ELITECAD ARCHITECTURE 15

Innovations of the new version

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Locally efficient, globally proficient: a short key phrase to sum up the new ELITECAD Architecture 15. In times of ongoing digitisation and globalisation, connectivity is the fundamental cornerstone in modern planning. An open exchange is as essential as never before. This means a seamless and lossless exchange of ideas, concepts and their implementation in different applications is the core of today's world of professional planning. In other words, the more details that are transferred, the more efficient our collaborations are and consequently, the more successful the entire project is.

With this in mind, a main emphasis in ELITECAD Architecture 15 is placed on **connectivity** and **Building Information Modeling (BIM)**. The innovations include a direct connection to platforms like BIMcollab, DBD-BIM or parts4cad as well as the further improvement of data exchange with up- and downstream systems just to mention a few. Furthermore, the IFC4 interface as well as a large number of predefined property sets and attributes according to openBIM standards were also integrated. New features like free attributes, mappings and the graphical visualisation of attributes provide further advantages for BIM planning projects.

Additionally, another major focus of ELITECAD Architecture 15 is on **usability**, i.e. on simplifying the daily work of architects and planners. With every extension and adaptation, the team of ELITECAD has always been putting a strong focus on providing the user with even faster, simpler and more efficient workflows. Within the development of the new version 15, this endeavour was given especially high priority. For instance, the glass elements, windows and doors received vast and important enhancements to enable an even more intuitive and detailed handling. Moreover, a new automatic intersection between roof, truss and attic roofs has been introduced. Thanks to the innovations in ELITECAD, it is now easier than ever to automatically generate and copy views and, with the new library part management, it is also easier than ever to detail building models. To put it briefly, there's no other CAD system for doing architectural planning as intuitively and efficiently as with ELITECAD.

The following pages provide a detailed description of all the extensions and innovations. The team of ELITECAD would like to wish you a lot of joy getting to know the new version, as well as a lot of success using it regularly with your projects.

Dr. Wolfgang Stöger
CEO

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Architectural innovations

Professional architectural designs are way more than simple building models. They are brought to life by the use of architectural design elements and develop impressiveness though modelling details. Therefore, doors, windows, glass elements, roofs and dormers are key elements in architectural planning, because they provide individual character to designs. Adding library parts to designs adds life to architectural designs and provides ideal insights to future building projects.

The new version 15 of ELITECAD Architecture provides countless planning tools and optimizations to further enhance the design experience. Creating projects in record time and adding final touches to the model is now easier than ever.

Roof with attic floor

The attic floor is the part of the attic above the top floor, so the area in the attic between the top ceiling and the roof itself. The intersection between a ceiling with roof surfaces and a truss leads to very complex 3D results.

One of the major features of the new version is defining these complex ceiling shapes in a very easy way. Simply select the roof surfaces that affect the topmost ceiling, the rest is done automatically by ELITECAD. With only a few clicks, truss elements and the affected layers of the
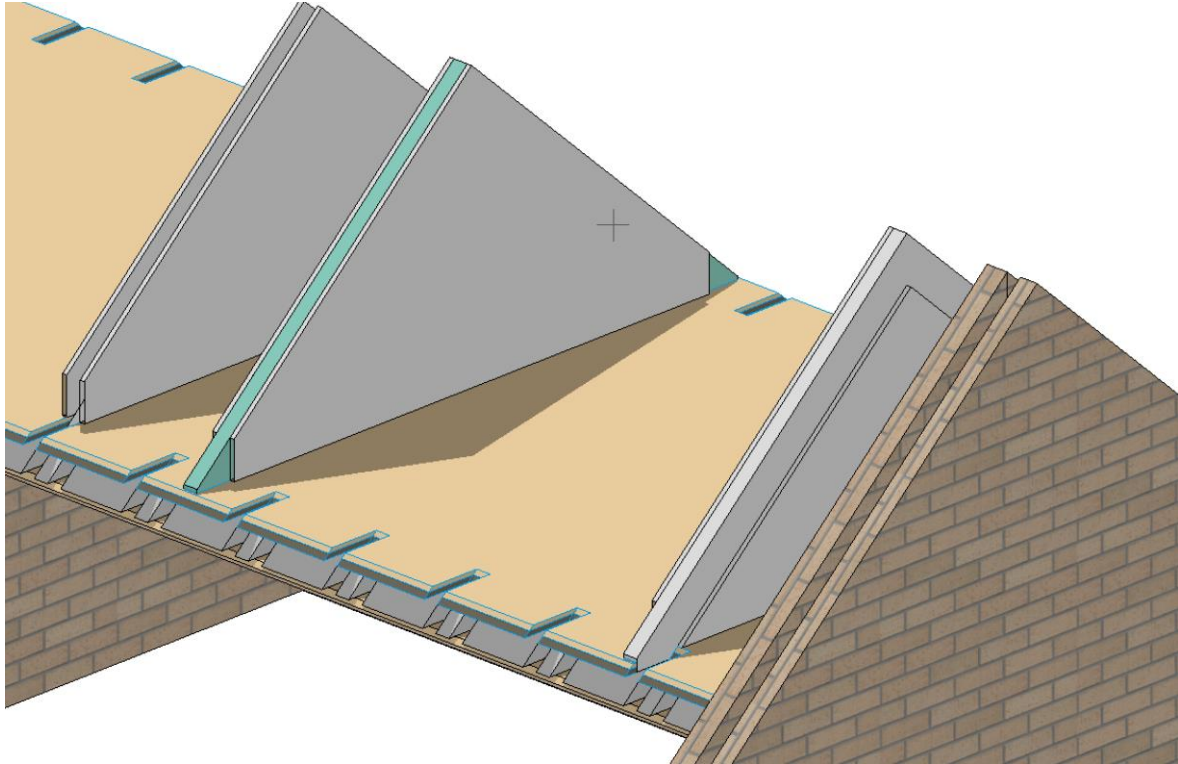
ceiling are intersected automatically. The complexity and time savings of this automated process are even clearer when looking at the plan views and sections.

Improved placement of dormers

Dormers are modifications in the roof, which can be configured as architectural objects using many parameters. Despite having many available options available, the definition of the dormers should be as easy as possible. The way dormers are created was simplified and now works similar to the definition of roof windows. Now it is possible to choose between position in floor plan and position by height.

Adjustable floor openings

Floor openings now feature handles and grippers for dynamic adjustments of the size in addition to the previous dialog for manual value input. Interactively changing the openings now provides immediate feedback to the user.

Extensions for opening elements

ELITECAD Architecture 15 has set a main focus on opening elements like windows, doors, glass elements and wall openings. Despite already having countless options and configuration possibilities it was possible to add a number of new innovations.

Window

Material inside / outside for window frame, fillings and muntins

Window frames, fillings and muntins can have different appearances inside and outside. For this reason, it is now possible to choose different visualisation materials for inside and outside for these three parts of the window. The default case is that both sides automatically have the same visualisation material, but the user can adapt the graphics parameters and remove the link, so that both sides can be configured individually. Note: the different material only affects the visualisation and not the material properties of the entire window, which can be configured in the main parameter window.

Casements and frames can now be configured with individual visualisation materials and the outsides can feature adjustable 3D hatches. The division point of frames/casements is depending on the glass parameters and is located on the start point of the first window pane. There are four options:

- inside-justified => the standard material is applied to the inner covering area
- outside-justified => the outside material is applied to the outer covering area
- centred => it is separated in the centre
- free => it is separated on a predefined plane
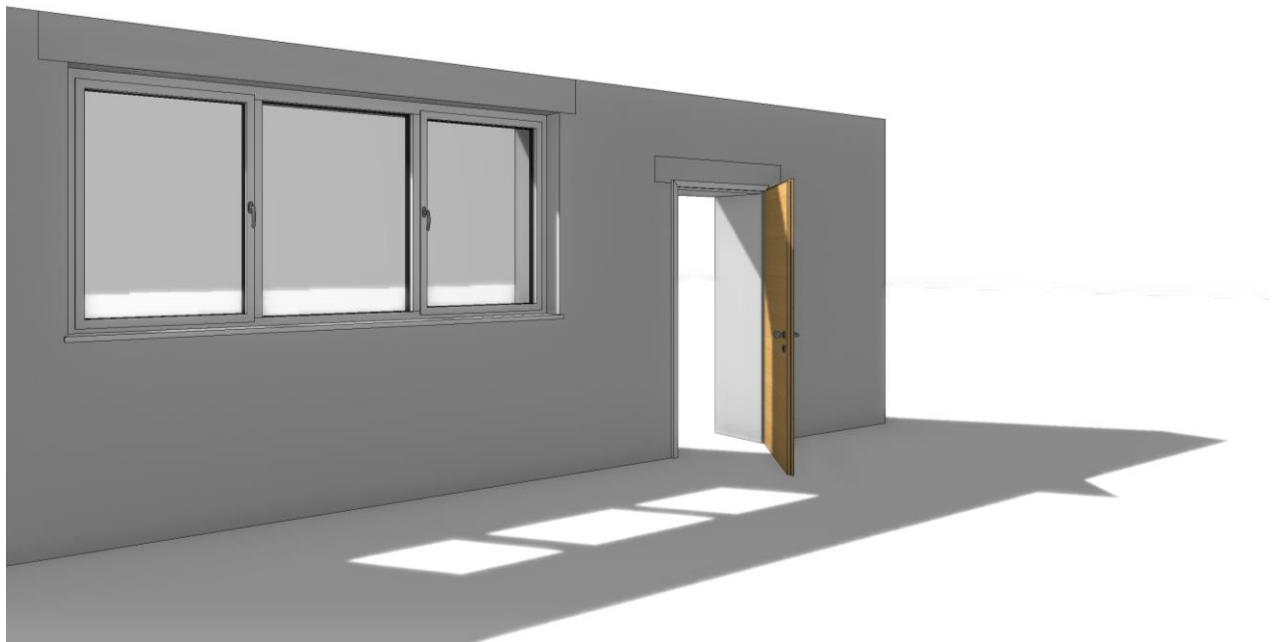
The materials of frames and casements with individual frame contours are automatically divided in the middle and the resulting contours are assigned the corresponding materials. Furthermore, corner stands in corner windows are considered as well. They are divided with the same plane as the frames. Mullions share the same material properties as the frames. For windows, the frame overrides the mullions, for glass elements they can be configured individually.

The material can be activated using the lock "adopt parameters". The default setting is that inside and outside have the same material. The <> command allows to switch between the parameters of inside and outside. The pen on the outside is only shown as information. After adopting the

parameters, the parameters of the outside are lost. If they are currently active, they are greyed out.

The copy parameters function groups the options for casements and frames together in the category frames.

Free contours for roll blinds
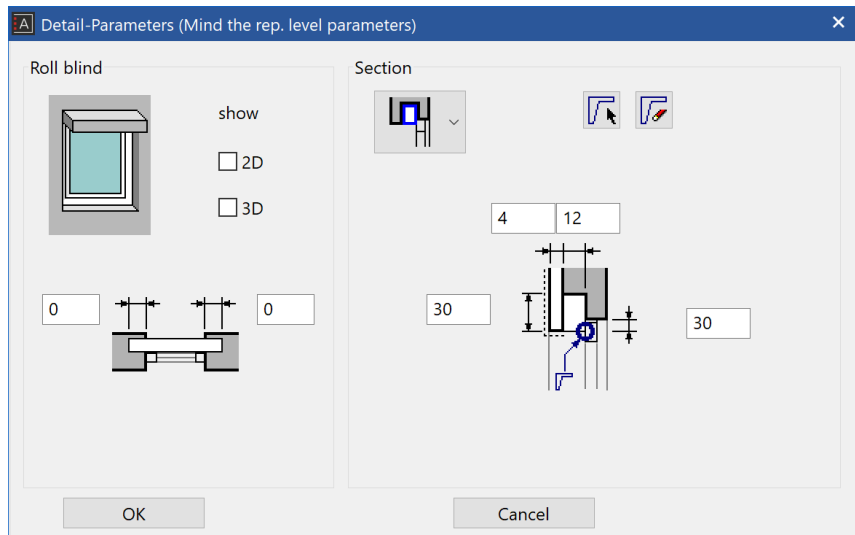
The roll blinds now allow any free contours that are closed for all types. Selection can be made similar to the exterior sill. If a contour is selected, the height and width are automatically determined from the contour and the two input fields in the parameter dialog are automatically disabled.

The required input is a point on the inside of the lower edge of the roll blind case, as well as a point on the outer edge. The position of the point is included in the section view.
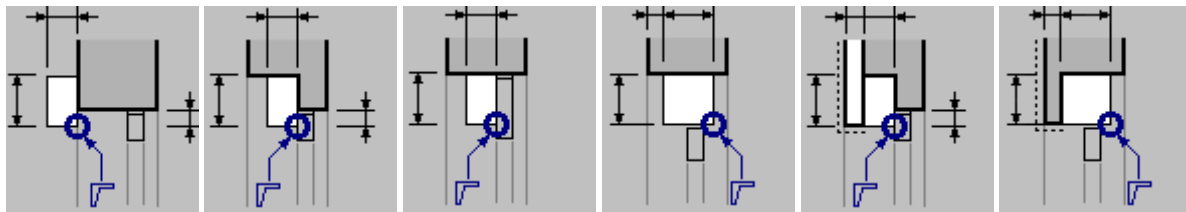
The copy parameters function also takes the cross-section contour into account. If available, but not selected, the height and width are set automatically as well.

Improved 3D depiction of casement protrusion

In order to have enough space for a handle on a casement, a protrusion on the side is necessary, which corresponds to the interlocking of casements and frames. This protrusion is left out of the frame in 2D as well as 3D.
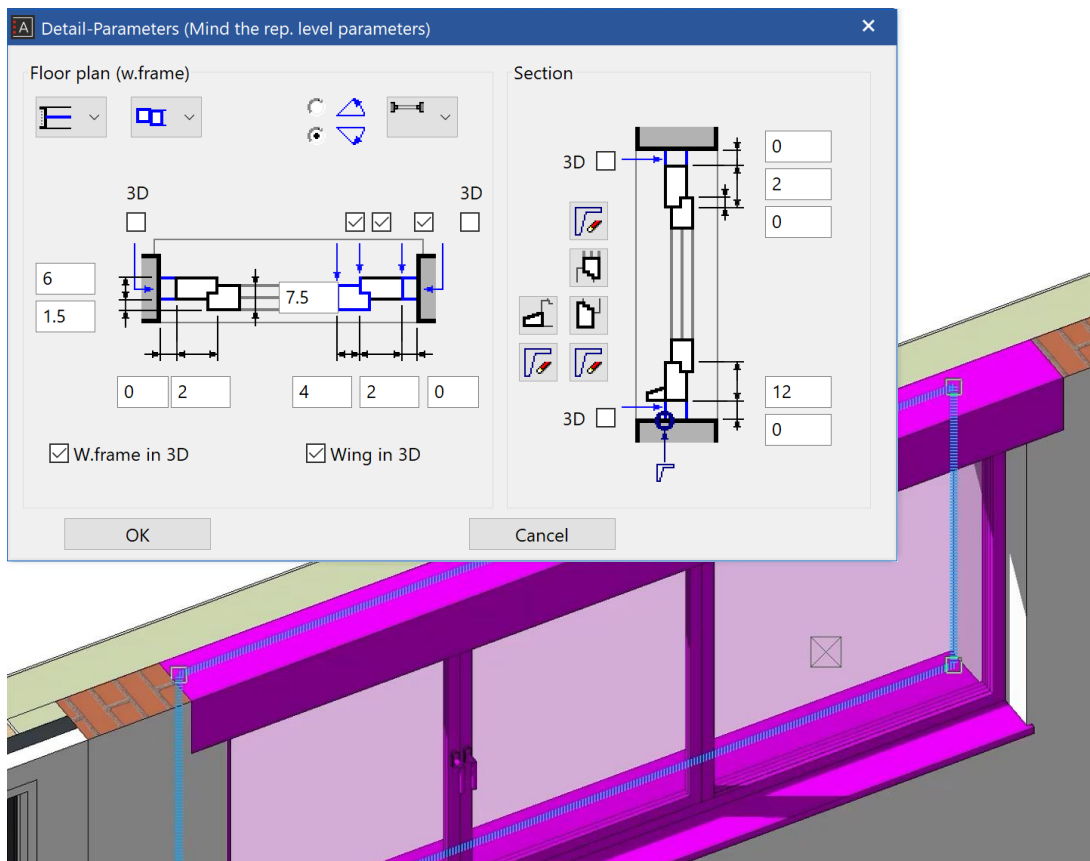
The protrusion can either be configured via the detail parameter dialog or in the tool for window division / muntins.

In the copy parameter functions, these options are located in the frame category. The glass element does not have this option but can be copied with casement and muntins layout.

Improved 3D depiction of casement interlocking
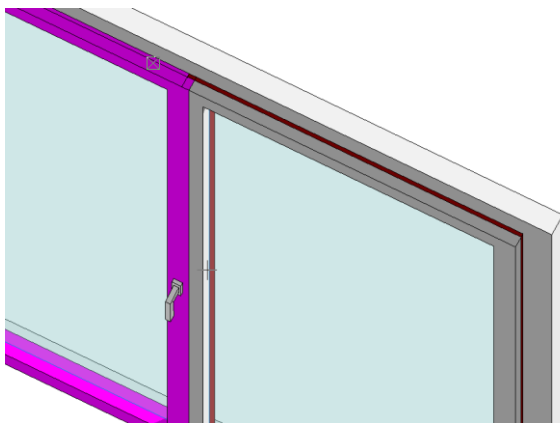
The interlock is available in 2D as well as 3D. The main casement is determined using the opening direction and the type of opening.

The 3D result also considers the separation between inside and outside material.
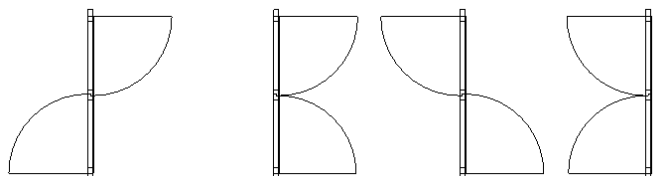
Window with fire rating

Windows now have the possibility to carry labels with fire ratings according to standards (for instance T30, type 1). The configured fire rating information is then added to the plan depiction of the window labels.

Characters immediately following a "~" symbol are shown in subscript. The "~" symbol itself is not displayed in the text (note tooltip).

The parameter for the display of fire rating information is independent of the project and can be configured in the representation level parameters. This allows an easy change of the visibility of fire rating information with a single click.

Roof windows – rotated labels

Roof windows now also provide the possibility to configure rotated labels if it is necessary.

Individual labels per casement

With the new possibility for individual labels for each casement, the labels for windows have now become even more flexible. The centre line can now optionally consider the opening direction.
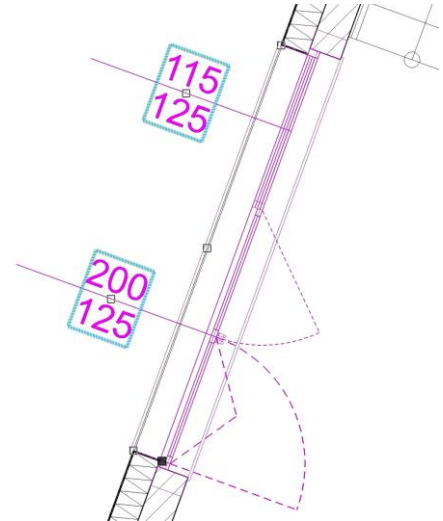
Window handles in 2D and 3D

Window handles, which can be depicted in 2D and/or 3D, are now available for a more detailed depiction of windows. The position can be configured via parameters, predefined library parts are used for the graphical depiction. This makes it easy to integrate handles from manufacturers into parametric windows of ELITECAD. The new detail parameter dialog, which can be accessed via the property bar of the window, provides extensive possibilities to configure the window handles. In contrast to door objects, handles for windows can be configured for every single casement.

Of course, there is also a possibility to quickly and efficiently change all casements at the same time.

window handle 01.d	window handle 02.d	window handle 03.d	window handle 04.d	window handle 05.d
window handle 06.d	window handle 07.d	window handle 08.d	window handle 09_left.d	window handle 09_right.d
window handle 10_left.d	window handle 10_right.d	window handle HST 01.d	window handle HST 02.d	window handle HST 03.d
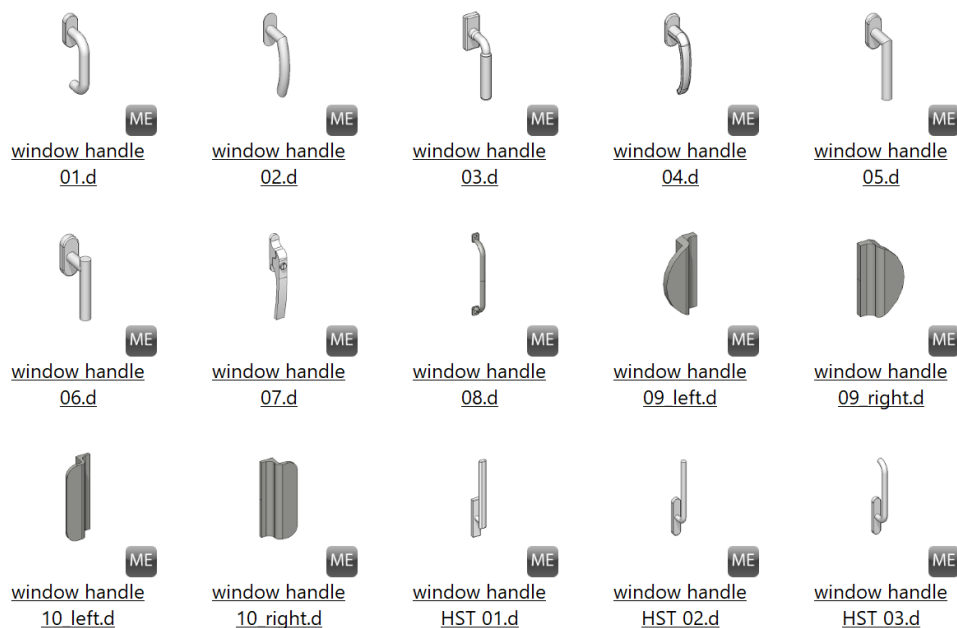
The distance to the frame corner points as well as the 2D/3D visibility can be configured as well. The frame corner point is independent of the position of the handle. For "under" and "left", the lower left frame corner point (as seen from outside) is selected as a reference point, for "upper", the top left frame corner point and for "right", the lower right frame corner point is selected.
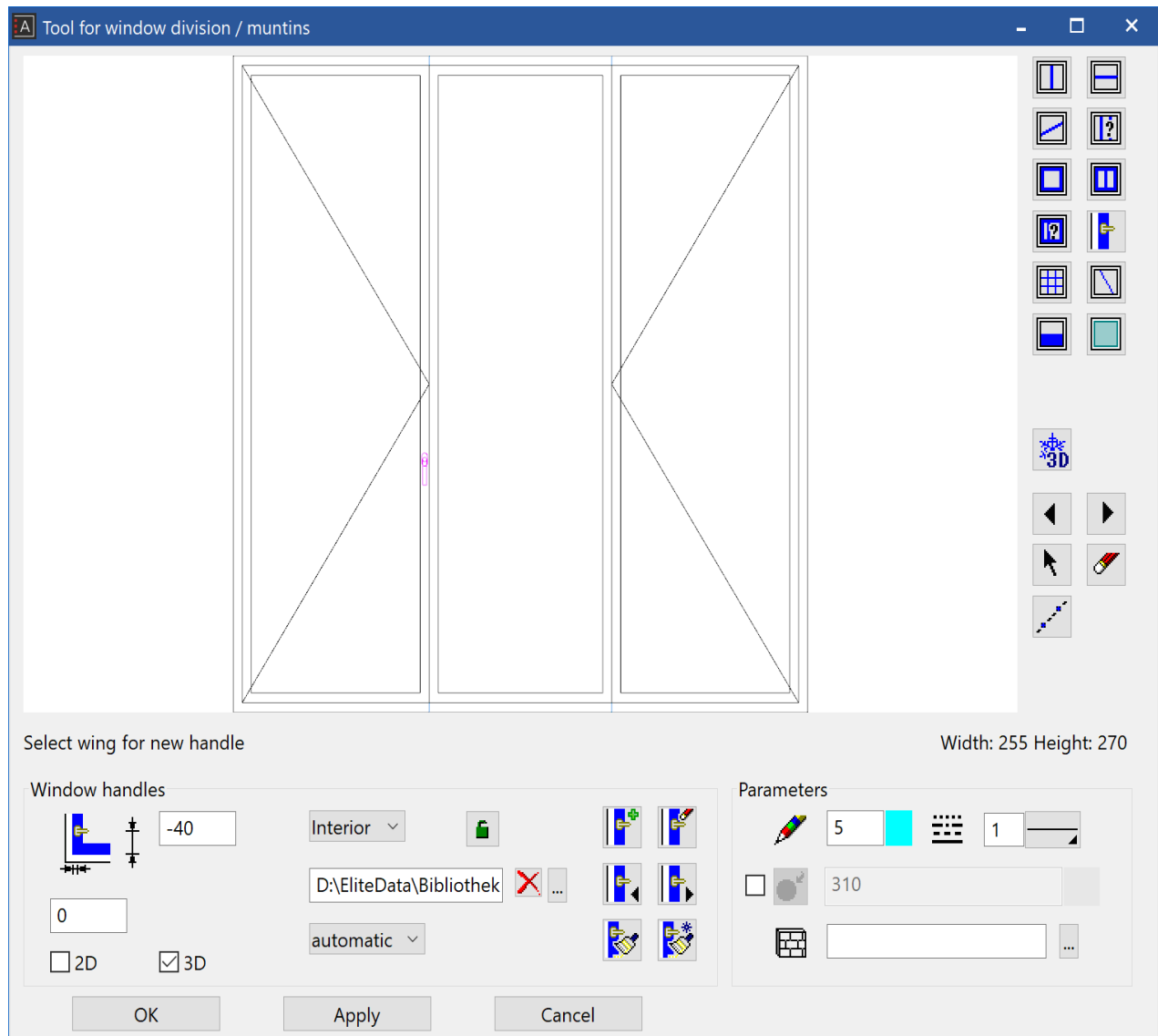
"Automatic" is a setting based on the opening type: for all windows with a stop on the right side it is left, for all windows with a stop on the left side it is right, for tilt casements it is on top and tilt windows it is on the bottom. The switch inside/outside enables users to place handles on both sides of the window. The handles can be optionally linked or have different appearance.

Handles can be used in combination with the copy parameters function.

Window, door and wall opening

3D lintel with configurable holders
Wall openings, windows and doors now feature 3D lintels, which can be configured using the corresponding dialogs. The behaviour resembles the one of girders or roll blind cases of windows.
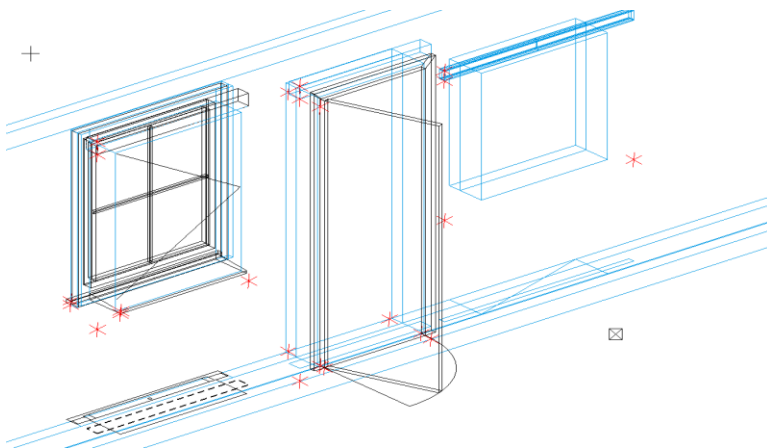
The way in which the lintel can be defined is identical for all three objects. The height, depth, distance to the wall (outside) as well as the distance to the actual lower edge of the lintel (relevant for insulation) can be configured.

The selection of free contours like for instance I-Beams allows for even more flexibility. 2D and 3D can be configured independent of each other, the 3D depiction is depending on whether the opening is displayed in 3D. The projection can be configured similar to roll blind cases.

3D lintels can also be used with the function copy parameters. The parameters can be selected from the group lintel and free contours can be selected and copied as well.
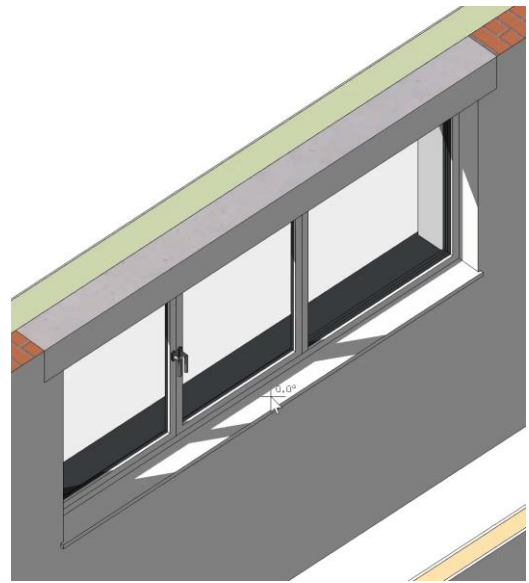
Labels in m, cm/mm dimensioning
Window labels are now also available in m, cm/mm dimensioning (Poliervermaßung). This is a special depiction of tolerance texts for dimensioning values for architecture. Millimetres are rounded with half a centimetre and shown in superscript. Meters are shown separated via points.

Glass element
Glass elements play a key role in many architectural designs, because they allow a lot of creative freedom in the modelling process. Many options that ELITECAD users already know from window parameters are now also available for glass elements. With the new possibilities, the glass element developed into an extensively configurable object with a lot of freedom for design. The new configuration menu allows for quick and easy object creation.

Redesign of the user interface
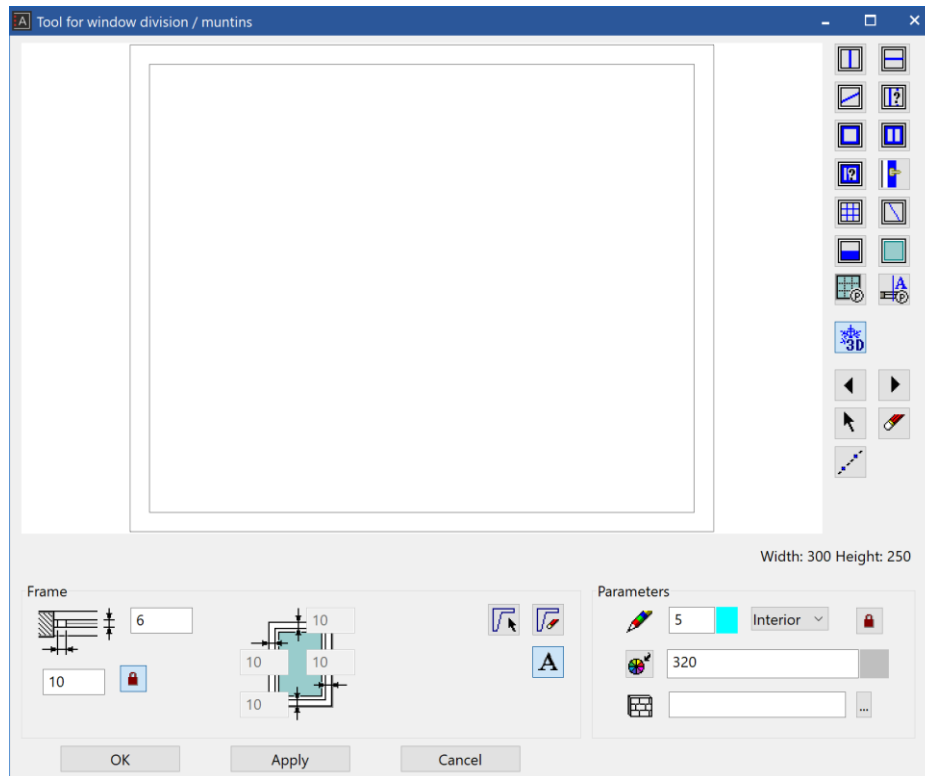
The configuration dialogue received countless improvements, so that the configuration of glass elements resembles the creation of window objects and a consistent user experience can be provided. Further changes improve the handling and configuration in the parameter window.

- The elements of the window division were reordered and the 2D/3D as well as pen, line type, material, colour and 3D hatch settings were added to the group parameters.
- The individual frame widths for rectangular windows are always shown for frames.
- The checkbox sym. (for symmetrical) was replaced by a lock symbol.
- Height and width of windows are shown as information without icons and for corner windows show which one is selected (e.g. 1 of n)
- Freeze 3D was removed from the group glass parameters.
- New icons improve the visibility and recognition of functions.

Improved depiction in floor plans

The floor plan depiction can now be configured analogue to the windows.

New group General/Quantities

New groups for general and quantity specific parameters were introduced, which now bundle all options and settings.
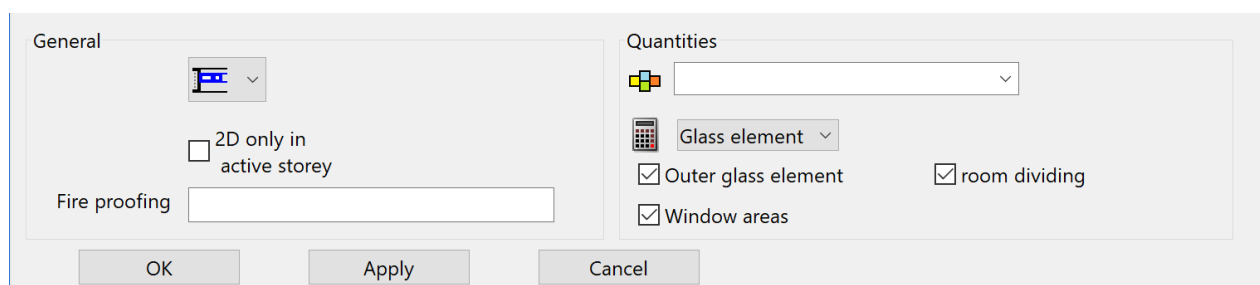
The option "2D only in active storey" was moved to the general group. "quantify object as", "room-dividing" and "window area" were moved to the group quantities.

Extensions for quantity material
The material was added to the group quantity as well as the property bar. There is no link to the depiction, because it is a generic material.

Extensions for filling (strength and orientation)
The filling was extended for a thickness and can be positioned similar to glass panes.

Extensions for muntins (orientation)
Muntins can now be positioned flush on the inside or outside, free or in the centre of the window pane. The number in X and number Y in the dialog are now substituted by icons.

Extension for mullions (selection of reference)
When mullions are changed or when multiple mullions are created, the side for the measurement of the distance can be configured: left or right for vertical mullions and top or bottom for horizontal mullions.
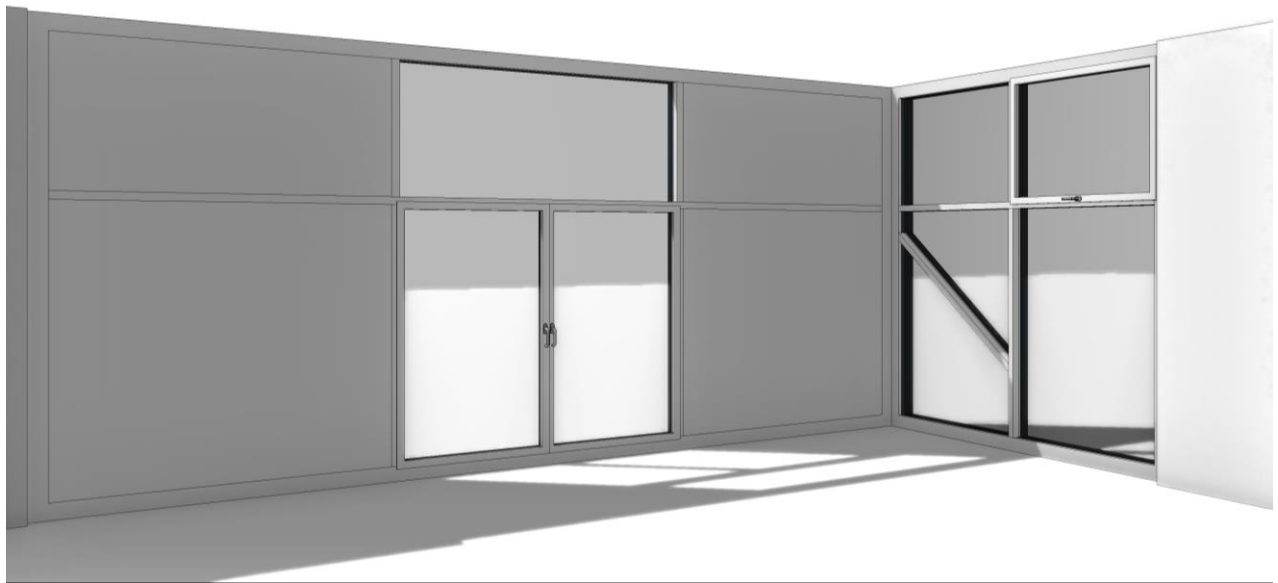
Labels for glass element analogue to window
The labels for glass elements were adapted to work analogue to the window. It is more detailed and ensures a consistent depiction.

Labels according to opening direction
Labels are now always positioned according to the opening direction, depending on the current situation.

Individually configurable settings per casement
Opening angles can now be individually configured for each casement. The opening direction can also be configured for each casement analogue to the window. Pen and line types of casements can be individually configured in views and floor plans.

Extension for fire rating

Analogue to windows and doors, glass elements now also have the possibility to feature information about fire rating standards and labels. The fire rating is added to the glass element label in plan depictions.

Characters that immediately follow a '~' symbol are depicted subscripted. The '~' symbol is not displayed (note tool tip).

The parameter for displaying fire rating information is controlled across all projects in the representation level parameters. This makes the switching on and off of the fire rating information display easier.

Extension for renovation planning

The renovation planning state can now also be set in the editor and not only via the property bar.

Extension for quantities inside/outside

These settings are now also considered in the function for copy parameters.

Extension for associative dimensions

The modification of dimensions upon changes of glass elements was improved and optimised. Dimensions automatically change accordingly.

Door

Parametric offset for door jam

If walls are logically linked, the position of the door jamb as well as the entire door, is assigned to the main wall. In order to solve this issue and provide more freedom to the user, a parametric solution was desired. The door jamb parameters now feature a new setting, which allows configuring the distance to the wall. The actual value is depending on the door jamb type as well as the position of the logically linked wall.
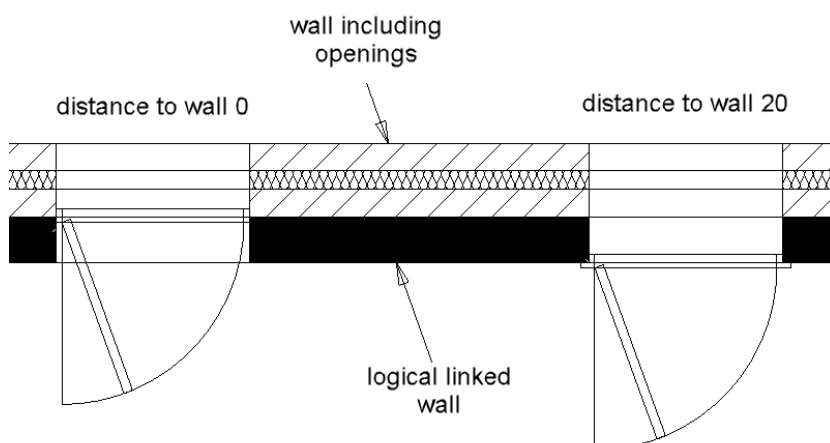
Passage not room dividing

Door openings are usually room dividing elements. A new option in the door parameters now allows setting the passage as not room dividing.

Room

Facet floor
Importing models via IFC, some buildings contain rooms, which are constructed from so-called facets (polygons). The IFC import interface now supports this special kind of room, which can be created in some CAD applications. Facet floors are depicted graphically and exist as room objects, but they cannot be modified in ELITECAD.

Girder

Visualisation material according to rooms
Analogue to walls, girders now also have the possibility to adopt the visualisation material of the room. Depending on the position, so if the girder is located inside a wall or beneath a ceiling, the girder now displays the same colour as the wall or ceiling if it is linked with the room. This only applies to the areas of the girder, which are actually visible in the room.

Storeys

Single coloured depiction of referenced storeys
If users work with separated storeys, single storeys can be loaded as referenced storeys, for instance to visualise the entire structure so certain reference points can be accessed, but the actual storey should remain untouched. In this case, it is advantageous to visually highlight the referenced storeys so they can be distinguished. The options now feature a setting, for configuring a colour for referenced storeys. This leads to better visibility in the model and increases usability.
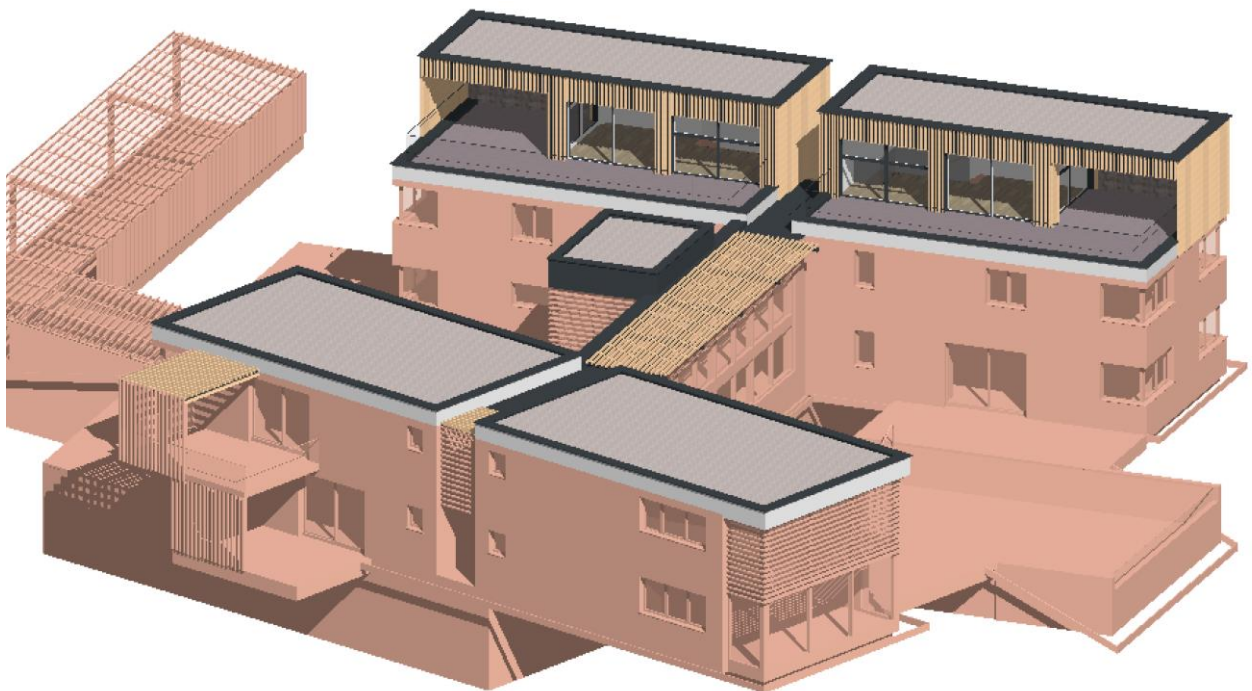
Improved storey manager
The tree view of the storey manager now features new buttons to open or close all storeys, as it is known from other manager windows. This ensures that a clear overview is given, even with large structures and many storeys.

Views

Automatically generated floor plans

Until now, floor plan views were generated automatically for every storey in the view management, but the generation had to be triggered manually. A new option now allows users to configure that floor plan views should be generated automatically, whenever changes to the storey structures are applied and confirmed. New storeys are generated automatically; therefore, the state of the plan views is always up to date. If storey heights are changed, the floor plan views are updated automatically as well. If a view already features a modified filter, for instance invisible layers, then this filter is kept after the update.

Copy views

With the new copy view function, it is now easier than ever to create variants of views. The type of the view does not matter, even plot views with integrated sub views can be copied. Copying views also ensures that the viewing direction on the model is always exactly the same as the original. One
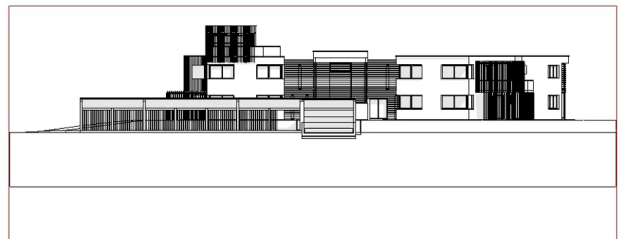
application is to create the same scene with different light settings, for instance day and night simulations. The generation of same views with different content is now easier than ever. After copying, only the content of the copy has to be adapted, for instance by changing the layer filter.

Library parts

Simplified generation of library parts

Library parts are a quick and easy way bring models to life, which results in more natural impressions and a better feel for proportions and spaces. For this purpose, the dialog for defining new library parts was completely redesigned and improved.

Reference point types

Reference points can have different meanings. They might be the enclosing rectangle or points that have a special meaning with respect to the model, like connection points for pipes. There are no limits regarding the possibilities. In order to distinguish between those reference points, a classification of reference points was introduced. This information can be used as a basis for decision when it comes to further utilisation of the objects.

Reference points for imported objects

Importing library parts from other manufacturers and platforms, ELITECAD adopts the reference points or creates new ones in the background and assigns them the corresponding types automatically. This allows a seamless integration of external data.

Graphical depiction of the reference point

Selecting a library part automatically highlights the reference point graphically. This allows an easy visual validation and provides information about the behaviour when it comes to changes.
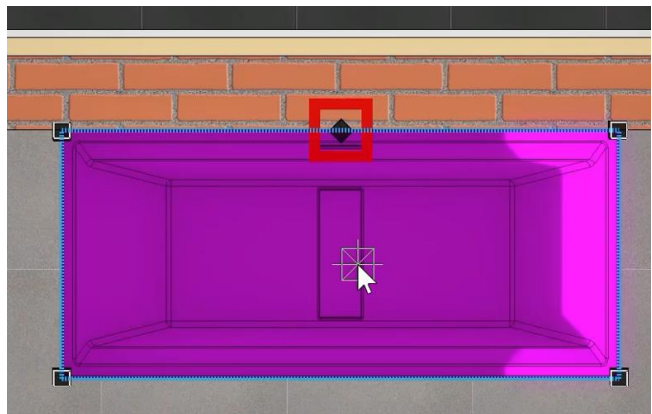
Intelligent exchange of library parts

The reference point is the basis for the exchange of library parts. For instance, if the reference point of an object is located in the top left corner of the enclosing rectangle, and the object was positioned in the top left corner of the room, then after a library part exchange the new library part will be positioned correctly at the same position in the room, because it will also be placed in the same top left position. The same principle applies to all other types of substitution points. The same substitution point is always preferred, otherwise the best fitting point is selected.
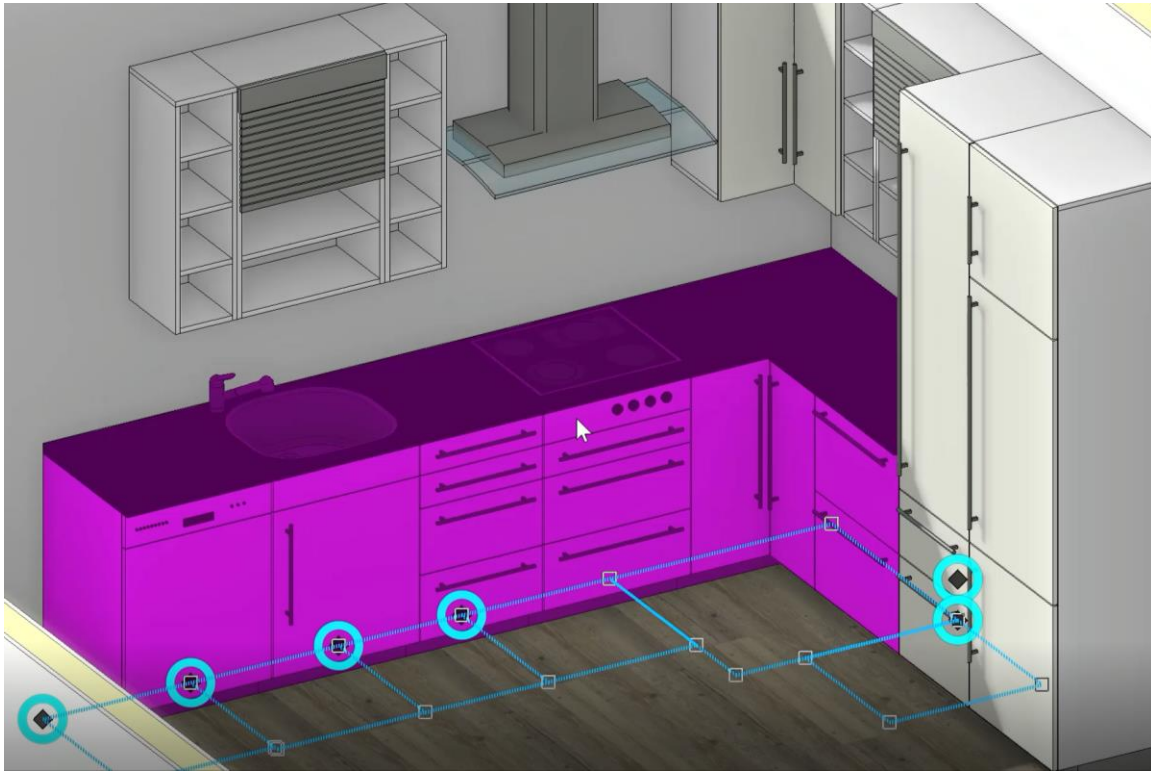
Adopt the "description" attribute

When library parts of the ELITECAD 2D library are inserted, the attribute "description" is now automatically assigned.

Management of parameters

Overview of the stored parameters

Managing parameters and configurations is a key factor when working in a team. The new parameter management function not only provides more structure for administrators, through the clearly structured user interface, one can see which stored parameters are available. Parameter sets for different functionalities like texts, dimensions, hatches or arrow parameters, but even pre-configured parameter sets for architectural object are listed with their names. The parameter management tool can be launched via the ELITECAD configuration. The selection of the version and region as well as the distinction between global and user-defined parameters can be configured using simple filters.
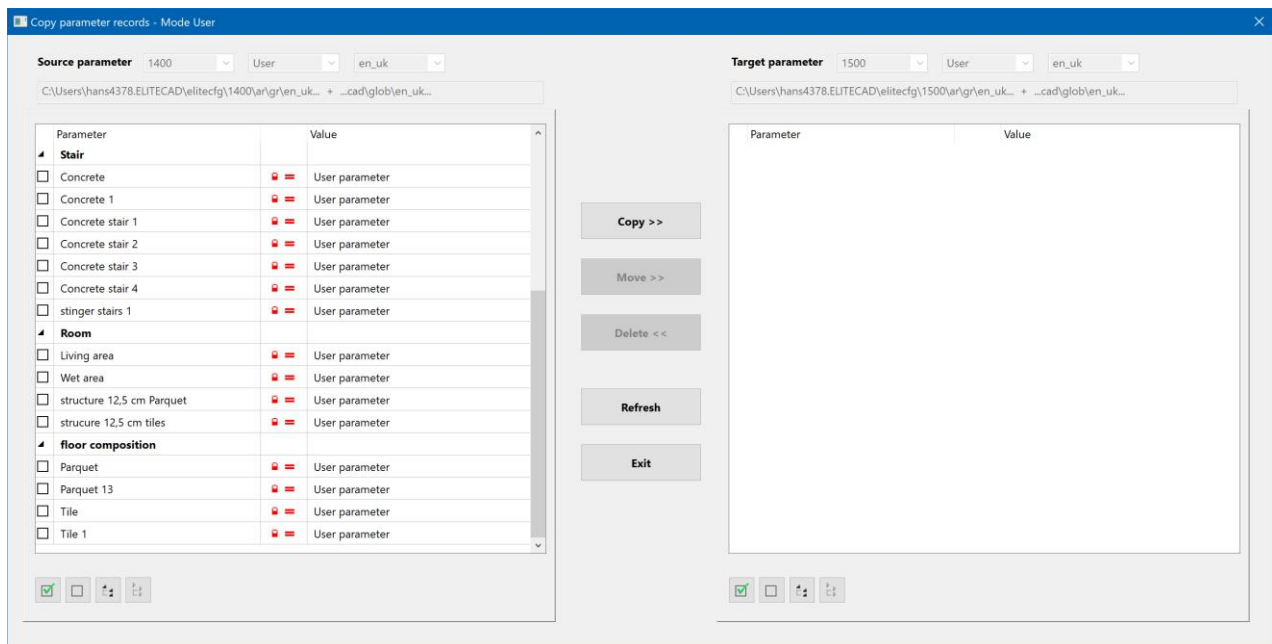
Easy adoption of parameters to a new ELITECAD version

The advantage of this new management tool is not only the structured overview, but also the possibility to copy parameter sets. This feature can be used right after installation, because many companies have defined their custom standards, which have to be migrated to the new ELITECAD version. The new parameter management tool makes the migration of parameters between ELITECAD versions easier than ever. User-defined parameter sets are simply copied from old versions to new versions and can be used in combination with the shipped parameters of the new version.

Adoption of parameters between regions

Besides copying parameters between different versions, it is also possible to copy them in-between regions. This is especially important for customers working on international projects and spread across multiple regions. Copying between regions is as easy as copying between versions.
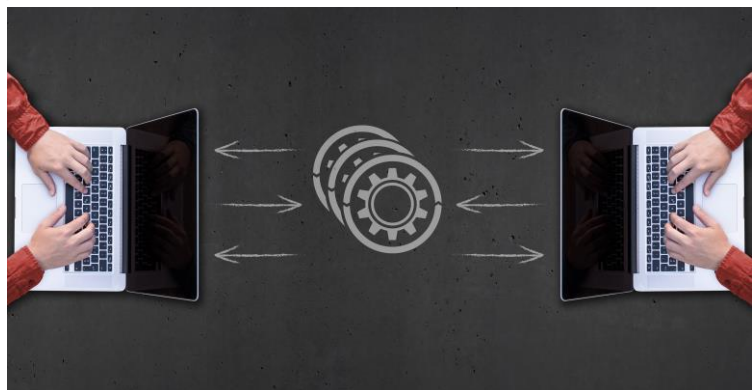
Connectivity

A main goal of the openBIM process is to connect people and applications in a way that the data exchange is open to everybody and as efficient as possible. The better the connection and data exchange between applications, the more information can be transported via BIM building models, and the better and easier projects can be implemented across all trades, regardless of the project size.

By implementing countless plug-ins and interfaces to external platforms, ELITECAD Architecture 15 was developed with a main focus on improving Connectivity. This allows us to lift the already efficient BIM process to an even higher level.
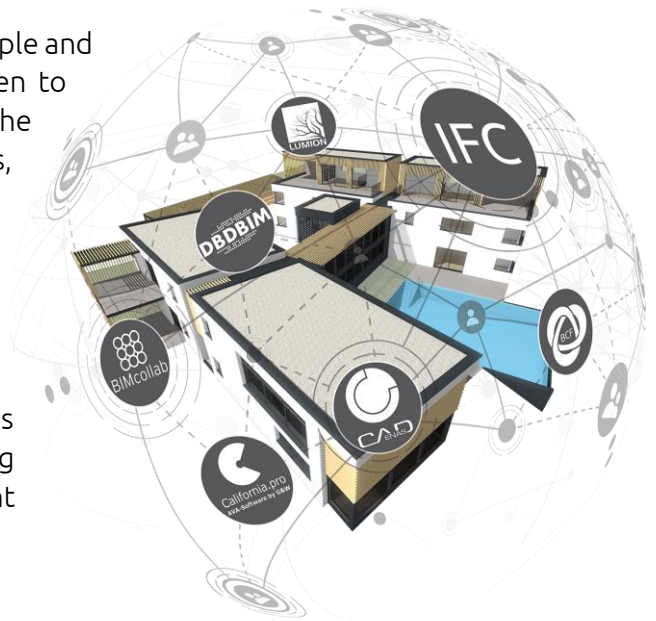
DXF

With ELITECAD Version 15, it is possible to import and export AutoCAD data up until version 2021. In addition, revision clouds from DXF will be imported as new ELITECAD objects. Another important improvement is the display of DXF specific attributes in the new attribute manager.

IFC

As a long-standing member of the buildingSMART, ELITECAD has a strong focus on continuously developing and improving the IFC interface. The new version provides countless new possibilities for the IFC data exchange, which can definitely be seen as a milestone in the IFC development.

Support for IFC 4

ELITECAD Architecture 15 now features detailed support of the IFC 4 data format for import as well as export. Of course, the still commonly used IFC 2x3 format can still be imported and exported as well.

New options for import and export

The IFC import and export features several settings and configurations for architectural objects. For every object, additional optional settings were introduced. The import of columns and girders can now optionally ignore openings and CSG information. The import of walls has a setting whether round walls should be connected. Another setting allows users to choose if clipping planes for roof boundaries should be imported. The clipping planes can be deleted later on using the property bars of the wall object.

In the general settings, the user can decide whether to import the property "LoadBearing".

New options for rooms

A new addition are the settings for importing rooms. The users can decide whether rooms should be imported parametrically, if the room geometry should be imported or if rooms should be ignored.

Export and Import of free attributes

Attributes were a major focus in the development of version 15. Of course, the new free attributes can be exported and imported using the IFC interface.
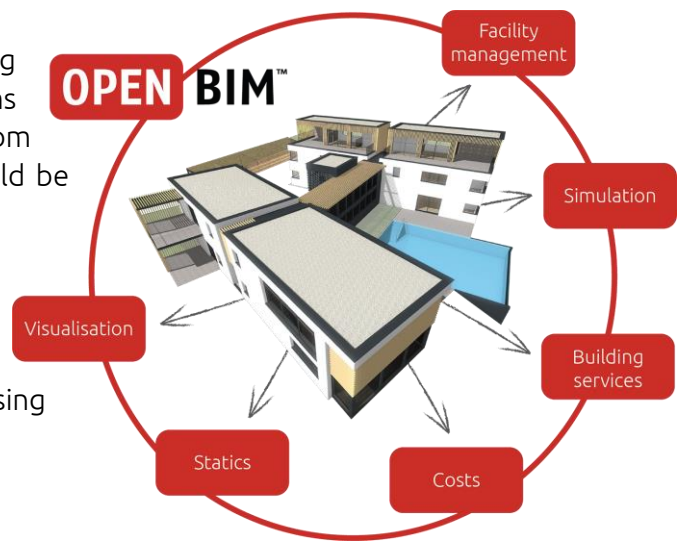
Integration of all free attributes contained in the buildingSMART specifications

The buildingSMART organisation defines extensive lists of so-called property sets (pSets) and roughly 160 specific attributes. ELITECAD includes all attributes and property sets for building construction that were defined at the time of the release as predefined templates. Those attributes are language independent and feature translations for all supported languages.

Improved export of IfcBaseQuantities

Another part of the buildingSMART IFC property sets are the IfcBaseQuantities. These are the basic properties of architectural building components, which can be read and interpreted by many other products. The new version of ELITECAD automatically exports many of those attributes and therefore drastically improves the data exchange with other systems.

Optimised data exchange with various tendering systems

Based on the new IFC4 interface, countless tests with various tendering systems were performed before the release to ensure that data exchange with ELITECAD data is as smooth as possible. The new IFC property sets, the free attributes, IfcBaseQuantities and the continuous feedback from our partners guarantee an optimal communication between systems and applications. Tested tendering software includes California.pro, NOVA AVA, BIM4You.

SketchUp

Export/Import

The SketchUp export and import interface was updated to the latest version and now allows data exchange with SketchUp models up to version 2020. The export function also features the possibility to export older versions for compatibility reasons.

Export of materials

For the SketchUp export, materials are now exported using unique names. That enabled us to improve the update mechanism of the model in Lumion.

Lumion

Lumion is the preferred application for generating photorealistic images and videos for highly professional presentations. With only a few simple steps, it is possible to create impressive visualisations from digital building models. ELITECAD Architecture 15 further simplified the data exchange of the BIM model with Lumion. Using a dedicated Lumion export interface, data can be passed to Lumion even more efficiently.

Another improvement is the optimised update mechanism of the model, when changes occur in ELITECAD by using unique material names for the model export.

CPIXML

The CPIXML interface is intended for data exchange of 3D models for road and civil engineering projects. Using the proprietary XML format, it is possible to pass information about route bodies, curves, lines, volumes, quantities and properties to ELITECAD. The imported properties are displayed for every object and are also considered during the evaluation of quantities. The objects are structured using layers, which are displayed as a main group in the layer manager.

BIMcollab

BIMcollab is the ideal interface for managing and documenting openBIM projects. With the new direct integration into ELITECAD, it is possible to create Issues and share them with team members, regardless whether or not they use the same BIM software.

Issues that were created with ELITECAD are automatically synchronised to the BIMcollab cloud and can be accessed by other project members immediately.

Using the provided tools for validating solutions, tracing annotations, publishing feedback and standardised workflows leads to an enormous increase in efficiency when it comes to working with BIM building models. Existing BCF issues can easily be imported into the new BIMcollab interface.

Accessing the platform and the project documentation does not necessarily require ELITECAD but can also be done using mobile devices and a web browser or any other BIM software that supports BIMcollab.

A detailed description of the interface can be found under:

https://www.bimcollab.com/de
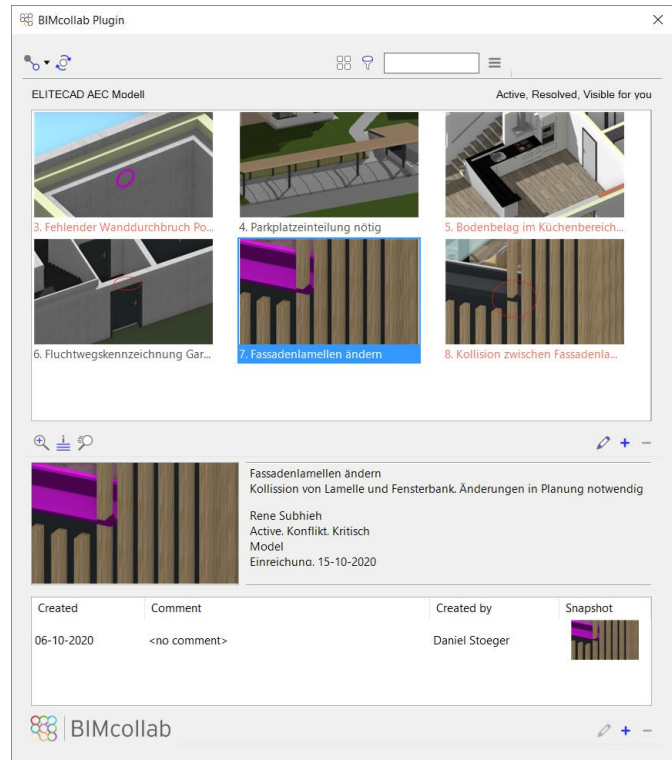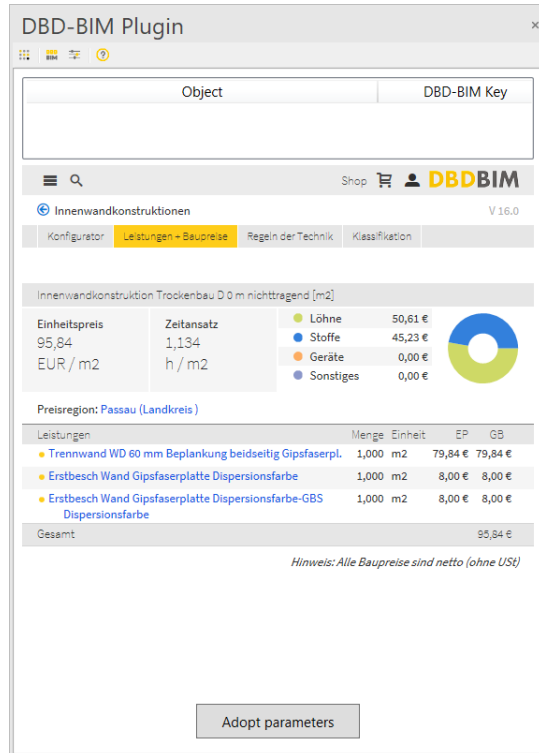
DBD-BIM

DBD-BIM is a tool for the classification and cost evaluation of construction parts in the BIM process, specialised for the German market. The online platform provides information about STLB-Bau compatible services and allows users to evaluate construction costs according to the DIN276 standard. The standardised information is provided by the BIM Cloud. This service allows users to individually configure and classify BIM construction parts and store this information as attributes to the objects in the BIM model. The building model is then equipped with standardised attributes and can be used to transport this new information in the BIM process. Using data exchange via IFC, models that contain DBD-BIM information can be passed to tendering and calculation applications in order to reconstruct the link between components and of the model and concrete services and costs.
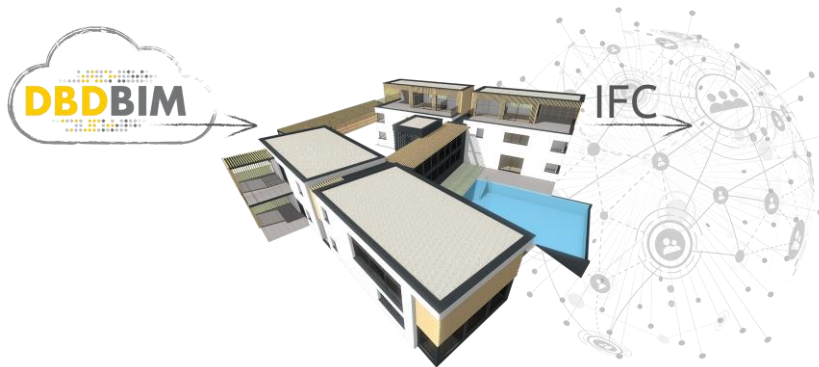
ELITECAD Architecture 15 features a direct integration of the DBD-BIM platform. Component information and services can be added to objects directly in ELITECAD. In the background, so-called BIM keys are generated and linked to the corresponding objects. In the ongoing BIM process, when the model is passed via IFC, the BIM keys are exported as well, so they can be imported by other BIM applications.

More detailed information about DBD-BIM can be found here: https://www.dbd-bim.de/

parts4cad

parts4cad, the well-known platform that was already featured in ELITECAD Mechanics 14, was now also integrated into ELITECAD Architecture 15. Through the direct integration, it is now possible to load millions of CAD objects by accessing product information of internationally renowned manufacturers. Using the parts3cad plug-in 2D and 3D data can be easily imported, which saves precious time and at the same time provides detailed information for the finished model.
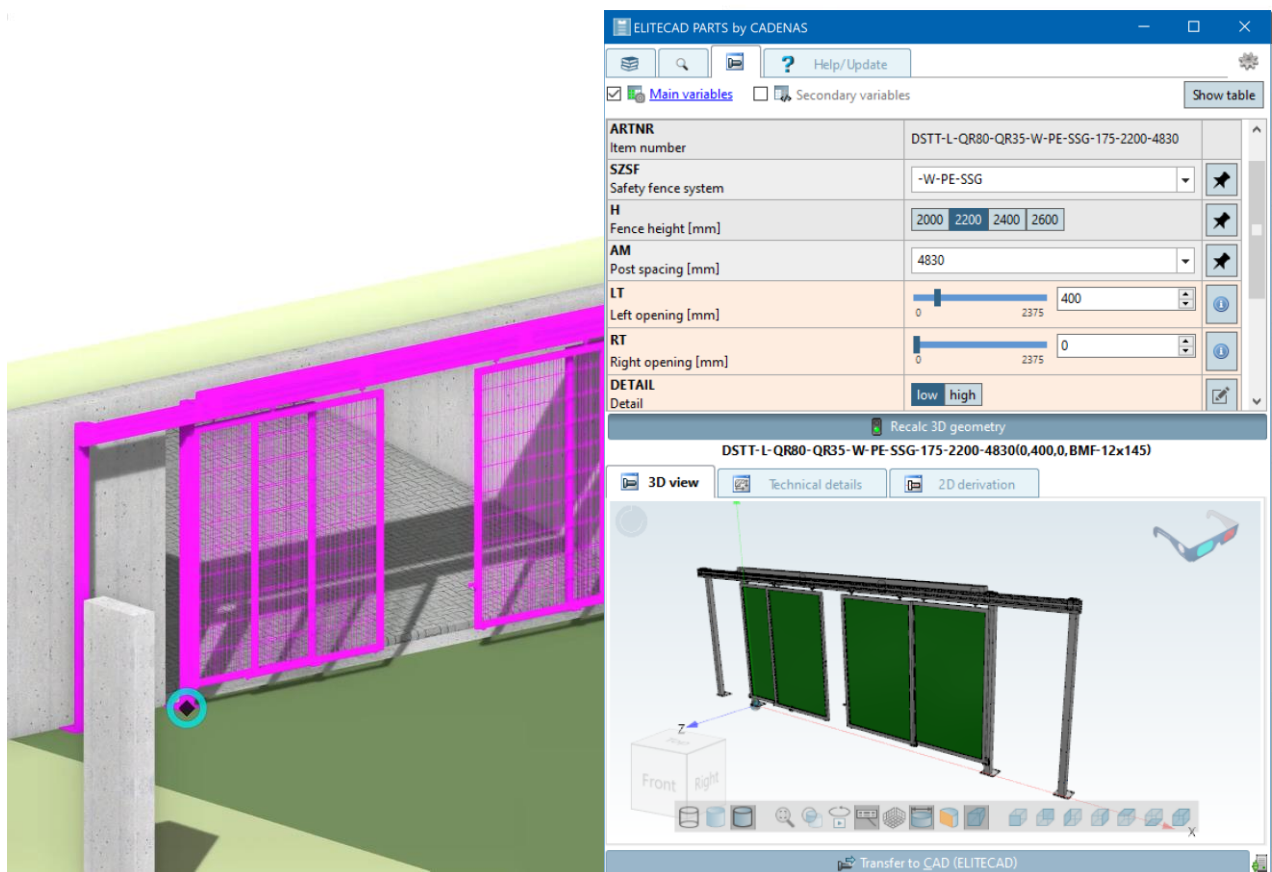
The imported library parts from the ELITECAD PARTS by CADENAS module are more than just library parts. With a double click on the object, the parts4cad configuration dialog opens again and

shows the current configuration and parameters. This makes it possible to perform adjustments later on and change component variations or the level of detail, in order to perfectly integrate manufacturer parts into ELITECAD.

3D platforms

An important step in the process of designing a digital building model is the integration of library parts. Besides the integrated ELITECAD library, there are countless web platforms that provide 3D models. The content on these platforms is developed continuously and they sometimes provide millions of objects. In order to make it easier and more efficient to browse library parts, a new toolbar and menu entry now provide quick and easy access to some of the most common platforms. Some of those platforms include parts4cad, BIMobject, 3DWarehouse, Sketchfab, DoschDesign.

Attributes

Fire rating
REI60-C

Wall number
W01

Acoustic rating
A

Thermal transmittance
0,23 W/m²K
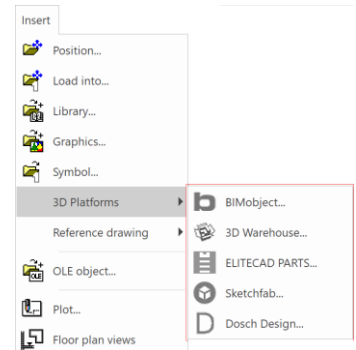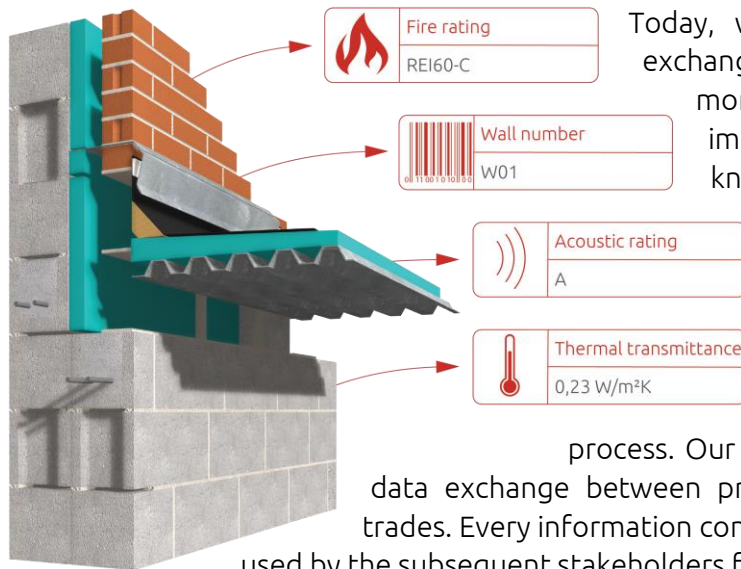
Today, when we talk about the design and exchange of building model, the term BIM is more relevant than ever. Probably the most important letter in this term, the "I", knowingly stands for information. Models, objects and intelligent building components provide information with their attributes and properties. The more information we already put into a model during the planning phase, the better the usability in the ongoing BIM process. Our highest goal is the smooth and lossless data exchange between project partners, software products and trades. Every information contained in the model early on can then be used by the subsequent stakeholders for a more efficient planning process.

Besides the existing parametric attributes that are automatically derived from the geometrical properties of the model, ELITECAD Architecture 15 provides drastically improved functions to add information as free attributes to objects and construction parts. On the one hand, all known attributes and property sets, specified by the buildingSMART standard, were integrated into the standard configuration of ELITECAD. On the other hand, the improved property manager now provides extensive functionality to add any information to objects using free attributes.

On top of that, countless functions were extended, to seamlessly integrate and make use of the free attributes. This includes the quantities and reports, the possibility to add the new information to 2D plan views using the new attribute-label object, the coloured depiction of models depending on their attribute values and the enhanced information about library parts by using attributes like article numbers and manufacturer details.
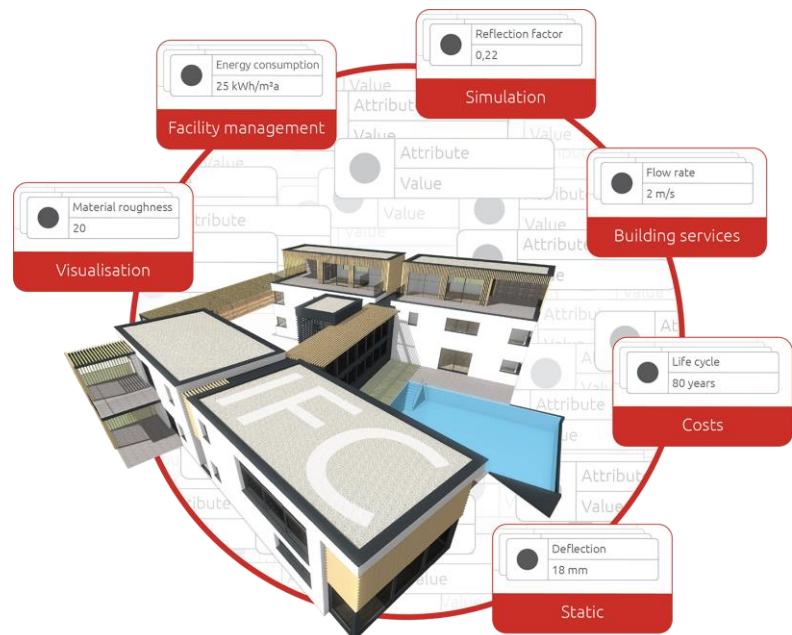
New attribute manager
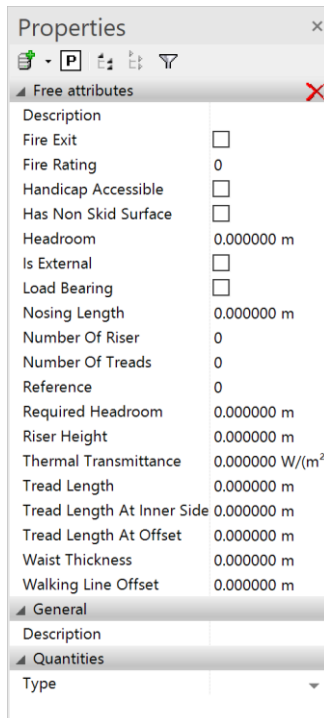
The basis for the management and configuration of free attributes is the new and improved attribute-manager. Besides the already known quantity-, IFC- and DXF-attributes, this window now also displays free attributes for the currently selected object.

Similar to other managers in ELITECAD, the new Attribute-Manager includes functions to open and close all groups as well as functions to search and filter attributes to always have the information you need clearly structured and available within seconds. Property sets and attribute definitions are managed and edited via parameters. Detailed information about single attributes is displayed via tooltips.

User-defined attributes

A core feature of the new attributes is the possibility for the user to define arbitrary free attributes. Therefore, an extensive toolset was created to configure attributes regarding names, language dependent display names, types and formatting. Using the new predefined types and units, every attribute imaginable can be defined within just a few clicks. In addition to the free attributes, it is also possible to define groups, which allow for a logical structure in the attribute hierarchy.
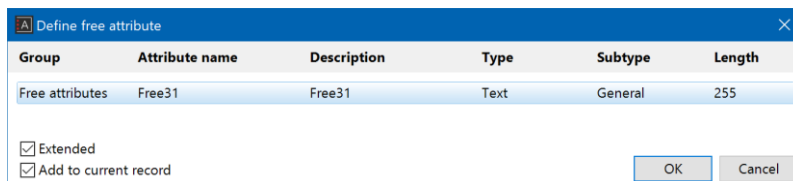
Attributes and property sets

Single attributes can be grouped together to data sets, also called property sets, similar to the quantity attributes. This enhances the efficiency of adding information to the model, because common attributes that should be added to several construction parts, can be grouped together to a property set with predefined default values. Instead of adding single attributes, only the property set has to be added to the object.

Management via database

Starting with ELITECAD version 15, the attributes and property sets are managed using a database. This allows for efficient storage and access to the attribute definitions and groups. Furthermore, this
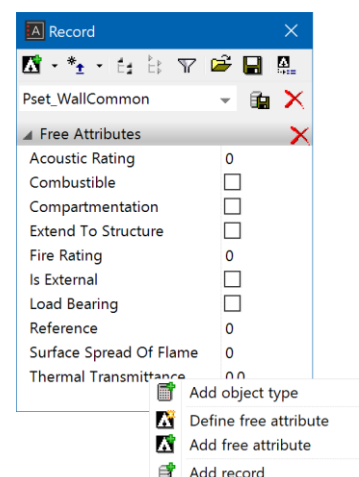
makes it easier to add more details to the attributes like translations to other languages. Attributes and property sets are managed globally, so if multiple users in a company are using a central installation, the attribute definitions are always available for every user. That way there will not be any conflicts or uncertainties about the definitions.

Export and import of property sets

Whenever free attributes are used in a drawing by assigning them to construction parts, the attribute definition will be stored in the drawing automatically, so other users can make use of those definitions on their installation. In some cases, it is required to only exchange the information about the attribute definition or property sets and not a drawing with information. For this purpose, ELITECAD version 15 features import and export functions to comfortably exchange the attribute definitions between installations.

New predefined attributes and property sets according to openBIM standards

Common attributes like fire rating or acoustic rating can in theory be defined as free attributes by the user. Since there is already a well-established standard by buildingSMART, this step is not necessary and can be done more efficiently. For every construction component, the IFC specification already defines every attribute imaginable. The entire specification is included in the attribute manager in ELITECAD version 15 which means every predefined attribute and property set can easily be added to construction parts. ELITECAD Architecture 15 features a total of 160 new predefined attributes, as well as all property sets specified by the buildingSMART organisation. A detailed specification as well as a description of all attributes can be found on the buildingSMART website:

https://standards.buildingsmart.org/IFC/RELEASE/IFC4_1/FINAL/HTML/
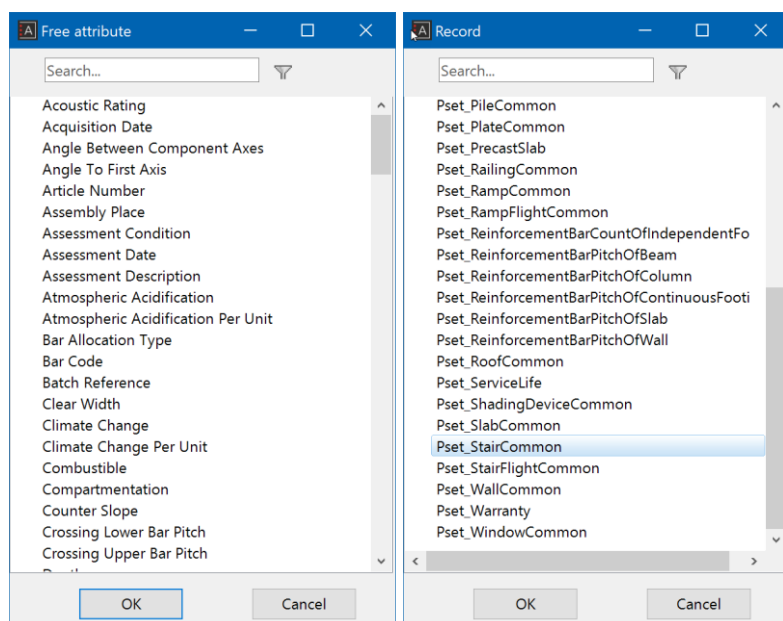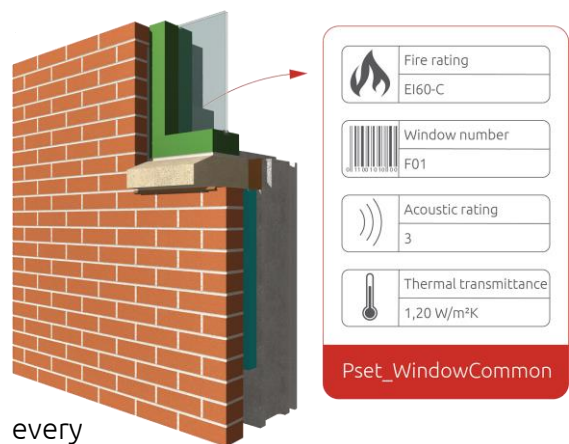
Free attributes in the openBIM process

Besides the possibility to define free attributes and assign them to construction parts, it is also important to exchange and distribute this new information with project partners and other planners. For this reason, ELITECAD version 15 now provides attribute mapping, which allows users to choose a certain IFC attribute as well as a property set for every custom attribute. All attributes included in the standard installation already have a predefined mapping, therefore every attribute that is used in ELITECAD is openBIM conform and can be processed by any software that supports IFC files.

Configurable attribute mapping

If users choose to define custom attributes that are not part of the IFC standard, it is still possible to configure a mapping between custom attributes and IFC attributes, so that they are linked together and the information will be available as standard IFC attributes. This makes it possible to export freely defined attributes as standard IFC attributes. The mapping table automatically suggests the most fitting attributes based on the object type and attribute formats and in turn guaranteeing the validity of the IFC model.
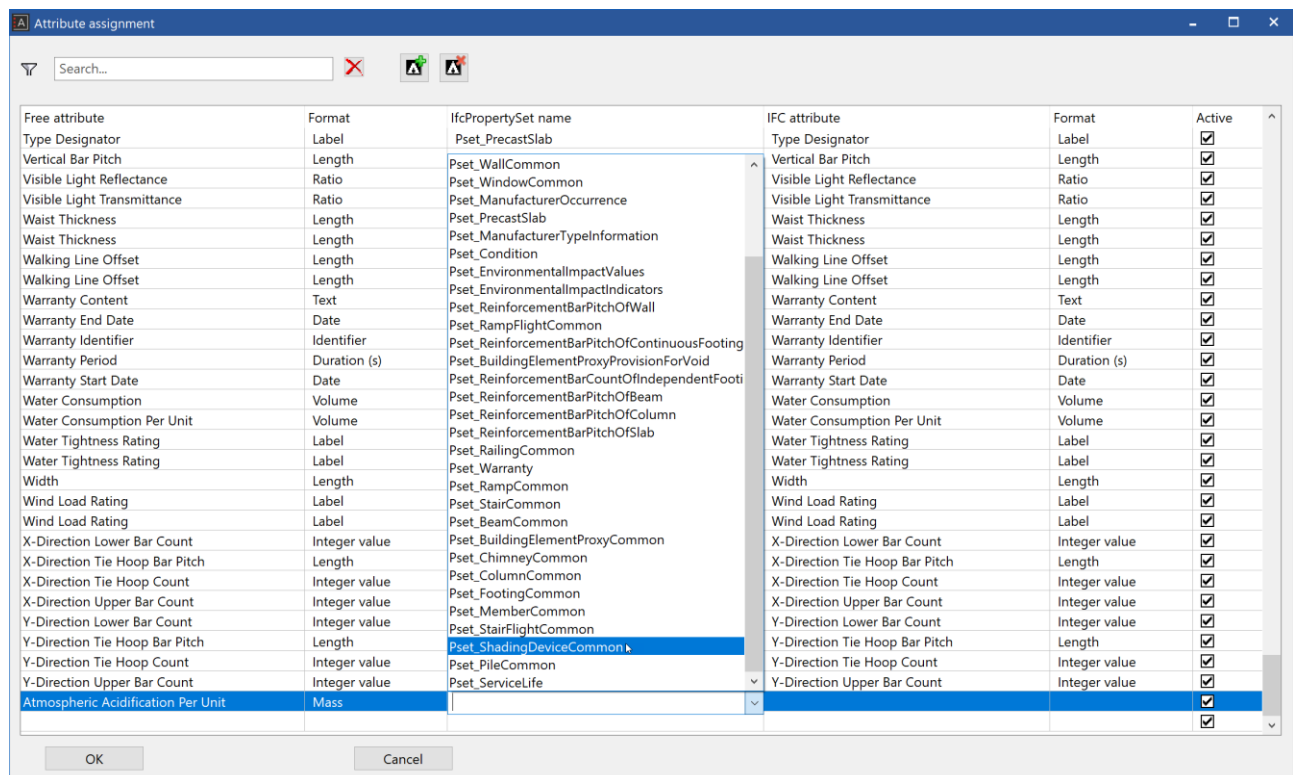
Attribute visualisation

Visualisation of properties and data

Just as important as the modelling and plan depiction, is the information that is linked to the construction parts and the model as a whole. Information is the central element in Building Information Modelling (BIM), because without data, no reports can be created, no masses and quantities can be evaluated and no costs can be calculated. In ELITECAD, this information is linked to the objects as attributes. Attributes are created in different ways and are essential for the data exchange with other applications and programs.
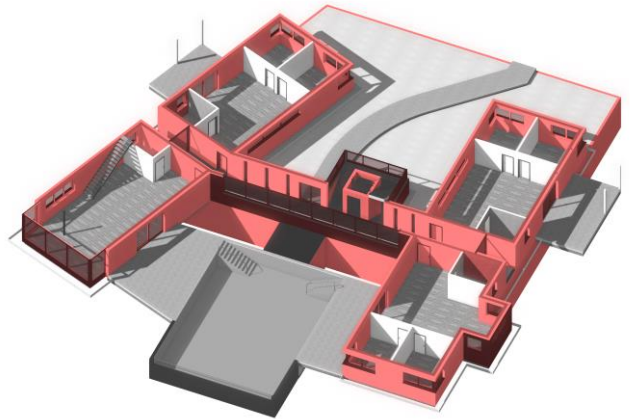
Countless areas of application
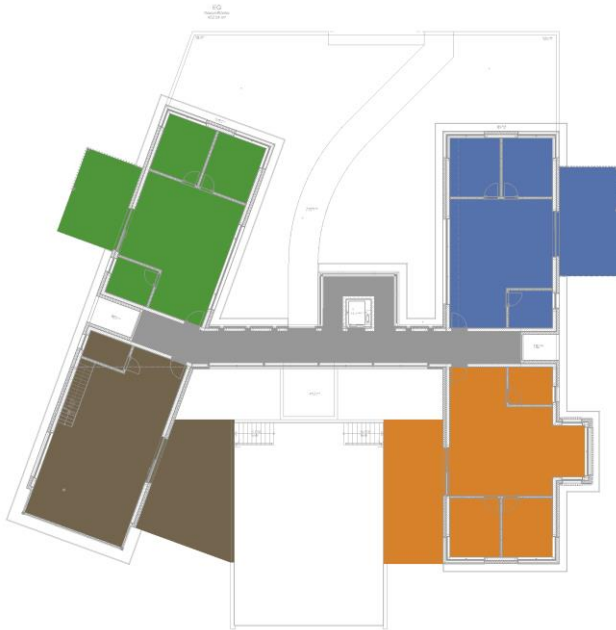
The quote "A picture is worth a thousand words" sums up very well that data and values in lists and reports are not as appealing to humans as a graphical representation or depiction of information. This knowledge inspired a new function in ELITECAD, the ability to graphically visualise information of attributes.

The coloured depiction of attributes is a new tool, which visualises object properties graphically. This leads to a number of practical examples in the world of digital construction, like the depiction based on storeys, the colouring of objects based on their fire rating, the grouping of apartments or the visualisation of building progress. The possibilities are almost endless, every information of objects, created automatically by the program or created manually by the user can be used as a basis for the depiction. Of course, free attributes and IFC properties can be used for the graphical depiction as well.

Free configuration of colours

A new dialog allows the user to configure the colours for every attribute value of a certain attribute. This does not necessarily have to be configured for every possible value, only for the values that should be coloured. The depiction according to attributes is a setting in the view parameters, including the model view. It is possible to choose an attribute for every view that defines the colours of the objects. As long as there is no other colour depiction, which has priority over the colour depiction, like renovation planning status, every object will be coloured according to the colours configured for the corresponding values. The coloured depiction can also be used for the plan views, because it is not only depicted on the screen, but can be printed as well.
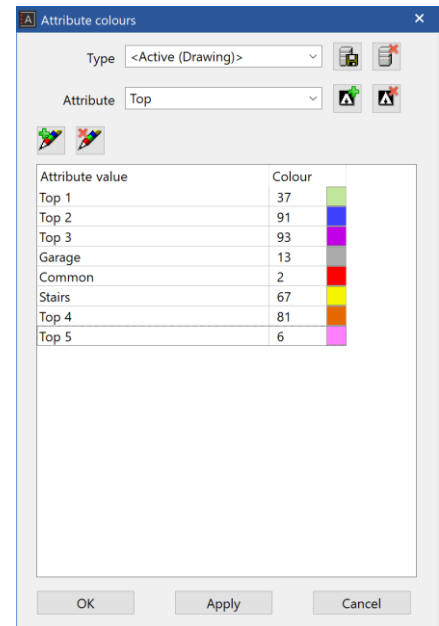
Searching objects by attributes

Another area of application is to search objects that have a certain property or attribute, independent of their value, for instance colouring all objects that have the information of an article number. In the attribute configuration, a default colour can be selected for every attribute. The default colour will be applied for every object that has the information of the attribute but does not have a colour assigned to its value. So, if there is only a default colour configured for a certain attribute, all objects that have this attribute will be coloured in the default colour and are clearly visible to the user.

View parameters for objects without attributes

In the view parameters, it is possible to choose what should happen with objects who do not have information about the configured attribute. The standard setting is a normal depiction without any specific colour. If the objects with the selected attribute should be clearly visible, there are two options: if the focus is on the objects with individually assigned colours to the corresponding attribute values, it might be advantageous to display objects without the attribute in the default colour as well. In this case, all object that have information about the attribute and that have an attribute colour linked to their value are displayed with the configured colour and all other objects, regardless whether they have the attribute or not are displayed in the default colour. In order to distinguish between objects that have or lack a certain attribute, it is also possible to set a fixed colour in the view parameters for objects that do not have the given attribute, which differs from the default colour. That way, all objects without a certain attribute will be depicted in a defined colour and can be distinguished from the objects that have the attribute, no matter if it the value was set explicitly or it still has the default value.

Attribute-label

Since there are many new features regarding attributes in ELITECAD Architecture 15, the resulting building models contain even more information than before. When we look at the data- and information exchange, of course the openBIM process comes to mind first where information is transported automatically via the BIM model. Nonetheless, 2D plans are a major part of the planning process so of course they have to also be extended for the improved functionality of free attributes.

The task to create graphical attribute information, or in other words to add information about attributes to 2D plans, can be done with the new function Attribute-label in ELITECAD. Like the existing object Room-label, Attribute-labels can be linked with objects and display information about these objects graphically according to predefined templates.

Always up-to-date-plans

By linking Attribute-labels with concrete objects instead of just displaying pure text information, the plan views are updated automatically upon changes of the main objects. So, for instance, if the fire rating of a parametric wall object changes, the plan depiction is updated automatically.

Freely configurable templates

The style of the graphical depiction of free attribute information on 2D plans can be freely configured using user-defined templates, which can be individually adapted to the customer's needs. Templates can be stored as library parts and define the number of attributes which should be displayed for a given object, how the attributes should be displayed, which text parameters should be used, what the orientation of the label is and which layer should be used. Information about labelling and formatting can be configured analogue to the Room-label object. Predefined templates can be stored as parameter sets, similar to other objects. In the end, only the attribute values are provided by the main object, the rest of the information is stored in the Attribute-label configuration.

Digital architectural surveying

Every architectural construction is located at a certain place, which might be a specific terrain or an existing construction. The architectural construction influences the surroundings, and vice versa. Therefore, the import of data representing the real world is an important basis for the depiction and the modelling of terrain and buildings. Depending on the situation, the processing of the surveyed data can be done in different ways, therefore it is important to provide flexible and efficient possibilities to handle this real-world data. ELITECAD Architecture 15 features countless innovations and improvements to further improve and optimise the handling of terrain and point cloud data.

Terrain module
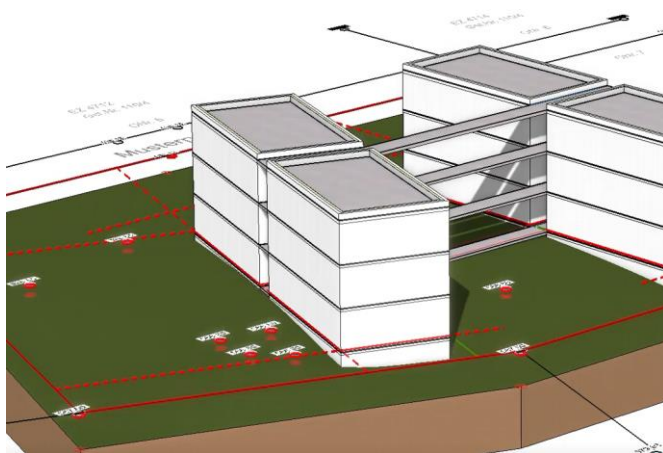
In general, a construction project only requires one dedicated terrain model, therefore in the past it was only possible to create one terrain model for every project. Nevertheless, the practical application has shown that there also are useful applications for multiple parametric terrain models. Therefore, the new version now supports an unlimited number of terrain objects within a drawing. This makes it possible to create copies of existing terrain data and design variations of the same terrain, which can be independently edited. The separating of terrains now also allows to split the terrain into individual parts, which are within the property and outside the property, without having to freeze one of the areas. Furthermore, the entire project can consist of multiple separated terrain sections.

The multi-terrain mode enables a series of advantageous workflows for terrains, especially for copy and manipulation operations. Furthermore, it also leads to new possibilities for geo-referencing.

Multi-terrain mode
The multi-terrain mode can be enabled in the terrain parameters. If the mode is switched ON, a new terrain is generated whenever a terrain function is activated. If the mode is switched OFF, an existing terrain is loaded for edit operations, and only if there is no existing terrain in the drawing a new terrain will be created.

In other words: When multi-terrain mode is enabled, the activation of terrain functions behaves like the functions of other architectural objects – at the beginning a new object is created, and upon selection, the existing object is manipulated. If the user only wants to use a single terrain model, the mode can remain switched off, and the existing workflow does not have to be changed. The advantage, that
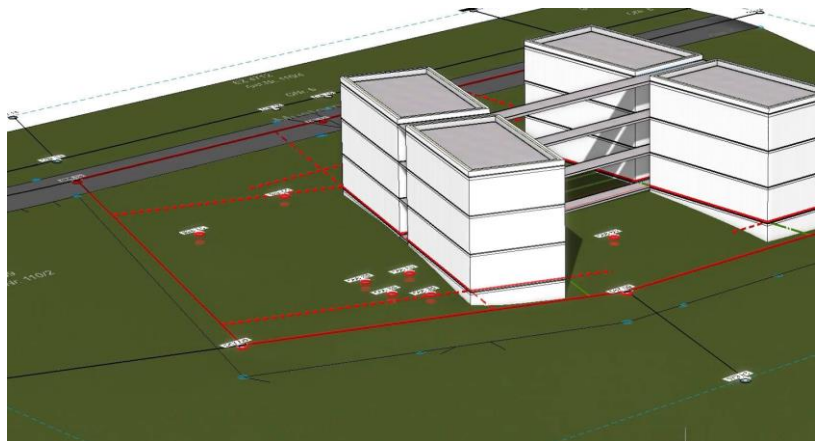
the activation of a terrain function looks for the terrain model and activates it for modification can still be used nonetheless.

Copying terrain objects

Terrain models can be copied just like any other object, without losing its parametric properties. Besides the creation of variations, another use case is the separation of a terrain into two parts, the area outside of the property and the terrain within the property. After copying the terrain, the two resulting objects are congruent. One object receives the property border as its outside contour and the other one has to use the border to create a deduction body. The two areas can then be modified individually.

Terrain - georeferenced import

When terrain data is imported, the first terrain object will be placed in the centre of the drawing and the project origin for georeferencing is stored in the terrain parameters. Starting with version 15, the terrain origin is valid for all terrain objects in a drawing. When multiple terrain models are imported later on, the terrain object is automatically positioned relative to the existing terrain origin, and therefore is relative to the existing terrain objects.

Terrain – georeferenced copying and adjusting

If a terrain model is adjusted relative to another object, it does not affect the terrain origin. On the other hand, if all terrain models in a drawing are moved horizontally, the terrain origin is adjusted as well. This allows adjusting an imported terrain relative to the model.

Terrain georeferencing – select terrain origin

The terrain origin for all terrain objects is displayed in the terrain parameters and can be modified using numeric values. A new feature is the possibility to select the terrain origin (x,y coordinates) with a mouse click in the floor plan. That way the terrain origin can be set without measurements or manual value input.

Terrain georeferencing – select model origin
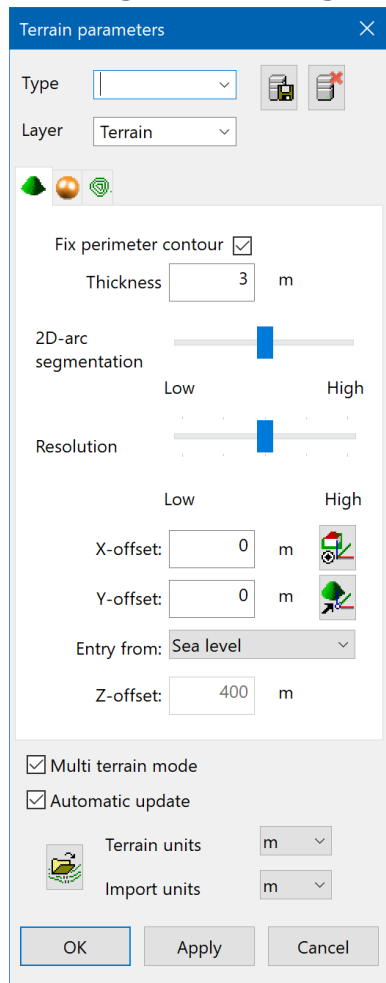
The terrain origin is valid for all terrain objects and serves as a reference point for the coordinate depiction of terrain points and curves. In order to show georeferenced coordinates for points of the design model, the reference point for measurements has to be set equal to the terrain origin. A new function in the terrain parameters creates a coordinate system at the terrain origin and adjusts the model reference point accordingly. This reference system also visually differs from other rotated coordinate systems by using a yellow rectangle. If this reference system is enabled, the coordinates of the entire model are georeferenced analogue to the coordinates of the terrain points. Using the function to reset work plane, the reference system can be set to centre of the page.

Adjust terrain in height

When a terrain object is adjusted in z direction using the manipulation functions, the 2D data of the terrain object will remain in the work plane at a height of zero. In contrast to the function "Move points and curves in Z-direction" of the terrain property bar, the "normal" adjustment of the terrain will also move the terrain modifications (excavation, etc.). That way it is now also possible to correctly adjust terrain objects in the height direction.

Multi selection and deletion of terrain points

A new function in the height point property bar allows the selection of multiple points using area selection. The selected points are visually highlighted and can be deleted together. This allows for a quick removal of unwanted areas.

Optional depiction of height point symbols

Some terrain models contain a huge number of points, which are graphically depicted with a height point symbol. In cases where the terrain model is not in the focus those points sometimes might be distracting. Now it is possible to optionally disable the height point symbols using the image properties.
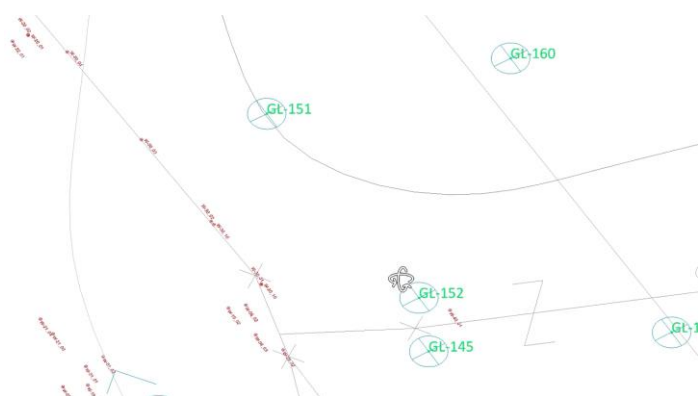
Improved depiction of terrain handles

In order to improve the visibility of terrain points in dense drawings or drawings with many terrain points, the graphical depiction of handles was optimised. That way, the necessary details are always clearly visible, no matter the depiction, wireframe or solid model.
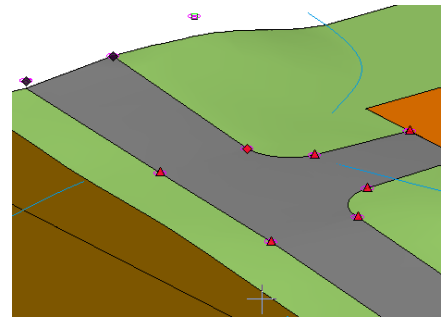
Configurable units for terrain points

The unit set in the parameters for terrain parameters and height parameters of all terrain modifications now also affects the display of the coordinates in the property bar for terrain points and the height in the height curves. The unit is displayed in the property bar next to the coordinate fields. The reference to the terrain is improved, since the input unit is not the currently active CAD unit.

Point clouds

E57 file format for import of point clouds
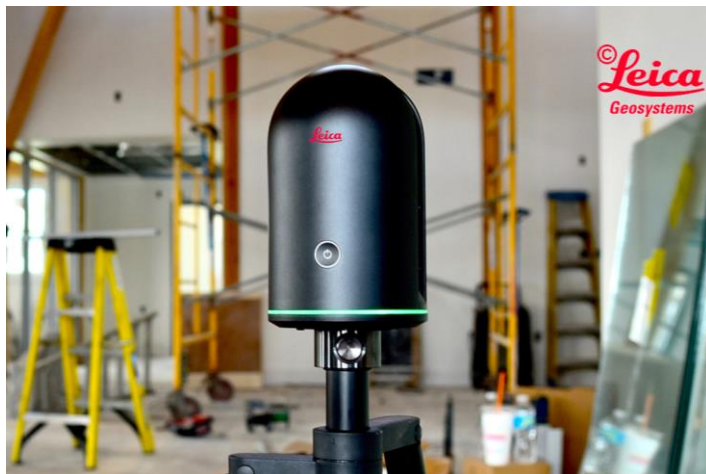
Besides the import of point clouds from ASCII files, it is now also possible to read data in the E57 format. The E57 file format is a compact, vendor-neutral format for storing point clouds, images, and metadata produced by 3D imaging systems, such as laser scanners. The file format is specified by the ASTM, an international standards organization.

LAS and LAZ file formats for import of point clouds

Furthermore, it is now possible to read point cloud data from LAS and LAZ formats. The LAS format is a binary format for point cloud data, which is produced by LIDAR systems (light detection and ranging, similar to radars) which is state of the art for point cloud scans. The format is defined and developed by the American Society for Photogrammetry and Remote Sensing (ASPRS). The LAZ format is a specially compressed version of LAS data.

Area selection for point clouds

A new function in the point cloud property bar allows the selection of multiple points using area selection. The selected points are visually highlighted. In contrast to the terrain, the area selection of height points also allows for a selection in z-direction. As a result, the area of selection is a cuboid with an arbitrary contour.

Deleting points of point clouds

The selected points from an area selection can be deleted at once via the property bar or using DEL key. That way unnecessary points can be eliminated and the file size is reduced. Furthermore, errors during scanning, for example distracting objects like cars and people can be corrected easily.

The focus on a certain section in z direction allows the deletion of plants, or power lines without changing the important features of the floor for instance.

Separating points in point clouds
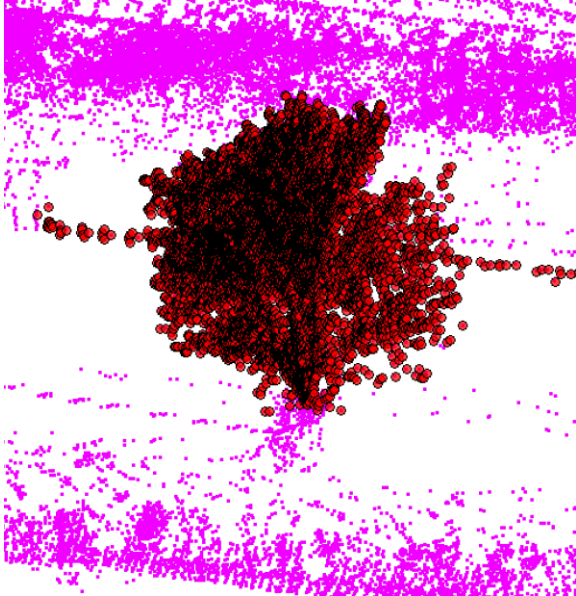
By using a function from the property bar, the selected points of an area selection can be split into a new point cloud. Using this feature, a large project can easily be divided into smaller sections. If not, all points are visible, the performance of image display as well as a clear overview is greatly improved. After splitting a large point clouds into several sections based on the height, it can be correctly assigned to the individual storeys.

Unification of point clouds

Divided point clouds, or even independently loaded point clouds can be unified into a single point cloud at any time. For that purpose, multiple point clouds can be selected using the SHIFT key. If multiple point clouds are selected, the property bar shows a function to unify the selected objects. All selected objects are combined with the point cloud, which was selected first.

Configurable point size in point clouds

The size of the depicted points on the screen can be configured in the options under depiction. The depicted point size can now be larger than one pixel. For point clouds with only a few points, this makes it easier to find single points. Another advantage for point clouds with only a few points is, that with larger points, the individual points cover a larger surface and therefore the image still looks dense, even though there are fewer points.
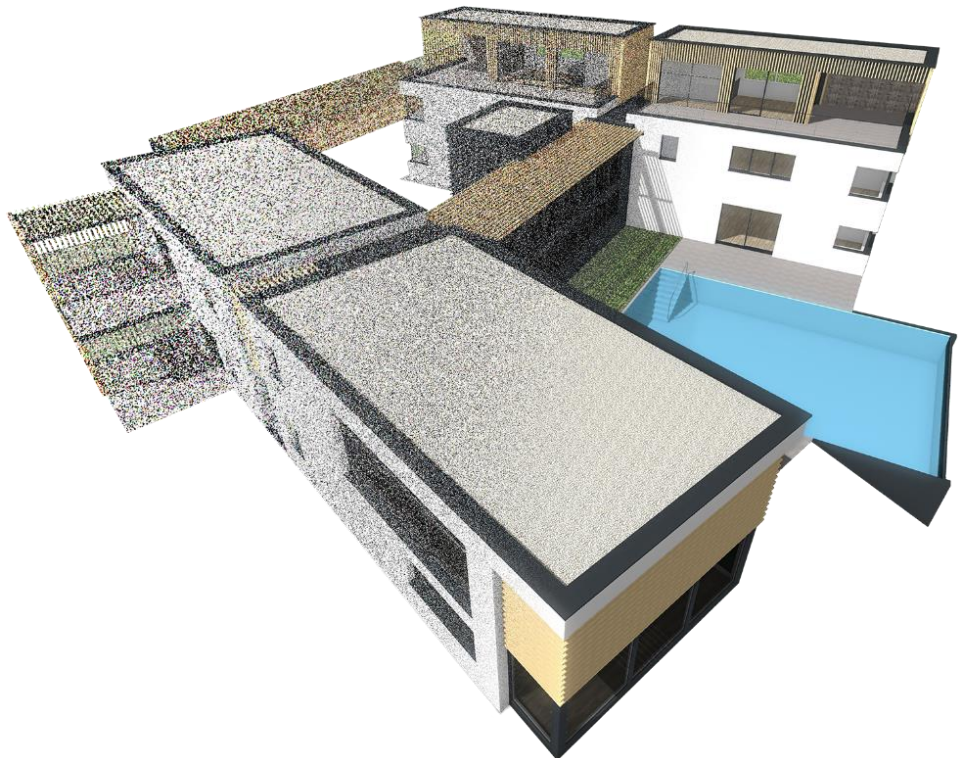
Depiction of point clouds

If the depiction of the model is switched to perspective projection, the points are displayed with varying intensity, depending on the distance to the observer. The perception is increased closer to the viewer, and decreased the further away the points are. This leads to a more natural impression and effect for the observer.

Point clouds and terrain – import of info text

In addition to coordinates and colour, it is now possible to read another column, which contains text information during import. This data is stored as "Info-text" for the corresponding point. The functionality is only intended for smaller point clouds, not for projects with millions of points, otherwise it is not necessary to distinguish between individual points. The maximum number of imported texts is currently set at one thousand. The info text might be a number which can be used for identification purposes or it might be a type information in order to assign points to certain categories.

	A	B	C	D
1	W-01_01	-0.327	-14.734	3.758
2	W-01_02	-0.013	-0.842	3.249
3	W-02_01	-0.504	-0.462	6.192
4	W-02_02	-5.689	-0.403	8.792
5	W-03_01	-0.009	-0.263	3.303
6	W-03_02	0.03	6.932	3.39
7	W-04_01	0.267	6.944	2.796
8	W-04_02	2.79	7.091	2.773
9	W-04_03	5.278	7.225	2.746

Point clouds and terrain – graphical depiction

Using the image properties, the info text can be optionally displayed for the points. This is only a temporary graphical information and not part of a plan. As a result, the inserted info text cannot be printed. The graphical depiction of the info text also occurs if the point clouds or terrains are not selected.

Quantities

Gross-volume

The gross-volume of rooms is an important foundation for the calculation of costs for a building. ELITECAD Architecture 15 automatically calculates this information according to the local standard based on the gross ground area and the corresponding heights. The gross ground area is the sum of ground areas of the floor plan areas of a structure, which is determined based on different classifications A and B. The terms are depending on the local standard, for instance A+B+C. In general, the A-areas are the covered rooms that are closed on all sides. The B-areas are covered rooms that are not closed in all sides, for instance loggias, greenhouses or covered balconies. Not counting towards the gross-volume is the category C, which includes areas like balconies, terraces and outdoor stairs.
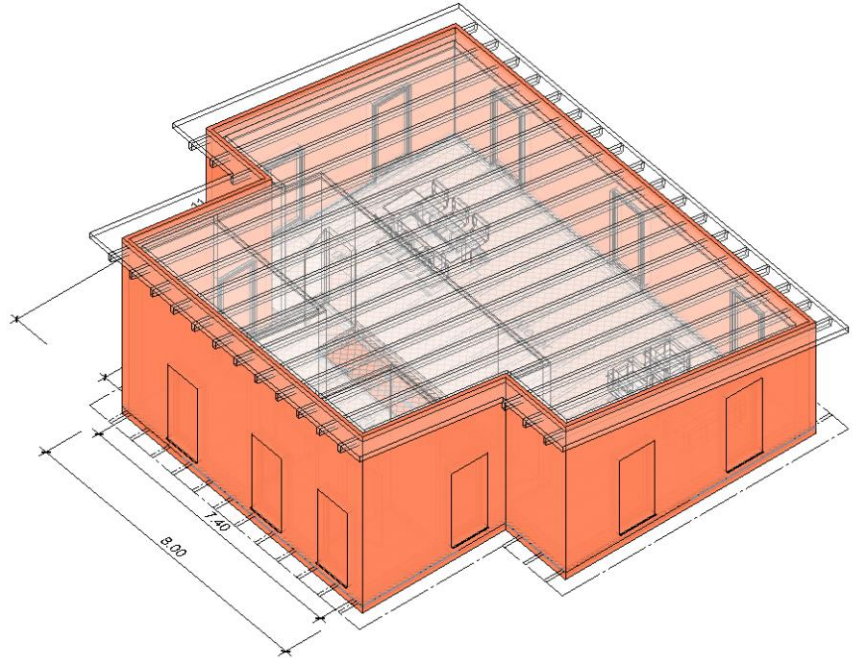
Graphical depiction
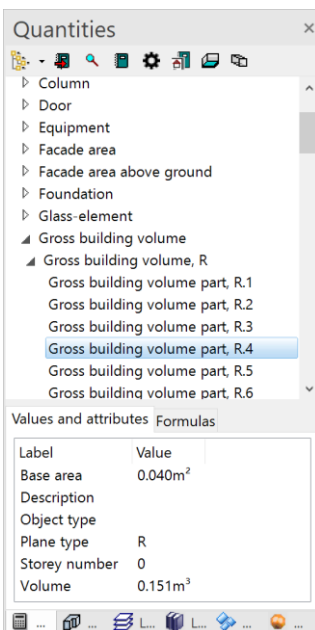
The graphical depiction is the ideal tool for verification of the calculation. The categories are divided into partial sections, so for every section an area can be calculated using an easy formula. The area of the basic polygons is then multiplied with the height of the room of the corresponding storeys. Roof constructions are considered as well, in order to calculate the precise volume of the room.

Depending on the information that is selected in the manager, either the entire room or the selected section is highlighted based on the formulas and the partial areas.

Depiction in the quantity manager

The calculated areas are shown as new elements in the quantity manager, so that the corresponding areas can be easily filtered and highlighted, for instance per storey or category. The corresponding data is listed for the individual objects. Every partial area is depicted with formula and result.

Reports

All the newly generated data is now grouped together into a new report for the gross-volume of rooms. The entire sum, as well as the partial areas provide an overview as well as the comprehensible depiction of the calculation.

Gross building volume

Project	CAD_Object_Project01
Alternatives	MODEL_Project01_with_views.d

Area type	R	
ST-1		**Volume**
	BA	2659.505 m³
	GF	3358.324 m³
	NF1	1731.752 m³
	NF2	1319.998 m³
	TF	94.840 m³
Total		**9164.419 m³**

Total	**CAD_Object_Project01**	**9164.419 m³**

Details

Structure	ST-1
Storey	BA

Area type	R	
R.1	**Calculation**	**Volume**
R.1.1	3.850x0.200x3.440	2.649 m³
R.1.2	3.265x0.200x3.440	2.246 m³
R.1.3	(5.964+5.932)x0.090/2x3.440	1.841 m³
R.1.4	0.110x0.100x3.440	0.038 m³
R.1.5	7.397x0.090x3.440	2.290 m³
R.1.6	3.175x0.200x3.440	2.184 m³
R.1.7	10.043x0.050x3.440	1.728 m³
R.1.8	0.650x0.200x3.440	0.447 m³
R.1.9	(9.812+9.740)x0.200/2x3.440	6.726 m³
R.1.10	(5.067+5.139)x0.200/2x3.440	3.511 m³
R.1.11	9.690x0.200x3.440	6.667 m³
R.1.12	6.565x0.200x3.440	4.517 m³
R.1.13	5.100x0.100x3.440	1.754 m³
Total		**36.598 m³**

Quantities for lintels and roll blind cases

The existing reports were extended, so that changes regarding lintels and roll blind cases are now also featured in the reports.

Graphical visualisation of room area calculation

Analogue to the gross-volume of the room, the room area as well as the partial areas are displayed in the quantity manager. Depending on the formula or area the graphical highlighting guarantees easy verification of the result.

Reports

Display of new reports

When Excel files are opened, usually the last row, which was in focus, is displayed in the visible area. When reports are generated, sometimes this behaviour is not considered, so after filling the report with information and opening the new report, the focus is not on the first line. This behaviour was adapted, so now after generating a report, the focus is always on the first line.

Lintels and roll blind cases

The existing reports were extended, so that changes regarding lintels and roll blind cases are now featured in the reports too.

Reports

The countless pre-defined reports were extended by a new report, which lists all objects including their free attributes.

Usability

Optimised area selection

Selecting objects in ELITECAD can be done using a rectangle selection, which is defined by two diagonally opposite points. Entering the points per click in the graphics window sometimes has the side effect, that instead of the rectangle, an object is selected especially in the case that the point is very close to an object. As a result, a normal object selection is performed instead of starting a rectangle selection. Selecting an area can now also be done using click and drag functionality. Therefore, in very dense drawings with many objects it is now possible to select elements using area selection without zooming into the desired area first. The workflow is now faster and more intuitive.

Improvements in the graphics window

Better visibility for handles and gripper

Handles and grippers for selected objects are drawn on top of the object and overlap with other information in the model. The better the visibility of those tools, the easier the manipulation of objects. For that reason, the graphical depiction of handles and gripper was further optimised. They are now displayed slightly thicker and with colours that feature more contrast, so they clearly differ from the rest of the model. Handles can also be displayed with fillings and borders, which further increases visibility.

Configurable snap radius and selection radius

The snapping of points and the selection of objects are some of the most commonly used functions in ELITECAD. The size of the area, for example the snap radius as well as the selection radius can now be configured in the options menu. This wish came mostly from experienced users, who wanted to reduce the area or make it configurable. On the one hand, this requires a more precise style of working, but in denser plans less zooming is required which further improves the efficiency. At the same time, the probability of accidentally selecting multiple objects at once is reduced.
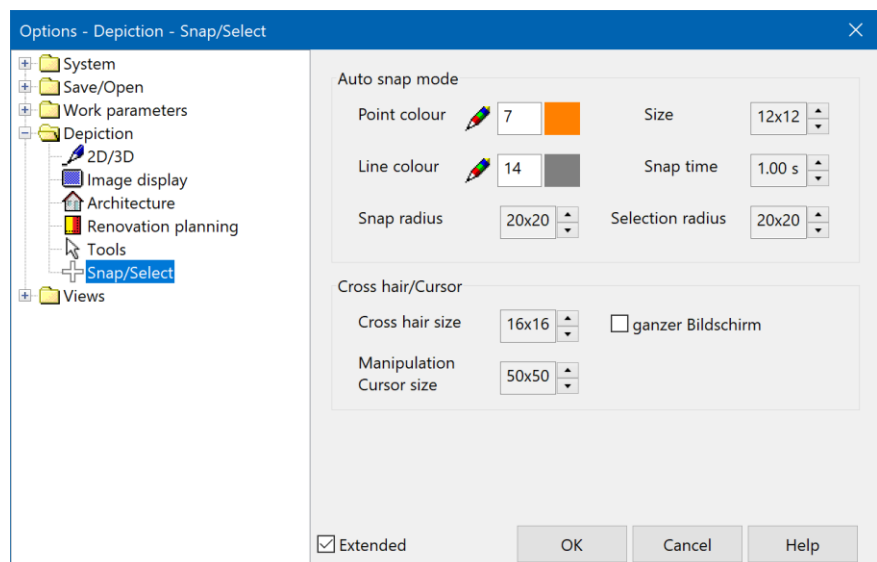
Configurable hair cross size

Different users have different preferences, especially when it comes to the crosshair size. Therefore, this property was turned into an option and now the size can be configured individually. It can be increased up to the size of the screen.

Navigator tool bar

The new navigator tool bar combines several existing as well as new functions for setting the camera position into one tool bar. The change of the viewing direction to a front view, side view, etc. was only possible by selecting the corresponding standard view, or by defining a free camera position. Changing to a different view is generally not necessary if one only wants to change the viewing direction of the model. Besides the new buttons to change the standard viewing direction, the new tool bar also features buttons for browsing through the standard viewing points as well as the stored cameras or snapshots (previous/next).

Boolean operations

Easier creation
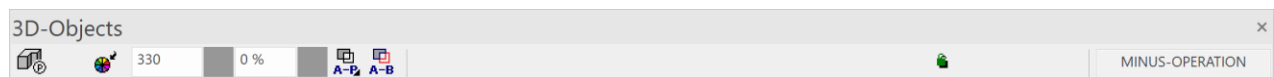
The creation of 3D objects usually displays the 3D property bar, where the most important settings can be set in advance. The generation of Boolean operations (average, unification and minus-operation) now works analogue to the basic 3D objects. Settings like the operation type, or if the result should be frozen, or if the original object should stay changeable can now be set in the property bar. In contrast to the basic objects, the detailed parameter dialog cannot be opened before the object creation. The reason for that is that the settings such as colour, layer, renovation planning state for the resulting object are adopted from the original object. Therefore, it is not necessary to modify those settings.

Easier deletion

One click on the result of a Boolean operation makes the property bar for Boolean operations appear again. The delete function can be activated via the property bar and only deletes the result of the operation, not the object itself. Alternatively, a Boolean operation can be selected via ALT-click (this corresponds to a partial selection) and via the delete function or DEL key, it can be deleted. As a result, the Boolean operation will be deleted and the original objects are visible again.

Graphical depiction of 3D operations (CSG tree)

Complex 3D objects often are modelled via multiple steps. For instance, by using Boolean operations or rounding operations on the edges, which consequently turn a basic object into an edited object, which can be regenerated by changing the original objects. This process is also called Constructive Solid Geometry (CSG) and the steps of this process that lead to the desired result can be depicted as a tree. The 3D origin dialogue was completely redesigned and now graphically shows the CSG tree, so the history of operations on the 3D object. The dialog displays the necessary modelling steps, which were used to create the selected object in a tree. The intermediate steps or basic objects can be selected directly in the tree and are highlighted in the graphics window. That way it is easy to navigate between the modification steps and the individual parameters of the original objects and the intermediate steps are always accessible. As a result, this new function allows for easy modifications on complex objects.
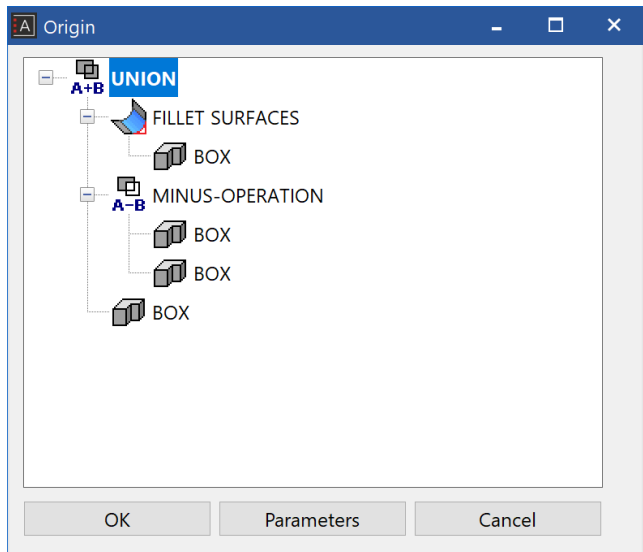
The 3D origin dialog can now easily be activated via the 3D property bar.

Pre-sets for creating 3D-objects

Most of the settings for creating 3D objects can be edited before the creation via the property bar or the detailed parameter dialog. Up until now, the only exception were the representation level settings. Now this setting can also be configured before actually creating a 3D object. In contrast to the modification of objects, where the selected object is displayed in the preview window, in that case the preview window shows the settings of the selected parameter set based on a fictitious 3D object.

Improved graphical feedback for dimensions

The new graphical preview for deleting and adding dimension points provides better feedback for users and simplifies user input. In addition, when moving a dimension text, the dimensioning text is displayed at the cursor, so that the result of the manipulation can be judged on the fly before actually updating the dimensions.

Light and camera dialogue
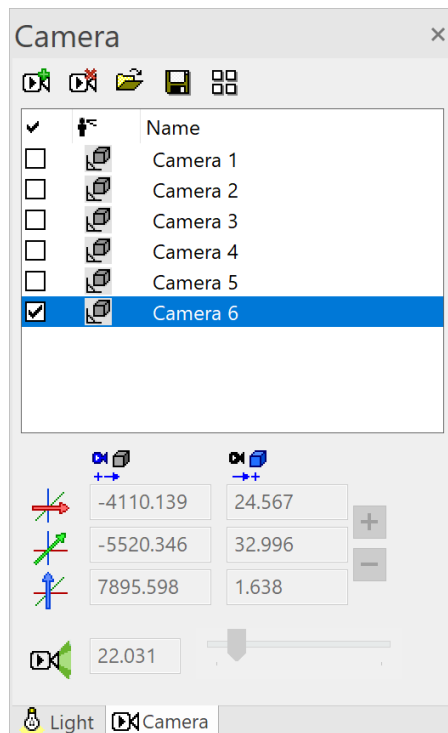
New design of the user interface

Similar dialogs and UI elements improve the easy operation and learnability of the software. For this reason, the user interface for light and camera settings was redesigned now features a more logical structure. Similar to other dialogues, the functions are listed in the topmost bar. The parameters in the bottom are grouped together in register cards, sun and timer intervals are part of the parameters as well. New icons and labels simplify the recognition of the meaning of certain settings.

Dockable dialogue windows

Since the manager windows for light and camera not necessarily are closed after finishing a configuration, they are now dockable windows and therefore improve the simple and clean design of the user interface.

Light-/camera configuration without 4 views mode

Changing settings no longer requires switching to the 4 views mode. Parameters of the light and camera can be modified at any time, since the dialog can be visible at all times. Only geometric changes, like the direction of the light require the 4 views mode. Changing light parameters immediately affects the graphics output and can be verified and further adjusted in real time.
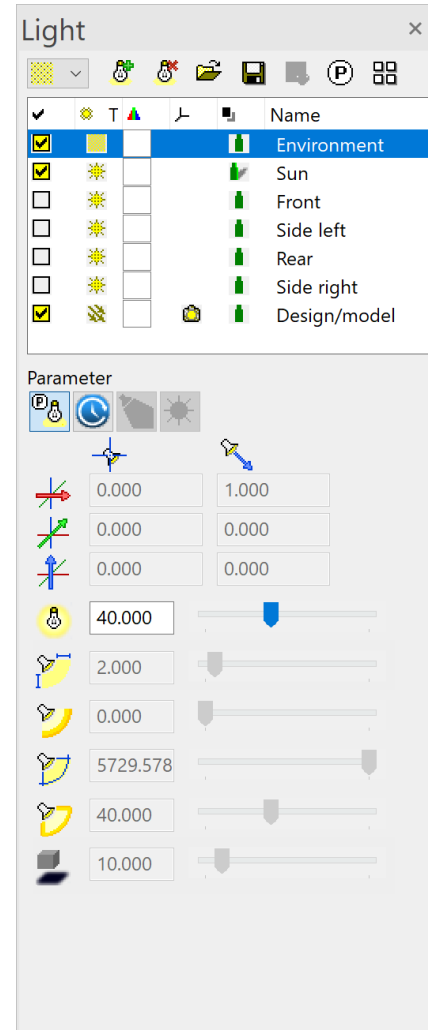
Extended sorting possibilities

Until now, ascending and descending sorting of cameras and light sources was possible with a click on the column header. In addition, it is now possible to sort cameras and light sources manually using drag and drop in the table. The result of the manual sort is defined as a user–defined sequence. A click on the column header now switches between ascending sort, descending sort and manual sort.

Camera path export / import

In order to transfer defined camera paths they can be exported to external files and reimported from there.

User interface

Ergonomic and efficient workflows are the basis for an optimised working process. Changes on existing layouts are always implemented with care, not to change existing habits and workflows of experienced users too much. Nevertheless, sometimes it makes sense to implement some changes to improve usability. After a short period of adjusting to the change, the reduced number of clicks and the shortened mouse movements improve the working pace. This principle also applies to the optimised menu workflows in ELITECAD Architecture 15. In addition, the new version provides countless advantages through clearly structured menus and helpful extensions in the user interface.

Dockable window for work plane functions

The window „Work plane „can now be docked. That way, the commonly used functions are always visible and can be seamlessly integrated into the tool bars.
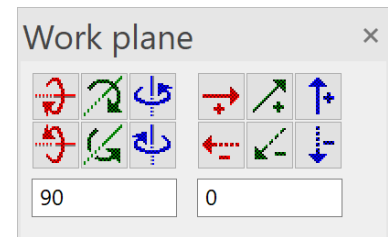
New search bar for the tools box
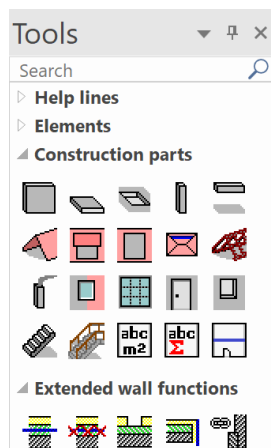
The tools manager with the function to open or close toolbars one the most important functions. Many users prefer to add many closed tool bars to the tools menu for quick access. The new search functionality allows users to search for a specific function or tool bar using the first letter of the name. The displayed elements and tool bars are then reduced to the corresponding functions and toolbars. That way, not only the desired toolbar but also functions can be found in an instant.

Optimised menus for import and export functions

The continuously growing number of supported interfaces kept increasing the size of the interfaces menu. For that reason, and to get a clearer structure, the new version features a clear separation of the functions into two separate menus for import and export.

In general, it is more intuitive to separate functions for loading and storing files into groups in the file menu. The functions for "save", "save as" as well as export functions now create a small group. "File open" and recently used files have been grouped together as well. Furthermore, those groups are now located in the topmost section of the menu, so that they can be accessed faster.

Improved workflows in menus

Some terms in the user interface, especially in menus have been improved and unified to provide a more intuitive and understandable user experience.

Measurement functions are commonly used, and therefore are no longer located in a submenu.
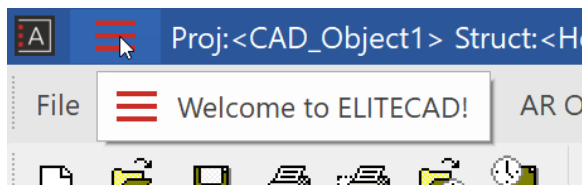
The access to manager windows is now in the main menu instead of being a submenu under "View" and therefore are more accessible to the user.

More icons

Images improve the recognition of functions. Therefore, countless icons were introduced in addition to the function names.

More information in the title bar

The window „Welcome to ELITECAD" can now be opened quickly with a small icon on the top left and features access to the recently opened drawings as well as project templates. An additional symbol indicates whether there is any new information in this area.

Quick access to notifications

The notification window (information window) can now be accessed via a small icon in the top right.

Display of the number of notifications

The new symbol in the title bar, which can open the information window now also can display the number of notifications. This convention is also known from other applications like mobile apps. It allows to quickly check the status about important notifications for the user.

More details for adopt parameter function

The function to adopt parameters is continuously improved. A new addition is the possibility to also adopt 3D resolution parameters. Furthermore, for windows it is possible to adopt the muntin depth and muntin thickness.

In addition, it is now possible to select the text content as selection criteria for adopting text parameters.
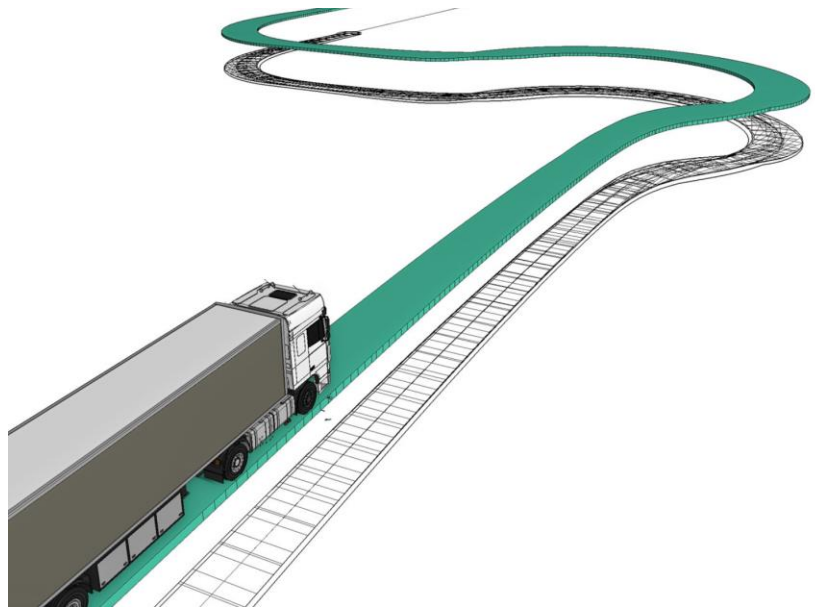
Free scale

When entering a free scale, it is now possible to use colons (for instance 1:15).

Tractrix curve

Animated vehicles

Besides the depiction of driving paths in the plan, it is also important and informative to interactively be able to analyse the driving behaviour of certain vehicles along the given path. For that purpose, a new function allows the user to drag the vehicle across the given path with the mouse. The interactive animations show the position of the vehicle with all of its components, as well as the required space of the vehicle in real time. The vehicle dynamically follows the mouse in forward and backward movements, and the important information can be observed in an instant.

New vehicle types

In addition to the standardised vehicles of the FGSV (Forschungsgesellschaft für Straßen- und Verkehrswesen) the new version features more vehicles, especially important for US standards.

2D extensions

Working in 2D still remains a crucial part, even for a 3D oriented BIM software. Many complex construction parts are generated from 2D contours, and of course, plans have to be generated fast, easy and in high quality. For those reasons, a continuous improvement and simplification of 2D functions will always be a high priority. Easy workflows and new functions lead to fast results and therefore make daily work easier.

Orientation of lines and poly lines

Geometrically speaking, lines and polylines are basically a connection of several individual points. Nevertheless, sometimes it is necessary to know in which order die points were created, or what the drawing direction was. The starting point for instance is the reference point, which stays at a fixed position when the length changes.

If a polyline is created with a certain line type, which consists of sections with fixed length, then the starting point is crucial for the graphical depiction. A function for changing the drawing direction can be accessed via the property bar and enables an even more precise plan generation.

Double line with options
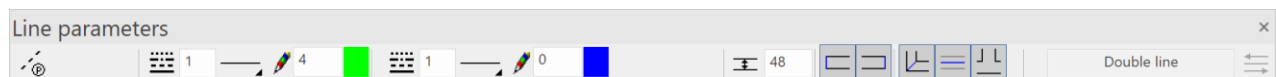
The double line is a lesser known help tool to create 2D contours. With new implementations in version 15, this will change in the future. The generation of a double line was completely redesigned, so now it is very easy and intuitive to handle. In the beginning a property bar is shown which provides numerous options, including several new settings. The user can for instance decide whether the double line should be closed at the beginning and at the end, if there should be a centre line, or how the corners should be generated.

Revision cloud
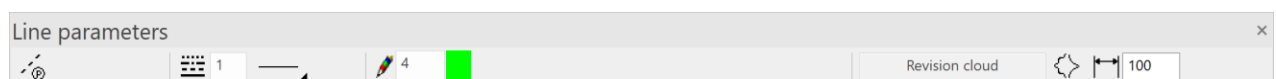
The revision cloud is a 2D element, which usually is used to add annotations about changes in the model. Drawing cloud-shaped contours is now simpler than ever, because there is a dedicated object. This new 2D element can be used analogue to other drawing functions.

The shape of the arches as well as the direction (inside to outside) can be configured using the property bar. Changes of the colour, line type, arch parameters etc. can be performed via the property bar later on by selecting the revision cloud. Furthermore, the revision cloud features handles to manipulate the contour.


modify this opening and report execution

The data exchange via DXF interfaces also supports revision clouds and can import and export native objects.

Handles and gripper for help lines

Help lines now feature handles and gripper. Using these tools, help lines can be manipulated even easier. Selecting the handles at the corners of the screen allow for changing the direction. Dragging the lines results in a parallel shift.

Linear dimensions parallel to line

Up until now, linear dimensions were exclusively positioned horizontally, vertically or parallel to the dimensioned points. A new addition is the option to define a direction, independent of the selected points, parallel to a selected line. In the past, a few intermediate steps were necessary to achieve this. Now the generation can be done easier and faster.
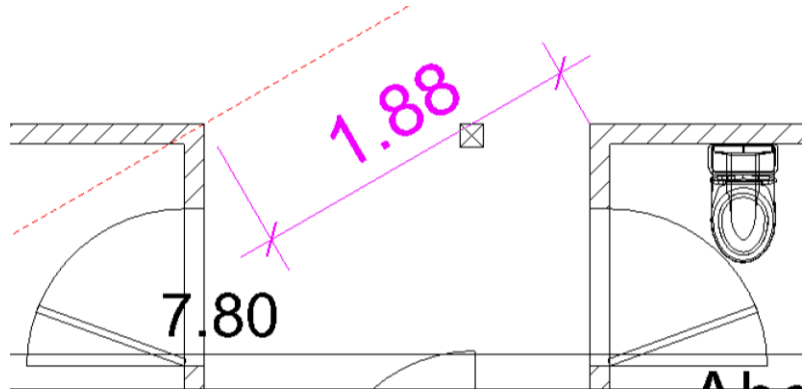
Simplified measurement of polylines

Measuring is one of the most basic functions in ELITECAD. The extensive function "Measure area" includes numerous options and provides countless details about the result, for instance the length of lines. Sometimes it is only necessary to calculate the length of a single polygon. Therefore, this function was introduced as a new measurement function and included into the measurement window.

Reconstruct polygon from hatch
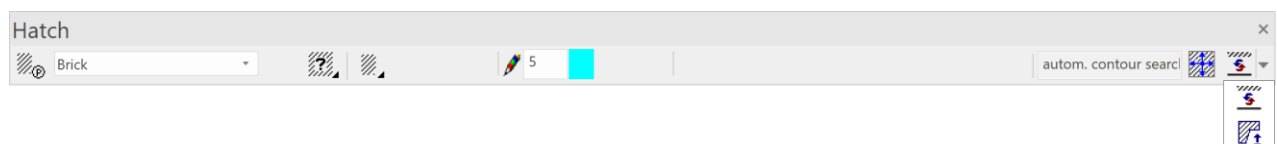
Hatches are usually generated using a closed polygon, but sometimes this polygon does not exist anymore. A new function called "Create boundary contours from hatch", which can be activated from the property bar, can recreate the boundary contour from a given polygon.

System and configuration

Supported operating system

Similar to the previous version ELITECAD Architecture 14, the current version is available as 64-bit edition as well. The supported operating systems for ELITECAD are based on the Windows versions officially supported by Microsoft. At the time of release, Microsoft provides support for Windows 8.1 and higher, therefore the minimum requirement for ELITECAD is also Windows 8.1 or higher. The recommendation is to always use the latest Windows version, and also ensure that the latest updates for the operating system are installed.

Database upgrade to MySQL version 8

Storing information in ELITECAD, for example data about quantities, is done using a MySQL database. As Oracle Gold Partner ELITECAD 15 also installs the latest version 8 of MySQL as an integrated part. The existing data from previous installations and older MySQL versions is automatically migrated without any data loss.

Database optimisations

Using various optimization steps, it was possible to achieve large performance gains for database access via network interfaces. Organizations that use a central installation on a server will profit from drastically reduced waiting times during the evaluation of quantities.

Easier and faster internet update

The Welcome Screen provides information about available updates. By improving the workflows, now even less steps are necessary to download and install new updates. In addition, the performance of the entire process was improved, so the latest version is installed and set-up even faster.

Improved performance for calculations and in the graphics window

Countless optimizations in various functions lead to shorter calculation times, for instance the refreshing of rooms or the import of large drawings. The graphics output for larger models is now even smoother and features higher quality. Users will notice the performance improvements and time-saving in the daily work rather quickly.

Improved languages

The Russian language version now supports Cyrillic characters in all dialogs and the predefined parameter sets are now refined even more for the local markets.

UNICODE file names

Opening drawings with UNICODE characters in their file name now works for almost every file type, with only a few exceptions. This feature has to be specifically enabled in the region settings. This allows for opening files with Chinese names etc.

Stereoscopic graphics output

The new possibilities for graphics output allow to experience three-dimensional perception even without VR glasses. The stereoscopic graphics output generates two images, that are separated according to the exact distance between the eyes. This is the main requirement for three-dimensional perception. The spatial vision in ELITECAD is further enhanced because tools like the cursor or markers are optimised for this purpose and are displayed in the correct depth.

Support for stereoscopic hardware

An easy way to observe stereoscopic graphics output is to use Red/Green glasses. An even better result can be achieved by using stereoscopic screens. With our partner Schneider Digital, stereo-screens were evaluated. ELITECAD is now optimised and pre-configured for stereoscopic devices.

Usage of optimised graphics hardware

Some workstations and laptops feature an on-board graphics card as well as a second, high quality graphics card. In order to get the most potential out of ELITECAD it is recommended to always use the high performance graphics card. With the new version, ELITECAD now automatically detects the high performance device and, independently of the windows settings, tries to activate the NVIDIA/AMD processors.

New OpenVR library

By supporting the latest OpenVR library, it is ensured that the latest VR hardware can be used. So there is nothing in the way of having the perfect VR experience in ELITECAD.

New user interface styles
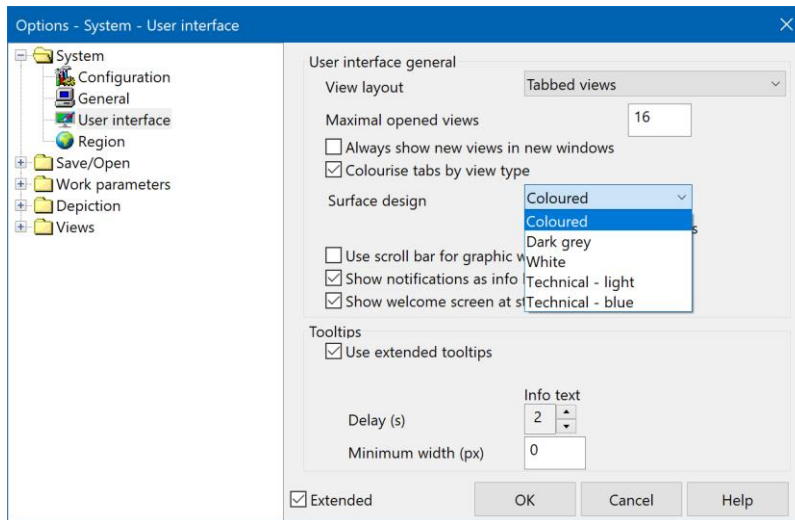
The user interface styles of ELITECAD were adapted to match the Microsoft Office 2019 styles, so the user has a familiar experience. Apart from the new predefined Office style, many more styles can be selected in the options menu of ELITECAD.

German spelling

The German letter sharp S (ß) is only used in Austria and Germany, but not in Switzerland. Up until now the double S (ss) was used for the German-speaking regions. The way words are spelled in texts in the user interface (menus, dialogs, queries) is now dependent on the current region setting. For instance, in Austria and Germany the words are spelled with ß, and in Switzerland with ss.

Note: For some special words, there are different spellings within Germany. For instance, the word storey is spelled "Geschoß" in the south and "Geschoss" in the north. In those cases, the double-s spelling was preferred.

Unification of terms

Many terms of the user interface have been unified, which leads to a clearer understanding for the user. For instance, the German word "Kennung" (property) has been changed to attribute, so that there are not several different terms which have the same meaning.