Test Project

Module 1.2 – Digital Lighting Design and Optical Performance Simulation

Optoelectronic Technology

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Introduction

Professional project context

The organizer of an international skills competition is seeking professional lighting design proposals for a dedicated competition venue, focusing on the customized design, digital simulation and subsequent installation and application of the venue's lighting system. The venue includes nine competition workstations and a central functional area, providing on-site working space for Competitors and supporting competition organization and work coordination. The client expects the lighting environment to support the actual use of each area, meet the task illuminance and illuminance uniformity requirements specified in this Test Project, and take account of venue functionality, working safety, energy savings, and ease of operation and maintenance, while also considering uses such as competition demonstrations, on-site observation, and photographic and video recording.

Through this commission, the competition organizer requires the design and simulation-based verification of the overall lighting system for the skills competition venue shown in the drawings. The project uses DIALux evo lighting design software for spatial modelling of the venue, luminaire selection, layout design, lighting simulation, parameter optimization and data verification. The client requires more than luminaires that light up in a model or a set of illuminance values: the requirement is for a professional lighting design supported by calculations, with a logical layout, appropriate use of luminaires and electrical load, and consideration of practical installation. Together, the submitted model, simulation data and design report will help the client understand the proposal and determine whether the proposed LED lighting arrangement is suitable for subsequent installation.

Occupational context

As a professional lighting design technician, the Competitor will undertake this lighting design project for the competition venue, independently completing the work from interpreting client requirements, creating the spatial model, and selecting and arranging luminaires, through to lighting calculations, design optimization, verification of results and preparation of deliverables. In doing so, you need to translate drawings, product data and simulation results into clear, credible design deliverables, demonstrating combined capabilities in lighting design, software operation, parameter analysis, engineering judgement and delivery of a design proposal to the client.

This project focuses on the application of lighting design and digital simulation in optoelectronic engineering. Rather than simply creating an indoor model or placing a number of luminaires, this client commission requires you to consider the spatial relationship between the competition workstations and the central functional area, understand the arrangement of workstation, furniture and partitions within the venue, and propose a lighting design suited to its actual use under the given conditions. Adequacy of lighting, uniformity of distribution, regularity of the luminaire layout and ease of installation are all matters that you need to consider together during the design process.

For this work, DIALux evo is the design tool that brings together venue information, luminaire data, the three-dimensional layout and lighting calculations. You need not only to operate the software, but also to interpret the calculation results, determine whether layout adjustments help to meet client requirements, and clearly present the verified final design. Model views explain the spatial arrangement and luminaire layout, calculation data support the evaluation of performance, and the design report communicates the final deliverables to the client.

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This project fully simulates a client commission for lighting design at a skills competition venue, covering requirements interpretation, spatial modelling, luminaire design, simulation-based verification, design optimization and delivery of results. The project is not limited to switching on lights and building a model. It requires digital design to resolve the lighting issues in this scenario and produce a technically sound solution that meets the client's specified requirements and has practical application value, demonstrating professionalism, adherence to established practice and practicality in design work.

The lighting performance values in this Test Project are the client's design requirements for this scenario. The usage context described above does not introduce any additional specialist design tasks, calculation criteria or deliverable documents that are not specified in this project; the specific scope of work and delivery requirements are defined by the clauses below.

Description of project and tasks

Competition time: 90 minutes.

Module 1.2: Digital Lighting Design and Optical Performance Simulation

Project and task description

Using the client's customized requirements in this Test Project, together with the supplied dimensioned venue drawing, floor plan, modelling reference illustrations, workstation models and accompanying IES photometric data for the candidate luminaires, use DIALux evo to complete the digital design, lighting simulation, design optimization and preparation of deliverables for the venue's indoor lighting system. The final deliverables are the DIALux project file and its corresponding PDF lighting design report, enabling the client to understand and verify your design through the model, layout, product data and calculation results.

Work description

The work in this project covers venue modelling, luminaire design, lighting simulation, design optimization, data verification and preparation of outputs. The following describes the content of each activity and its role in the client commission.

1. Spatial modelling of the venue: Using the supplied drawings and dimension annotations, create a full-scale three-dimensional model of the competition venue in DIALux evo, showing the spatial relationships between the competition workstations, central functional area, partitions, workstation and furniture. Set the architectural dimensions and layout in accordance with the drawings, and apply the dimensional and positional accuracy requirements for workstation and ordinary furniture specified in Section Task 1.2.2. This provides a model that represents the client's venue as the basis for subsequent lighting design.
2. Luminaire selection and data import: Select from the supplied candidate luminaires and import the corresponding IES photometric data into the project. Select products suitable for this scenario based on the venue's intended use, the client's specified lighting targets and the luminaire data. Observe the limits on the number of luminaire types and the permitted data sources in Section Task 1.2.3, providing the correct basis for luminaire layout and simulation.

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3. Luminaire layout and quantity: Determine the number, spacing and positions of luminaires according to the arrangement of the competition workstations, central functional area and specified calculation areas. Produce a regular, practical layout at the specified mounting height and aiming direction, coordinating the luminaire arrangement with the venue geometry and considering lighting coverage, uniformity of distribution and practical installation, rather than adding luminaires in a disorganized manner.
4. Lighting simulation and performance checks: Create the four overall calculation planes and configure the calculation conditions in accordance with the task requirements, then run the lighting calculation in DIALux evo. Use the illuminance, illuminance uniformity and distribution diagrams to check the preliminary design's performance in each designated area and compare it with the client's specified performance targets, providing a basis for subsequent adjustments.
5. Design optimization and iteration: Address aspects of the calculation results and layout that need improvement by adjusting luminaire quantity, spacing and positions within the permitted limits, and check the effects of these adjustments by recalculating. While meeting the client's lighting targets, consider appropriate use of luminaires and electrical load, layout balance and installation practicality. The specified model, photometric data or calculation conditions must not be changed to obtain results that merely appear to meet the requirements.
6. Data verification and recording of results: After completing the final calculation, check the illuminance and illuminance uniformity of each of the four overall calculation planes separately and verify them against the client's specified targets. Record and report the final values for each plane, the number and layout of luminaires, and any available information on the total connected load. Ensure that the results used to explain the proposal come from the final saved design.
7. Design documentation and output: Organize the model, luminaire selection, layout, calculation results and explanation of optimization into lighting design deliverables that the client can understand. Save the complete DIALux project file, export a clear PDF report containing relevant information, and check that both files represent the same final design, so that the client can understand the design approach and verify the lighting results.
8. The work description above does not prescribe the sequence in which the Competitor must complete the tasks.

Workstation number convention

Unless otherwise stated, XX represents the two-digit workstation number assigned to the Competitor (e.g. 01, 02). Workstation numbers shown in the reference images are examples only. Wherever a workstation number is required in the programme content or filenames, the Competitor must use their own two-digit workstation number.

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Required drawings, reference illustrations and resources

The following drawings, reference illustrations and accompanying resources form part of this Test Project and constitute the venue and product information provided by the client. During the work, the Competitor must interpret and use them together with the requirements in the main text to create a lighting model that represents the venue shown. Dimensions must be based on the annotated values in the drawings; the placement accuracy requirements for furniture and workstation are specified in Section Task 1.2.2.

Figure 1.2-1 Indoor lighting scenario floor plan

Figure 1.2-2 Indoor lighting scenario dimensioned drawing

Figure 1.2-3 Indoor lighting scenario modelling illustration

Figure 1.2-4 Workstation model A

Figure 1.2-5 Workstation model B

Figure 1.2-6 Illuminance calculation plane 1 illustration

Figure 1.2-7 Illuminance calculation plane 2 illustration

Figure 1.2-8 Illuminance calculation plane 3 illustration

Figure 1.2-9 Illuminance calculation plane 4 illustration

Accompanying resources

The Resources folder issued with this Test Project contains IES photometric data for the candidate luminaires and workstation model resources. The LED resource folder provides several candidate IES files; the Competitor must select luminaires from the supplied data.

Workstation models A and B are distinguished by the filenames in the accompanying resources and by **Figure 1.2-4** and **Figure 1.2-5**. Set the model dimensions as specified in Section Task 1.2.2.

See Section Task 1.2.3 for the limit on the number of luminaire types and the method of verifying photometric data.

Use these materials as one complete project information package: create the space from the floor plan and dimensioned drawing, represent the venue configuration using the modelling illustration and workstation resources, and then use the candidate luminaire data to complete selection, layout and lighting simulation. The final design report must bring together the model, layout and calculation results produced through this work, rather than presenting only isolated visualizations.

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Drawings and modelling references 1

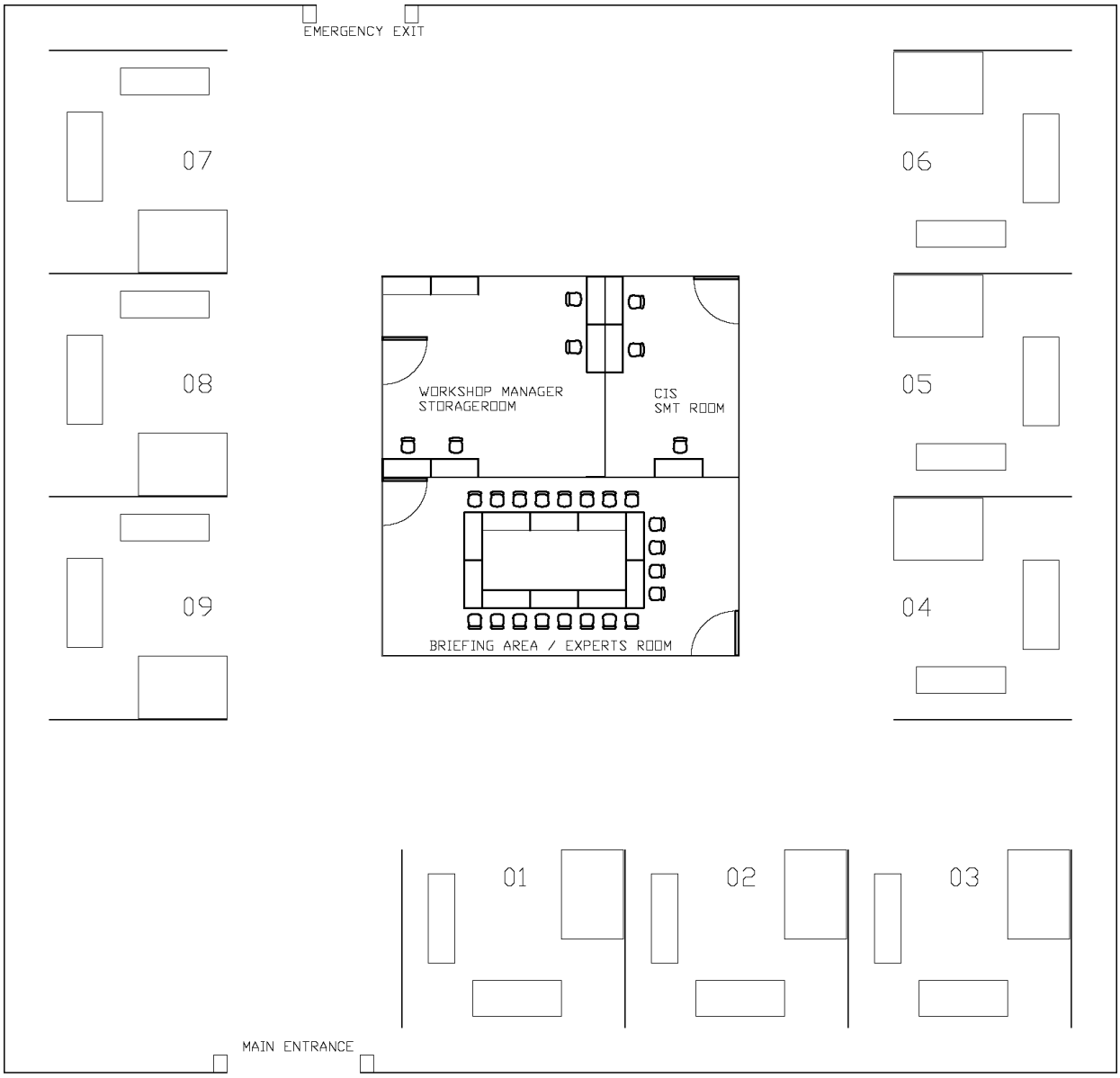


Figure 1.2-1 *Indoor lighting scenario floor plan*

Drawings and modelling references 2

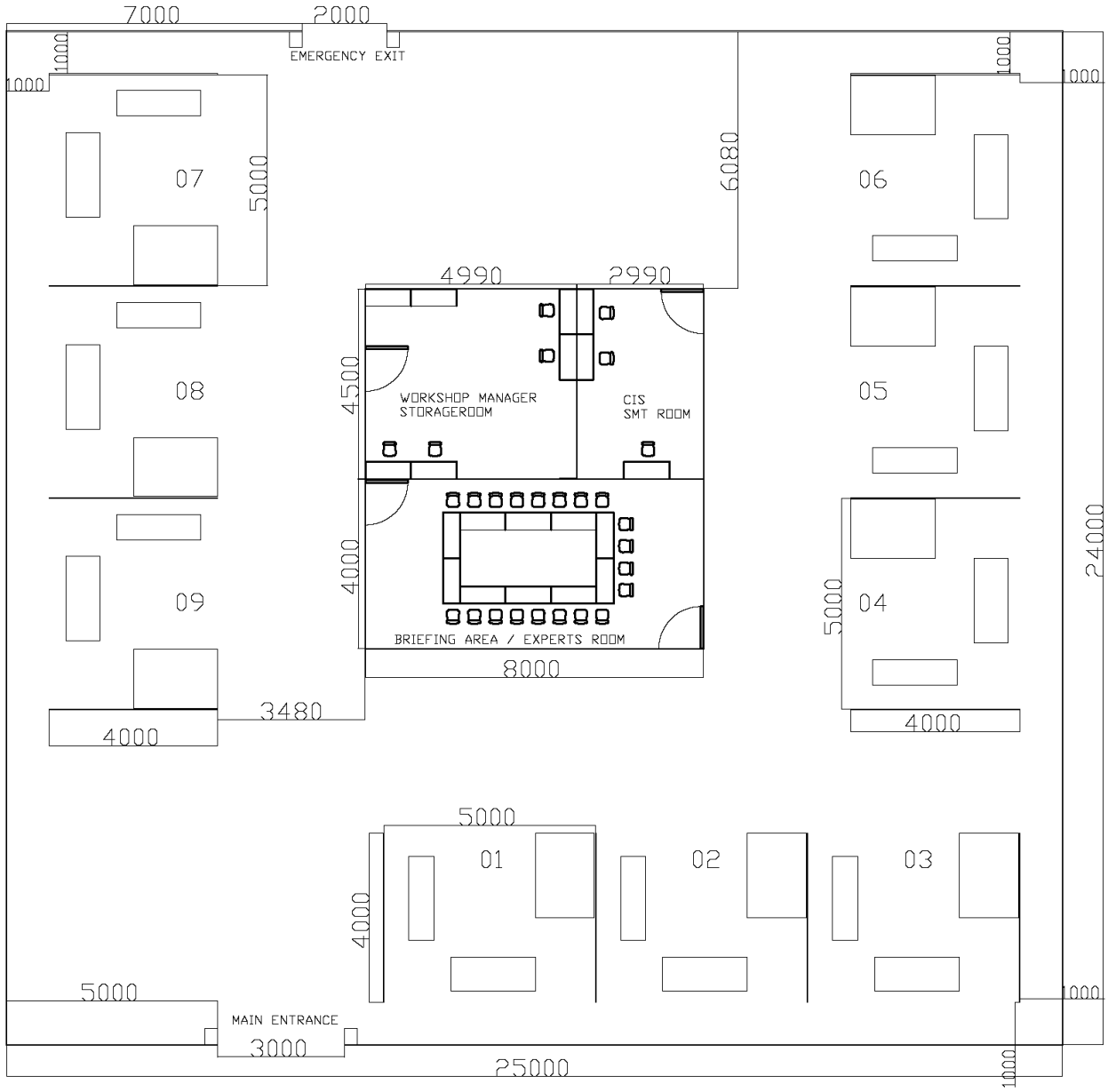


Figure 1.2-2 *Indoor lighting scenario dimensioned drawing*

Units: mm. Interpret the dimension annotations in accordance with Section Task 1.2.2.

Drawings and modelling references 3

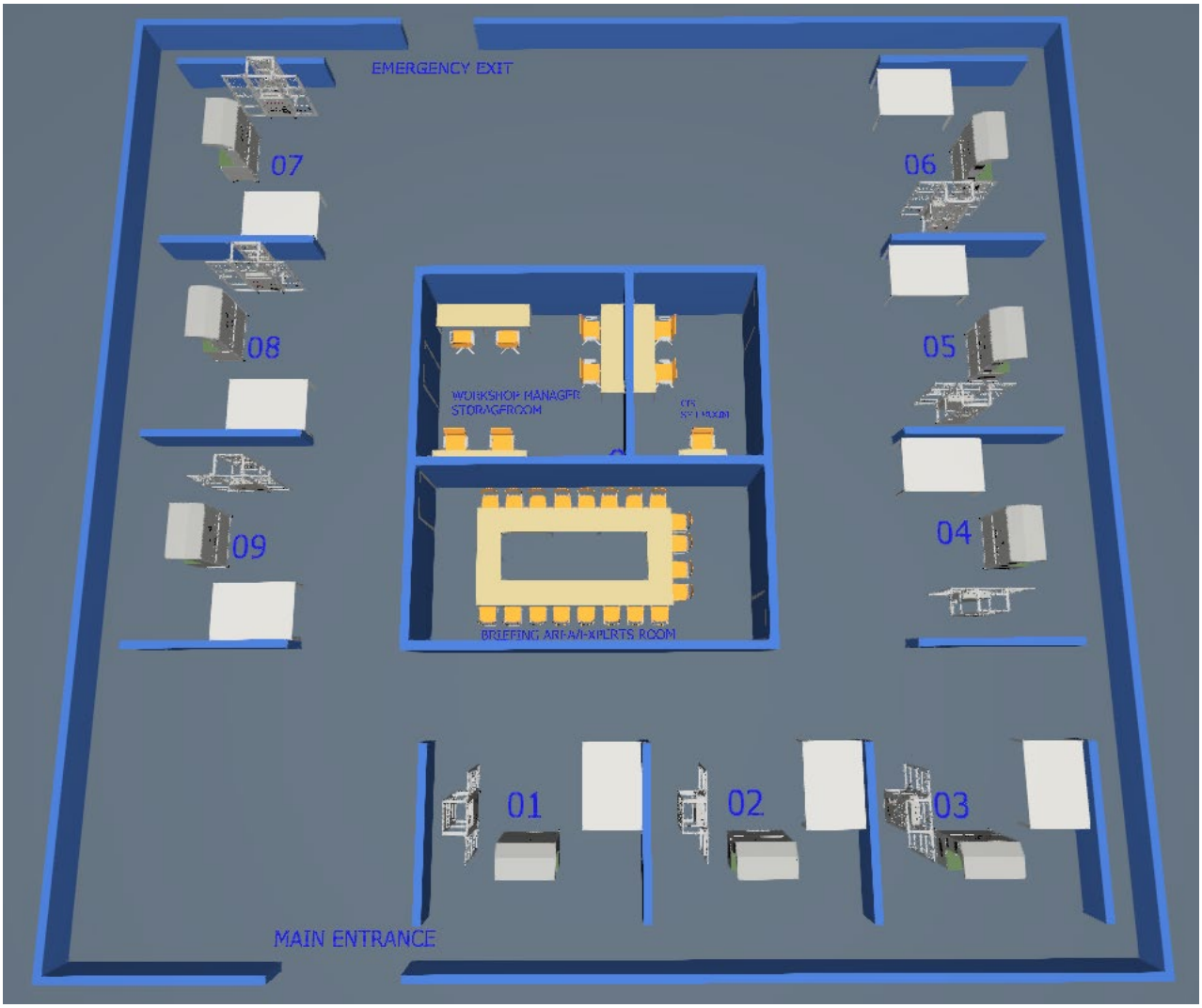


Figure 1.2-3 Indoor lighting scenario modelling illustration

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Drawings and modelling references 4



Figure 1.2-4 Workstation model A

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Drawings and modelling references 5



Figure 1.2-5 Workstation model B

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Drawings and modelling references 6

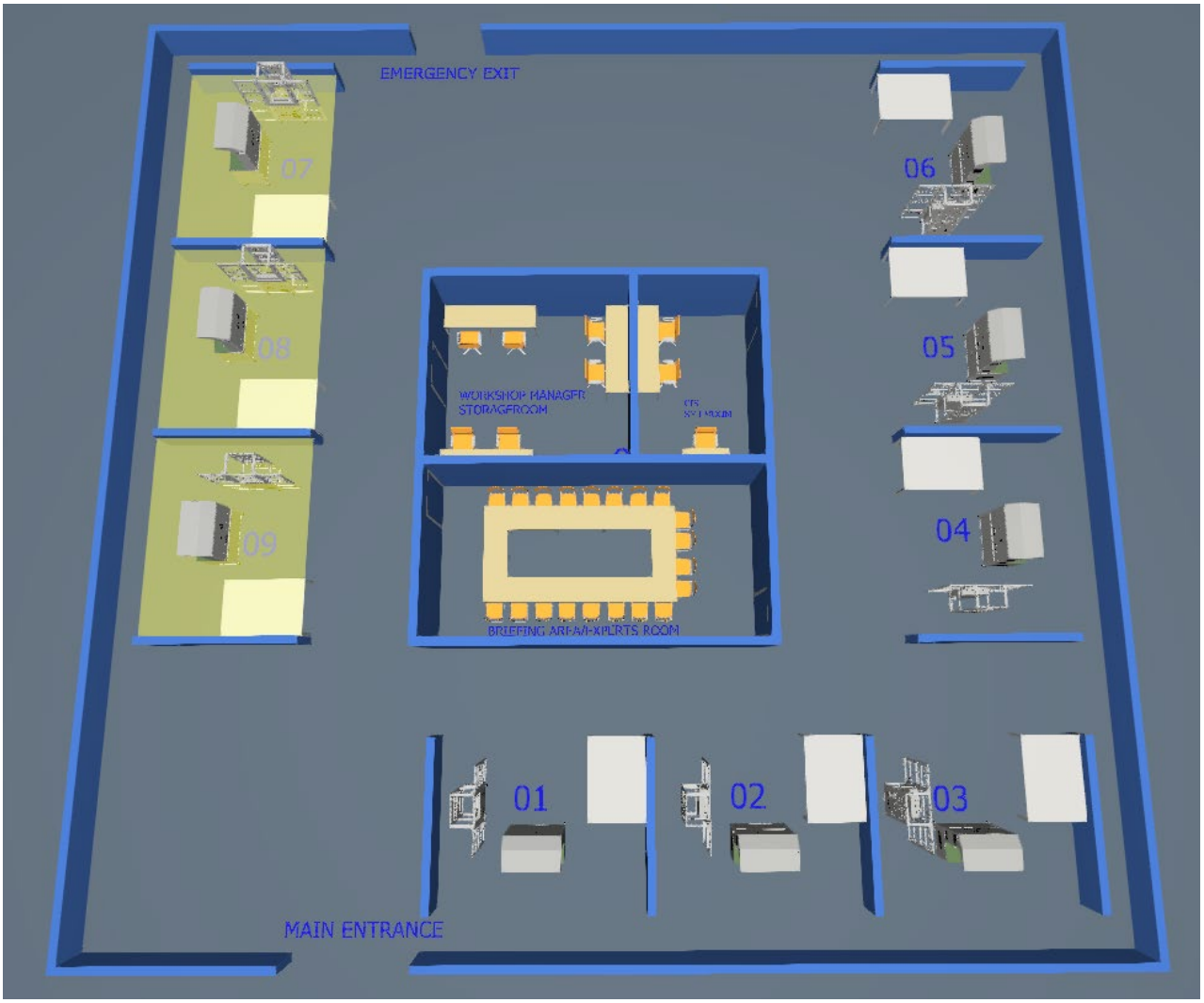


Figure 1.2-6 *Illuminance calculation plane 1 illustration*

Calculation plane 1: covers the designated area of workstations 07, 08 and 09 as one overall calculation plane.

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Drawings and modelling references 7

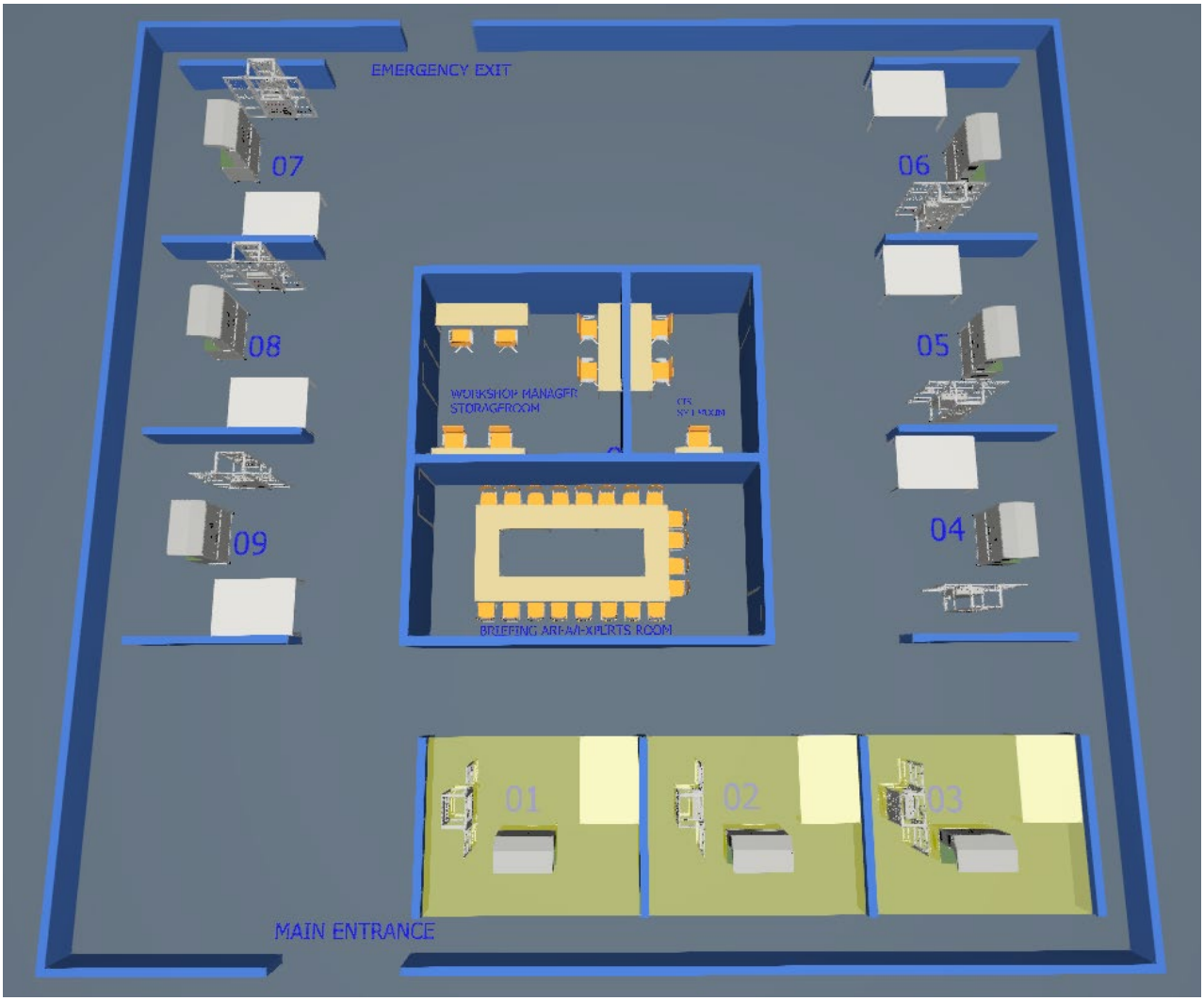


Figure 1.2-7 *Illuminance calculation plane 2 illustration*

Calculation plane 2: covers the designated area of workstations 01, 02 and 03 as one overall calculation plane.

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Drawings and modelling references 8

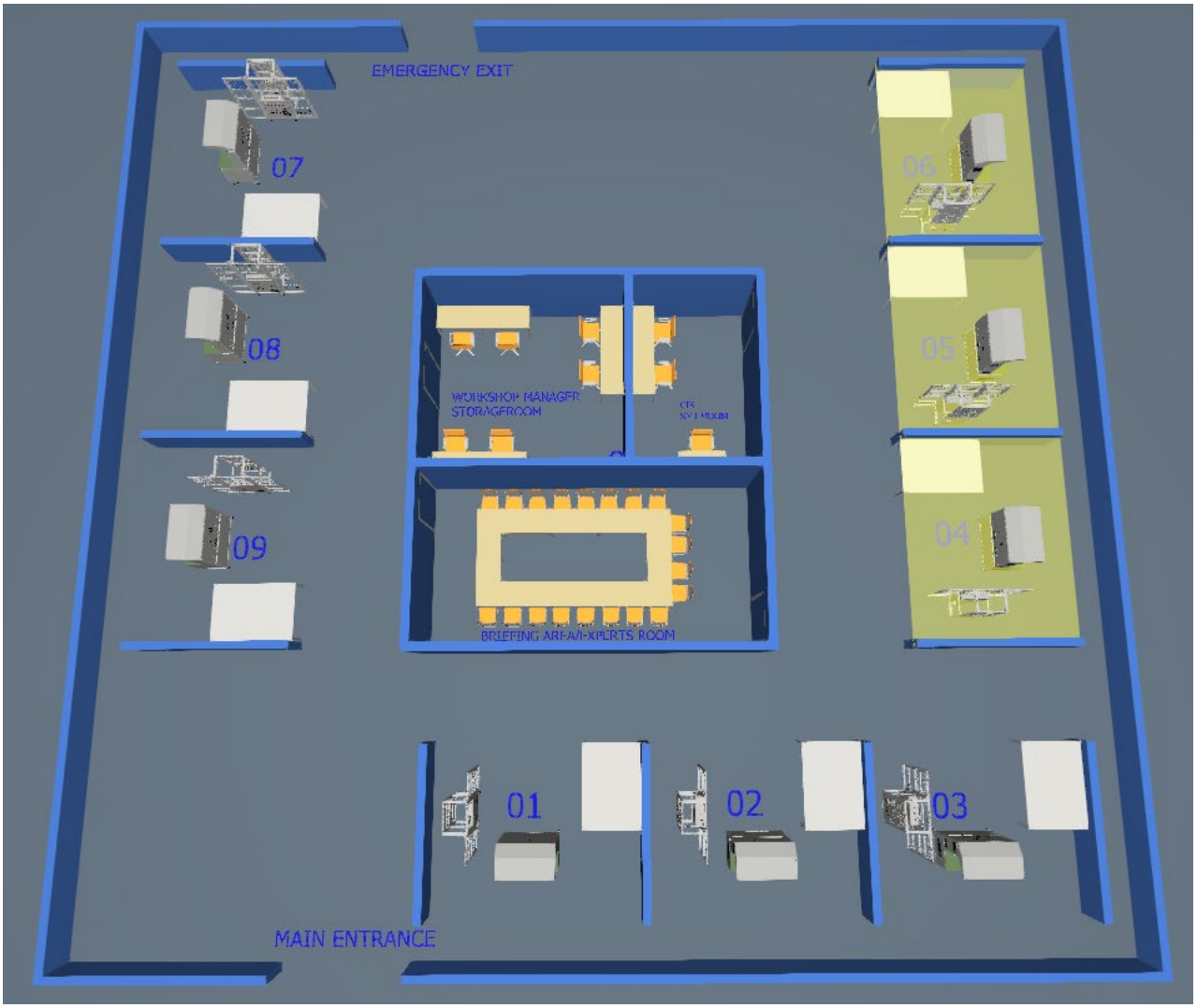


Figure 1.2-8 *Illuminance calculation plane 3 illustration*

Calculation plane 3: covers the designated area of workstations 04, 05 and 06 as one overall calculation plane.

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Drawings and modelling references 9

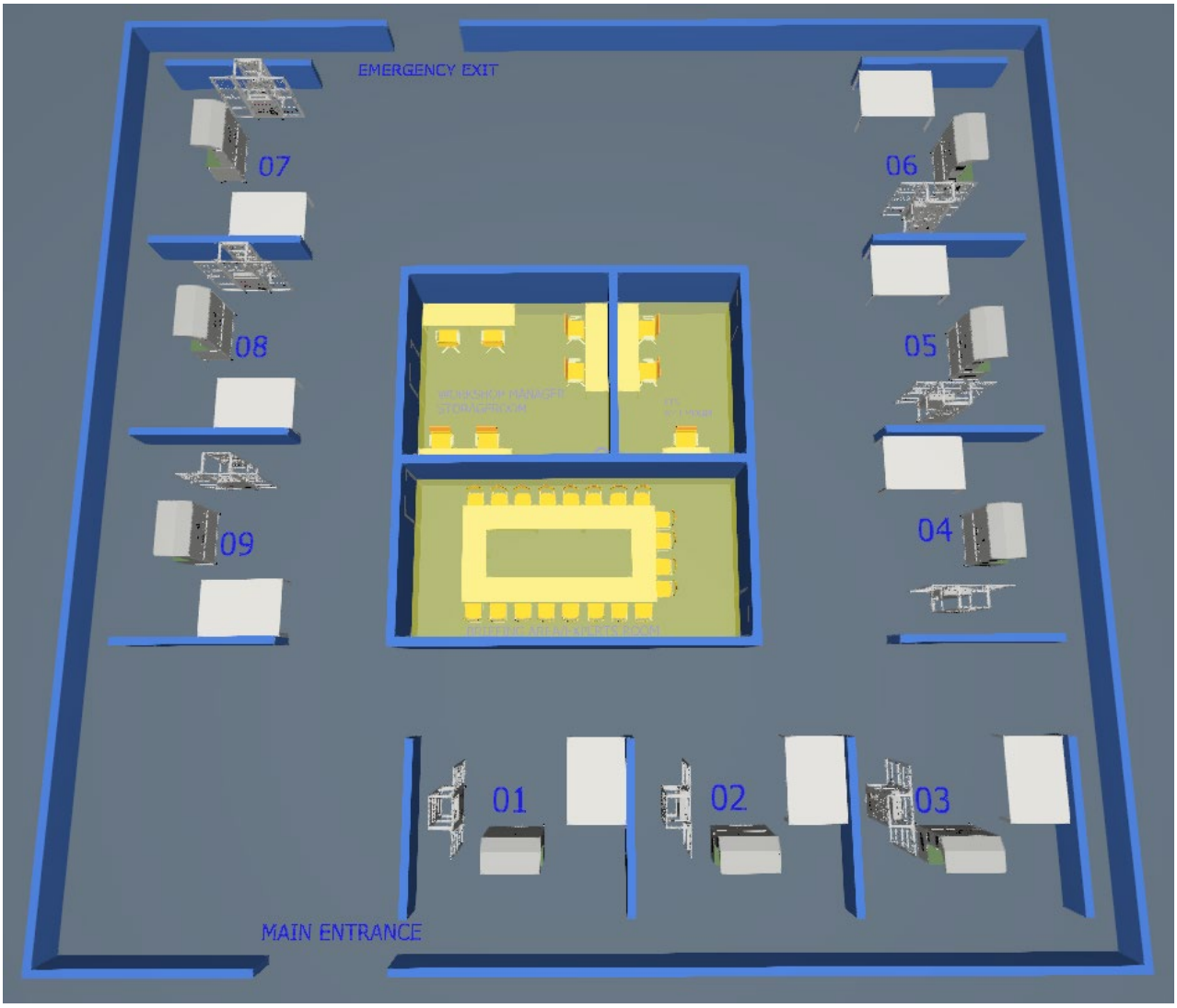


Figure 1.2-9 *Illuminance calculation plane 4 illustration*

Calculation plane 4: covers the designated area of the central functional area as one overall calculation plane; calculations are not to be performed separately for each room.

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Instructions to the Competitor

Project brief from the client

As the lighting design technician for this project, you have been commissioned by the competition organizer to prepare a digital lighting design for the skills competition venue shown in the drawings. The client will use your submitted DIALux model and exported report to understand the lighting layout for the nine competition workstations and the central functional area, and to determine whether the proposed LED lighting design is suitable for installation.

Your design must be practical, technically sound and supported by verifiable calculation results. Completing the task does not mean merely placing luminaires in the model or continually adding luminaires until a high illuminance is achieved. You need to create a spatial model consistent with the drawings and resources, use the supplied photometric data correctly, configure the calculation areas and conditions as specified, and develop a complete design through layout adjustments and verification of results.

At handover to the client, the model, luminaire layout, performance results and design explanation must correspond to one another. The report needs to show the client clearly which luminaires have been selected and in what quantities, how they are arranged, the lighting performance of the specified areas, and the reasons for design optimization. The clauses below define the technical conditions and submission requirements for this commission; you may decide the sequence in which you carry out the design, verification and report preparation.

Technical requirements and conventions

Unless the Skill Management Team issues a different instruction applicable to all Competitors, the interface language of all competition software that supports language settings must be set to English.

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Task 1.2.1 Project setup and file management

Client requirement

The project file and PDF report together constitute the deliverables for this commission: the project file retains the model and calculation settings for review, while the report presents the design and its results. Plan file naming, saving and final output as part of the design work.

Work instructions

1. Open DIALux evo, create a new indoor lighting project, and set the software interface language as required above.
2. Enter and check dimensions in millimetres (mm) or metres (m), as appropriate. Express illuminance results in lux (lx); illuminance uniformity U0 is a dimensionless ratio.
3. Use DIALux_M1_2_XX as the project name, where XX is the Competitor's workstation number. For example, workstation 01 uses DIALux_M1_2_01.
4. Save the project file and final PDF report to the desktop of the competition user account, using the following full paths and filenames.
   C:\Users\Competitor\Desktop\DIALux_M1_2_XX.evo
   C:\Users\Competitor\Desktop\DIALux_M1_2_XX.pdf
5. Both files must be present, readable, correctly named and saved in the specified location. The project file and PDF report must represent the same final model, luminaire layout, calculation settings and calculation results. Missing or corrupted files, incorrect filenames or save locations, and inconsistencies between the final files may affect the corresponding assessment.

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Task 1.2.2 Room modelling requirements

Client requirement

The venue layout supplied by the client forms the basis of this design. The three-dimensional model represents the functional areas and workstation configuration and also provides the spatial basis for the lighting simulation. During modelling, distinguish between explicitly specified dimensions and furniture details that may be represented approximately.

Work instructions

1. Create the three-dimensional indoor model using **Figure 1.2-1** to **Figure 1.2-3** together. The shapes, annotated dimensions and relative layout of the venue, rooms and workstation areas must comply with the drawings. The specified spaces or calculation areas must not be changed without authorization.
2. All dimensions in the dimensioned drawing of the indoor lighting scenario are internal dimensions. The overall internal dimensions of the venue shown are 25 000 mm × 24 000 mm. Wherever dimensions are explicitly annotated, model them to the stated values.
3. Unless otherwise annotated in the drawings, all modelled walls and partitions must be 20 mm thick.
4. All partitions around and between workstations 01–09 must be 1.00 m high; the enclosing walls and internal partition walls of the central functional area must be 2.50 m high. All these heights are measured from finished floor level.
5. The ceiling height of the overall modelled space must be 5.00 m above finished floor level.
6. Use the accompanying workstation model resources to configure workstation models A and B. Both workstation types must have the dimensions specified in the table below. Their placement only needs to correspond approximately to the relationships shown in the floor plan and modelling reference illustrations; precise positioning to coordinates that have not been provided is not required. The specified workstation dimensions must not be changed to adjust the calculation results.

Workstation model	Length × width × height
A	1.4 m × 0.8 m × 1.8 m
B	2.0 m × 0.6 m × 1.8 m

7. Ordinary furniture and decorative, non-architectural objects may be represented using simplified DIALux objects. Their types, arrangement and approximate positions must correspond to the reference illustrations. Exact furniture dimensions will not be assessed, except for objects with dimensions explicitly specified in the drawings or this Test Project. The allowance for approximate dimensions does not apply to workstation models A and B.
8. Furniture and workstation must not be deliberately added, removed, altered or repositioned to avoid actual obstruction of light or artificially improve the lighting calculation results.

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1.2.2 Room modelling requirements (continued)

1. Create the four overall calculation planes listed in the table below. Each number corresponds to one overall calculation surface (Calculation Surface), with one set of calculation results output for each. Separate results for individual workstations or individual rooms in the central functional area must not be averaged to replace the overall result.

Calculation plane	Overall coverage	Reference illustration
1	Designated area of workstations 07, 08 and 09, including the locations of internal partition walls	**Figure 1.2-6**
2	Designated area of workstations 01, 02 and 03, including the locations of internal partition walls	**Figure 1.2-7**
3	Designated area of workstations 04, 05 and 06, including the locations of internal partition walls	**Figure 1.2-8**
4	Designated area of the central functional area, including the locations of internal walls, calculated as a whole	**Figure 1.2-9**

The overall extent of each of the four calculation planes corresponds to its designated area in the illustrations. The presence of partitions or separate rooms within an area does not change the requirement to calculate each numbered plane as a whole.

2. All four calculation planes must be 0.75 m above finished floor level and must remain horizontal. They must not be tilted, moved or scaled, and their specified overall coverage must not be changed to improve the results.
3. Where a real object intersects or physically occupies the specified working plane, the corresponding area actually occupied by that object may be excluded in accordance with DIALux's normal calculation logic. Additional exclusion areas must not be created solely to improve lighting results. This treatment does not permit any change to the overall outer boundary of the specified calculation plane.
4. Unless expressly specified otherwise in the accompanying drawings or official project information, use the following surface reflectances: ceiling 70%, walls 50%, floor 20%. These values must not be modified to manipulate the calculation results.

The specified reflectances must be correctly configured in the submitted DIALux project and can be verified through the project file. Apart from content automatically included by DIALux, a separate reflectance presentation item is not required in the PDF report.

5. Use neutral, realistic material settings for the rooms. Unless explicitly required in the drawings, mirrored surfaces, highly reflective decorative materials or unrealistic colour/reflectance settings must not be used.

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Task 1.2.3 Luminaire data and selection requirements

Client requirement

Several candidate luminaires are provided for this commission. You need to select from the given product range and translate the products' photometric data into a practical arrangement suitable for the venue. Luminaire selection, quantities and mounting arrangements must be consistent with the final calculations and report.

Work instructions

1. Select luminaires from the candidate luminaire data in the accompanying Resources and import the corresponding IES photometric files into DIALux evo. No more than two luminaire types may be used in the entire design.
2. Only the supplied luminaire/product data may be used. Luminaires from other manufacturers' databases and external photometric files must not be used, and the supplied photometric files must not be modified.
3. The report must show the selected luminaire data and quantities, including luminaire names, mounting heights, luminous flux or available output data, and any available electrical power information.
4. The report and/or submitted DIALux project file must provide sufficient information for Experts to verify that the correct accompanying photometric data have been used. Where DIALux displays a different luminaire name because of the product information contained within the IES file, the PDF report is not required to reproduce the original filename verbatim, but it must be possible to confirm the data used.
5. The reference/mounting point height of all luminaires must be 3.50 m above finished floor level, with the luminaires suspended below the 5.00 m-high ceiling. The 3.50 m dimension must not be interpreted as the suspension distance below the ceiling.
6. Unless explicitly required otherwise in the supplied product information or drawings, luminaires must be aimed vertically downwards at the working plane. Luminaires must be located within the indoor space and must not physically overlap walls, opening components or other luminaires.
7. In the scene used for final assessment, all luminaires in the final design must be switched on and operating at 100% output. Dimming factors, luminous flux multipliers, correction factors or other output adjustments must not be used to manipulate the calculation results.
8. The luminaire layout must facilitate practical installation. A regular rectangular grid or another regular layout with a clear and reasonable justification may be used, and the arrangement must be coordinated with the spatial geometry. Luminaires must not be scattered randomly or clustered excessively, their symbols must not overlap, and the layout must not be evidently disorganized.

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Task 1.2.4 Lighting performance targets

Client requirement

The client requires the average illuminance and illuminance uniformity of the four calculation planes to meet the respective requirements in the table below. The results for each plane must correspond to the overall calculation surfaces specified in Section Task 1.2.2.

Technical and quality requirements

Calculation plane	Average illuminance Eavg	Illuminance uniformity U0
1	≥ 500 lx	≥ 0.85
2	≥ 500 lx	≥ 0.85
3	≥ 500 lx	≥ 0.85
4	≥ 500 lx	≥ 0.80

1. In this Test Project, U0 = Emin / Eavg, where Emin is the minimum illuminance on the relevant overall calculation plane and Eavg is the average illuminance on that plane. Emax is the maximum illuminance on the relevant plane.
2. Equivalent standard notation used by DIALux for average illuminance, such as Ē, is acceptable. The software output does not have to be rewritten as Eavg.
3. Average illuminance and illuminance uniformity must not be below the specified values. Uniformity above the minimum requirement does not automatically indicate a better design where it depends on unnecessary over-lighting or an excessive number of luminaires.
4. Use a maintenance factor of 0.80 throughout.
5. Record and report Eavg, Emin, Emax and U0 separately for each of the four calculation planes, and report the final luminaire quantity and layout. Where valid electrical power information is available in the accompanying product data, report the total connected load of the final design (the total electrical power of the installed luminaires).
6. The design must make appropriate use of luminaires and connected load, balancing the performance targets with a practical, visually balanced layout and avoiding unnecessary over-lighting. Higher illuminance or uniformity alone does not automatically mean that the overall design is better. This section does not prescribe the sequence in which the activities must be completed.
7. Values used for assessment must come from the final DIALux calculation results or report. Colours in illuminance distribution diagrams, the visual appearance of screenshots or manual estimates must not be used in place of the numerical values output by the software.

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Task 1.2.5 Calculation settings and optimization workflow

Client requirement

Lighting simulation is used to verify the design, while design optimization uses the results to improve it. In this commission, you may adjust the luminaire layout in response to performance in each calculation area, but the specified venue, product data and calculation conditions must always be retained so that the optimized results can be reviewed on a consistent basis.

Work instructions

1. Before running the calculation, check the extent, position, horizontal orientation and 0.75 m height of all four overall calculation planes and confirm that they comply with the project requirements.
2. Use a regular calculation grid for final assessment. The spacing between adjacent calculation points must not exceed 1.00 m in either the X or Y direction.
3. The distribution of calculation points must not be manipulated, low-illuminance points must not be selectively excluded, and the geometry of calculation objects must not be changed to artificially increase Eavg, Emin, Emax or U0. The PDF report and submitted project file must use the same final basis of calculation. Treat areas intersected by actual objects in accordance with Section Task 1.2.2.
4. Check and record the factors used in the calculation, applying the maintenance factor of 0.80 specified in Section Task 1.2.4.
5. Final assessment is based on one final artificial-lighting scene: all luminaires in the final design must be switched on and operating at 100% output. Daylight contributions through windows or other openings must not be included in the assessment results.
6. Optimize the design by adjusting luminaire quantity, spacing and positions, while complying with the requirements for luminaire selection, mounting height, aiming direction and layout. The specified room dimensions, calculation areas, heights, reflectances, factors, photometric data or luminaire output must not be modified to force the results to meet the requirements.
7. After the last design change that affects the lighting calculation, run the final calculation again, then save the project and export the report. The PDF report must reflect the final saved DIALux project.
8. Unresolved calculation errors or warnings that would invalidate the assessment results must not remain. Informational messages or warnings that do not affect calculation validity may remain.

Task 1.2.6 Visual comfort, practical installation and design judgement

Client requirement

The client is concerned not only with the values in the report, but also with whether the luminaire layout is suitable for the venue’s actual use. Professional judgement involves considering the lighting targets, luminaire quantity, available connected-load information, installation practicality and visual balance together, rather than simply maximizing a single parameter.

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Technical and quality requirements

The design should consider visual comfort and direct glare. The luminaire layout must suit the client's intended use of the space and take account of installation feasibility and visual balance.

Optimize the layout using the supplied luminaires under the specified conditions, avoiding unnecessary locally excessive brightness, dark corners and evidently non-uniform distribution. Do not add excessive numbers of luminaires solely to increase a particular value.

Task 1.2.7 Required report output

Client requirement

The lighting design report is the main document for communicating the final proposal to the client. It must bring together the venue model, luminaire selection, layout approach and calculation results, enabling the client to understand the design and Experts to review the relevant evidence. No additional deliverable documents beyond those required in this section need to be prepared.

Work instructions

Export a PDF lighting design report from DIALux evo. The report must be clear and readable, enabling the client and Experts to understand and verify the final design.

1. Project name and the Competitor's workstation number.
2. A venue/model overview to confirm that the correct scenario has been modelled.
3. A floor plan or layout drawing showing the final luminaire positions.
4. A three-dimensional model view that clearly shows the space, furniture/workstation and luminaire layout. Any three-dimensional model view that fulfils these presentation purposes is acceptable; ray-traced rendering is not required. A two-dimensional floor plan alone cannot replace the three-dimensional view.
5. A schedule or list of the selected luminaires, showing luminaire data, the quantity of each luminaire type and the final total quantity, together with the required product information specified in Section Task 1.2.3.
6. Information on the four calculation planes, including their correspondence to planes 1–4 and the working plane height of 0.75 m. The report and/or submitted project file must support verification of the final calculation settings.
7. An illuminance calculation results table for the four overall calculation planes, showing Eavg, Emin, Emax and U0 separately for each plane. Equivalent DIALux notation is acceptable.
8. Evidence of illuminance distribution covering all four designated calculation planes, using false-colour diagrams, isolux diagrams or numerical distribution diagrams. It is not necessary to provide all three formats, but the material provided must show the illuminance distribution in each designated area.
9. A brief design summary explaining the final luminaire quantity, layout approach, achievement of targets, reasons for optimization, and appropriate use of luminaires/electrical load. Where valid electrical power data are available, report the total connected load of the final design.

Export the report after completing the final calculation. Screenshots submitted on their own cannot replace the required DIALux PDF report. Necessary screenshots may be included as supplementary illustrations in the report or provided in accordance with requirements applied uniformly by the Expert team.

The report must not contain unrelated projects, alternative layouts that have not been adopted, or manufacturer information unrelated to the selected luminaires.

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1.2.8 Final submission checklist

Client handover

Before submission, check the design files as you would for a formal client handover: confirm that they are complete, their content is clear, and the model and report reflect the same final design. The checklist below is used to verify the deliverables already specified in the main text.

Submission checks

1. Files: the project file and PDF report are saved as C:\Users\Competitor\Desktop\DIALux_M1_2_XX.evo and C:\Users\Competitor\Desktop\DIALux_M1_2_XX.pdf respectively, are readable, and have the correct workstation number.
2. Consistency: the project file and PDF report represent the same final model, luminaire layout, calculation settings and calculation results.
3. Model: the venue, partitions, central functional area, workstation and furniture are modelled in accordance with the drawings and Section Task 1.2.2; the dimensions of workstation A and B comply with the requirements.
4. Calculation planes: each of the four designated areas is created as one overall calculation plane, set horizontally at 0.75 m above finished floor level.
5. Materials and factors: ceiling/wall/floor reflectances of 70%/50%/20%, a maintenance factor of 0.80 are set as specified.
6. Grid: the spacing between adjacent points in the regular calculation grid does not exceed 1.00 m in either the X or Y direction.
7. Luminaires and scene: only the accompanying data are used, with no more than two luminaire types; the reference/mounting point height is 3.50 m. The final scene includes only artificial-lighting contributions, with all luminaires in the design switched on and operating at 100% output.
8. Performance: Eavg reaches 500 lx on all four calculation planes; U0 reaches 0.85 on planes 1, 2 and 3, and U0 reaches 0.80 on plane 4.
9. Report: includes the required model overview, layout drawing, three-dimensional view, luminaire list, calculation plane information, four sets of results, illuminance distribution evidence and design summary.
10. Verifiability: the specified reflectances and the photometric data used can be verified in the report and/or project, with evidence provided as required by the respective clauses; all required pages and values are clear and readable.

Required deliverables for Module 1.2

Specified save directory: C:\Users\Competitor\Desktop

Deliverable	Filename/format	Purpose in assessment
DIALux project file	DIALux_M1_2_XX.evo	Verification of the model, luminaire data, layout, calculation settings and final results.
Lighting design report	DIALux_M1_2_XX.pdf	Verification of design presentation, luminaire data, calculation results, illuminance distribution and design summary.

Table 1.2-1 Required deliverables for Module 1.2

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Other

Summary of technical requirements

Item	Requirement
Competition duration	90 minutes
Software and interface	DIALux evo; software interface set to English in accordance with the uniform requirements
Drawings and model	In accordance with **Figure 1.2-1** to **Figure 1.2-3**; annotated dimensions are internal dimensions
Overall internal venue dimensions	25 000 mm × 24 000 mm
Wall and partition thickness	All 20 mm unless otherwise annotated
Specified wall/partition heights	Partitions at workstations 01–09: 1.00 m; central functional area walls: 2.50 m; see Section 1.2.2 for details
Overall ceiling height	5.00 m above finished floor level
Workstation model A	Length × width × height: 1.4 m × 0.8 m × 1.8 m; approximate position as shown in the reference illustrations
Workstation model B	Length × width × height: 2.0 m × 0.6 m × 1.8 m; approximate position as shown in the reference illustrations
Calculation surfaces	Four overall calculation planes, with coverage corresponding to **Figure 1.2-6** to **Figure 1.2-9**; results must not be averaged from individual workstations or rooms
Calculation plane height	0.75 m above finished floor level, horizontal

Table 1.2-2 Summary of technical requirements

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Summary of technical requirements (continued)

Item	Requirement
Reflectances	Ceiling 70%, walls 50%, floor 20%; verified in accordance with Section Task 1.2.2
Maintenance factor	maintenance factor = 0.80
Calculation grid	Regular grid; spacing between adjacent calculation points in both X and Y directions ≤ 1.00 m
Luminaire data and types	Only the accompanying candidate IES/product data; no more than two luminaire types in the entire design
Luminaire installation	Reference/mounting point 3.50 m above finished floor level; suspended below the 5.00 m ceiling; aiming direction in accordance with Section Task 1.2.3
Final assessment scene	One final artificial-lighting scene; all luminaires in the design switched on and operating at 100% output; no daylight contribution
Average illuminance	Eavg ≥ 500 lx on all four calculation planes
Illuminance uniformity	Planes 1, 2 and 3: U0 ≥ 0.85; plane 4: U0 ≥ 0.80; U0 = Emin / Eavg
Optimization considerations	Performance targets, luminaire quantity, available total connected-load information, layout and installation practicality; no prescribed task sequence
Report content	Model overview, layout drawing, three-dimensional view, luminaire list, information on the four calculation planes, four sets of Eavg/Emin/Emax/U0 results, illuminance distribution and design summary
Evidence verification	Photometric data identifiable in the report and/or project; reflectances need not be listed separately in the PDF; equivalent DIALux notation for average illuminance is accepted

***Table 1.2-2** Summary of technical requirements (Continued)*

This table summarizes the requirements in the main text and does not replace the detailed provisions in each clause concerning the model, calculations and submitted evidence.

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