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Press release

A uniform data format for the lighting industry: the Global Lighting Data Format

DIAL and RELUX are jointly developing a new data format for luminaires and sensors called the Global Lighting Data Format (GLDF). This will be used in the companies' two lighting planning programs, DIALux and RELUX, among other things. GLDF is an open and free format that can be deployed throughout the lighting industry and meets the latest requirements for BIM processes. Manufacturers, planners and software producers will all benefit from this new format.

Motivation and starting point

Up until now, manufacturers have been faced with a situation where users request product information in different formats for their specific individual purposes. Planners and designers work with a selection of programs for the individual use cases, and product data is expected to be available for all these applications – and it must naturally be uniform product data too. Software manufacturers require comprehensive, up-to-date product information. And this data has to contain all the information required for the purpose in question.
The Global Lighting Data Format (GLDF) has advantages for all the parties involved. Manufacturers only have to maintain and supply a single format, and all the processes that use a manufacturer's data can then retrieve the information they require from the GLDF. Planners will find all the information on a product in the GLDF, and the file can be used by all the different programs and applications. The information contained in the file will always be identical, with no deviations due to different data statuses. Software manufacturers will have excellent information at their disposal for their (planning) programs, and product manufacturers will be motivated to maintain the information and keep it up to date, since they no longer have to compile a new format for each intended use.

Current status of electronic documentation for luminaires

Different luminaire descriptions are currently available for different purposes.
Standard photometric formats such as Eulumdat, LM63, TM-14 and UNI 11733-2019 exist for generating technical data sheets or calculating lighting systems. These formats document the physical properties of luminaires and lamps. Measured properties are depicted and can be interpreted using formulas and standardised application rules.
These formats contain virtually none of the additional information required for a complete BIM process, such as the system design, its commercial handling and facility management.
When it comes to the information required by the lighting trade, the ETIM format has become established in Germany, as well as in a number of other countries. This format is designed to permit the exchange of data between manufacturers and the trade and it summarises product descriptions. The ETIM format cannot be used to conduct lighting planning.
State-of-the-art data formats that are used in CAD and lighting planning programs include ULD (DIALux), ROLF (RELUX), RFA (Revit) and IFC (OPEN BIM). These formats unite different requirements. In the case of the lighting planning programs, light is calculated and the maximum possible product information provided for selection and ordering. The RFA and IFC data formats, by contrast, endeavour to depict the product in the CAD and BIM process without making sufficient allowance for the lighting engineering.

Current status of the new Global Lighting Data Format (GLDF)

The new Global Lighting Data Format (GLDF) is being developed to fully depict luminaires and presence or motion sensors for all applications. Preliminary work from different committees, including from the BIM working group of the German Electrical and Electronic Manufacturers' Association (ZVEI), has been channelled into the format. The GLDF naturally includes photometric and spectral information, together with geometric, electrotechnical, commercial and maintenance data. The characteristics are described in CEN TS 17623, "BIM Properties for lighting - Luminaires and sensing devices". A GLDF can accompany the project from the initial design phase right through to the product recycling stage, in precisely the manner required by BIM.
DIAL and RELUX have compiled a data structure that can map all the above parameters and enable this data to be exchanged between applications and stakeholders. The format and the associated documentation are being made available free of charge to ensure that largest possible number of users can be reached.
The format will continue to be curated by the participating companies in future and will be further developed in line with requirements.
It is planned to release the documentation in 2021. A beta phase of the format is being launched in the first half of 2021, following which the software manufacturers (lighting planning, CAD, PIM...) and luminaire manufacturers must implement and offer this format in their systems.

Composition and structure

The GLDF has an XML structure (Extensible Markup Language). This is eminently suited to the depiction of hierarchically structured data. Further advantages include its readability for humans and machines, its platform independence and the fact that it is very widely distributed.
The GLDF is a container format in which data providers can place all their contents. These include texts, images, light distribution curves (LDC), spectra and 3D models, etc. A product can also contain a range of supplementary information. Hence, a luminaire can be described as a cuboid with its length, width and height, and can additionally deliver a detailed 3D model. The application reading it can then decide whether to depict a simple or a complex model. Products can be either simple or complex in line with reality. It is just as possible to depict a simple recessed luminaire as to portray a complex lighting system with a large number of individually-dimmable light beams that change colour to provide human-centric lighting. The system can also be equipped with a motion sensor and an emergency lighting unit.
The structure is defined in such a way that both the individual elements and the entire contents can be signed. It is then possible to see whether the content has been changed. This gives the manufacturer or the supplier of the data and also the planners a high level of security when using GLDF files. If elements have been changed, such as the power consumption, the LDC or the designation of the manufacturer, this can be detected immediately by checking the signature.
An XML schema definition (XSD) is also being provided together with the documentation. Software developers can use this to readily implement the GLDF interface in a PIM (Product Information Management) system. Both the structure and the data types are defined in the XSD.
It is up to the manufacturers of individual software programs to determine which data their respective programs will retrieve from the available range of data. A program can thus link the scope of the read-in information to licensing by the end user (user) or to the licensing of the data provider (manufacturer). A combination of the two is also possible.
The GLDF format can depict the geometry of a product in three ways:

- As a simple geometry, cuboid or cylinder, specifying the length, height, width and diameter (as part of the generic model)
- As a generic 3D model, where an archetype is described and the associated dimensions are defined (e.g. a freestanding luminaire with the dimensions of the base, pole and luminaire head)

- As a realistic 3D model with geometric, photometric and mechanical information in OBJ format. Textures, any desired rotation angles and multiple light beams can be defined here. “LD3” model.

Further information

More information on the Global Lighting Data Format will be available shortly on the DIAL and RELUX websites. The www.GLDF.io website not only gives a description of the format but also provides tools, sample files and the opportunity to submit suggestions and comments. This site is maintained jointly by DIAL and RELUX.