STRATEGIC BUSINESS PLAN – ISO/TC 274

Executive summary

ISO/TC 274 is responsible for standardization in the field of application of lighting in specific cases complementary to the work of the International Commission on Illumination (CIE); see Annex 1 and Annex 2.

Rapid technological developments have to be incorporated into the standards/publications within the ISO area of work having a rapid transposition into ISO standards in mind. Relevant technological developments are:

- LED transformation,
- digitalization/controls,
- adaptive lighting,
- integrative lighting.

The work of ISO/TC 274 complements international, regional and national standardization work for any "light and lighting" related subject.

The market is on a clear transition path from traditional incandescent and fluorescent light generating technologies to LED lighting technology with digital controls. Worldwide lighting-related regulations become more stringent resulting in fast market penetration of more energy-efficient lighting technologies.

Indicators related to the overall size of the markets are:

- The value of the total LED market is expected to grow annually by roughly 11 % until 2030.
- The LED share in general lighting is expected to grow to almost 90 % in 2025.
- The lighting control system market is expected to grow at about 17 % per year.

To summarize the benefits to be gained:

- timely provision of internationally harmonized documents (standards, technical specifications, etc.) in the field of light and lighting to remove technical barriers to trade and to open markets in various regions of the world;
- close cooperation with other ISO Technical Committees (ISO/TCs), CIE and the International Electrotechnical Commission (IEC), as well as regional standardization, to ensure effective coordination of the work items of these bodies, to avoid duplication of effort and conflicting standards, and to encourage the involvement in lighting standardization of Experts from all stakeholders;
- harmonized standards to gain cost savings as only one standard needs to be implemented by the users instead of various standards;
- involvement of national mirror committees in the voting procedures of CIE documents, to ensure that these CIE documents are based on international consensus of involved National Standardization Bodies (NSBs);
- facilitation of the harmonization of regional standards through intensive cooperation with CIE, IEC and regional standardization bodies.
The following social, health and environmental aspects will be addressed by ISO/TC 274 with priority, in cooperation with its partner organizations, international and regional ones (in alphabetical order):

- ageing population,
- health and well-being,
- energy consumption.
1 Introduction

1.1 ISO technical committees and business planning

The extension of formal business planning to ISO Technical Committees (ISO/TCs) is an important measure which forms part of a major review of business. The aim is to align the ISO work programme with expressed business environment needs and trends and to allow ISO/TCs to prioritize among different projects, to identify the benefits expected from the availability of International Standards, and to ensure adequate resources for projects throughout their development.

1.2 International standardization and the role of ISO

The foremost aim of international standardization is to facilitate the exchange of goods and services through the elimination of technical barriers to trade.

Three bodies are responsible for the planning, development and adoption of International Standards: ISO (International Organization for Standardization) is responsible for all sectors excluding Electrotechnical, which is the responsibility of IEC (International Electrotechnical Committee), and most of the Telecommunications Technologies, which are largely the responsibility of ITU (International Telecommunication Union).

ISO is a legal association, the members of which are the National Standards Bodies (NSBs) of some 164 countries (organizations representing social and economic interests at the international level), supported by a Central Secretariat based in Geneva, Switzerland.

The principal deliverable of ISO is the International Standard.

An International Standard embodies the essential principles of global openness and transparency, consensus and technical coherence. These are safeguarded through its development in an ISO Technical Committee (ISO/TC), representative of all interested parties, supported by a public comment phase (the ISO Technical Enquiry). ISO and its Technical Committees are also able to offer the ISO Technical Specification (ISO/TS), the ISO Public Available Specification (ISO/PAS) and the ISO Technical Report (ISO/TR) as solutions to market needs. These ISO products represent lower levels of consensus and have therefore not the same status as an International Standard.

ISO offers also the International Workshop Agreement (IWA) as a deliverable which aims to bridge the gap between the activities of consortia and the formal process of standardization represented by ISO and its national members. An important distinction is that the IWA is developed by ISO workshops and fora, comprising only participants with direct interest, and so it is not accorded the status of an International Standard.
2 Business Environment of the ISO/TC

2.1 Description of the Business Environment

The following dynamics describe the business environment of the industry sector, products, materials, disciplines or practices related to the scope of this ISO/TC, and they may significantly influence how the relevant standards development processes are conducted and the content of the resulting standards.

2.1.1 Complementary work

According to its scope ISO/TC 274 responsible for “Standardization in the field of application of lighting in specific cases complementary to the work items of the International Commission on Illumination (CIE) and the coordination of drafts from the CIE, in accordance with Council Resolution 19/1984 and Council Resolution 10/1989 concerning vision, photometry and colorimetry, involving natural and man-made radiation over the ultraviolet, visible, and infrared regions of the spectrum, and application subjects covering all usage of light, indoors and outdoors, energy performance, including environmental, and non-visual biological and health effects and lighting related information modelling systems”.

With the focus on the application of light and lighting, the work of ISO/TC 274 complements the work of the CIE, who develop the fundamental and basic standards, and of IEC committees, which develop standards regarding the electrical and electronic requirements for lighting products and complete lighting systems.

2.1.2 Technological developments

Technology cycles
Rapid technological developments have to be incorporated into the standards/publications within the ISO area of work having a rapid transposition into ISO standards in mind. Relevant technological developments and their evolvement over time are shown in Figure 1.

Figure 1: Relevant technological developments and their evolvement over time
Conventional
In the current market place, the traditional lighting technologies used for illumination were through incandescent, halogen, high-intensity discharge and fluorescent products. However the lighting market around the world is changing rapidly with the adoption of LED technology.

LED transformation
LED lighting is the most innovative and challenging lighting technology on the market. It can offer improved lighting quality with positive effects on human performance, both visually and non-visually, while providing substantial cost saving opportunities, reducing light pollution and driving innovation in the lighting and construction sectors. Adapted rules and measures for lighting application and design need to be developed.

Digitalization/ controls
With LED-based lighting systems equipped with digital controls there are in principle no longer limitations in tweaking both quantity and quality of light to application-specific needs. This brings further opportunities in the ongoing drive to save energy and facilitates more demanding and flexible lighting for well-being. The challenges are to fit such new options in application standards.

Adaptive lighting
The fact that technology no longer limits the controllability of lighting systems brings further opportunities in the ongoing drive to save energy while maintaining lighting quality. Lighting systems can now be seamlessly integrated into indoor and outdoor lighting management systems and easily connected to (future) smart grids.

Privacy
Adaptive lighting systems using advanced controls can generate signals to control other building equipment (e.g. ventilation); these signals may include sufficient data to raise privacy concerns, possibly leading to a need for standards related to the proper use of such data. The development of such standards, if not subject of governmental rule making, is awaited from ISO/IEC/JTC 1/SC 27 Information security, cybersecurity and privacy protection or other committees until an urgent need by ISO/TC 274 is identified. If such standards on privacy of data in systems would be needed, at first existing standards from ISO/IEC/JTC 1/SC 27 should be reviewed on their suitability for reference. Search for <privacy> on the Online Browsing Platform.

Integrative lighting
Controllability of lighting systems and of the spectral output of light sources provide opportunities to tune visual, biological, and emotional needs of humans simultaneously. Many technical solutions are already available for particular lighting application areas. These solutions concern new LED technologies and digital controls, may include the use of daylight and possibly conventional light sources. At all times it is important that these systems perform based upon solid research and knowledge concerning the effects of integrative lighting on humans, also on the longer term.
Note: Non-visual effects on humans can be observed and this needs further research.

2.1.3 Social, health and environmental developments

Ageing population
The on-going pressure to save energy poses a threat to electric lighting levels in both indoor and outdoor lighting applications. The trend towards an ageing population and postponed retirement implies the need for lighting standards alleviating the impact of age on the human visual capabilities. Visual capabilities reduce steadily the deterioration accelerating beyond the age of 40 years.
Health and well-being
Growing scientific insights on the impact of light on human factors like well-being, activity, alertness, performance, sleep quality, health, and others lead to requirements for lighting design that meet the visual, biological, and emotional needs of humans simultaneously. A holistic understanding of integrative lighting harmonized with the environment poses the availability of adequate lighting on top of the requirements for human visual needs. This will be a driver for more demanding and flexible lighting designs. This will result in a review of visual-task-oriented application standards as well as in the creation of new standards defining the assessment of and lighting requirements for non-visual effects on humans.

Sustainability

Energy consumption
The energy consumption and environmental aspects of lighting are more and more a matter of directives and regulations. ISO/TC 274 is equally active in standards for the application (use) of lighting as well as for the provision of a well-lit (designed) environment.
A more holistic system approach is needed both within the lighting sector and between different ISO/TCs working on energy performance of buildings, the latter meaning energy performance of lighting systems in buildings including control methodologies and the use of daylight (ISO/TC 163 and ISO/TC 205).
Standards on energy performance of road lighting shall be developed as well.

Circular economy and life cycle cost
An essential effort to protect the environment is the use and protection of rare goods and the reuse of material. Standards may help in classification and categorisation of material and processes. Cost estimation needs to serve the entire lifetime.

Sustainable development goals
Standards can support UN sustainable development goals (SDGs) to transform the world in a number of aspects. UN SDGs represent an ambitious plan to enhance peace and prosperity, eradicate poverty and protect the planet. They are recognized globally as essential to the future sustainability of our world.
For new proposals, the proposer of a new ISO standards development project shall indicate which of these goals are served by the proposed work item. See also 5.1.2.

2.1.4 Stakeholders

Customers of the standards are academia, architects, certification and testing bodies, employers, end users, facility managements, governmental organizations, installers, legal authorities, lighting designers, manufacturers, National Metrology Institutes (NMIs), owners of lighting installations, retailers and specifiers; worldwide. These customers are actively represented through either direct membership of maintenance teams, project teams, working groups or through the national mirror committee structure. The committee’s activities are well supported by the involvement of interested bodies.

The major concerns of the stakeholders are related to the fact that international standardization in the field of light and lighting is going on at the same time in the technical committees of CIE, ISO, and IEC, which leads to duplication/overlap of work and which is often undertaken by the same collectives of Experts. It is one of the major tasks of ISO/TC 274 to ensure international that standards are properly channelled through the National Standardization Bodies (NSBs).
A Partner Standards Developing Organization (PSDO) agreement between ISO and CIE on technical cooperation is in place since 2019, replacing the Memorandum of Understanding from 1986. An implementation Guide (IG), annexed to the PSDO agreement (Annex 1), describes the working arrangement specific to the CIE and ISO/TC 274. This IG is updated at the occasion of the the annual revision of the ISO Directives and/or CIE Code of Procedure, if necessary (see Annex 2). Liaisons with other ISO technical committees were established and more are foreseen.

The resulting harmonized international standards are important for scientific, engineering, and commercial purposes for the worldwide application of light and lighting. The international lighting industry, as well as test houses and lighting designers, are active in many countries and it is important for them to find similar application standards everywhere. Such standards make it possible to specify, install and use the same products and the same design in different countries, even allowing for different cultural habits.

Such harmonized international standards are important to meet future challenges related to social, health, and environmental aspects, as described below.

2.2 Quantitative Indicators of the Business Environment

The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of the ISO/TC:

2.2.1 Climate change as a regulatory driver

Climate change and thus energy efficiency are on top of the political agenda. Several organizations such as the United Nations Environment Programme (UNEP) and the International Energy Agency (IEA) published guiding documents which called for the phasing out of inefficient lamps to a wider public audience and especially the main international policy makers of the industrialized world.

It was recommended that policy measures are needed to address the following objectives:

- Phase out or substantially reduce the use of low-efficacy lamps and control gear;
- Encourage the adoption of high efficacy luminaires and lighting controls to discourage the use of their inefficient counterparts.

Subsequently, legislation in many countries followed these recommendations as policy and decision makers were pressured by their electorate.

Examples:

America
- In general, Canadian lighting regulations are aligned with the US Dept of Energy with modifications to account for certain Canadian differences (e.g., Canada has some 600 V systems for HID lamps and fluorescent ballasts). One exception is that the US allows lower wattage halogen torchieres, but Canada does not; this is not a new regulation. Canada has regulated minimum performance levels for general service lamps (GSL) and modified spectrum incandescent lamps manufactured on or after January 1, 2014 such that most conventional, incandescent lamps are no longer available for sale. The provinces of Ontario, Québec and British Columbia have gone further and introduced requirements for minimum efficacy of ≥ 45 lm/W, which will remove all but LED and CFL technologies from the GSL market. The Province of British Columbia has also applied those requirements to small diameter directional lamps.
Asia
- Roadmap schedule for phasing out incandescent lamps in Asian countries and economic regions: China in 2011, Korea in 2014 and Japan in 2016.
- Driven by the multiple policies of the national departments in the past two decades, China has become the world's largest production, export and consumer of solid-state-lighting (SSL). The key technology has made great progress, and the market penetration has increased continuously. The strength of SSL companies has been enhanced significantly, and the standardization system has been improved gradually. At present, LED general lighting market has gradually matured, and the market growth point in the future will be non-functional lighting such as LED display, intelligent lighting, health lighting, horticultural lighting and non-visual application such as UV LED and IR LED. China will focus on these fields, to improve the joint-innovation of enterprises, industrial organizations and government departments, and organize cross-field standardization research and development, continually to promote the innovation of LED technology and standards.
- India: Implemented Multicast Source Discovery Protocol (MSDP) based on economic models, published the white paper "Promoting LED Lighting in India", initiated pilot projects and LED labeling projects.
- Japan: Implemented “Top-runner” plan and “Carbon-neutral” plan.
- Korea: Implemented "Photonics Industry Development Plan", “Low Carbon, Green Growth” national strategy, “Green LED Lighting Spread and Development” plan, and “LED Lighting 20/60” plan. Governments operate some voluntary high-efficiency certification programs and eco certification programs related to solid-state lighting. They also provide low interest rate loans and tax free policies to the private construction industry using energy-saving lighting products.

Europe
- The European Commission introduced energy-efficiency requirements for lighting products (lamps, modules and drivers) under the Ecodesign directive and related implementing measures. Also not planning on renewing mercury exemptions under RoHS (2021) will phase out many technologies irrespective of eco-design regulation.
- The European Commission has introduced the Energy Performance of Buildings Directive (EPBD) which was recast in 2021 and is scheduled to get into force in 2022. This is regarded as a key legislative instrument to deliver on the 2030 and 2050 decarbonisation objectives setting the vision for achieving a zero-emission building stock by 2050. The proposal is particularly important because buildings account for 40% of energy consumed. The EPBD works in tandem with a. m. Ecodesign Directive and applies to Technical Building Systems (e.g. heating/cooling, ventilation, building automation and lighting application) within a building.

The result will be a whole generation of energy-inefficient lamps being phased out and eliminated from the market. These inefficient lamps are being replaced by fluorescent lamps and LEDs.

2.2.2 LED revolution

The value of the total LED market is expected to grow annually by roughly 11 % until 2030. The LED share in the general lighting market is expected to grow to almost 90 % in 2025, also due to the general ban of fluorescent lamps. The lighting control system market is expected to grow at around 17 % per year.
(Prescient & Strategic Intelligence Private Limited, 2021; Grand View Research, 2021; imarc, 2021; CSIL, 2021; Allied Market Research, 2020)
In terms of general lighting’s geographical aspects, Asia is already the largest market in both the total general lighting market and LED general lighting market. Asia is strengthening its position due to its high economic growth, with China in the lead. In terms of the LED penetration rate, Europe and North America are likely to lead going forward, but Asia is expected to continue building on its number one position in terms of revenue due to the vast size of its general lighting market.

2.2.3 Disruption of industry structures

The transformation from traditional lamps to LEDs\(^1\) has affected every stage of the value chain, from upstream to downstream. LED production methods are very different from those used for traditional lamps which led to an entirely new industry and the upheaval of traditional industry structures. Most upstream companies aimed to capture the general lighting opportunity as LED upstream business in general lighting is expected to be significant. Emerging technologies opened up opportunities for start-ups and semiconductor manufacturers.

In the midterm, LED technology has become the next standard in the general lighting market.

The “disruption of industry structures” influenced the value chain, with impacts on standard development. The so-called ‘new entrants’ do/did not always make use of traditional standard development organizations and look/looked for alternative routes.

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\(^1\) LEDs may take many different forms in practice: LED lamps, LED light sources, LED modules; lamps and modules may be integrated, semi-integrated or non-integrated; see IEC 60050-845, IEC Electropedia, CIE S 017 or CIE eILV
3 Benefits expected from the work of the ISO/TC

The work of ISO/TC 274 complements national, regional and international standardization work for any “light and lighting” related subject.

Standards developed by ISO/TC 274 are primarily to support and promote the application of light and lighting worldwide, providing tools to all stakeholders to assure lighting quality, safety, and energy efficiency.

One of the drivers for standardization is the need to make it possible for the new entrants and the old alike to deliver LED lighting products that are fit for purpose. The newer entrants (such as the semi-conductor manufacturers who did not previously make lighting products) will benefit from good international standards by having one set of clearly-articulated requirements that will allow them a smooth entry into multiple markets at once. Established players will benefit from a level playing field. Consumers will benefit from better products becoming available sooner, with standards that exclude products that would not fulfil their expectations.

The diversity of the ISO/TC 274 work programme reflects and meets these demands, and all published standards and projects in development are relevant to the continuity of a healthy market. ISO/TC 274 is committed to the timely provision of its documents in order to close gaps in standard development and facilitate harmonization of national or regional specifications and requirements in the field of light and lighting.

Even more efficient international standardization in the field of light and lighting is established through the strong involvement of the CIE which is a globally recognized international standardization body for light and lighting (ISO Council Resolution 19/1984 through ISO Council Resolution 10/1989) and has Experts within national committee members from academia, industry and national metrology institutes worldwide. The CIE has a well-established structure for global cooperation in the field of vision, colour, photometry, application of light in interior and exterior lighting, as well as related areas of photobiology, photochemistry, and image technology. The CIE is also recognized as Standards Developing Organization by the IEC and by CIPM (International Committee of Weights and Measures).

The foundation of ISO/TC 274 complements these already existing networks, particularly by providing enhanced involvement of national mirror committees in the voting procedures of CIE documents, and thus supports the adoption of best practice in the process of standardization in this field.

In fact, the results of the international (scientific) cooperation within CIE spreads worldwide through the ISO system. Vice versa, ISO benefits from the activity of an internationally recognized body such as CIE in the field of light and lighting standardization. The overall result is an improved and enhanced knowledge transfer, at the industrial, commercial, and professional level, of many subjects such as safety of citizens by night, urban nightscape, and energy consumption minimization, a general demand which should never be neglected.

Close liaison is established between ISO/TC 274, CIE, and IEC/TC 34. Apart from the many formal and informal contact, delegates from these parties meet in ISO/TC 274 /JAG on a regular basis; see Annex 2.

To summarize the benefits that are gained:
• timely provision of international harmonized documents (standards, technical specifications, etc.) in the field of light and lighting to remove technical barriers to trade and open markets in various regions of the world;
• close cooperation with other ISO/TCs, CIE and IEC, as well as regional standardization, to ensure effective coordination of the work items of these bodies, to avoid duplication of effort and conflicting standards, and to encourage the involvement in lighting standardization of Experts from all stakeholders;
• harmonized standards lead to cost savings as only one standard needs to be implemented by the users instead of various regional standards;
• involvement of national mirror committees in the voting procedures of CIE documents, to ensure that these CIE documents are based on international consensus of involved NSBs;
• facilitation of the harmonization of regional standards through intensive cooperation with CIE, IEC and regional standardization bodies, e.g. CEN and CENELEC.
4  Representation and participation in the ISO/TC

4.1  Membership

Countries/ISO member bodies that are P and O members of the ISO committee

4.2  Analysis of the participation

The principal players in this field (the industrialized countries) are represented. The involvement of the European and Asian countries is high. The involvement of countries from the American region is existing but should increase.

ISO/TC 274 has 24 P-members and 16 O-members. Among the P-members, 83 % come from developed countries and 17 % from developing countries or countries with economies in transition; among O-members the shares are 31 % and 69 % respectively. (Status 2022-06-16). In 2014 this was: 18 P-members, 89% from developed and 11% from developing countries, and 17 O-members.

The economic partners involved in the work of the technical committee are:

- government agencies;
- testing laboratories (incl. e.g. quality control);
- academia (incl. e.g. research institutes);
- international governmental organizations;
- non-governmental organizations;
- industry (e.g. manufacturers, industrial users, promoters, lighting designers).

Presently it is not felt that a specific stakeholder lacks in participation.
5 Objectives of the ISO/TC and strategies for their achievement

5.1 Defined objectives of the ISO/TC

5.1.1 Main target areas

The objective of ISO/TC 274 is to establish International Standards in the field of light and lighting, which reflect the needs of interested parties and actual practice in industry and includes the intention to follow technological changes by appropriate standardization work as described in section 2.

The following challenges will be addressed by ISO/TC 274 with priority in cooperation with its partner organizations, international and regional ones (in alphabetical order):

- adaptive lighting,
- energy performance of lighting,
- integrative lighting,
- lighting for the ageing population.

At the same time ISO/TC 274 will develop new standards particularly in the application of LED technologies in close cooperation with CIE and with liaison to IEC/TC 34.

In addition ISO/TC 274 will ensure proper maintenance of these documents, which is even more important as, due to rapid technological developments in the lighting field, the market is constantly demanding to keep existing standards up-to-date. Following the state of the art, new emerging technologies require amendments to and the creation of new standards/publications to ensure best practice and fair play among market parties.

5.1.2 Sustainable development Goals — guidance

Light and lighting standards usually support the UN sustainable development goals (SDGs) as in the following table. This table may serve as a guidance for assessing the supported goals by new work items of ISO/TC 274:
<table>
<thead>
<tr>
<th>Goal</th>
<th>Lighting performance</th>
<th>Energy performance</th>
<th>Systems performance</th>
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<tbody>
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<td>1  No Poverty</td>
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<td>2  Zero Hunger</td>
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<td>3  Good Health and Well-being</td>
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<td>4  Quality Education</td>
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<td>5  Gender Equality</td>
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<td>6  Clean Water and Sanitation</td>
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<td>7  Affordable and Clean Energy</td>
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<td>8  Decent Work and Economic Growth</td>
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<tr>
<td>9  Industry, Innovation and Infrastructure</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>10 Reduced Inequality</td>
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<td>11 Sustainable Cities and Communities</td>
<td>x</td>
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<td>12 Responsible Consumption and Production</td>
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<td>13 Climate Action</td>
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<td>14 Life Below Water</td>
<td>x</td>
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<td>15 Life on Land</td>
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<td>16 Peace and Justice Strong Institutions</td>
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<td>17 Partnerships to achieve the Goal</td>
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</table>
5.2 Identified strategies to achieve the ISO/TC’s defined objectives

5.2.1 Prioritization

The defined objectives of the ISO/TC are a challenge. They cover wide areas of expertise and sometimes more knowledge is needed before standardization is feasible. This is why ISO/TC 274/CAG was given the task to act as a “Think Tank” of ISO/TC 274 and to give a firm theoretical fundament for the implementation of its strategic plans. CIE is expected to deliver the necessary fundamental knowledge, including definitions, metrics and guidance on how to apply this fundamental knowledge.

To prepare for a draft revision of the Strategic Business Plan (SBP), workshops/webinars were organized early 2021 and subsequently an enquiry was held amongst the ISO/TC 274 members and liaisons to collect potential topics for future standardization. All this was discussed in several meetings of ISO/TC 274/CAG and resulted in a new overview of topics/ potential future work items (Annex 3):

A. Ready to go:
   1. Topics that should be worked on,
   2. Topics one could work on,

B. Other:
   3. Topics that may be integrated with other topics,
   4. Topics not yet feasible.

For all work items, it shall be assessed which UN sustainable development goals are being served (see 5.1.2).

No priority within these four lists is proposed since the execution of these lists of potential topics is heavily depending on available expertise and Project Leaders, nominated by P-members.

5.2.2 Cooperation

The following key strategies have been identified to achieve the objectives defined in 5.1:

ISO/TC 274 will work towards multi-level and seamless cooperation using the following options:

1) horizontal cooperation (ISO-CIE-IEC) in lighting;
2) vertical cooperation (ISO-CEN-NSB) in lighting;
3) cross ISO/TCs, IEC/TCs and cooperation with other non-lighting organizations.

Liaisons are established as required by the standardization work; see 5.2.4.

Cooperation in lighting — Horizontal

CIE

The ISO and CIE PSDO Agreement has the objectives to avoid duplication of work, to achieve the best possible input to the work and to express a concerted view to third parties (Annex 1).

In general, fundamental/application research as well as the development of basic and fundamental standards is typically a CIE-driven process. Standards development in applications perfectly fits into the ISO structure. Both processes are equally important and have to be cleverly interlinked to meet the objectives of ISO/TC 274. Specifications of respective domains as well as

Close cooperation is encouraged and embodied by a joint advisory group (ISO/TC 274/JAG), which acts as a coordination committee between ISO/TC 274 and the CIE. The main objective of this joint advisory group is to share/align on a regular basis early drafts of scopes of standards work items and to make recommendations regarding the routes of collaboration. The main task of this joint advisory group is to provide recommendations on all topics related to the cooperation in light and lighting. ISO/TC 274/JAG may also consider work items in overlapping areas with other standardization committees and recommend on possible action, including inviting guests from those other standardization committees.

Figure 2 shows the horizontal cooperation between ISO and CIE in the (overlapping) fields covered by their scopes (white and grey shaded boxes), with the cooperation between ISO/TC 274 and CIE (white shaded boxes) in the middle of the diagram; for more information see Annex 1 and Annex 2.

Figure 2: Visualization of the cooperation between ISO and CIE and of the close cooperation between ISO/TC 274 and CIE

IEC
IEC cooperates with ISO and ITU in the World Standards Cooperation (WSC).

Cooperation of ISO/TC 274 with IEC/TC 34 "Lighting" is in place and intense amongst others through ISO/TC 274/JAG.
Cooperation in lighting — Vertical
In addition to existing ISO, CIE and IEC standards there is a broad variety of existing regional and national standards. Due to the strong and historic connection between the regional and national standardization organizations, ISO/TC 274 could make use of the existing knowledge as a basis for its own standardization work.

A cooperation with CEN/TC 169 "Light and lighting" is in place and is aimed to be intensified.

Cooperation — Cross ISO/TCs, IEC/TCs and other non-lighting organizations
The most significant benefit of ISO/TC 274 is that "lighting" becomes integrated within the ISO system instead of spread (and frequently lost) within a variety of other ISO/TCs. Therefore lighting application standardization becomes more structured and usable with a visible and correctly functioning chain from national to regional to international levels (and vice versa), allowing international standards to be produced and accepted at all levels.

To develop, maintain and optimize a set of coherent standards, ISO/TC 274 cooperates with CIE, IEC and other ISO committees which deal with light- and lighting-related work items or where light and lighting is being used in the respective product or specific applications.

Before ISO/TC 274 was established, other ISO committees developed light- or lighting-related standards, in which a bigger or smaller portion was dedicated to light and lighting subjects. In 2021, a list of standards with lighting-related aspects was generated, but announcement for systematic review is a good messenger for action, if necessary.

Unfortunately, other ISO committees still manage to start a new (preliminary) project that is clearly (partly) in the scope of ISO/TC 274 (as well). ISO/TC 274/JAG is keeping an eye on such developments and invites delegates from other committees to their meetings to exchange information. In addition, the ISO/TC 274 Secretariat holds an internal committee ballot to acquire the position of ISO/TC 274 members.

As a follow-up, delegates from involved parties, often with involvement of CIE and/or ISO/CS, try to find a way forward, that is acceptable to their committees. Such meetings do not always result in an effective way of resolution with reasonable effort. ISO/TC 274 should consider how to manage such issues. See also 6.

5.2.3 Coordination
The coordination of the light and lighting standardization activities in ISO, CIE and IEC is to utilize resources as effectively as possible by avoiding any unnecessary duplication of activity. See Annex 1.

Priority is to improve the coordination with:
- ISO/TC 163 “Thermal performance and energy use in the built environment”;
- ISO/TC 205 “Building environment design”.

5.2.4 List of liaisons
The established liaisons of ISO/TC 274 can be found on the following link: ISO/TC 274 liaisons.

Prerequisite for establishing a liaison is that the other organization or committee is (interested) in cooperation with ISO and that volunteers are prepared and available to be appointed and be active as liaison representatives.
Liaison to the following committees for future review:

Cooperation in lighting — Horizontal
- IEC/TC 23/SC 23B “Electrical accessories”

Cooperation in lighting — Vertical
- IEEE “Institute of Electrical and Electronics Engineers” (last review: 2018)

Cooperation — Cross ISO/TC’s, IEC/TC’s and non-lighting organizations
- ISO/TC 59/SC 14 “Design life”
- ISO/TC 59/SC 17 “Sustainability in buildings and civil engineering”
- ISO/TC 145 “Graphical Symbols”
- ISO/TC 160 “Glass in buildings”
- ISO/TC 217 “Cosmetics”
- ISO/TC 256 “Pigments, dyestuffs and extenders”
- ISO/TC 301 “Energy management and energy savings”

6 Factors affecting completion and implementation of the ISO/TC work programme

Conditions for successful light and lighting standardization are especially:

- Adequate resources (e.g. funding) to support professionals from standardization institutes, including the work of the secretariats. Proper application of standardization rules, organization of efficient meetings and assistance in drafting unambiguous standards are indispensable.
- Delegates and working group Experts shall have sufficient resources available (capacity, travel budget, etc.) to participate actively in the standardization work and to make proper contributions.
- Viewpoints can differ because of national education and habits, different commercial interests, different climates etc. Without a clear outline of the purpose of the standard and the commitment of all parties concerned a standard cannot be developed within a reasonable time schedule.
- As there was no ISO committee on light and lighting in the past, various ISO/TCs started to deal with specific light and lighting aspects which did not contribute to harmonization in the field. One of the main strategic objectives of the ISO/TC 274 is thus to harmonize standards with aspects of light and lighting globally. To avoid redundant and not cost-effective work, all ISO and IEC TCs should refer to ISO/TC 274 if light and lighting application issues in their standardization work are arising.
- For the correct allocation of new projects, the responsibilities of ISO, CIE and IEC need to be defined as unambiguously as possible and relevant coordination structures put in place (ISO/TC 274/JAG).
7 Structure, current projects and publications of the ISO/TC

Information on ISO online

The link below is to the TC’s page on ISO’s website:
ISO TC 274 on ISO Online

Click on the tabs and links on this page to find the following information:
• About (Secretariat, Committee Manager, Chair, Date of creation, Scope, etc.)
• Contact details
• Structure (Subcommittees and working groups)
• Liaisons
• Meetings
• Tools
• Work programme (published standards and standards under development)

Reference information

Glossary of terms and abbreviations used in ISO/TC Business Plans

General information on the principles of ISO’s technical work

Prescient & Strategic Intelligence Private Limited, LED Lighting Market, October 2021

Grand View Research, LED Lighting Market Size, Share & Trends Analysis Report By End-use (Residential, Commercial), By Product (Lamps, Luminaires), By Application (Indoor, Outdoor), By Region, And Segment Forecasts, 2021 – 2028, April 2021

imarc, LED Lighting Market: Global Industry Trends, Share, Size, Growth, Opportunity and Forecast 2022-2027, 2021

Allied Market Research, Intelligent Lighting Controls Market by Type (Sensors, Ballasts & LED Drivers, Microcontrollers, Dimmers & Switch Actuators, Transmitters & Receivers, and Others), Connectivity Type (Wired and Wireless), and Application (Smart Cities, Automotive, Manufacturing, Media & Entertainment, and Others): Global Opportunity Analysis and Industry Forecast, 2020–2027, April 2020

EXTRACT FROM THE ISO/CIE PARTNER STANDARDS DEVELOPING ORGANIZATION (PSDO) AGREEMENT

1 Introduction and summary

The International Organization for Standardization (ISO) and the International Commission on Illumination (CIE) are committed to cooperate to make the maximum possible use of the knowledge and experience available within each of the organizations in order to:

1) avoid duplication of work in the (overlapping) scopes of both organizations ISO and CIE;
2) achieve the best possible input to the work associated with the preparation of documents;
3) express a concerted view to third parties dealing with matters associated with the preparation and/or application of documents.

Technical committees and/or subcommittees within ISO and Divisions within CIE, working in related fields or working in fields having complementary or overlapping scopes are encouraged to establish and maintain liaison relationship, preferably in both directions.

ISO and CIE agree that this PSDO Agreement shall cover adoption coordinated by ISO/TC274 and joint development in the field(s) covered by ISO/TC 274 Light and lighting. Joint development in other fields covered by other ISO/TCs may be added subject to the prior approval of the ISO governance and the CIE.

2 Rules for the good functioning of the co-operation


1 links to ISO websites (2018-05-10): www.iso.org
https://www.iso.org/technical-committees.html
2 links to CIE websites (2018-05-10): http://www.cie.co.at/about-cie
http://www.cie.co.at/technical-work/itcs
https://www.iso.org/organization/8928.html
ISO and CIE will maintain liaison according to their respective procedures. The CIE will keep ISO informed about items on the programme of its Divisions aimed at international standardization. ISO, and in particular ISO/TC 274, will keep CIE informed about items on their programme of work.

ISO and CIE will endeavour to inform each other on matters that are of common interest in accordance with TMB resolution 10/2011.

This cooperation includes and encourages the active participation of CIE as a liaison organization in all relevant ISO committees (TC, SC or PC) in line with ISO/IEC Directives, Part 1, as well as reciprocal participation by such ISO committees in relevant CIE Divisions and Technical Committees (TC).

In case of doubt concerning overlaps or gaps in the work of the two organizations and as far as international standardization is concerned, such matters will be jointly discussed.

3 Adoption of CIE international standards at ISO

A published CIE international standard may be proposed by CIE to ISO for publication as an ISO/CIE International Standard. The CIE standard shall be processed by ISO via the FDIS fast-track procedure as detailed in Annex F2 of ISO/IEC Directives Part 1. ISO/CS will assess the CIE fast-track proposal by involving the ISO/TC 274 secretariat and other relevant ISO committee secretariats (if any) with a view to avoiding any potential duplication with an existing ISO project.

4 Joint development of ISO/CIE documents

ISO and CIE agree to cooperate in the joint development of mutually-agreed and relevant documents within the scope of ISO/TC 274 Light and lighting as described in Annex ISO_CIE PSDO Agreement - Implementation Guide (IG). The IG is mutually agreed and maintained between the ISO Central Secretariat (ISO/CS), CIE and ISO/TC 274. The IG is also contained in the annex of the Strategic Business Plan (SBP) of ISO/TC 274. For ISO/CIE documents which have been developed or maintained under this PSDO Agreement, the ISO/IEC Directives, Part 1 and Part 2 shall apply.

5 Maintenance of published documents

Revisions to documents produced under this PSDO Agreement may be proposed at any time by ISO and/or CIE. Systematic review of the documents produced under this PSDO Agreement shall occur at intervals after publication of the documents according to the ISO timing in the ISO/IEC Directives, Part 1.
This Implementation Guide (IG) accompanies the ISO/CIE PSDO Agreement and provides the procedures to be followed for the projects being developed under this agreement, both jointly and by adoption. This IG may be updated as needed by agreement between ISO/CS, ISO/TC 274 Secretariat and CIE Central Bureau in consultation with and approval from each organization’s stakeholders.

A.1 Introduction

The International Commission on Illumination (CIE) is devoted to worldwide cooperation and the exchange of information on all matters relating to the science, art and photometry of light and lighting, colour and vision, photobiology and image technology.


This recognition implied that CIE may submit a standard developed by CIE for vote to ISO as a Final Draft International Standard. However, there was no ISO technical committee established as a counterpart to CIE to execute “fast track procedure”.

In 2012, ISO established the technical committee ISO/TC 274 with the scope: Standardization in the field of application of lighting in specific cases complementary to the work items of the International Commission on Illumination (CIE) and the coordination of drafts from the CIE, in accordance with the Council Resolution 19/1984 and Council Resolution 10/1989 concerning vision, photometry and colorimetry, involving natural and man-made radiation over the UV, the visible and the IR regions of the spectrum, and application subjects covering all usage of light, indoors and outdoors, energy performance, including environmental, non-visual biological and health effects. In 2019, this scope was extended with “lighting related information modelling systems”.

Further to these original agreements, this implementation guide (IG) of the ISO/CIE PSDO Agreement applies between the CIE and ISO/TC 274 to strengthen the development of International Standards and to avoid duplication of work.

A.2 Acronyms and abbreviations

Specific to this annex:

ISO/TC 274/JAG  Joint Advisory Group between ISO/TC 274 and CIE
JWG  Joint Working Group
NUC  New work item (proposal) Under Consideration

1 Superseded by ISO Council Resolution 42/1999
A.3 Scope

Noting the complementary nature in specific cases of the scopes of ISO/TC 274 and the CIE, the focus on standardization work shall be as follows:

a) **CIE** develops the **fundamental and basic standards** in all domains covered by its scope (see Section A.1 and Figure A.1).

b) **ISO/TC 274** develops **application standards**, based upon fundamental and basic publications of the CIE and/or common practice or other application publications, in lighting situations of all domains covered by its scope (see Section A.1 and Figure A.1).

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This IG applies to (the development of) all documents from ISO/TC 274 and those from CIE as a Standards Developing Organization².

A.4 Organization of cooperation

A.4.1 Information exchange and coordination

An inter-organizational standing coordination committee for Light and Lighting ISO/TC 274/JAG has been established as a joint advisory group (JAG) to support the execution of this IG (composition see A.4.2.1).

The ISO/TC 274 Secretariat and the CIE Central Bureau shall inform each other and the ISO/TC 274/JAG Secretariat of any work item (proposal) under consideration (NUC), new or preliminary, including revisions of existing documents in the scope of this IG.³

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² CIE is also a scientific organization that produces other documents.

³ ISO Technical Management Board Resolution 10/2011 on Enhanced cooperation with the International Commission on Illumination (CIE)
The proposer of such a NUC should indicate the envisaged route of collaboration as described in A.4.3.4.

The ISO/TC 274/JAG shall review the NUC within 2 weeks according to 2.3.4. of the ISO/IEC Directives Part 1 to determine the need for collaboration and recommend on the collaboration route as described in A.4.3.

The ISO/TC 274 Secretariat and the CIE Central Bureau shall inform each other and the ISO/TC 274/JAG Secretariat about changes and amendments of the work program.

If CIE submits, via the “fast track procedure” (see ISO/IEC Directives Part 1, Annex F.2), a standard developed by CIE to ISO/CS for vote within ISO/TC 274 as a Final Draft International Standard to become a standard carrying the logo of both organizations (dual logo standard), no ISO/TC 274/JAG recommendation before this submission is needed. Such a standard might originate from route 1 and 2 (when CIE has the lead) of this IG or some other standard of the CIE.

In the case that CIE submits, via the “fast track procedure”, a standard developed by CIE to ISO/CS outside the scope of this IG, the relevant ISO committee, if any, should be consulted.

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4 In the case that ISO/TC 274 is cooperating with other ISO/TCs or IEC/TCs and CIE is not interested in the new work item proposal, cooperation (modes) according to B.4.2.2 of the ISO/IEC Directives Part 1 applies.
A.4.2 Coordination Committee (ISO/TC 274/JAG)

A.4.2.1 Composition

Table A.1 — ISO/TC 274/JAG membership

<table>
<thead>
<tr>
<th>Origin</th>
<th>Function in ISO/TC 274/JAG</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Members</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISO/TC 274/JAG</td>
<td>Convenor</td>
<td>CIE Board of Administration member</td>
</tr>
<tr>
<td></td>
<td>Secretary</td>
<td>NSB holding the ISO/TC 274 Secretariat</td>
</tr>
<tr>
<td>ISO/TC 274</td>
<td>Liaison representative to CIE or alternate</td>
<td>* Official liaison from ISO/TC 274 Experts in ISO/TC 274</td>
</tr>
<tr>
<td></td>
<td>2 nominated Experts</td>
<td></td>
</tr>
<tr>
<td>CIE</td>
<td>Liaison representative to ISO/TC 274 or alternate</td>
<td>* Official liaison from CIE Experts in CIE</td>
</tr>
<tr>
<td></td>
<td>2 nominated Experts</td>
<td></td>
</tr>
<tr>
<td><strong>Ad hoc members for NUC</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Related to NUCs</td>
<td>Expert</td>
<td>Proposer from ISO/TC 274 or CIE</td>
</tr>
<tr>
<td></td>
<td>Expert</td>
<td>WG Convenor in ISO/TC 274</td>
</tr>
<tr>
<td></td>
<td>Expert</td>
<td>TC Chair in CIE</td>
</tr>
<tr>
<td><strong>Ad hoc members for collaborative work</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IEC/TC 34</td>
<td>Liaison representative to IEC/TC 34</td>
<td>Expert in ISO/TC 274</td>
</tr>
<tr>
<td></td>
<td>Liaison representative to ISO/TC 274</td>
<td>Expert in IEC/TC 34</td>
</tr>
<tr>
<td>Other ISO/TCs</td>
<td>Liaison representative to another ISO/TC</td>
<td>Expert in ISO/TC 274</td>
</tr>
<tr>
<td></td>
<td>Liaison representative/committee manager of another ISO/TC</td>
<td>Expert/committee manager of another ISO/TC</td>
</tr>
<tr>
<td><strong>Other ad hoc members</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Related to defined topics</td>
<td>Expert in the topic</td>
<td>Advisor</td>
</tr>
</tbody>
</table>

* Contributes to consensus (see A.4.2.3.1.b)

A.4.2.2 Tasks

A.4.2.2.1 New work items under consideration

The main task of the ISO/TC 274/JAG is to recommend to the ISO/TC 274 Secretariat and to the CIE Central Bureau for a NUC: (i) one of the routes for collaboration as described in A.4.3, and (ii) the recommended administrative responsibility (“lead”) of the relevant body (ISO/TC 274 or CIE). Thereby, ISO/TC 274/JAG shall explicitly review the NUC on the following reviewing criteria:

a) Does the title of the NUC conform to the relevant rules or recommendations of the respective organization or body (ISO, ISO/TC 274 or CIE)?
b) Is the scope of the NUC clear in whether fundamental or basic work is intended; or whether the application of fundamental or basic publications intended or the application of common practice or other application publications?

c) Is a clear justification and purpose provided?

d) Is this work already ongoing elsewhere?

e) Are liaisons to other committees or working groups necessary and indicated?

f) Are there relevant publications within CIE or ISO available or necessary?

g) Is enough fundamental or basic knowledge or common practice available?

A.4.2.2.2 Additional tasks

Additional tasks of ISO/TC 274/JAG are to provide a recommendation to the ISO/TC 274 Secretariat and to the CIE Central Bureau in the case that:

a) advice is requested on a change of route of collaboration or a change of document type as described in A.4.3.4;

b) results of systematic review ballots become available as part of the administrative responsibility of the ISO/TC 274 Secretariat or the CIE Central Bureau on the maintenance of documents (A.4.3.5);

c) CIE submits via the “fast track procedure” a standard developed by CIE for vote to ISO as a Final Draft International Standard to become a standard carrying the logo of both organizations (dual logo standard) and the ballot in ISO/TC 274 results in rejection;

d) the conversion of a Technical Specification (TS) or a Publicly Available Specification (PAS) to an International Standard(IS), or the withdrawal of a document is considered by ISO/TC 274 or CIE.

ISO/TC 274/JAG may also:

e) provide recommendations on general topics related to cooperation between parties involved in ISO/TC 274/JAG;

f) consider work items in overlapping areas with other standardization committees. They shall then inform the ISO/TC 274/JAG Secretariat that shall recommend on possible action, including calling for a meeting of ISO/TC 274/JAG and inviting guests from those other standardization committees.

Once per calendar year strategic points and other issues, if any, shall be reviewed, including whether ISO/TC 274/JAG recommendations are being followed.

A.4.2.3 Rules and procedures

A.4.2.3.1 General rules

The following rules apply:

a) ISO/TC 274/JAG shall adopt its recommendations by consensus as defined in 2.5.6 of the ISO/IEC Directives Part 1.

b) Only the liaison representative from ISO/TC 274 to CIE and the liaison representative from CIE to ISO/TC 274 contribute to consensus.

c) The nominated Experts from each organization advise the liaison representative of their organization.

d) The route of collaboration is route 3 by default, see A.4.3.3.

e) In the absence of consensus at a meeting on a given topic ISO/TC 274/JAG shall meet again.

f) The default route of collaboration for a NUC applies even if a meeting cannot be scheduled in time in relation to the rules and procedures of the respective organizations.
g) A NUC may proceed to the NP ballot in ISO if enough fundamental knowledge or common practice is available. If not enough fundamental or basic knowledge or common practice necessary for a NUC is available, ISO/TC 274/JAG should express this in its recommendation and clarify that the NUC is not feasible.

h) If necessary fundamental or basic knowledge for the NUC is missing ISO/TC 274/JAG should recommend CIE to work on the item.

i) A ballot on a NUC in ISO/TC 274 and CIE should be accompanied by a recommendation of ISO/TC 274/JAG.

j) In the case that a ballot on the allocation of a NUC in ISO/TC 274 or CIE is needed, this ballot shall be accompanied by a recommendation of ISO/TC 274/JAG.

k) ISO/TC 274/JAG will meet on demand as required in addition to its annual meeting as described in A.4.2.2.2.

A.4.2.3.2 Meeting procedures

The meeting procedures are applied in accordance with Clause 4 of the ISO/IEC Directives Part 1. After a period of 2 weeks to comment on the draft report of the meeting, the ISO/TC 274/JAG Secretary shall circulate the confirmed report to the CIE Central Bureau and the ISO/TC 274 Committee Manager for circulation to ISO/TC 274.

In case of unavailability of a liaison representative for a meeting of ISO/TC 274/JAG or for other reasons such as a (temporary) double role, the liaison representative may be represented by an alternate, appointed by its organization and registered for ISO/TC 274/JAG; this shall be notified to the ISO/TC 274/JAG Secretariat in writing.

A.4.2.3.3 NUC procedures

The following procedures apply at the reception of a NUC:

a) The ISO/TC 274/JAG Secretary shall inform all members of the ISO/TC 274/JAG about the NUC.

b) The ISO/TC 274/JAG Secretary shall launch a JAG consultation, using the format of Appendix 2 to this IG.

c) The liaison representative from ISO/TC 274 to CIE and the liaison representative from CIE to ISO/TC 274 shall return the completed forms to the ISO/TC 274/JAG Secretary in less than 2 weeks.

d) The ISO/TC 274/JAG Secretary shall circulate the JAG consultation results to the members of ISO/TC 274/JAG, and:
   1) if further information is needed, request the ISO/TC 274 Committee Manager and/or the CIE Central Bureau to contact the proposer for the requested information as soon as possible;
   2) if consensus on the route of collaboration and the lead organization is missing, call for a meeting of ISO/TC 274/JAG, which should take place within 7 weeks of the end of the JAG consultation.

e) The ISO/TC 274/JAG Secretary shall provide recommendations of ISO/TC 274/JAG to the ISO/TC 274 Committee Manager and the CIE Central Bureau for decision (in the form of resolutions).
Figure A.2 shows a simplified diagram of the NUC procedures.

A.4.3 Collaboration routes

A.4.3.1 Route 1 – Informative relation

One organization is fully entrusted with a specific work item and keeps the other fully informed of all progress through liaison mode.

A.4.3.2 Route 2 – Collaborative relation

One organization takes the lead in the activities, but the work sessions and meetings may receive liaison representatives from the other. These liaison representatives could also make written contributions where considered appropriate during the progress of this work.

Such liaison representatives should have the right to intervene in the debate but have no right to vote. The full flow of information is oriented through this liaison.

Appendix 1 informs in more detail though not complete on how these procedures link with the ISO/IEC Directives Part 1 and the CIE Code of Procedures, respectively.
A.4.3.3 Route 3 – Integrated liaison

Joint Working Groups (JWGs) ensure integrated meetings for handling together the realization of documents on equal terms.

JWGs between technical committees or working groups\(^5\) of the two organizations shall operate in accordance with 1.12.7 of the ISO/IEC Directives, Part 1 including the option to appoint a co-Convenor.

Each organization may always appoint a co-Project Leader.

For documents developed following the integrated liaison, the different approval stages in the development shall be carried out in parallel in both ISO/TC 274 and CIE. The lead committee (ISO/TC 274) or organization (CIE) for the project shall submit drafts for all stages to the other 2 weeks prior to the circulation date.

When the enquiry draft has not fulfilled the approval criteria in one of the organizations, then:

a) the officers of the committees or working groups involved in the JWG may select one of the options given in 2.6.4 c) of the ISO/IEC Directives, Part 1, or

b) in exceptional circumstances, if agreed between ISO/TC 274 working groups and CIE committees involved in the JWG and the offices of the respective CEOs, the project may proceed as a single logo document of the organization in which the enquiry draft was approved. The JWG is automatically disbanded.

If the Final Draft International Standard is not approved in accordance with the conditions in 2.7.3 of the ISO/IEC Directives, Part 1, then:

\[c\) the committees or working groups involved in the JWG may select one of the options given in 2.7.7 of the ISO/IEC Directives, Part 1, or \]

\[d)\) in exceptional circumstances, if agreed between ISO/TC 274 working groups and CIE committees involved in the JWG and the offices of the CEO, the standard may be published as a single logo standard of the organization in which the Final Draft International Standard was approved. The JWG is automatically disbanded.

Documents developed following the integrated route via a JWG between ISO/TC 274 and CIE are published under a joint reference ISO/CIE. The document carries the logo of both organizations (dual logo). The document's foreword is based upon the ISO template with inclusion of information about CIE and possibly its origin of publication.

Projects not according to collaboration route 3 should preferably not be assigned to JWGs. However, it may be beneficial to assign such a project to an existing JWG. In that case, the project may be assigned to an existing JWG, which shall follow for that project the procedures of the organization where that project is registered.

A.4.3.4 Change of collaboration route or document type

If there is a reason during the development of the project to change from one route of collaboration to another, or to change from one document type to another document type, the procedure as for an NUC shall be followed.

Publications resulting from routes 1 or 2 can be further proposed by the lead organization to the other as joint dual logo ISO/CIE document. The proposal shall be received by the CIE Central Bureau or the ISO/TC 274 Secretariat respectively, who shall take the following actions:

\(^5\) TC or WG in ISO/TC 274; TC in CIE
a) Assess in consultation with ISO/TC 274/JAG whether an existing committee or working group is competent for the subject covered by the proposed document from the other organization;

b) Ascertain that there is no evident contradiction with other documents;

c) Distribute the proposed document as an enquiry draft if the publication falls within the scope of an existing committee, or as a Final Draft International Standard if appropriate (e.g. in case of already published standards which should become a joint standard).

d) Involve ISO/TC 274/JAG and appropriate advisors of the relevant committee(s) or working group(s) to deal with the comments received.

If CIE submits a standard developed by CIE for vote to ISO as a Final Draft International Standard, this is not considered a change of collaboration route.

A.4.3.5 Maintenance procedures

The maintenance procedures to be used will be those currently applied in the organization which has the committee with the administrative responsibility.

When a dual logo document associated with ISO/TC 274 or CIE is automatically submitted to systematic review by ISO/CS, the ISO/TC 274 Committee Manager or the CIE General Secretary, depending on which organization has the administrative responsibility of the dual logo document, shall notify the other with a copy to the ISO/TC 274/JAG Secretary.

The systematic review in ISO/TC 274 and CIE shall be performed in parallel. When the review is complete, the secretaries of both organizations shall collect the comments and send them together with the results of the ballot to the ISO/TC 274/JAG Secretary, so that ISO/TC 274/JAG can provide a recommendation to the secretariat having the administrative responsibility for the dual logo document.

A.5 Obligations

The secretariats or persons in charge of the respective committees and groups from ISO/TC 274 and CIE concerned shall cooperate on the implementation of this IG.

Any unresolved issues shall be forwarded to the ISO/TC 274/JAG for further treatment.

References to ISO/IEC Directives or the CIE Code of Procedure and possible consequences for this IG shall be reviewed at the occasion of the review of the business plan of ISO/TC 274\(^6\), preferably once per year, but at least once every 3 years.

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\(^6\) ISO/IEC Directives are revised annually
Appendix 1

INFORMATIVE
ISO/TC 274/JAG
Process flow work items

This flow chart is purely informative and may not be complete. Its purpose is to indicate the interfaces between the processes in ISO/TC 274, ISO/TC 274/JAG and CIE. This figure is not drawn in accordance with any standard on flow charts.
Appendix 2

<table>
<thead>
<tr>
<th>Form</th>
<th>ISO/TC 274/JAG Consultation for NUC</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO/TC 274 — CIE</td>
<td></td>
</tr>
</tbody>
</table>

The JAG consultation is intended for the coordination of work between ISO/TC 274 and CIE. The liaison representatives are encouraged to acquire advice from their committees and in particular from their Experts in ISO/TC 274/JAG.

<table>
<thead>
<tr>
<th>Origin of the proposal for this work item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
</tr>
<tr>
<td>Proposer (ISO/TC 274 P-Member, CIE Division)</td>
</tr>
<tr>
<td>Consultation closure date</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Response</th>
<th>Liaison representative from ISO/TC 274</th>
<th>Liaison representative from CIE</th>
<th>Result of consultation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of return of this completed form</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This work item should be handled by</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed route*</td>
<td>1/2/3 or None</td>
<td>1/2/3 or None</td>
<td></td>
</tr>
<tr>
<td>Is further information with reference to the reviewing criteria of A.4.2.2.1 of the IG is needed?*</td>
<td>Yes/No</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>Request for ISO/TC 274/JAG to meet?*</td>
<td>Yes/No</td>
<td>Yes/No</td>
<td></td>
</tr>
</tbody>
</table>

* delete as needed

Summary of the need for further information, based upon the reviewing criteria (A.4.2.2.1):
Annex 3  Overview of topics/ potential future work items

A. Topics one should work on
- Which could already be used from other topics still under study in ISO/CIE AWI 8995-1:
  - Application of colour metrics for white light in indoor and outdoor lighting
  - Disinfection, cleaning and germicidal purposes by UV-C radiation
  - Horticultural lighting
  - Integrative lighting
  - Lighting for the ageing population
  - Time-modulated lighting — visual aspects
- Daylighting design procedure for indoor visual environment
- Life cycle costs
  - Climate change (ISO/TMB/CCCC)
- SR of ISO 30061 (CIE S 020) Emergency lighting

B. Topics one could work on
- Building information modelling (BIM) — additional project
- Energy performance of lighting in buildings — ISO/CIE 20086 and 52000 family
- Energy performance of lighting in buildings — 52007 family
- Machine readable standards (ISO/TMB/SAG MRS)
- Measuring lighting performance
- Sports lighting

C. Topics that may be integrated with other topics
- Climate change (ISO/TMB/CCCC)
- Gender responsive standards (ISO/IEC JSAG)
- Accessibility (ISO/TMB/SAG)

D. Topics not yet feasible
- Adaptive road lighting
  - Energy performance — road lighting
- Application of colour metrics for white light in indoor and outdoor lighting
- Daylight in lighting
- Disinfection, cleaning and germicidal purposes by UV-C radiation
- Smart farming (ISO/TMB/SAG SF)
  - Horticultural lighting
- Integrative lighting
- Lighting for the ageing population
- Lighting for use with Augmented Reality (AR) devices
- Maintenance factor <of a lighting installation>
- Obtrusive light
- Outdoor workplaces
- Time-modulated lighting — visual aspects

1 See document ISO/TC 274 N 756