DIAL

Standardized data format for lighting design – Structure and Features

Friedrich Wilhelm Bremecker

Member of the Board

DIAL GmbH

www.dialux.com

Standardized data format for lighting design

Motivation

Cooperation between two software manufacturers

→ Competence

   → Long term experience in the challenges of precise product data definition
   → Luminaire data is complex
   → Physical correct data is necessary
   → Lighting design is integral part of architecture and electrical planning

→ Market relevance

   → Unparalleled market position in the industry

→ Win-Win-Win Situation

   → Advantages for planners, industry and software manufacturers

GLDF
Global Lighting Data Format

Why a new data format?

→ ## For better software

- → Planning software needs good data
- → Correct information is the foundation

→ ## For increased benefits for the planner

- → Comprehensive and up-to-date product information
- → Everything in one place

→ ## For less effort for the manufacturer

- → Reduction of data maintenance effort
- → Minimization of errors

Standardized data format for lighting design

Current situation

Historical Data Formats (Photometry)

→ Eulumdat (LDT)
Axel Stockmar

→ IES LM-63 (IES)
Illuminating Engineering Society of
North America

→ Various others
CIBSE, CEN, CIE…

→ Objective: Exchange of
measurement data using
punch cards or floppy disks.

Problem: Inadequate
technical description, no BIM
or commercial information

Modern Data format (Products)

→ ULD   (DIALux)

→ ROLF (RELUX)

→ IFC   (OpenBIM, Building Smart)

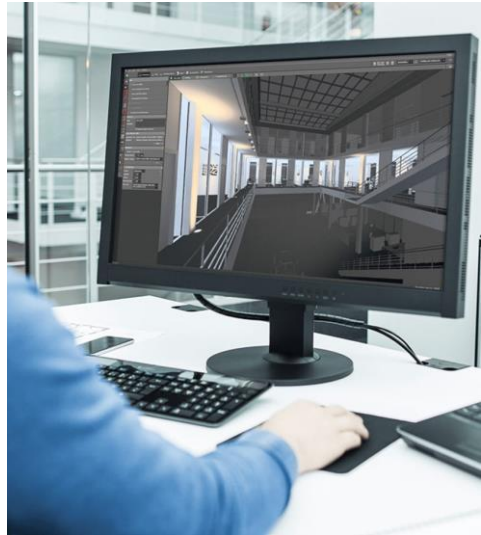→ RFA   (Revit family file)

→ ETIM (Retail/Wholesale)

Objective:
Comprehensive technical
description of products and data
transfer to catalogues.

Problem:
Insufficient for BIM processes or
proprietary and incompatible
formats
No comprehensive format.

Future format (BIM)

→ Among other things, the new uniform

# Global Lighting Data Format GLDF
www.GLDF.io

→ Photometrically and radiometrically complete

→ Mapping of all necessary commercial data

→ Mapping of all data required in the BIM process

→ Open format that can be used by everyone

→ Freely available

→ Curated format, future-proof

Current state of development

→ International stakeholders have analysed and identified necessary data (industry, planners, software producers).

→ DIAL and RELUX mutually design a data structure to exchange this information

→ DIAL and RELUX make the format freely available

→ Industry (manufacturers and software industry) can now create the interfaces and offer data.
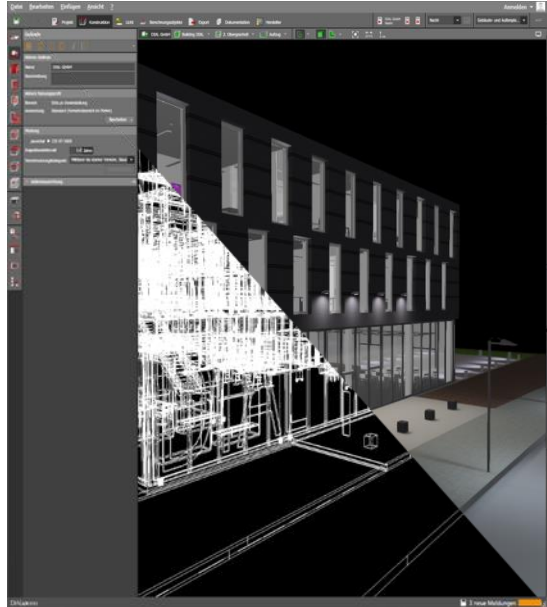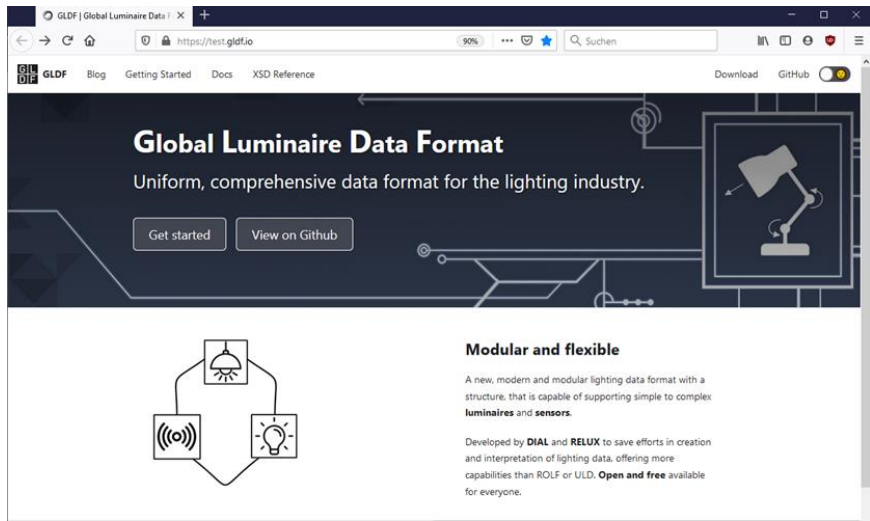
Standardized data format for lighting design
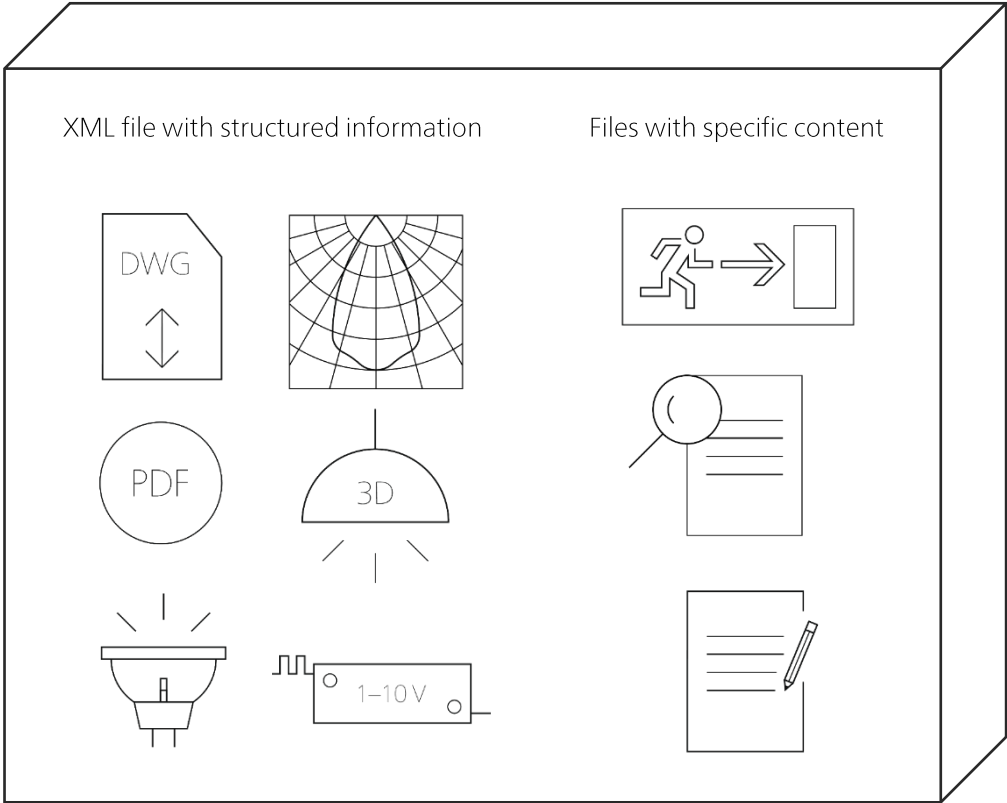
Unification

Current state of development

→ The industry maintains and updates parameter lists
   (ZVEI, CEN, IESNA, ISO…).

→ The data format is created and curated by DIAL and RELUX
   → Information, tools and documentation is provided
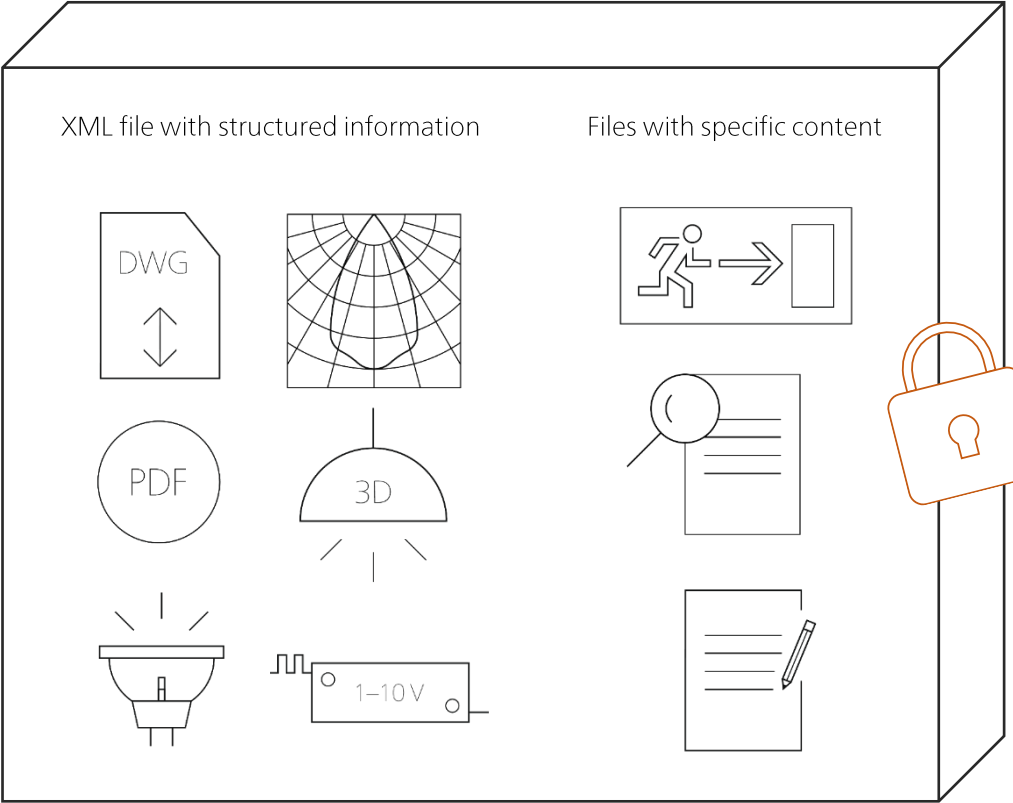   → Interested parties can submit suggestions for improvement

Standardized data format for lighting design

Design and structure

Container format, Global Lighting Data Format *.GLDF

XML file with structured information

Files with specific content

Container format, Global Lighting Data Format *.GLDF

XML file with structured information

Files with specific content

DWG

PDF

3D

1–10 V

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Possibilities of mapping

Format description

→ XML (Extensible Markup Language)
  → Platform-independent
  → Structured information
  → Readable by man and machine
  → Validatable
  → Variants can be mapped
  → Extendable
  → Complementable
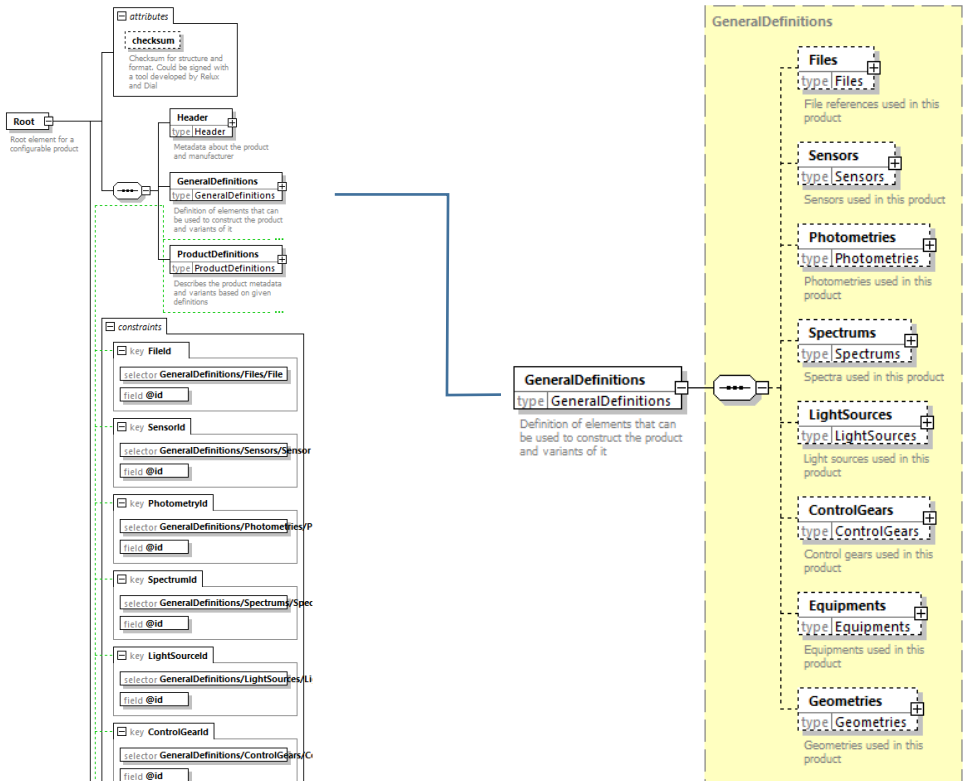 → Easy to implement

→ XSD (XML Schema Definition)
  → Provided together with documentation
  → Facilitates the implementation of interfaces
  → Defines the structure of the XML and the data types
  → With the XSD I can validate the XML i.e. I can check if the generated XML file is valid when I create it
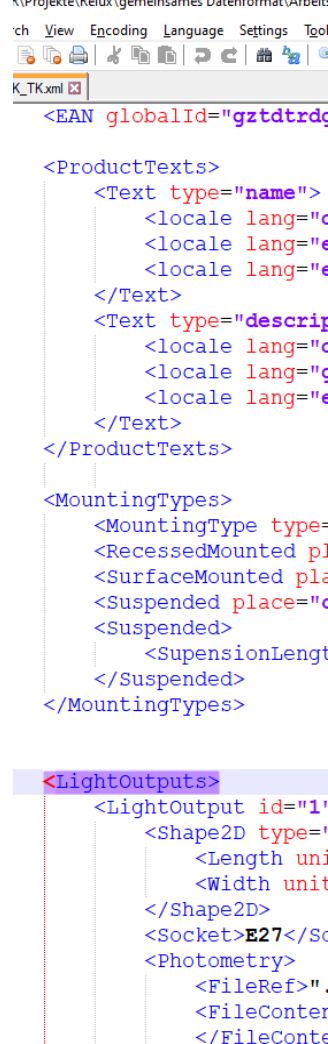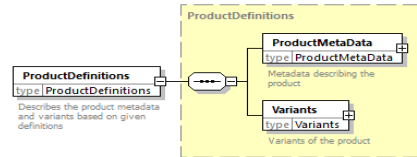
XSD describes XML structure
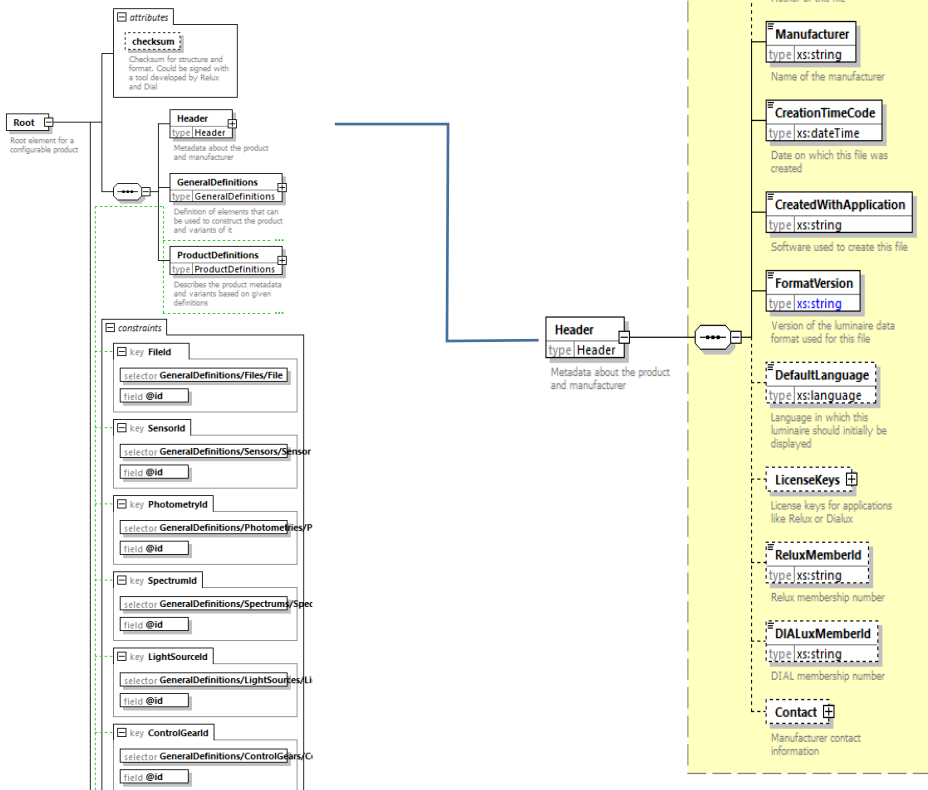
XSD describes XML structure

Product presentation

Split in two parts:

→ Global properties

  → Properties that apply to all
    variations, e.g. item name or family.

→ Properties of 1-n variations

  → Properties that provide the product
    with different possibilities. e.g. light
    colour, beam angle, driver

Content

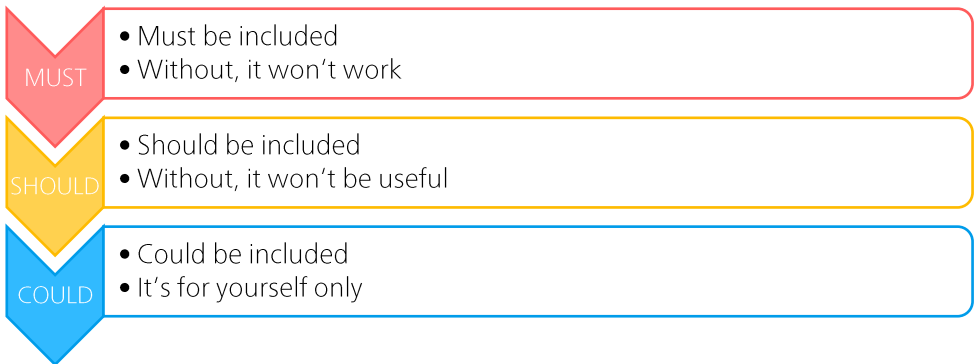→ ## Mandatory data elements

    → The content of an Eulumdat file (LDT) would suffice, but not an IES (missing geometry)

→ ## Meaningful data elements

    → All contents of the BIM parameter list (and others) are planned for 3D models

→ ## User defined data elements

    → Each user may add further elements that are found necessary

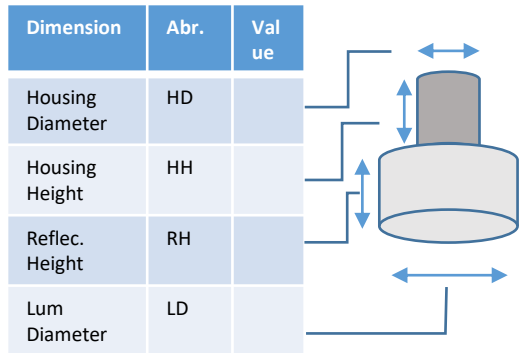| MUST	• Must be included • Without, it won't work
SHOULD	• Should be included • Without, it won't be useful
COULD	• Could be included • It's for yourself only

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Standardized data format for
lighting design - Geometry

Representation of the geometry

→   No geometry data (L,W,H)

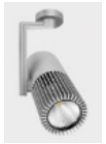→   Parametric geometry
    (Type + parameter)

Dimension	Abr.	Value
Housing Diameter	HD	
Housing Height	HH	
Reflec. Height	RH	
Lum Diameter	LD	

→   Realistic 3D geometry (L3D)
    successor to M3D and M4D
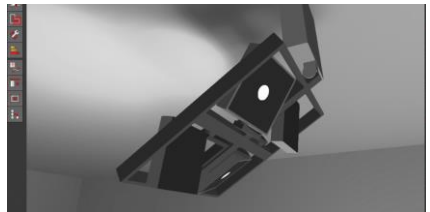
Parametric geometry

→ Approx. 50 basic types

→ Indoor, outdoor, ceiling, wall, spot,
   bollard, pendant, recessed, surface-
   mounted, round, angular,...

→ Variable parameters define the
   geometry

→ Type + parameter no CAD model
   necessary, only PIM

→ Contain connection and mounting
   coordinates

Geometry und mechanic

→ Parametric geometry with joint
   (e.g. spot light)

→ 3D geometry with joints

→ Default orientation

→ Max.-min. angle, step size

→ Multiple light exits

Geometry format OBJ

→   Open data format

→   .OBJ

→   Grouped objects (e.g. mast + bracket
    + luminaire head)

→   Extensive material model (colour,
    reflection, transparency, texture…)

→   Many CAD programs can export OBJ
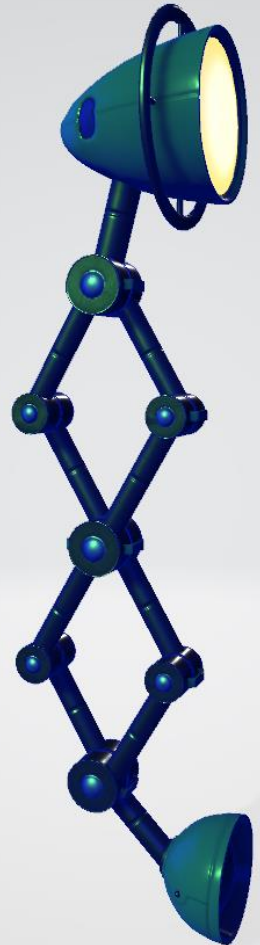
Tools for generation

→   3D modeller / editor
    for the creation and attribution of
    luminaire models

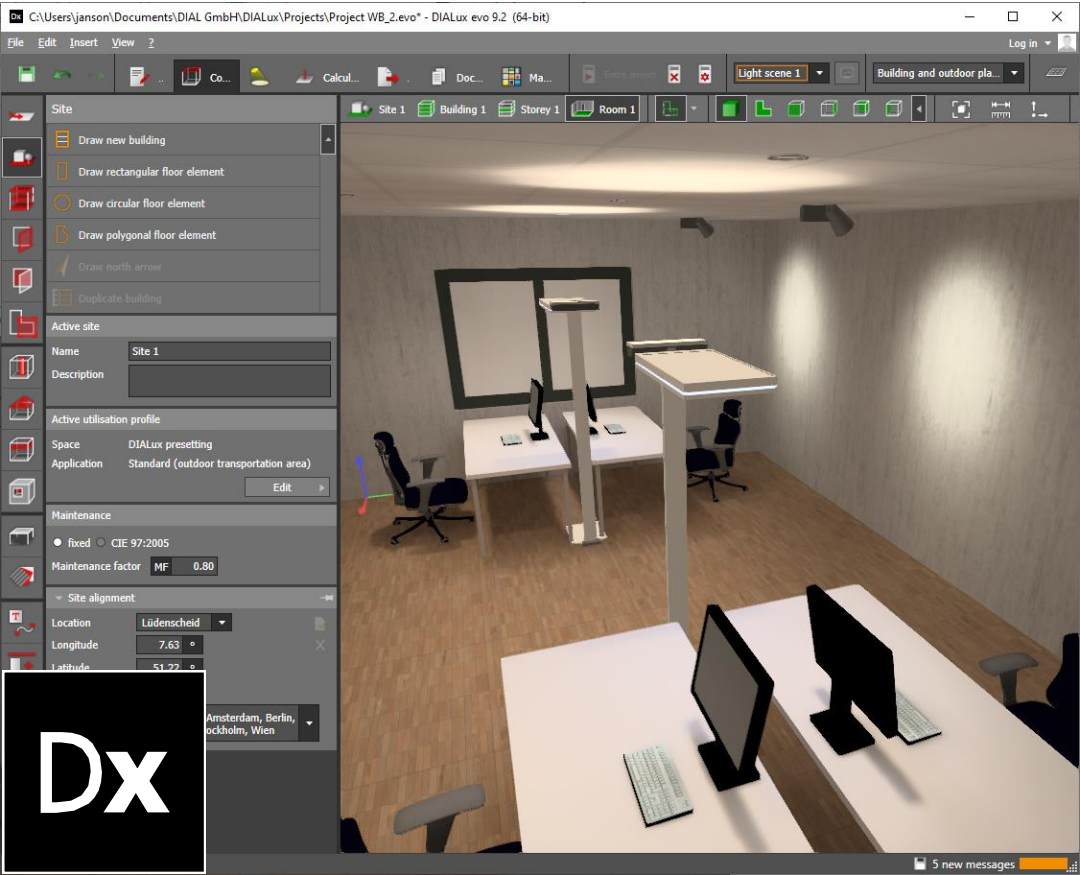→   Add Ins for CAD programs (ACAD...)

→   Any software with OBJ export
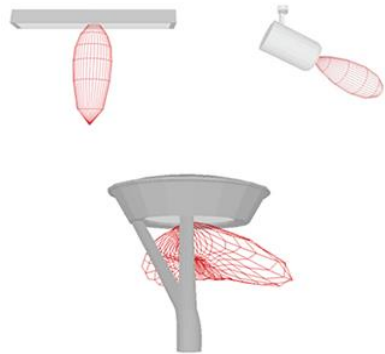
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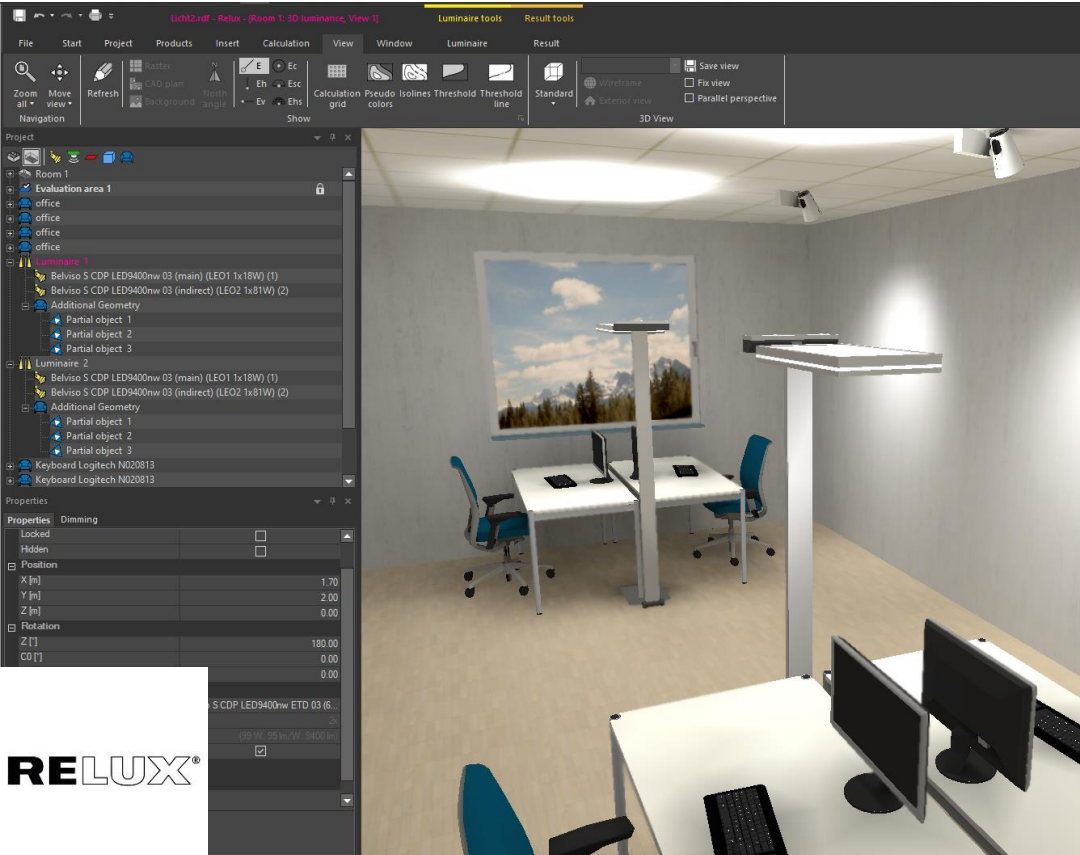
Benefits, opportunities

Benefits, opportunities

Manufacturer

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Architect

Lighting designer

Electrical designer

Retail

Maintenance
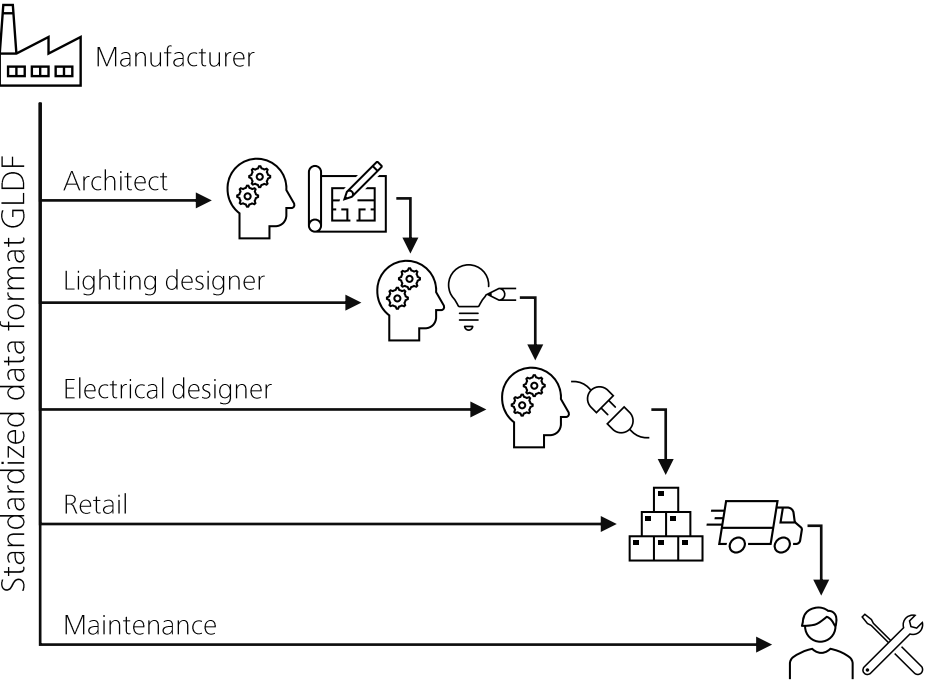
The new data format in DIALux evo

The new data format in Relux

Roadmap

→ Spring 2021 Publication
  → XSD, XML templates & examples
  → Documentation on the web: www.gldf.io

→ Summer 2021 Libraries
  → Components for writing and reading product data
  → Components for writing and reading model data

→ Winter 2021 Tools
  → 3D editor for creating models
  → Plug-ins for CAD programs

→ 2022 Further development

→ All information subject to feasibility