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OVERVIEW

BimRv SDK is the first stand-alone independent toolkit available for developers working with the .rvt and .rfa formats. It supports import, visualization and creation of Revit® models.

■ Supported file versions

- Read Revit files from version 2011
- Files from version 2015 onwards are automatically converted to the latest
- Latest file version is 2023
- Write support for the latest version only

■ Data access

- Full access to all file data.
- Auxiliary methods, processing, calculations for data converted to the latest format:
 - Parameters in elements
 - Calculation volume, area, perimeter, etc.
 - Mesh for B-Rep geometry

■ Visualization

- Draw all elements that have geometry
- Create graphical representation for most elements without geometry
- Create geometry for sections and planes
- Use materials, visual styles, lights, etc.

■ Export

- Export BimRv data to IFC
- Export BimRv data to COLLADA .dae
- Publish to 2d or 3d PDF
- Export to .svg, .dwf, etc.



■ Import

Import COLLADA files and store their geometry in DirectShape elements.

■ Creation Elements:

- Curve Elements
- Materials
- Basic Wall
- Different views
- DirectShape and FreeFormElement
- Connectors
- TextNote
- SiteSurface
- Floor
- Custom parameters and their instances

■ Families

- All Forms elements and their Void form. These are base elements for creating Family geometry
- FamilyGeomCombination. This is a Boolean operation on form elements
- Opening in host elements in a family file
- Dimensions and ReferencePlane elements
- FamilyInstances for activated Family symbols

■ Family import (under development)

- Import a Family into a model or family database and create an internal Family database
- Create new FamilySymbols during import
- Activate the symbol for the active Family type. During activation we need to create the geometry of the symbol
- Activate other symbols, if we can rebuild the geometry of the Family
- We can create new FamilyInstances for activated symbols. Creating new instances for hosted families also requires modification of geometry of the host element

WHAT'S NEW 2022

■ 2023 file format

This new base file format for BimRv. API has been enhanced to provide full access to 2023 data. Saved file will have version 2023

■ Consistent colors

“Consistent colors” visual style uses material settings for Shaded style but excludes lighting

■ Background & Foreground fill patterns

The ability to draw background fill patterns was added. Elements can use background & foreground fill patterns in visualization

■ Overrides

Each element or elements by category can have overrides. We implanted the ability to use it in visualization. It is possible to override color, material, transparency, halftone, etc.

■ Cable Tray Fine LOD geometry

Implemented creation geometry of cable tray for Fine LOD during visualization. Cable Trays do not contain this geometry in cache

□ Schedules

Schedules normally do not store data internally but have different rules and settings for collecting data from elements. This year we significantly improved it.

We implemented the ability:

- show images in schedules
- splitting of the schedule
- rows color
- table background
- using of rebar numbering for schedules

- different schedule behavior in the view and on the sheet
- filling keynote legend by the sheet
- etc

■ Panel Schedules

Implemented visualization of panel schedules. It looks similar to schedules but it has its own variant for collecting data and formatting them in the view.

■ Room visualization

Improved room visualization. Implemented visualization of interior fill. This geometry is created by cutting out the internal B-Rep geometry of the room. This geometry is also visible on vertical planes.

■ Creation new elements

- Grid: Line, Arc, Multi-Segment
- Dimensions: Linear, Alignment, ArcAlignment, ArcLength, Radial, Angular
- ReferencePlane

■ Family creation

- Added the ability to create several family templates
- Implemented EditFamily method. It restores an imported family and returns its database
- Initial version update Family Type. Currently it has restrictions:
 - Parameters must not use formulas. We cannot translate them yet and for this reason we cannot use them
 - Elements which we cannot create and update their geometries

■ IfcExport

- Implemented export to the IFC4 format. It can have geometry types:
 - TriangulatedFaceSet
 - PolygonalFaceSet
 - AdvancedBrep
- Implemented the ability to load external property sets from XML using our PSDQTO module
- Export of BimRv parameters as IfsPropertySet
- IfcExportAs and IfcObjectType are overridden by BimRv parameters
- Export of classifications
- Rooms, Areas from plan view 3D geometry calculation and export