but we are not seeing them used as they ought to be. TCCs, take note, and use them for your next reports.**
- **SMART goals can be effective for setting targets for ourselves.** I have found this useful for myself, and commend it to you for your TC work.

**Challenges and Opportunities**

In 2011 I set myself these goals: faster delivery of useful documents with less administrative effort; new work to focus on a limited number of tasks with demonstrated value to the lighting community. We are making progress, with most of our longstanding TCs having published their documents and new ones making good progress on important topics -- but our pipeline remains small in comparison to the importance of interior lighting in the lives of people everywhere. I don’t understand how we have so many excellent submissions and presentations at every CIE conference, but so little discussion, debate, and new work proposals in the Division. This is a challenge, and the things are are not doing are opportunities we risk missing.

In 2019, it will be time for Division 3 to select a new Division Director. Who will it be? The opportunities to shape international thought and consensus on all matters light and lighting in interiors await you! Please give this challenge some thought, because nomination time will be here sooner than you think.

Respectfully submitted,

*Jennifer A. Veitch, Ph.D.*

Ottawa, Canada
Division 3 Director’s SMART goals through 31-Mar-2017 (report 2017-Sep-20)

1. Promote the research roadmap for healthful lighting (CIE 218:2016) widely, through presentation and publication, to direct research in ways we think are needed. 
   Ongoing, with presentations at Strategies in Light 2017 (Anaheim, CA, USA; March 2017) and CABR International Healthy Lighting Forum (Beijing, China, October 2017), and upcoming article in LED professional Magazine.

2. Work with BA members and others to organize a stakeholder meeting to co-ordinate international standards and recommendations related to light source luminous modulation. 
   Done, and published as TN 008:2017.

3. Work with Division Executive to develop at least 1 new TC proposal for electronic ballot before this date.
   New JTCs formed with ISO/TC 274 and D4 on maintenance factor.

4. Report to Division on the achievement of these goals by April 30, 2017.
   ☺ Not done! Complain to me if you do not hear from me.

Division 3 Director’s SMART goals through 31-Mar-2018

1. Continue to promote the research roadmap for healthful lighting (CIE 218:2016) and the Division 3 and CIE Research Strategies.

2. Work with BA members and others to follow up on the stakeholder meeting to co-ordinate international standards and recommendations related to light source temporal light modulation, enacting the roadmap in TN 008:2017.

3. Contribute to the planning of the CIE Expert Tutorial and Workshop on Research Methods for Human Factors in Lighting, to be held in Copenhagen in August 2018.

4. Report to Division on the achievement of these goals by April 30, 2018.
CIE Division 3
Interior Environment and Lighting Design

Associate Director’s Report – Daylighting

CIE Division 3 Meeting, October 2017

In the last year the number of Division 3 TCs active in the area of daylighting has remained unchanged. The currently active daylighting TCs in Division 3 (including joint TCs) are:

**JTC 4:** (D3/D6) Visual, Health, and Environmental Benefits of Windows in Buildings during Daylight Hours

**TC 3-54:** Revision of CIE 16-1970: Daylight

**TC 3-55:** Metrics for sunlighting and daylight passing through sunshading devices

**TC 3-56:** Assessment of Discomfort Glare from Daylight in Buildings

As noted previously, the small number of active TCs in daylight-related areas remains a concern. Despite efforts to encourage wider participation, this worrying downwards trend persists.

Daylighting research has historically received a small fraction of the funding allotted to either electric lighting (mainly from manufacturers) or in the more general area of built environment supported by research councils, but with a heavily restrictive energy focus. Thus daylighting research is often pursued by enthusiasts/academics without significant funding support. In other words, sustained more by good will rather than hard cash. Daylighting researchers have, necessarily, adapted to this funding landscape. And much of the quality daylighting research carried out in recent years has been relatively low-cost. However, with ever increasing pressure on academics to justify the time spent on unfunded work, the capacity to contribute to any significant degree on ‘personal projects’ is gradually being eroded. This reality has become impossible to ignore in recent years since its most obvious manifestation has been with the difficulty experienced in recruiting volunteers to participate *actively* in CIE Technical Committees. A number of compounding factors have not helped. In particular for academics, the lack of visibility of CIE publications serves to discourage wider participation.

The CIE is not alone in having to confront these challenges. However, in certain areas, the traditional encouragements to participation either no longer apply or carry much less weight than they used to. We should therefore consider potentially radically new ways to renew interest in, and commitment to, the various work programmes of the International Commission on Illumination, in particular the technical committees.

Professor John Mardaljevic
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**CIE Division 3, Interior Environment and Lighting Design**

**Associate Director's Report – Electric Lighting**

**CIE Division 3 Meeting, October 2017**

The current progress of the TCs in the domain of electric lighting is as follows:

- **TC 3-44:** Lighting for Older People and People with Visual Impairment in Buildings
  - Approval Draft Technical Report was approved by the Board of Administration as well as by Division 3 on September 2017. The TC will be closed upon publication.

- **TC 3-48:** CIE Standard Method of UF Table Calculation for Indoor Luminaires
  - TC 3-48 will be closed at Jeju. TCC recommend that “this technical committee is disbanded and a new technical committee is formed with the remit to either confirm the method given in CIE 52 or replace CIE 52 with a new method relevant for modern luminaires and design practice. The existing draft from TC 3-48 and the paper from Lux-Europa will be available for the new technical committee.”

- **TC 3-53:** Revision of CIE S 008 Joint ISO®CIE Standard: Lighting of Work Places - Part 1: Indoor
  - Inactive; TC will be closed.

- **JTC 6:** Energy Performance of Lighting in Buildings (joint working group with ISO/TC 274/WG 1)
  - the results of the ISO/DIS 20086 enquiry - now under DIS ballot - will be expected to end beginning of November

- **JTC 7:** Discomfort caused by glare from luminaires with a non-uniform source luminance
  - Skype meeting in correction WG was held at 27th September to discuss correction of UGR in fourth draft. TC meeting is scheduled during the CIE event in Korea. Limiting parameters will be identified.

- **JTC 9:** Quantifying ocular radiation input for non-visual photoreceptor stimulation
  - CIE procedures & publication draft: another ~7 months
  - CIE publishes final international standard: another ~7 months

**New TC/JTC & TC/JTC/Reportership in near future**

- **JTC 11 (CIE-ISO):** Light and Lighting – Maintenance factor –
- **CIE JTC on Depreciation and Maintenance of Lighting Systems**
- **Reportership on 'Vision and the visual display unit work' (revision of CIE 60 1984)**
- **JTC(CIE-ISO) on Revision of ISO 8995:2002(E)/CIE S 008/E-2001: Lighting of Workplaces – Part 1 Indoor**
The setting-up of the JTC for Emergency Lighting has been canceled because both ISO/TC 274 and CIE could not find a convenor for this activity. Most academic researchers have now lots of tasks and works at their own organization, and is sometimes getting lost their time for voluntary works. On the other hand the work load for TCC is still heavy, so it is worrying that such things would be repeated in future. Sometimes it seems difficult to collect members for both ISO/TC 274 and CIE Div3. Is it really necessary to collect 5 members from different countries for ISO-led JTC? Or isn’t it possible that committee members overlap each other?

Open discussion on the internet is now suspended. Some members e-mailed me that they had no longer spare time for voluntary work, or they preferred face-to-face discussion rather than on the internet...

- Lighting and the Internet of Things
- Design Guide for Lighting Controls in Tertiary Spaces
- Lighting for Display Screens

It would be necessary to find out a member who could lead the discussions, who has strong interest in this topic, and are ready to take a role of TCC in future.

We could try to restart it again on a topic about reportership on ‘Vision and the visual display unit work’, or some novel topics like museum lightings would go well.

October, 2017
Nozomu Yoshizawa
Tokyo University of Science, Japan
CIE Division 3 Division Editors report

The main items over the last year have been;

CIE 60:2004 Vision and the visual display unit work station
This document has been flagged as requiring updating for a number of years. In association with the Associate Division Director/Electrical the document was checked and the updates required defined.

CIE 103 – CIE Technical Collection 1993
This document contains technical reports from both Division 1 and Division 3. The Division 3 report "Industrial Lighting and Safety at Work" contains out-of-date information. Discussions were held with Division 1 on whether the document should be deleted but it was agreed that this publication would be kept as a historical record as the Division 1 reports were still useful.

CIE 117-1995 – Discomfort glare in interior lighting
A query was received by CIE on the use of tabulated position index values in CIE 117 compared to the equivalent formula in other publications such as the IESNA Lighting Handbook. The historical background to this was described in a reply to the query.

CIE 171 – Test cases to assess the accuracy of lighting computer programs
Comments were received on possible inaccuracies within the document regarding the daylight test case calculations. The background to these comments was checked and the Associate Division Director/Daylight took up the issue to have the comments assessed independently.

Investigate CIE Division 3 involvement in the systematic review of ISO 30061:2007
The systematic review of ISO 30061:2007 – Emergency Lighting indicated that the standard should be updated. This was considered suitable for a joint ISO/TC274 CIE working group. However no chairperson was found to lead the work so the standard will have to be confirmed unchanged.

Investigate publication of table of contents for historical CIE Proceedings
CIE is open to making a selection of archived publications open to the public. Division 3 is working towards this by looking into scanned tables of contents of CIE proceedings. The Divisional Editor scanned the contents pages for early CIE proceedings.

P. Thorns
CIE Division 3 - Division Editor
16th October 2017
TC Report TC 3-44 “Lighting for Older People and People with Visual Impairment in Buildings”

Report Date: August 24, 2017

TCC: Yukio Akashi, akashi@u-fukui.ac.jp

TC Members:

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<td>Ans van den Broek Cools</td>
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<tr>
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<td>Ken Sagawa</td>
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<td>Naomi J. Miller</td>
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<tr>
<td>Shigeko Kitamura</td>
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<tr>
<td>Tommy Govén</td>
<td>SE</td>
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<tr>
<td>Yuki Akizuki</td>
<td>JP</td>
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Terms of Reference and Work Plan:

- This report summarizes lighting recommendations on lighting and visual environment in interior spaces such as offices, public spaces, and residences for healthy older people (defined as people aged 50 years and older) with normal vision, and people with low vision, and implements guidelines described in CIE 196 (2010) into practical solutions.

- TCC plans to publish TR in September, 2017.

Revised time schedule (if any changes have been made):

- ED was supposed to be prepared by the end of October, 2016.
- But, ED preparation was six month behind schedule.

Status of SMART goals from <April 30, 2015>:

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<td>Preparation of AD</td>
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<td>August 22nd, 2017</td>
<td>Revised ED according to comments raised during stage 9.</td>
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* Process Stage Number in “CIE code of procedure”
Other Activities and Achievements between (last report) and (now)

- TM (Dr. Peter Zwick) kindly reviewed and edited CD.
- TCC and TCMs revised CD and prepared ED at the end of April, 2017.
- Then, TM circulated ED to BA/DIV and received six comments from BA/DIV.
- TCC revised ED according to the comments and circulated it to TCMs for their approvals in August, 2017.
- TM completed AD and circulated it to BA/DIV for their ballots.

SMART goals for coming 6 months

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<td>12</td>
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<td>October 20th, 2017</td>
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*Process Stage Number in “CIE code of procedure”
Annex 2.6: TC 3-48 CIE standard method of UF table calculation for indoor luminaires

**TC Report TC 3-48 “CIE standard method of UF table calculation for indoor luminaires”**

**Report Date:** 14th September 2017

**TCCs:** Peter Thorns (peter.thorns@zumtobelgroup.com)

**TC Members:**

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<td>Thorns</td>
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</tr>
<tr>
<td>Gilles</td>
<td>Vissenberg</td>
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</tr>
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**Terms of reference and work plan:** To produce a CIE standard for the calculation of utilization factor (UF) tables for indoor luminaires

**Revised time schedule:** Not applicable

**Status of SMART goals from 9th June 2015**

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<td>Peter Thorns</td>
<td>-</td>
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**Other Activities and Achievements between 9th June 2015 and 14th September 2017**

The draft was rejected with the comment that it differed too far from existing document CIE 52-1982 "Calculations for Interior Lighting: Applied Method". The proposed solution was to retain the majority of the document but use the reference arrangements given in section 10.3.6 of CIE 52. This method does not use the luminaire SHR but uses fixed luminaire spacing's for each room index.

In a subsequent paper "Comparison of Different Methods of Distribution Factor Calculation" by Peter Raynham and Peter Thorns and presented at Lux-Europa 2017, Ljubljana, it was demonstrated that this approach penalizes modern optics designed for wider luminaire spacing's. The conclusion states

"It is now common place for lighting designs to be assessed using computer software. However, utilizations factors are still useful as they provide a quick and easy way to find which luminaires are likely to be most efficient in a given installation and thus their use simplifies the luminaire selection process. The CEN method of calculating the UF takes into account the SHR of the luminaire providing sets of geometric multipliers to cover a range of SHR's. The CIE 52 method does not do this and implicitly assumes SHR values that would be considered low for most modern luminaires. In practice there are great pressures to reduce the number of luminaires used in any given installation so manufacturers strive to produce luminaires with high SHR values which are then installed close to their maximum SHR.

The method in CIE 52 underestimates the performance of luminaires that have been designed to be used at high spacing ratios and thus may be putting such equipment at a commercial disadvantage. For this reason it may be sensible to withdraw CIE 52 and replace it with method that relies on the SHR of the luminaire being evaluated."
Therefore the recommendation is that this technical committee is disbanded and a new technical committee is formed with the remit to evaluate this assertion and either confirm the method given in CIE 52 or replace CIE 52 with a new method relevant for modern luminaires and design practice. The existing draft from TC 3-48 and the paper from Lux-Europa will be available for the new technical committee.

Peter Thorns  
Chair TC 3-48  
14th September 2017
Status Report TC 3-54
The TC was re-initiated with a new chair in October 2016. Up until that time, the TC had agreed on a document structure (2 parts with several chapters each).

Organization of the work
The activity first focused on re-affirming the envisioned document structure and to include small adjustments if needed.

The TC Chair then suggested a work structure as follows:
- Each chapter is being drafted by a Task Force (TF)
- Each TF has a TF leader who will drive the activity (TC Chair also needs to take on TF leads)
- TFs with 3 members trigger a kickoff of that activity
- Every TC member is expected to take on a certain workload (including the leadership of TFs)

With monthly (trigger) emails, the entire TC is being informed about the status of the work. TC members have been asked to inform about the chapters they would like to contribute to. Members that did not respond (at all) after 4 such emails are being disregarded as active contributors towards the TC.

We were also able to attract two new TC members who have already been actively contributing to the TC work. One is located in Switzerland and the other one is located in South Africa.

Progress on the report:
From October to December only slight modifications and clarification were made to the initial suggested document structure.

In accordance with the document structure (details below in the “Appendix”) there are 13 chapters in part 1 and 4 chapters in part 2, i.e. the TC consists of 17 TF activities.

As per July 2017:
- The TC consists of 11 active members
- 11 of the 17 TFs have been kicked off
- 1 TF has produced a draft report which has been circulated to the TC for comments (currently in the phase of finalizing the draft within the TF)

The table below shows a matrix of TC members and their indicated interest to contribute to the various chapters (via TFs). The matrix is taken from the TC Chair’s project management sheet to keep an overview of the overall status of things. The list does not include the individual names as it is supposed to only give a high level overview of the work distribution.

There are three “strange” occurrences in the matrix:
- One TF member offered to discontinue on TF 1-12 and contribute instead to TF 1-10 and to TF 1-11. TF 1-10 is therefore about to be kicked off (just need to confirm the TF leadership). The remaining TF 1-12 members are currently discussing whether they can take this on with just two members (knowing both of them personally, this will likely be the case).
- TF 1-13 does not seem to get any uptake despite repeated triggering. The TC Chair will check whether this chapter needs to be included. This was the only chapter that has been added after the re-initiation of the TC.
- One TF member has not indicated any contribution towards any of the TFs. In contrast to the procedure above, this person is being kept on the active TC members list for other reasons. It is expected that this individual will contribute to the TC in one way or another.
Annex 2.7: TC 3-54: Revision of CIE 16-1970: Daylight

Other progress-related information:
TC face to face meetings
The TC chair has actively and repeatedly tried to trigger face-to-face meetings and proposed the following logical events:

- Velux Daylight Symposium in Berlin, (May 2017)  
  There was no indication of interest from the TC members
- LUXEUROPE 2017 in Ljubljana (September 2017)  
  One of the main organizers of this conference is also a TC member and offered a meeting space during the conference  
  There was no indication of interest from the TC members
- CIE Midterm on Jeju Island (October 2017)  
  There was no indication of interest from the TC members  
  The the knowledge of the TC Chair, none of the TC members will be at the 2017 CIE Midterm meeting

Progress of work
Despite the regular email notifications, there is very little visible activity in the TC. This underlines the need for active communication to all active TC members and forms one of the key activities for the TC Chair. Fortunately, the reminder emails do trigger some responses. The new additions to the TC can already be seen as drivers to the TC activities. They have contributed actively to their TFs already and also provided feedback on a TF draft. But the work towards the TC goals seems to be low on the priority list of many. From personal communication, the main reason for this are the other job responsibilities that more directly link to the performance goals of the professional TC members. There are also TFs that are currently put “on hold” because key contributors are currently busy with organizing Europe’s largest lighting conference. Even though some activities have officially been kicked off, we only expect momentum to take up after the LUXEUROPE in September 2017. The ADD/DL of CIE Div. 3 is well aware of the overall situation. Next to the TC emails (ADD/DL is a TC member), he also received additional comments by the TC Chair on challenges and issues with the TC.

Targets for the upcoming year:
In light of the aforementioned challenges with getting the TC members to contribute to their TFs, the expectations need to be managed. Based on this, the following targets set by the TC Chair for himself represent an ambitious set of activities and milestones. For comparison the performance indication of the first year (October 2016 to July 2017) is added in red afterwards:

- Continue to send (monthly) trigger emails to the TC to keep the momentum as high as possible (2017: done in 6 of 8 cases)
- Complete 6 TF drafts (”50% of the currently “active” TFs) (2017: pushed 1 TF draft to 95% stage)
- Kick off all of the remaining 6 TFs (2017: kicked off 11 of 18 TFs)
TC Chair to increase effort on the communication to TC as a continuous improvement activity – communication seems to be the key to get some progress in the TC (2017: no measure defined – will seek feedback from ADD/DL)

Prof. Alexander Rosemann
July 14, 2017

Additional information:

Document structure:

Part 1
1 General introduction on daylighting
2 Description of the daylighting design process
   a) The daylighting design process within the building design process
   b) Importance of considering daylighting in the earlier design phases
   c) Importance of evaluating daylighting in the later design phases
3 Daylight definitions
   (sunlight; skylight; reflected components...)
4 Climate variability
   (spatial and temporal)
5 Site layout
6 Indoor daylighting
   Description of building features affecting indoor daylighting (building geometry, opening features, rooms features, daylighting system features ...)
7 Design data (parameters, variables, etc.)
8 Perception of daylighting and sunlight (3 dimensional visualization)
9 Glare
10 Perception of external environment (view)
11 Daylighting systems
12 Daylight-dependent Control
   a) Introduction of control strategies;
   b) controlling daylight systems;
   c) connection to electrical lighting system
13 Selection of the right daylight system for the right application

Part 2
1 Desired daylighting conditions
   Space distribution, Time distribution, Quantity, Quality
2 Application related metrics
   (taking into account the outcomes of others TCs on the topic); metrics, methods and tools are distinguished for different stages of design process
   a) Earlier design phases
      i. Metrics
      ii. Methods and tools
   b) Later design phases
      i. Metrics
      ii. Methods and tools
3 Cross references to other standards
4 Appendices:
   a) Daylighting edit design
   b) Description of simple calculation methods (early design stages)
      i. Graphical
      ii. numerical methods
      iii. computer edit design
      iv. computer evaluation based on standard requirements
   c) Measurements in situ
   d) Measurements in models
      i. in situ
      ii. under artificial sky
   e) Design Checklist and/or Decision Tree
TC Report TC 3-55 “Metrics for sunlighting and daylight passing through sunshading devices”

Report Date: 3 October 2017

TCC: Marc Fontoynont, Denmark, mfo@sbi.aau.dk

TC: Members and contributors:

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<th>Last name</th>
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<tr>
<td>Marc</td>
<td>Fontoynont (TC Chair)</td>
<td>Denmark</td>
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Terms of Reference and Work Plan:

To propose a metric to assess contribution of sunlight to the daylighting of a building, and to rate lighting contribution of daylight and sunlight passing through sunshading systems. The proposal should avoid performing long term climate based calculations, and be of interest both for building designers and manufacturers of window components.

Revised time schedule (if any changes have been made):

This document as been updated from the document circulated June 30, 2016. Contributions from participants were received recently, but from the review of the comments it seems that we could rapidly work on the content of the final document, if the table of content is agreed upon. We foresee the production of the final draft within one year (Summer 2019)
Annex 2.8: TC 3-55 Metrics for sunlighting and daylight passing through sunshading devices

Comments by the chair of CIE TC 3.55 (Marc Fontoynont, DK)

I proposed to delay the progress of this TC since there was a CEN group working on a new Daylighting standard with a section on sunlight. Since various experts were involved both in the CIE TC and in the CEN, I waited to see what type of consensus could be reached in the CEN group, and what were the proposals. The scope of the CEN group with respect to sunlighting was more limited, but at least there were few interesting proposals:

1) Definition of the position of a reference point (P) in a building interior to assess the duration of exposure to sunlight
2) Selection of specific dates for the analysis
3) Use of data on horizontal global illuminance to assess daylighting from horizontal roof top equipped with diffusing materials.
4) Adjustment of recommended values of minimum Daylight Factors to take into account the extra sunlight usable with the above systems.
5) Criteria for glare assessment from windows were also included, as well as a proposal of classification of shades

The CEN group does not address procedures to assess the contribution of sunlight to lighting needs: contribution from sunlight reflected by the environment, contribution by sunlight becoming usable after reflecting on louvers or any reflecting materials, or through sunlighting systems.

It appears that the scope of the work of CIE TC 3.55 needs to be related to publications by CIE and on going work of CIE, more particularly:

sunlighting calculations / sunlight data:
link of detailed 3D modelling with available data on local daylight climate (distinction between daylight from the sky vault and light coming from the sun and the circumsolar area). Link with CIE sky luminance models.

• Reference TC 3.54 (Chair Alex Rosemann) Revision of CIE-16-970.
• CIE 016-1970 Daylight
• CIE 108-1994 Guide to Recommended Practice of Daylight Measurement
• CIE 110-1994 Spatial Distribution of Daylight - Luminance Distributions of Various Reference Skies

Glare from sunlight:
• TC 3.56 Assessment of Discomfort Glare from Daylight in Buildings Chair Toshie Iwata
• TC 2-59: Characterisation of Imaging Luminance Measurement Devices

Sunlighting system performance evaluation
• CIE 173:2006 Tubular Daylight Guidance Systems
• TC 2-85 Recommendation on the geometrical parameters for the measurement of the Bidirectional Reflectance Distribution Function (BRDF)
• TC 2-79: Integrating sphere photometry and spectroradiometry
• TC 2-62: Imaging-Photometer-Based Near-Field Goniophotometry
• TC 2-59: Characterisation of Imaging Luminance Measurement Devices

The TC chair received a number of comments and suggestions by experts of TC 3.55. The details are listed in the section “comments and propositions by TC Experts”.

From these comments we can make a global statement:
Annex 2.8: TC 3-55 Metrics for sunlighting and daylight passing through sunshading devices

“Long term assessment of indoor illuminances distribution in building interiors is best obtained through performing calculations over long time periods (months, years or various years to avoid the issue of using averaged years or reference years). But this approach requires to supply high quality climatic data to lighting simulation software: data with a step of maximum one hour, 15 minutes to 30 minutes being suggested”

If running long term simulations are not possible, or too long, it is suggested to run calculations mostly with geometric information, either for one position of the sun, or for a typical day, or even a specific period of the year”

“As for the CIE skies, we could propose a set of reference sunlight sources to be used for assessment of sunlighting”.

General issues raised by experts so far:

- When processing climatic data and modelling the natural light source, there are issues to address in TC 3.55: we have to clarify what is sunlight, and most of it what is the angle we are talking about, both for the calculations and also for coherence with the climatic data which are used (what was the dimensions of the shading system to measure diffuse light).
- What is precisely the angle of the circumsolar light, both coherent with CIE sky models and with the data base used for long term calculations (diffuse + direct)
- When condution 3D lighting simulations, it is essential to provide ways to assess the contribution of externally reflected sunlight, on the facades of the building being studied, and then assess consequences in the interior of buildings and for glare for the occupants.
- The scattering of light around the sun (circumsolar) affects scattering of sunlight transmitted by window components (hence the need to have information concerning Bidirectional Scattering Distribution Function), and also the large possible error conducted if one suppose all beams related to sunlight as being parallel.
- In providing expertise for sunlighting system optimization, designers find it important to provide information on tolerance issues, decision process, minimum performance rating, etc. If the decision process is the objective (selection of a configuration), performing long term simulations may not be necessary, and short term benchmarking more appropriate (specific hour, whole day, or specific period of the year).

Contributions are summarised in the section “content of contributions”

Content of contributions:

1. Observations and comments from John Mandaljevic (University of Loughborough, UK)

John Mandaljevic sent to the chair a new document describing the approach of the Sunlight Beam Index (SBI), co-published with N. Roy from VELUX, Denmark (see attachment) 1. TC Chair sent some questions on the document. SBI is an area which measures of the “connectedness of a building aperture to all the possible occurring sun positions for the configuration. It is averaged over the aperture and taking into account the obstructions. Then it is possible to calculate from the index the cumulative annual sunlight beam index (m²hrs) over a year taking into account occurrence of sunbeam coming from specific areas in the sky. This index allows an equivalence, with sunbeams hitting the window normal to the
2. Observations and comments from Marc Fontoynont (University of Aalborg, DK)

Marc Fontoynont commented the proposal by John, mentioning that it is effectively a simple way to assess the amount of sunlight which can penetrate in a room through a window over a long period, such as a year, and this is designed to allow comparison between apertures. But this does not give indication of the distribution of the sunlight distribution in the room, or sunlight being reflected on the outside environment or on the components of the sunlighting system (Louvers, reflectors, etc.). But the work is relevant to assessment of exposure to direct sunlight as used in CEN standards on Daylight, and also on the global direct solar energy penetrating spaces through windows.

Marc Fontoynont stresses that a proposal was made by the participants of the European Standardising Technical Committee CEN T169-WG11 Group to define criteria for minimum exposure to sunlight at given dates in hours per a given winter day (supposed to be a sunny day). Assessment is made inside the room at one point P behind an aperture, on the inner surface of the wall, at a height of 1.2 meter above the floor. This criteria is suggested to apply to habitable spaces (in dwellings, hospital rooms, or nurseries, for instance). Recommendation is purely geometric (function of latitude, date, orientation of faced and external obstructions. It, does not address intensity of incoming light or reflexions of sunlight on outdoor surfaces.

Marc Fontoynont also mentioned in the former report (TC 355, 2016) one of his publication dealing with processing sunlighting data to assess the contribution of sunlight to indoor lighting. At that time, detailed consideration for circumsolar light was not included.

3. Observations and proposals from Richard Perez, (ASRC, U.S.A.)

Richard Perez makes following observations on Sunbeam Index (SBI) (1) the SBI is purely geometrical and thus do not allow integrations of fluctuations of variations of direct sunlight as a function of weather conditions. (2) calculation of ASI is not explained in the document which was analyzed. Furthermore it is not clear how the systems handle complex window component.

Richard Perez suggests that detailed calculations using precise data on sky luminance distribution, including circumsolar seems to me the most reliable one. But sections of sky including trajectories of the sun during a given period (a month for instance, as he mentioned in earlier publications) with statistical information on fluxes generated by the sun should allow the production of useful data for design of sunlighting systems.

4. Observations and proposals from L. Escaffre and C Marty (Ingélux, France)

Until now, Ingélux was simulating successive sun positions with a time interval of 5 min over a year, to which they applied the climatic data from the server satel-light over periods of 5 years to avoid singularities. Due to often excessive computing time (for complex geometries), Ingélux started to solve 10 years ago issues dealing with sunlighting using light sources following the sun trajectory in the sky, for a given day, or during a specific period (light source has the shape of a wide arch in the sky). This is practical to assess lux.hrs inside for given periods. More recently, using various colours on the light source and tracking it
inside leads to a better understanding of the relation of the cause to effect, in one single simulation. So we support the idea, within the TC 3.55, of offering tracing of sunbeam from specific area in the sky, and linking them to effects indoor.

5. Observations and proposals from Dominique Dumortier (ENTPE, France)

Dominique Dumortier stresses the importance of the quality of the climatic data. Often, long term daylighting and sunlitng calculations are conducted using sky luminances derived from TMY or TRY data files, which have been constructed to provide rather average conditions. Dominique Dumortier thinks that simulating systems with data which are closer from measurements, and over periods longer that 2-3 years can reduce the errors.

Dominique Dumortier has produced various techniques to link lighting calculation with detailed informations of luminances of the sky vault derived from satellite recording. This techniques led to indoor maps of probabilities to exceed given illuminances (daylight and sunlight) as well as cumulated data (lm.hours). These data can be assessed within specific time schedules.

6. Observations and proposals from Alexander Rosemann (TUE, NL) and Chair of CIE TC 3.54 Daylight

"On taking into account direct sunlight and circumsolar, which is partly taken into account in the clearest CIE standard skies... Alexander Rosemann proposes to stick to a mix of established models for the luminance distribution, including the ones close to the sun. Suggested process: Determine the solid angle from the various contributions (direct sun, circumsolar region, and remainder of the sky). Determine the luminance distribution within these regions by using the relevant models. Use the resulting luminance distribution for calculation. This is a bit of a patchwork approach and the resulting luminance function will have “steps” in it but it may be the easiest approach to realize without double counting the impact in the circumsolar region”

7. Observations and proposals from Matej Kobav (University of Ljubljana, Slovenia)

Matej Kobav addressed the issues of the angular dimension of the circumsolar light, in his PhD thesis: « In this chapter a problem of high luminance values of the solar corona is exposed. Neither sky luminance models nor sky scanner are capable to model or measure (truthfully) high luminance values of sky elements with low scattering angle towards sun. For this reason in our comparison, all sky elements with scattering angle smaller that 15° were eliminated. This decision is based on calculated mean bias error for all sky elements and only for those with scattering angle higher that 15°. Later on, a comparison between three models and sky scanner measurements is introduced. Comparison was carried out with calculation of MB error and RMS error between each modelled and measured sky element. In similar way also CIE sky types were compared. A comparison was carried out for two methods used to derive sky scanner sky type; the one based on gradation and indicatrix group and the statistical one and for two sets of luminance values; for all sky elements without the ones with scattering angle less than 15° and the for all sky elements without the ones with scattering angle less than 15° and the ones on first almucantar »
8. Observations and proposals by Lucien Wald (ENSMP, France)

Lucien Wald mentions that there was a debate on the circumsolar within the IEA SHC46 task. An article has resulted (see reference). Concentrations of solar rays were the most commonly discussed. Analytical forms of the circumsolar have been proposed in this article and they can help you provide a response to the way circumsolar light should be taken into account. Since diffuse is defined only in relation to direct, the answer is not simple. The direct estimated by the radiative transfer models generally does not include circumsolar. The direct given by a pyrheliometer includes circumsolar. There is certainly an angle mentioned as being close to the sun. This angle could be used as an angle of acceptance, in a manner equivalent to an instrument. (See attachment: P. Blanc et Al, Direct normal irradiance related definitions and applications: the circumsolar issue, Solar Energy, Elsevier Ltd, 2014).

9. Observations and proposals by Arnaud Deneyer (BBR, Belgium)

The definition of sunlight (light from the sun with a fraction of circumsolar radiation) is of high importance when defining optical properties of window systems, shading systems and all sunlighting solutions. It appears important to link the work of TC 3.55 with tasks conducted in Europe on shading systems such as CEN TC 3 WG3 for instance, and the standard EN 14501. The understanding of the sensitivity of performance of sunlighting techniques to A) climatic data accuracy B) BSDF (Bidirectional Scattering Distribution Function) and BRDF (Bidirectional reflectance distribution Function) of components seem to suggest that some simplifications could be acceptable.

10. Observations and proposals by Anna Pellegrino (Politecnico de Torino, Italy)

On the point of view of architects and designers, a key issue related to sunlighting, beyond the calculation of usual metrics (such DF or CBDM metrics) is the (visual) analysis of sunlight penetration related to sizing and selection of openings and shading solutions. Hence the importance of selecting special conditions (clear sunny days) at specific time in the year, and conduct assessment, for these conditions, of the role of sunlight being reflected from the outside environment, or transmitted by the sunlighting systems of shaded by the shading device. This could be of help in understanding where and when sunlight penetrates into the room and whether it could cause glare or, the other way around, help in increasing the visual appearance of the space. Sunlight can be treated largely by geometrical aspects, combined with 3D lighting simulations with specific conditions.

11. Observations and proposals from Aris Tsangrassoulis (University of Thessalonique, Greece)

In sunny climates like Greece, it is essential to take into account sunlight being reflected by the outdoor environment. After reflection, sunlight is often filtered by façade components and light can therefore be used for lighting purposes. This leads to the interest to the requirements to rate performance of “light filters” with respect to reflected sunlight. In Greece, reflected sunlight is often excluded (using shading) during summer months in naturally ventilated residences. The reason is both to reduce glare and reduce somehow internal temperature.

It seems that selected positions of the sun in the sky is a proper way to go (see proposal by Ian Ashdown, with 61 positions). See also a good reference on solar geometry such as Solar Geometry by Sokolai. An issue with sunlighting is how view to the outside is maintained through the sunshading device.
I understand that the TC 3.55 included in its scope the effects of sun to the luminance distribution of the sky (circumsolar radiation) and not the sun itself as a point source. Therefore the approach of this TC is to examine sunlight according to its effects a) on sky b) on systems and finally c) on spaces.

Geometrical calculations can save processing time and can be easily adopted by design teams. Nevertheless, taking into account circumsolar radiation (or one of all possible CIE sky models) is a whole different story and I agree that this definitely is new approach, although I cannot see a strong benefit for practical use (initial design level). It seems to me that this can be considered a sky modelling issue.

On system level (shading devices) there are some interesting metrics to qualify products in EN 14501 “Blinds and shutters — Thermal and visual comfort — Performance characteristics and Classification”. Only a few parameters needed for a calculation (assuming that a mathematical model of the system exists) or a measurement in order to classify in a performance class a shading device. Since the idea was to keep the whole procedure quite simple these parameters involve the following transmittances: normal-normal, normal-diffuse, normal-hemispherical and diffuse-hemispherical. For slatted devices a predefined position of the sun is used (30 degrees altitude, 0 degrees azimuth in relation to the opening). In order to avoid detailed description of the device’s optical properties and time-consuming yearly calculations a set of predefined solar positions can be set and according to them, total transmittance can be calculated. Concerning solar positions there are a few approaches in the bibliography which are based on a specific set of solar positions (Energy+, Daysim) or hourly values for a specific day in each month (LICASO). Thus, the proposal is to extend the methodology used in the aforementioned EN in order to take into account a number of solar positions. An important issue is the visual contact with the exterior environment (there is a peculiar definition in EN 14501), shading systems’ user acceptance (perforated sheets can be annoying, forcing users move away from the façade and luminous patterns due to sunlight.

The light reflected from exterior surfaces can be considered as a source of daylight. There are different methodologies to calculate this, depending on whether these surfaces are specular or diffuse. An infinite-length urban canyon can be used with a number of geometrical configurations (height of the opposite façade) to calculate the illuminance on the window (see Obstruction Illuminance Multiplier, Solar Energy Vol. 66, No. 6, pp. 439–446)

*Observations and proposals by Yannick Sutter (Chair of Daylighting group of French Lighting association), and French representative of CIE Division 3)*

“What I find interesting about this TC is that it addresses the complex question of the sunlight transmission of shading devices and it proposes to develop simple metrics based on robust calculations. When building consultancies are doing daylight calculations, they never really know how to integrate shading devices, using BRDFs being out of reach for them. Some for environmental certification bodies, they don’t know how to integrate the performance of shading systems in their requirements. New simple metrics could be helpful in these situations (and for manufacturers) and I am interested in participating to the discussions and work around the aspect of simplifying something complex.”

12.
Proposed table content of Report of TC-355

"Metrics for sunlighting and daylight passing through sunshading devices"
Draft document for discussion, October 3, 2017

From the observation above, here is the proposal of structure the final report that I would have been to discuss in Korea in October. This could be discussed this through webex / skype and written exchanges.

I. Terms and reference and scope
To propose a metric to assess contribution of sunlight to the daylighting a building, and to rate lighting contribution of daylight and sunlight passing through sunshading systems. The proposal should avoid performing long term climate based calculations, and be of interest both for building designers and manufacturers of window components.
Ambitions: to propose metrics for configurations in sunny climates to match requests concerning sunlight exposure inside buildings, illumination with sunlight only, use of sunshading systems as well as sunlighting solutions.

II. Contribution of direct sunlight to lighting
Direct sunlight, and circumsolar light, definitions.
Coherence of circumsolar light with CIE sky luminances models.
Values of direct normal illuminances, and horizontal illuminances
Variations of spectra of direct sun radiation and variations of Correlated Colour Temperature
Metrics: example of direct normal illuminances, horizontal illuminances for specific conditions

III. Procedure 1: specific contribution at specific time or during specific days
Instantaneous values of illuminances on indoor surfaces, and at specific places on facades, to assess contribution of sunlight in comparison for instance of daylight coming from the sky vault. Summary for a whole day.
Metrics: illuminances, luminances (for glare), exposure (lux.hrs), sunlight fraction (% of time for which levels are exceeded), hours of exposure, hours when sunbeams are shaded, transmitted luminous flux from sunlight through aperture system, etc.

IV. Procedure 2. long term assessment of sunlight indoor:
Sunlighting calculations using climatic data base: performing computations with a time step of one hour or less.
Integration of externally reflected sunlight, sunlight transmitted by buildings apertures, and sunlight reflected on indoor surfaces (procedure similar to calculations when light come from the sky vault.
Metrics: exposure (lux.hrs), sunlight fraction (% of time for which levels are exceeded), hours of exposure

V. Procedure 3: sunlighting during selected period of the year
This approach is commonly used by designer to check if their building apertures allow sunlight in, provides proper shading.
Selection of days in the year
Selection of sections of the sky vault.
Metrics: reference sunlight sources, exposure (lux.hrs), sunlight fraction (% of time for which...
levels are exceeded), hours of exposure, shading efficiency (hours).

VI. Rating of window component with respect to sunlight:
Reference positions of sunlight for performance assessment with BSDF, BTDF, etc.)
Possible influence of circumsolar light (dispersion of sunlight)
Use of typical references days for daily performance.
*Metrics: reference days, shading performance over time (hours), luminance of system under sunlight, filtering of external reflected sunlight, reduction of glare due to sunlight,*

### Status of SMART goals (panned 3 October 2017)

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<td>3. Propose way to rate window system with respect to sunlighting (draft)</td>
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<td>4. Rate contribution of outdoor reflected sunlight</td>
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Annex 2.9: TC 3-56 Assessment of discomfort glare from daylight in buildings

**TC Report TC 3-56 “Assessment of Discomfort Glare from Daylight in Buildings”**

*Report Date: September 25, 2017,

TCC: Toshie Iwata, iwata@keyaki.cc.u-tokai.ac.jp

**TC Members**

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**Targets for the next 9 months**

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<td>5. TCMs checks the 1st WD and makes comments to the edited 1st WD</td>
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A new draft of the table of contents is prepared and suggestions for responsible persons for the chapters/subchapters made. The idea is to have “independent” chapters, lead by 1-2 responsible persons and several contributors. The assigning to the chapters/subchapters is still ongoing, will be finished in September.

Until the Meeting in Korea, the chapters will be outlined (keywords).

During the meeting the structure/content will be discussed and finalized.

The chapters/subchapters are as follows:

1. Introduction
2. Windowless rooms vs. windows
3. Functions and benefits of windows
   3.1. Daylight and Architecture
   3.2. Daylight and individual well-being
4. Drawbacks of windows
5. Daylight and Economics
6. Influence factors and interactions on window functions
7. Guidelines
8. Conclusions
9. Further research
10. Bibliography

The timetable is as follows:

1. Draft a revision of the table of contents April 2017 (done)
2. Agree on the table of contents among members/guests of the TC (Sept 2017)
3. Assign 1-2 responsible person(s) for each (sub)chapter and contributors. (Sept 2017)
4. Write an outline of each chapter until the meeting in Korea (End September 2017)
6. Discuss the final structure of the report at the meeting in Korea (Oct 2017).
7. Draft of each chapter until mid-December 2017.
9. Collect comments until Feb. 28 2018
10. Have a web-ex meeting mid-March 2018 to discuss all comments.
11. Finalize the report until June 2018.
TC Report JTC 7 “Discomfort caused by glare from luminaires with a non-uniform source luminance”

Report Date: 31 Aug 2017
TCC: Naoya Hara, nhara@kansai-u.ac.jp
TC Members:

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<td>Shau-Wei</td>
<td>Hsu</td>
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Terms of Reference and Work Plan:
1. To review the literature on glare from non-uniform light sources to identify the parameters that influence the discomfort prediction (UGR) and define limits to the applicability of the UGR formula.
2. To propose a correction to the UGR formula that takes into account the non-uniformity of glare sources.

July 2015—1st TC meeting
(physical at Manchester CIE Session, with via WebEx)

Dec. 2015—Relevant literature compiled
Limiting parameters identified, establish limits to UGR, decide whether intermediate report will be issued or not.
Annex 2.11: JTC 7 Discomfort caused by glare from luminaires with a non-uniform source luminance

Mar. 2016 -- 2nd TC meeting at the CIE Conference
July. 2016 -- Intermediate report (CIE Technical Note) completed, if any
Jan. 2017 -- First Working Draft ballot in TC
Apr. 2017 -- WD delivered to CIE Central Bureau
   (Later steps as per Code of Procedure)

Revised time schedule (if any changes have been made):
Oct. 2017 -- Limiting parameters identified, establish limits to UGR
Dec. 2017 -- Making First Working Draft
Jan. 2018 -- First Working Draft ballot in TC
Apr. 2018 -- WD delivered to CIE Central Bureau
   (Later steps as per Code of Procedure)

Status of SMART goals from <date of last report>:

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<th>Due Date</th>
<th>Status</th>
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<td>Naoya Hara</td>
<td>Spt. 2016</td>
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<td>2.</td>
<td>Gilles Vissenberg</td>
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Other Activities and Achievements between (last report) and (now):
Spt. 2016 -- 2nd TC meeting during the CIE event in Prague.
   Some limiting parameters and UGR limits using them have been proposed.
   decide intermediate report will not be issued.
Nov. 2016 -- Making the draft of correction of UGR in the correction WG
Dec. 2016 -- Skype meeting in correction WG and literature WG was held at 12th December to discuss draft report: literature review and proposed correction to UGR
Jan. 2017 -- Making the second draft of correction of UGR in the correction WG
Feb. 2017 -- Skype meeting in correction WG was held at 23th February to discuss correction of UGR in second draft.
Mar. 2017 -- Making the fourth draft of correction of UGR in the correction WG
Sep. 2017 -- Skype meeting in correction WG was held at 27th September to discuss correction of UGR in fourth draft.
TC meeting is scheduled during the CIE event in Korea meeting

SMART goals for coming 6 months

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Report JTC-8 “Terminology in Light and Lighting”

Report Date: 14th September 2017

TCCs: Peter Zwick (peter.zwick@cie.co.at)

TC Members: for Division 3 Peter Thorns and Tommy Goven

Terms of Reference: To address any issues regarding terms and definitions related to the International Lighting Vocabulary (ILV). This includes coordination within CIE Divisions to maintain and update the ILV, coordination with IEC on questions related to the incorporation of ILV terms and definitions into IEC 60050-845 “International Electrotechnical Vocabulary. Lighting”, coordination with ISO/TC 12 on questions related to the incorporation of ILV terms and definitions into ISO 80000-7 “Quantities and units – Part 7: Light and radiation” and any further terminology issues within CIE.

Status: JTC-8 received over 400 comments on the draft. These have been addressed in division-related task group meetings and email exchanges. Harmonization with definitions as drafted in ISO/TC 12/WG 19 for a revised ISO 80000-7 has been taken into account.

At the end of this work a few issues remained where a harmonization with IEC definitions seemed impossible due to the fact that the entries in question are nominally in IEC’s field of expertise but the respective CIE definitions had been approved and published just recently in CIE S 017-SP1.

For these D2 experts in JTC 8 held a meeting with IEC colleagues from IEC/TC 34/MT 2 under moderation of Joanna Goodwin, terminology coordinator in IEC. The BA approved that an expert group of JTC 8 D2 members and the JTC 8 chair may adopt the relevant IEC definitions where no compromise can be found in the discussion with IEC.

Three meetings took place between CEI and IEC. Beside a few issues of a general nature this succeeded in harmonizing all definitions in question.

What still needs to be decided between CIE and IEC is e.g. the question whether to use the term “quotient” (as done in our draft, following the policy used in the revised ISO 80000 series) or “ratio” (as preferred by IEC), and some issues regarding the numbering of entries.

As soon as all this is finalized, the completely revised DIS will be submitted to IEC/TC 1 (Joanna Goodwin) who will combine the CIE input with the input from IEC/TC 34/MT 2 (Sections 7, 8, 10) and prepare a CDV for ballot in IEC/TC 1. Before this the revised CIE document together with the comment file, completed with replies to the comments, will be sent to the attention of JTC 8 for a final check.

During the IEC/TC 1 ballot CIE will have the chance to comment on the combined IEC/CIE document.

The DIS comment file will be circulated to NGOs, D/Is and BA together with the CDV prepared by IEC/TC 34 so that the commenters see what happened with their comments.

The 8th meeting of JTC 8 will be in Jeju during the Midterm Meeting. As JTC-8 have to a large extent completed their work for the time being, the meeting will mainly be to report about the status and discuss further steps.

Peter Thorns
14th September 2017
Annex 2.12: JTC 8 Terminology in light and lighting

CIE Technical Committee Activity Report 2017

Date: 2017-09-22
TC number: JTC 8
TC title: Terminology in light and lighting
TC chair: Peter Zwick, Austria

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<th>Tony</th>
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<td>Joanne</td>
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* New member
* No longer active member

Progress achieved since September 2016:

CIE DIS 017:2016 ILV: International Lighting Vocabulary, 2nd Ed. published and circulated to CIE NCs/BA/Divisions (December 2016), ISO/TC 274 and IEC/TC 34 for comments.


Detailed work plan (milestones and dates) required to complete TC report:

Standing committee – continuous work on the improvement of the ILV and harmonization with the IEV (IEC 60050-845), ISO 80000-7 and other international terminology standards.
Annex 2.12: JTC 8 Terminology in light and lighting

Schedule for approval process of CIE 017 ILV: International Lighting Vocabulary, 2nd Ed.:

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<td>2016</td>
<td>IEC/TC 34</td>
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<td>12/2016-03/2017</td>
<td>CIE</td>
<td>CIE DIS 017:2016: CIE Enquiry (all Sections)</td>
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<td>04/2017-09/2017</td>
<td>CIE JTC 8</td>
<td>Work on comments (&gt; 400)</td>
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<td>Currently</td>
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<td>End of 2017</td>
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<td>Beginning of 2018</td>
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<td>Middle of 2018</td>
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<td>Parallel FDIS ballot</td>
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<td>End of 2018</td>
<td>CIE and IEC</td>
<td>Parallel publication in CIE (ILV) and IEC (subject area 845 of IELV)</td>
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CIE Division 6 Technical Committee Activity Report 2016-2017

TO BE COMPLETED FOR ALL TCs.

Date: 03-10-2017
TC number: JTC9 (D1, 2, 3, 6)
TC title: QUANTIFYING OCULAR RADIATION INPUT FOR NON-VISUAL PHOTORECEPTOR STIMULATION
TC chair: Luc Schlangen, the Netherlands
TC members: Luke Price, Great Britain (JTC secretary)
Robert Lucas, Great Britain
Dieter Lang, Germany
Raphael Kirsch, Germany
Manuel Spitscher, United States of America
Shantha Rajaratnam, Australia
Peter Blattner, Switzerland (JTC co-chair Division 2)
Hiroki Noguchi, Japan (JTC co-chair Division 3)
Nana Itok *, Japan (JTC co-chair Division 1)
David Sliney *, USA

Please indicate new members added to the TC since the last Division meeting by an asterisk, and those who are no longer active by striking through their name, as in the examples above.

Progress achieved since last Division meeting (September 2016):
- JTC9 had 9 formal meetings: 1st meeting Sept. 27th 2016; 9th meeting Sept. 27th 2017
- An adapted title and Terms of Reference were proposed to and discussed within the CIE Board of Administration, iterating to:

Title: "CIE system for metrology of optical radiation for IPRGC-influenced light responses"

ToR:
To produce an International Standard which defines spectral sensitivity functions, quantities and metrics to describe radiation for its ability to stimulate each of the five photoreceptor types that can contribute, via the melanopsin-containing intrinsically-photosensitive retinal ganglion cells (ipRGCs), to retina-mediated non-visual effects of light in humans.

To include information concerning the effects of age and field of view (FOV) when quantifying retinal photoreceptor stimulation for ipRGC-influenced light (IIL) responses.
The International Standard will not give information for particular lighting applications, or for the quantitative prediction of IIL responses. It will also not address health or safety issues such as those resulting from flicker or photobiological safety and will only relate to retinal photoreception.

- Working Draft International Standard WD/IS nearly finalized in 9th meeting

**Detailed work plan (milestones and dates) required to complete TC report:**

- 10th formal JTC9 meeting (address comments & reach consensus): November 2017
- DE reviews WD/IS: November 2017 (pending JTC ballot)
- CIE finalizes Enquiry Draft International Standard (ED/IS) (possibly via CD/IS, when needed): December 2017
- BA and Division Enquiry for ED/IS: Jan. & Feb. 2018
- Finalization Approval Draft International Standard (AD/IS): April 2018
- final BA and Division Ballot for AD/IS: May 2018
- CB turns AD/IS into Draft International Standard (DIS) & publishes DIS: June 2018 (pending ballot)
- NC commenting for DIS: June to Oct. 2018
- CB prepares Final Draft International Standard (FDIS): Nov. & Dec 2018
- NC ballot for FDIS: Jan. & Feb. 2019
- final CIE publication as International Standard: March 2019 (pending ballot)
**Two slider summary of progress:**

**CIE JTC 9** "Quantifying ocular radiation input for non-visual photoreceptor stimulation"

*Fits in CIE research roadmap "Healthful Lighting"*

**Progress:**
- 9 JTC9 formal meetings since start in Sept 2016
- JTC9 first ballot on working draft (WD/IS) in Oct 2017
- CIE procedures & publication draft: another ~7 months
- CIE publishes final international standard: another ~7 months

***When all fields have been completed please return a copy of this activity report to the Division Secretary, Luke Price (luke.price@phe.gov.uk), in advance of the next Division***
Annex 2.13: JTC 9 Quantifying ocular radiation input for non-visual photoreceptor stimulation

Report ISO/TC 274 WG3 “Maintenance factor”

Report Date: 14th September 2017

TCCs: Adrie de Vries (ISO) and Nigel Parry (CIE)

Terms of Reference: Produce a technical specification that describes the method to calculate the Maintenance Factor (MF) relevant for light source technologies currently in use in the market for both indoor and outdoor lighting installations.

The method will be based on the CIE methodology and will reference to the available CIE technical reports and use the values for accumulation of dirt on surfaces (SMF) and luminaires (LMF) as described by CIE

Work Plan:

Working draft 1  June 2017
Working draft 2  October 2017
CD circulation(s) and final vote for TS  during 2018
Document completion  December 2019

Status: Working draft 1 has been produced and circulated. This will be discussed during the next WG meeting in Jeju. Current table of contents is as shown below.

Foreword
Introduction
1 Scope
2 Normative references
3 Terms and definitions
3.1 Maintenance period
3.2 Replacement interval
3.3 Cleaning interval
3.4 Surface refurbishment interval
3.5 Survival probability
3.6 Failure probability
4 Influencing factors
4.1 Non recoverable external factors
4.2 Recoverable external factors
4.3 Luminaires and/or light source characteristics
4.4 Maintenance period, cleaning, replacement and surface refurbishment interval
5 Maintenance Factor determination
5.1 Basic description of the method
5.2 Luminous flux factor fLF
5.2.1 Constant light output (CLO)
5.3 Survival factor fS
5.3.1 Group replacement regime
5.3.2 Spot replacement regime
5.4 Luminaires maintenance factor fLM
5.4.1 Indoor luminaires
5.4.2 Outdoor luminaires
5.5 Surface maintenance factor FSM
6 Use of the maintenance factor
6.1 Lighting design using the maintenance factor
6.2 Documentation
6.3 Maintenance schedules
Annex A (informative) Maintenance Factor determination examples
Annex B (informative) Luminaire Maintenance Factor (fLM) determination examples
B.1 Indoor luminaires
B.2 Outdoor luminaires
Annex C (informative) Luminaire Maintenance Factor (fLM) determination examples
Bibliography

Peter Thorns
14th September 2017
CIE Division 3 Midterm meeting October 2017
Liaison Officers Report – Lou Bedocs

CEN/TC169 – Light and Lighting

The TC held a midterm web-conference of the CEN/TC169 Convenors in March 2017 to assess the progress made in the working groups and to update the convenors on CEN and TC relevant matters. Participants were TC chair and secretary, 7 WG convenors and 1 liaison officer. The secretary reported on the status of decisions made in the plenary and confirmed that CEN/BT is assessing the TC proposed changes to the Scope. In May 2017 the CEN/BT approved the changes to the scope requested by TC169. The new scope is "CEN/TC169 is responsible for standards in the field of vision, photometry and colorimetry, involving natural and man-made optical radiation over the UV, the visible and IR regions of the spectrum, and application subjects covering all usages of light, indoors and outdoors, including environmental, energy and sustainability requirements and aesthetics and non-image forming biological aspects". The key additions are energy and sustainability matters. The TC secretariat confirmed that the next plenary will be in Ljubljana, Slovenia on the 20/21st September 2017 in conjunction with LuxEurope congress.

Key points from the convenors reports.

WG1 – Terms and Definitions – the revised prEN12665 is being prepared for formal vote
WG2 – Lighting of work places – the revised prEN 13032-2 awaits formal vote. The main tasks are the revision of EN12464-1 with new requirements for ambient light, illuminance values for aged eyes and more on quality. There will be reference to non-visual light needs. WG2 has created a TF to draft a technical statement on "Lighting system design process".
WG3 – Emergency lighting – is seeking NWI approval to draft a guide on "Dynamic signage systems" and considering to update EN 1838 and EN13032-3 standards. It has deep reservation on the ISO/DIS 16069 standard content for European use.
WG4 – Sports lighting – the comments to draft prEN12193 are being actioned to prepare for votes in TC and NSBs
WG5 – Closed, replaced by WG12
WG6 – Tunnel lighting – participating in CIE 88 update in TC4-53 with particular interest in short tunnels, control and management systems specific technical aspects e.g. maintenance, flicker, energy, L20/Lseq and comfort in tunnels.
WG7 – Photometry – Urgently revising EN 13032-4 into harmonised standard. Also busy progressing with revision of EN 13032-1 into harmonised standard based on part 4.
WG8 – Exposure to incoherent radiations – EN14255-4 is being reviewed and likely to be updated. A separate part 5 standard for LED generated radiations is being considered.
WG9 – Energy requirements for lighting in buildings – The CEN/TR 15193-2 technical report has been published. The EN15193 standard is approved but await publication with other EPB related standards. The Spreadsheet can be found on the NEN live link.
WG10 – Closed. Need convenor for standard to characterise translucent optical materials.
WG11 – Daylighting – Comments on prEN17037 are being actioned.
WG12 – Road lighting – The enquiry on prEN 13032-5 is closed and comments being actioned. Corrections to EN 13201- parts being considered.
WG13 – Non-visual effects of light on human beings – The vote of prCEN-TR 16791 was positive and being prepared for publication.
WG14 – ErP Lighting mandate management group – The work program prepared by the LIGHT coordination group on M485 and M519 have been submitted to the EUC for approval. The task are devolved to CENELEC TC169/TG1 and 2 have been disbanded.
TC169/TG3 – Road map on Lighting application – The Final report is being prepared. The key tasks identified will be embodied in TC169 business plan.

Lou Bedocs
Div3 Liaison Officer to CEN/TC169
12th June 2017
CEN TC169/WG 2 Lighting of work places - report to CIE Division 3

The activities of CEN WG 2 in 2016 and 2017

prEN 13032-2 “Light and Lighting - Measurement and presentation of photometric data of lamps and luminaires - Part 2: Presentation of data for indoor and outdoor work places” was submitted to CCMC for initiating the Formal Vote, which is scheduled to start end of June.

Preparation of the revision of EN12464-1 “Lighting of work places - Part 1: Indoor work places” is ongoing (Systematic Review). Activation of this Work Item is expected in 2017. For now, following topics are discussed:

- Include additional recommendations for higher maintained illuminance levels in the tables of EN 12464-1 to cater for specific conditions such as age of the worker or high risk tasks.
- Move wall and ceiling illuminances, possibly cylindrical illuminance, to address ambient lighting in the tables of EN 12464-1
- Give non visual effects of light a more prominent position in the standard, by restructuring the sections and using a more significant heading
- Include a new section on design considerations
- Revise the text on flicker, referring to the work done at the CIE Workshop on temporal lighting
- Include advice on boundary conditions for UGR determination, when the UGR tabular method cannot be used, which will remain in the standard.

Preparation of a Technical Statement (CEN/TS) on “Lighting Systems Design Process” by a task force. The document was circulated within CEN/TC 169 in July 2017 with a request for comments.

CEN/TC WG 2 has recommended to revise EN 1837 “Safety of machinery - integral lighting of machines,” in January 2017, no WG2 activities for now, but CEN started the official systematic review in May 2017.

July 2017
Martine Knoop
CIE Division 3 Liaison Officer for CEN TC169/WG2
Report to CIE Division 3
CEN/TC169/WG11 « Daylight »

Jan Wienold, CH
CIE Division Liaison Officer for CEN/TC169/WG11
10 August 2017

My participation started in 2011, since December 2016 I got the status of the Liaison officer of CIE for this standardization group.

The main goal of this standardization group is to establish a new European standard for daylight in buildings, providing recommendations for daylight provision, view out, sunlight exposure and protection from glare.

The scope of the standard is: “This standard specifies elements for achieving, by means of natural light, an adequate subjective impression of lightness indoors, and for providing an adequate view out. In addition, recommendations for the duration of sunshine exposure within occupied rooms are given. This standard gives information on how to use daylighting to provide lighting within interiors, and how to limit glare. This standard defines metrics used for the evaluation of daylighting conditions and gives principles of calculation and verification. These principles allow to address the issue of variability of daylight over the days and the year.”

My contributions so far were writing the paragraphs/annexes for the protection from glare, reviewing comments received during the public inquiry and reviewing of the entire document.

For each of the four main categories - daylight provision, view out, sunlight exposure and protection from glare – evaluating metrics and calculation methods are described and recommendations for three different levels (minimum, medium and high) given.

I participated the meetings Dec 5-6 2016 and March 29-30 2017 in Copenhagen. In both meetings, the comments of the public inquiry were reviewed and the standard accordingly adjusted. Several discussions regarding complexity of the methods for all the categories took place. For the daylight provision and the protection from glare simplified methods are also included in the final draft.

The final draft will be submitted on Friday 18 August to the chair and secretariat of CEN TC 169. The formal vote will be in September 2017.
Liaison officer report TC 159

**TC 159 Ergonomics**

The Scope: Ergonomics: Standardization in the field of ergonomics, in particular, general ergonomics principles, anthropometry and biomechanics, ergonomics of human-system interaction and ergonomics of the physical environment, addressing human characteristics and performance, and methods for specifying, designing and evaluating products, systems, services, environments and facilities

Excluded: Standardization of purely technical matters not related to human characteristics and abilities

The TC 159 had a plenary meeting in Stockholm on Sept 15-16 2016. 34 participants from 11 countries. During the meeting many interesting ergonomic discussions were had, but none of the discussions included any lighting or vision issues.

Regarding liaison officer: At the first day of the ISO/TC 159 plenary meeting Hillevi Hemphälä reported about the activities of CIE. Later at the meeting the liaisons were discussed and as Ken Sagawa who is presently the liaison officer from ISO/TC 159 to CIE has many liaisons it was proposed whether Hillevi could be the liaison officer for both way CIE to TC 159 and vice-versa. The below resolution was taken:

**Resolution 375** ISO/TC 159 asks its secretary to contact CIE in order to update their liaison officers. ISO/TC 159 agrees to ask Ms/Dr Hillevi Hemphälä whether she would be willing to become the liaison officer from ISO/TC 159 to CIE.

Hillevi Hemphälä has agreed to be the Liaison officer between the CIE and TC 159 and vice-versa.

**TC159 WG4 (Ergonomics of Human-System-Interaction)**

Much of the work performed within the WG4 concerns haptic, audio and visual input. Below are some of the most relevant standards.

- ISO 9241-300:2008 (Ed. 1): Ergonomics of human-system interaction -- Part 300: Introduction to electronic visual display requirements
- ISO 9241-12:1998 (Ed. 1): Ergonomic requirements for office work with visual display terminals (VDTs) -- Part 12: Presentation of information

**TC 159 WG 5 (Ergonomics of the Physical environment)**

Much of the work performed within the WG5 concerns the thermal environment. But light and vision is a part of following projects:

- ISO 28803:2012 (Ed. 1): Ergonomics of the physical environment -- Application of International Standards to people with special requirements
Liaison officer report TC 159

Ergonomics of the physical environment --
Assessment of environments by means of an
environmental survey involving physical
measurements of the environment and subjective
responses of people

ISO 11428:1996 (Ed. 1)

Ergonomics -- Visual danger signals -- General
requirements, design and testing

ISO 11429:1996 (Ed. 1)

Ergonomics -- System of auditory and visual danger
and information signals

ISO/TR 22411:2008 (Ed. 1)

Ergonomics data and guidelines for the application of
ISO/IEC Guide 71 to products and services to address
the needs of older persons and persons with
disabilities

Next proposed meeting TC 159 WG 5 (Ergonomics of the Physical environment):

July 20, 2017

Hillevi Hemphâlã
Report to CIE Division 3

ISO/TC 205/WG7 « Indoor Visual Environment »

Yannick SUTTER (FR), Bernard PAULE (CH)

CIE Division 3 Liaison Officers for ISO TC 205 WG7

19 July 2017

We contacted Elsa Lucas, the new secretary of the WG7. She informed us that there are currently two ongoing projects and that our contribution could be useful in reviewing the documents in September 2017 before the next meeting in Tokyo 26-29 September 2017:

- ISO NP 19454 "Building Environment Design – Indoor environment – Daylight opening design process in order to ensure sustainability principles in visual environment". Yasuko KOGA is leader for this project. Comments are currently being reviewed and integrated. A new document integrating those comments will be circulated early September 2017. We are expected to review the new document then.

- ISO NP 20734 "Building Environment Design -- Daylighting design procedure for indoor visual environment". This project submitted by Dr Seo (Korea) is at draft stage. A more detailed version will be circulated early September 2017. We are expected to review the new document then.

- ISO 16817 "Building environment design — Indoor environment — Design process for visual environment" was approved and is to be published shortly.

- Next meeting of WG7 is in Tokyo 26-29 September 2017
Annex 3.1: Slides DD on PSDO ISO TC 274

Introduction
• ISO recognized CIE as an international standardizing body (MoU; 1989)
  — CIE may submit a standard by CE for vote to ISO as FDIS
  — there was no ISO TC to execute this “fast track procedure”
• ISO/TC 274 was established (2012)
  — Scope: Standardization in the field of applications of lighting in specific areas complementary to the work items of the International Commission on Illumination (CIE) and the work items of the International Electrotechnical Commission (IEC).
  — Terms of reference: vote on standards, etc.
  — Initial organization: CoC, CoC, CoC
• Working Arrangements (WA) between CIE and ISO/TC 274 (2014)
  — Attached to the Strategic Business plan of ISO/TC 274
  — Coordination Committee (CoC) for recommendations on collaboration

Necessity for revision
Meetings of the Coordination Committee
• End 2014 - until mid 2017: 9 meetings in total
• Efficient, but:
  — Role and authority of the CoC not always clear
  — Interpretation issues of the WA text
  — Staging of CoC was changed over time
  — Position of committees like IEC/TC 34 or other ISO/TCs in CoC was not clear
  — ISO Directives were changed
    • Rules of procedure CoC not in line with revised ISO Directives

Main changes
ISO - CIE
• Memorandum of Understanding (MoU) Sales agreement
• Partner Standards Development Organization Agreement (PSDO)

ISO - CIE ISO/TC 274
• Working Arrangements (WA)
• Coordination Committee

CIE - ISO/TC 274
• Implementation Guide (IG)

Notes
• CIE Code of Procedures (CoP) to be harmonized with IG
  — In case of the integrated liaison route B:
    • Parallel processes
      — Stages, WD, ED, AD, DS, FDIS, (L/5)
      — Required and optional procedures
      — Time frame (following IG phase)
    • Introduce “project leader” in the case of cooperation with ISO or IEC
    • If the joint TC with ISO is also a Joint TC within CIE, no co-chairs from the named Division.
  — Definition of deliverables of CIE as a standards organization needed
    • Current deliverables:
      — ISO, IEC, IAW, PAT, TTV
    • Counterparts of these deliverables in the other organization
    • A (JTC) application form must answer all questions in the IG review criteria
CIE 60:1984 VISION AND THE VISUAL DISPLAY WORK STATION
(archived: formally withdrawn)

This report was important for offering guidance on the appropriate visual conditions for the work using visual display units (VDU), but some contents are already out of date for the current state of VDU, and there are also newer standards for VDU, such as ISO 9241: Ergonomics – Office work with visual display terminals (VDTs).

...What is the relationship between L3-2 “ISO/TC159/SC4 - Ergonomics of Human-System Interactions” and CIE DIV3?

If the work is to be revisited in CIE DIV3, debatable points are as follows:

1) Part 1 THE USE OF THE VISUAL DISPLAY UNIT: not needed
   a. if it was to be kept it would need a complete rewrite as interfaces, both software and hardware, have moved on considerably. The use of a mouse or trackerball type technologies, touchscreen technology or even speech-recognition have totally changed the man-machine interface.

2) Part 2 HEALTH ASPECTS OF VISUAL DISPLAY UNITS: much of this is still relevant although needs some updating.
   a. Eyestrain considerations have changed to some extent with better screen technologies and positive polarity (black text on white background) application software, improved screen refresh rates and methods have reduced risks of photosensitive epilepsy, and none cathode gun technology has changed radiation consideration (although plasma technologies have their own issues).
   b. LED-backlit LCD monitors with blue LED chips were commonly used now. Therefore, some statements on the health concern about blue light should be included.

3) Part 3 3.1 Display requirements, 3.4 User requirements: not necessary
   a. It is completely out-of-date. If considered necessary a few sentences with references would be sufficient.
   b. Other bodies, such as ISO/TC159/SC4 and ISO 9241:2008 standards, cover this very well. It is also important as whilst there are international guidelines there are also national/regional requirements and it is
impossible to cover everything.

4) Part 3.3 Environmental requirements: Should be updated and the main area of expertise in Division 3
   a. Some of it is still perfectly valid (lighting of the space and luminance balance) and some of it has completely changed (screen technologies, tablets and smart phones, etc.).
   b. Although there seems to be no “unified” views on issues such as appropriate quantitative luminance balance between display surfaces and surroundings, it would be better to debate in CIE reportership whether some knowledge newly gained after 1990s could be included in the new report.

*Starting reportership on VDU would be a good choice, and after that, joint TC with ISO/TC159/SC4 is possible?*
Resilient lighting is lighting that has the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events.

Resilient lighting:
- Definition & development stage
- It's not traditional emergency lighting (which is typicallynosis lighting)
- Requires new residential lighting products able to operate for extended periods of time
- IEA Design Guide now in draft form (IEA Resilience Lighting Committee)
- Existing British standard is published called ‘Illumination for continued activity’.

Resilient lighting:
- Fits with lighting products and designs being developed for Zero Energy and Resilient Homes

Resilient lighting:
- Are there resilient lighting products?

PORTABLE LED LANTERN
with Bluetooth Speaker

Bring light and music to any space.

Resilient lighting:
- Are there resilient residential lighting products?
Annex 4: Current list of NCs, TCCs, DOs and LOs (status October 25, 2017)

### Division 3 Officers

<table>
<thead>
<tr>
<th>Name</th>
<th>Nationality</th>
<th>Position</th>
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<tbody>
<tr>
<td>Dr. Jennifer A. Veitch</td>
<td>CA</td>
<td>Division Director</td>
</tr>
<tr>
<td>Prof. John Mardaljevic</td>
<td>UK</td>
<td>Associate Director for Daylighting</td>
</tr>
<tr>
<td>Prof. Nozomu Yoshizawa</td>
<td>JP</td>
<td>Associate Director for Electric Lighting</td>
</tr>
<tr>
<td>Mr. Peter Thorns</td>
<td>GB</td>
<td>Division Editor</td>
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<tr>
<td>Dr. Martine Knoop</td>
<td>DE</td>
<td>Division Secretary</td>
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</tbody>
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### Official Division Members

<table>
<thead>
<tr>
<th>Name</th>
<th>Nationality</th>
<th>Delegate For</th>
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<tbody>
<tr>
<td>Dr. Veronica Garcia-Hansen</td>
<td>AU</td>
<td>Australia</td>
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<tr>
<td>Dr. Gillian Isoardi</td>
<td>AU</td>
<td>Australia</td>
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<tr>
<td>Mr. Peter Dehoff</td>
<td>AT</td>
<td>Austria</td>
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<td>Dr. Arnaud Deneyer</td>
<td>BE</td>
<td>Belgium</td>
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<tr>
<td>Prof. Claudia Amorim</td>
<td>BR</td>
<td>Brazil</td>
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<tr>
<td>Mr. Vladimir Shalamanov</td>
<td>BGR</td>
<td>Bulgaria</td>
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<tr>
<td>Dr. Jennifer Veitch</td>
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<td>Sen. Eng. Wang Lel</td>
<td>CN</td>
<td>China</td>
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<td>Mr. Dubravko Vlasic</td>
<td>HR</td>
<td>Croatia</td>
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<tr>
<td>Dr. Marek Smid</td>
<td>CZ</td>
<td>Czech Republic</td>
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<tr>
<td>Prof. Werner Osterhaus</td>
<td>DK</td>
<td>Denmark</td>
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<tr>
<td>Mr. Tapio Kallasjoki</td>
<td>FI</td>
<td>Finland</td>
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<td>Dr. Yannick Sutter</td>
<td>FR</td>
<td>France</td>
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<tr>
<td>Prof. Christoph Schierz</td>
<td>DE</td>
<td>Germany</td>
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<td>Dr. John Mardaljevic</td>
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<td>Dr. Harry Kambezidis</td>
<td>GR</td>
<td>Greece</td>
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<td>HK</td>
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<td>Dr. Levente Filetoth</td>
<td>HU</td>
<td>Hungary</td>
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<td>Dr. Jeongduk Ryeom</td>
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<td>Korea (Republic of)</td>
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<td>Mr. Rajasegaran Bungara Naidu</td>
<td>MY</td>
<td>Malaysia</td>
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<td>Dr. Gilles Vissenberg</td>
<td>NL</td>
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<td>Mr. Michael Donn</td>
<td>NZ</td>
<td>New Zealand</td>
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<tr>
<td>Mr. Jan Petter Skar</td>
<td>NO</td>
<td>Norway</td>
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<tr>
<td>Dr. Piotr Pracki</td>
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<tr>
<td>Dr. Dorin Beu</td>
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<tr>
<td>Dr. Julian Aizenberg</td>
<td>RU</td>
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<tr>
<td>Dr. Stanislav Darula</td>
<td>SK</td>
<td>Slovak Republic</td>
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<tr>
<td>Dr. Matej Kobav</td>
<td>SI</td>
<td>Slovenia (Republic of)</td>
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<td>Mr. Alex Cremer</td>
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<td>South Africa</td>
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<td>Mr. Jose de Andres Diaz</td>
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<td>Spain</td>
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<td>Mr. Tommy Govén</td>
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<td>Dr. Simon Simos</td>
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<td>Switzerland</td>
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<tr>
<td>Prof. Rong Seng Chang</td>
<td>ROC</td>
<td>Taiwan / Chinese Taipei</td>
</tr>
<tr>
<td>Prof. Leyla Dokuzer Öztürk</td>
<td>TR</td>
<td>Turkey</td>
</tr>
<tr>
<td>Mr. Terry McGowan</td>
<td>US</td>
<td>USA</td>
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</tbody>
</table>
## Annex 4: Current list of NCs, TCCs, DOs and LOs (status October 25, 2017)

### Observer Member

<table>
<thead>
<tr>
<th>Engr.</th>
<th>Simeon Isibor</th>
<th>NG</th>
<th>Nigeria</th>
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</table>

### Division 3 Technical Committee Chairs

<table>
<thead>
<tr>
<th>Chair</th>
<th>Name</th>
<th>Nationality</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>Dr.</td>
<td>Yukio Akashi</td>
<td>JP</td>
<td>TC 3-44 Lighting for Older People and People with Visual Impairment in Buildings</td>
</tr>
<tr>
<td>Mr.</td>
<td>Peter Thorns</td>
<td>UK</td>
<td>TC 3-48: CIE Standard Method of UF Table Calculation for Indoor Luminaires</td>
</tr>
<tr>
<td>Prof.</td>
<td>Alexander Rosemann</td>
<td>NL</td>
<td>TC 3-54: Revision of CIE 16-1970: Daylight</td>
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<tr>
<td>Prof.</td>
<td>Marc Fontoynto</td>
<td>DK</td>
<td>TC 3-55 Metrics for sunlighting and daylight passing through sunshading devices</td>
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<tr>
<td>Prof.</td>
<td>Toshie Iwata</td>
<td>JP</td>
<td>TC 3-56 Assessment of Discomfort Glare from Daylight in Buildings</td>
</tr>
<tr>
<td>Dr.</td>
<td>Jan Wienold</td>
<td>CH</td>
<td>JTC 4 Visual, Health, and Environmental Benefits of Windows in Buildings during Daylight Hours</td>
</tr>
<tr>
<td>Mr.</td>
<td>Soheil Moghtader</td>
<td>DE</td>
<td>JTC 6 Energy Performance of Lighting in Buildings</td>
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<tr>
<td>Dr.</td>
<td>Naoya Hara</td>
<td>JP</td>
<td>JTC 7 Discomfort caused by glare from luminaires with a non-uniform source luminance</td>
</tr>
<tr>
<td>Dr.</td>
<td>Hiroki Noguchi</td>
<td>JP</td>
<td>JTC 9 (co-chair) Quantifying ocular radiation input for non-visual photoreceptor</td>
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### Division 3 Reporters

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<tr>
<th>Chair</th>
<th>Name</th>
<th>Nationality</th>
<th>Title</th>
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<tbody>
<tr>
<td>Prof.</td>
<td>John Mardaljevic</td>
<td>GB</td>
<td>R 3-29 Variable Transmission Glazing (VTG): Current Trends and Future Prospects for Uptake by the Building Sector</td>
</tr>
<tr>
<td>Prof.</td>
<td>John Mardaljevic</td>
<td>GB</td>
<td>R 3-31 Available daylight metrics</td>
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### Division 3 Liaison Officers

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<tr>
<th>Chair</th>
<th>Name</th>
<th>Nationality</th>
<th>Title</th>
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<tbody>
<tr>
<td>Mr.</td>
<td>Lou Bedocs</td>
<td>GB</td>
<td>Liaison CEN TC 169</td>
</tr>
<tr>
<td>Dr.</td>
<td>Martine Knoop</td>
<td>DE</td>
<td>Liaison CEN TC 169 / WG 2</td>
</tr>
<tr>
<td>Dr.</td>
<td>Jan Wienold</td>
<td>CH</td>
<td>Liaison CEN TC 169 / WG 11</td>
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<tr>
<td>Dr.</td>
<td>Hillevi Hempfläa</td>
<td>SE</td>
<td>Liaison ISO TC 159/SC4, ISO TC 159/SC5</td>
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<td>Yannick Sutter</td>
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<td>Liaison ISO TC 205 WG8</td>
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<td>Uri Doman</td>
<td>IL</td>
<td>Liaison IEC ahG 66 - Smart Home/Office Building Systems</td>
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<td>Terry K. McGowan</td>
<td>US</td>
<td>Liaison IDA (Informal)</td>
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<tr>
<td>Dr.</td>
<td>Yoshiki Nakamura</td>
<td>JP</td>
<td>Liaison IEU (Informal)</td>
</tr>
<tr>
<td>Dr.</td>
<td>Jennifer Veitch</td>
<td>CA</td>
<td>Liaison Indoor Environmental Quality Global Alliance (informal)</td>
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