digipara® liftdesigner

BIM Properties & Exports

C1

Recommendation

ONLINE TRAINING

Are you an attendee in a DigiPara Liftdesigner online training module?

We recommend to print these out in advance so that you have a handout for your own editing and for your notes during your training.

Information

ONLINE TRAINING

Since DigiPara can not provide software licenses for CAD programs like SolidWorks, Creo, Inventor or AutoCad on the remote training machines, attendees will follow the feature demonstration by the trainer. Attendees can also practice the training samples, but the related CAD software must be installed on the attendees machine.

Please contact DigiPara AG some days in front of the training, to obtain a free DigiPara Liftdesigner software license, to be installed on the trainees local workstation. Installing other CAD programs as mentioned above needs also to be done by the attendee upfront.

Agenda

BASICS

C1.1 BIM (Building Information Modeling)

- What is BIM?
- BIM Goals
- BIM Standards

C1.2 LOD-Level & design phases (according to German VDI)

- Phase A – LOD 100
- Phase B – LOD 200
- Phase C – LOD 300

Agenda

LOD & LOI

C1.3 LOD & LOI

- General information: LOD (Level of Development)
- General information: LOI (Level of Information)
- Setting options for BIM components
- LDBIM LOD sheet templates
- Setting options for view frames

Agenda

BIM FILE EXPORT

C1.4 Create own BIM properties

- Docking windows for BIM properties
- Project-related setting options
- Create in the database table and distribute the data

C1.5 BIM file export

- Coordinate settings
- IFC exports and LDBIM exports
- RFA exports

Agenda

AUTODESK REVIT®

C1.6 Notes on Autodesk® Revit®

- DigiPara Elevatorarchitect & Load LDBIM Tool
- IFC and the creation of families

C1.7 Practice

- BIM values & IFC exports

C1.8 Summary

- Custom Q&A‘s & further information

digipara® liftdesigner

C1.1

BIM (Building Information Modeling)

What is BIM?

C1.1 BIM (BUILDING INFORMATION MODELING)

digipara® liftdesigner

Requirements for the delivery of a BIM model

"Can you deliver as BIM?"

"Please send a BIM Model"

BIM applications

C1.1 BIM (BUILDING INFORMATION MODELING)

Closed BIM

- Collaboration with *product-specific* standards and workflows

- **Example – Little closed:**
  - Architect works on the digital building model with his own specialist program but does not share the resulting files with the parties involved.

- **Example – Big closed:**
  - The architect and engineer work with the same specialist program, so there is no need to exchange information about neutral formats.

Open BIM

- Collaboration with *manufacturer-neutral* standards and workflows

- **Example – Little open:**
  - Architect works with his own specialist program on the digital building model but provides his client with the data as an IFC model.

- **Example – Big open:**
  - The architect and engineer work with their own specialist program. The data is shared transparently in the process via neutral exchange formats (IFC).

BIM and „digital twin“

C1.1 BIM (BUILDING INFORMATION MODELING)

Open BIM vs. Closed BIM

- Closed BIM

  - closed stand-alone solutions

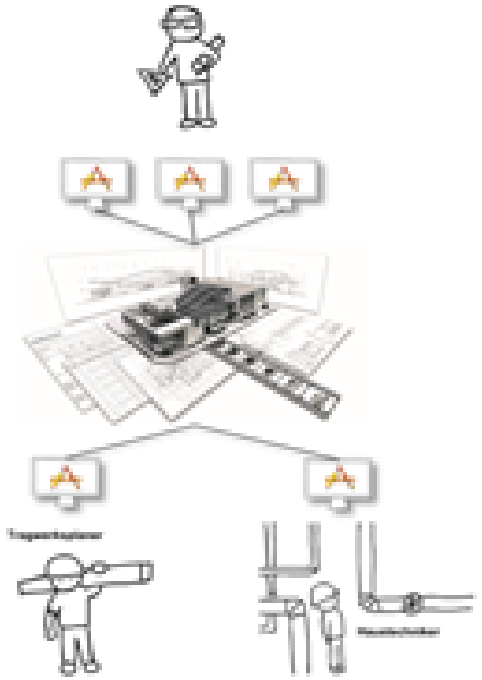
  - in-house, software constrains

  - no manufacturer-neutral tender

  + full information content

  + preliminary coordination rather low

- Data exchange
  - not manufacturer-neutral
  - e.g. .dwg, .rvt, .prt, etc.



closed BIM

BIM and „digital twin“

C1.1 BIM (BUILDING INFORMATION MODELING)

Open BIM vs. Closed BIM

- Open BIM

  + open BIM integration, neutral format

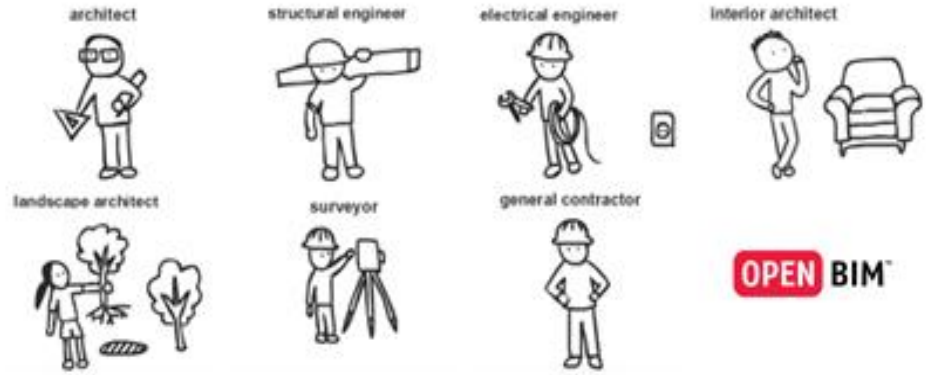
  + manufacturer-neutral tender

  + free choice of software

  - preliminary agreement on data type, data unit

  - not yet standardized / certified

- Data exchange
  - manufacturer-neutral
  - e.g. .ifc, .bcf (buildingSMART)



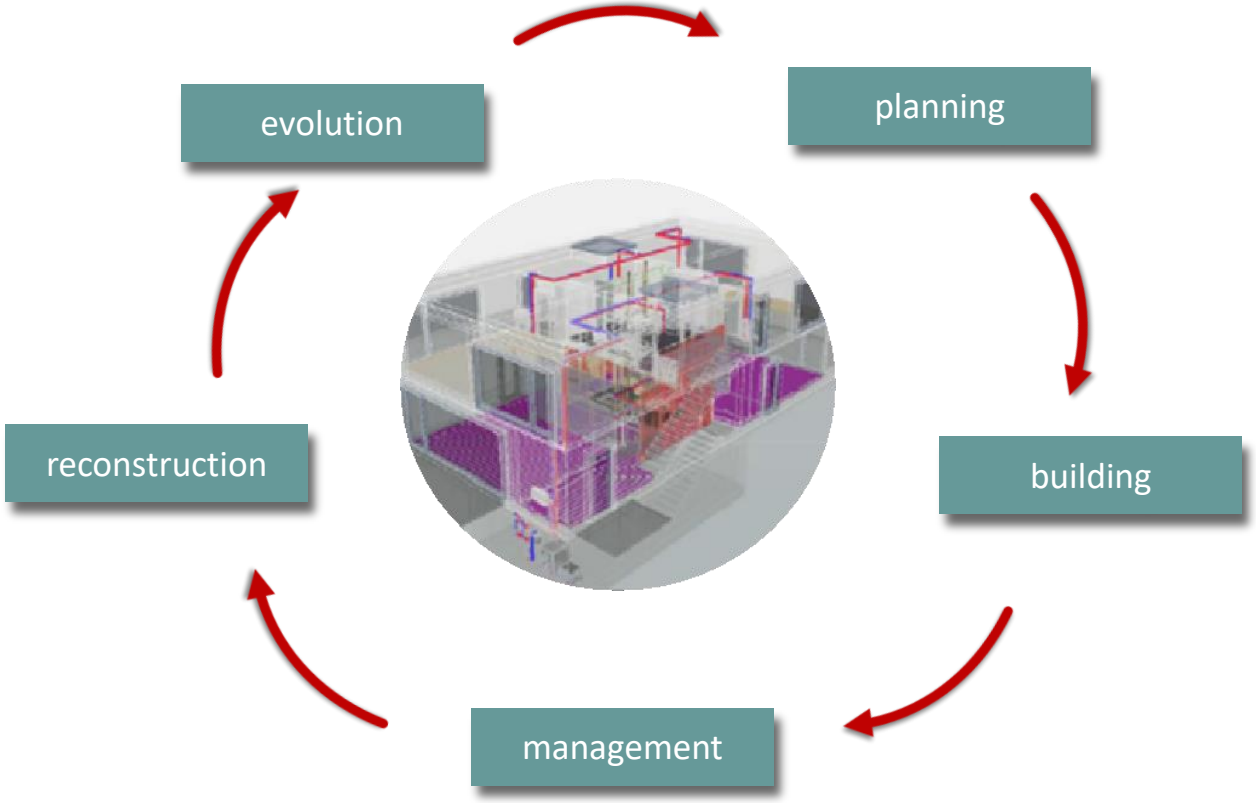
open BIM

BIM: Building Information Modeling

C1.1 BIM (BUILDING INFORMATION MODELING)

Enables the use of model data throughout the entire life cycle (and beyond)

- BIM is a scalable method that covers a wide range of use cases, e.g.
  - Visualization of planning and construction
  - Linking time and costs with planning
  - Detection of collisions between trades
  - …



BIM: Building Information Modeling

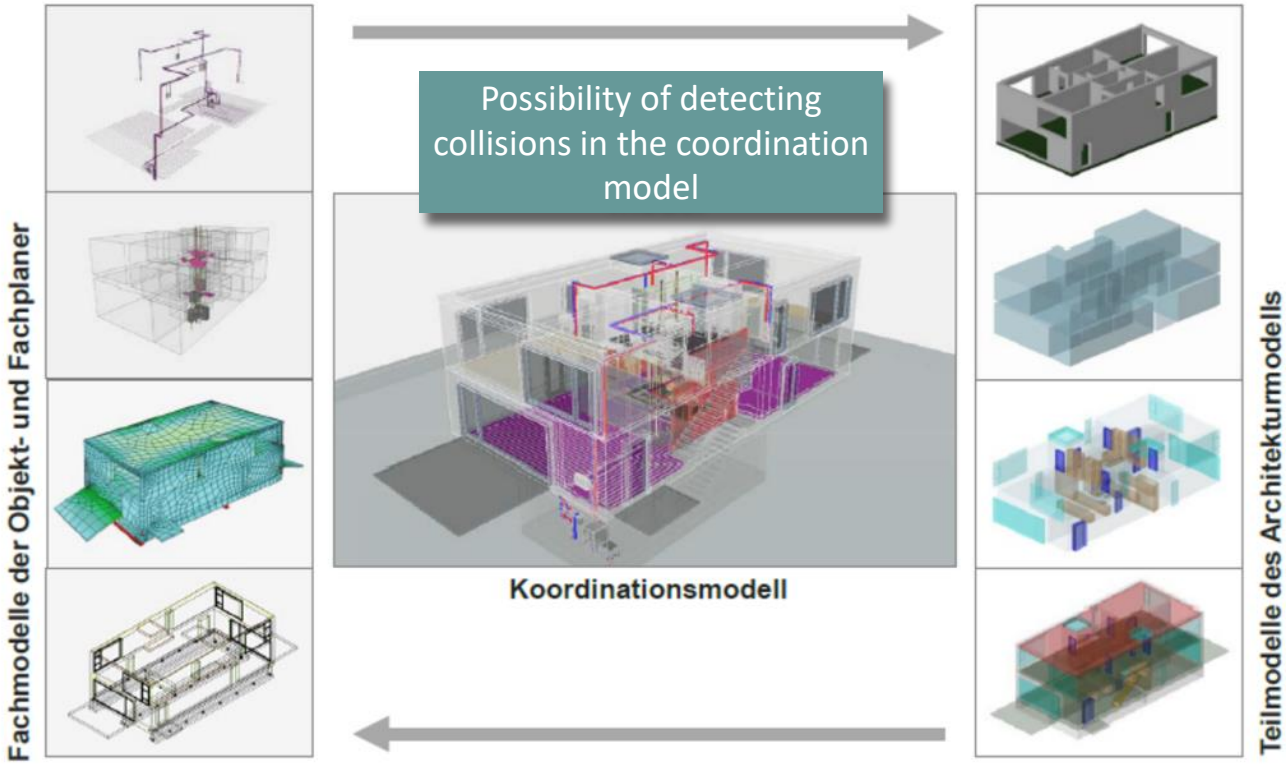
C1.1 BIM (BUILDING INFORMATION MODELING)

BIM is a process

- Plan, Design, Build and Manage the building

With BIM all involved parties work in one virtual digital building model, e.g.

- architects, builders
- elevator companies
- facility managers



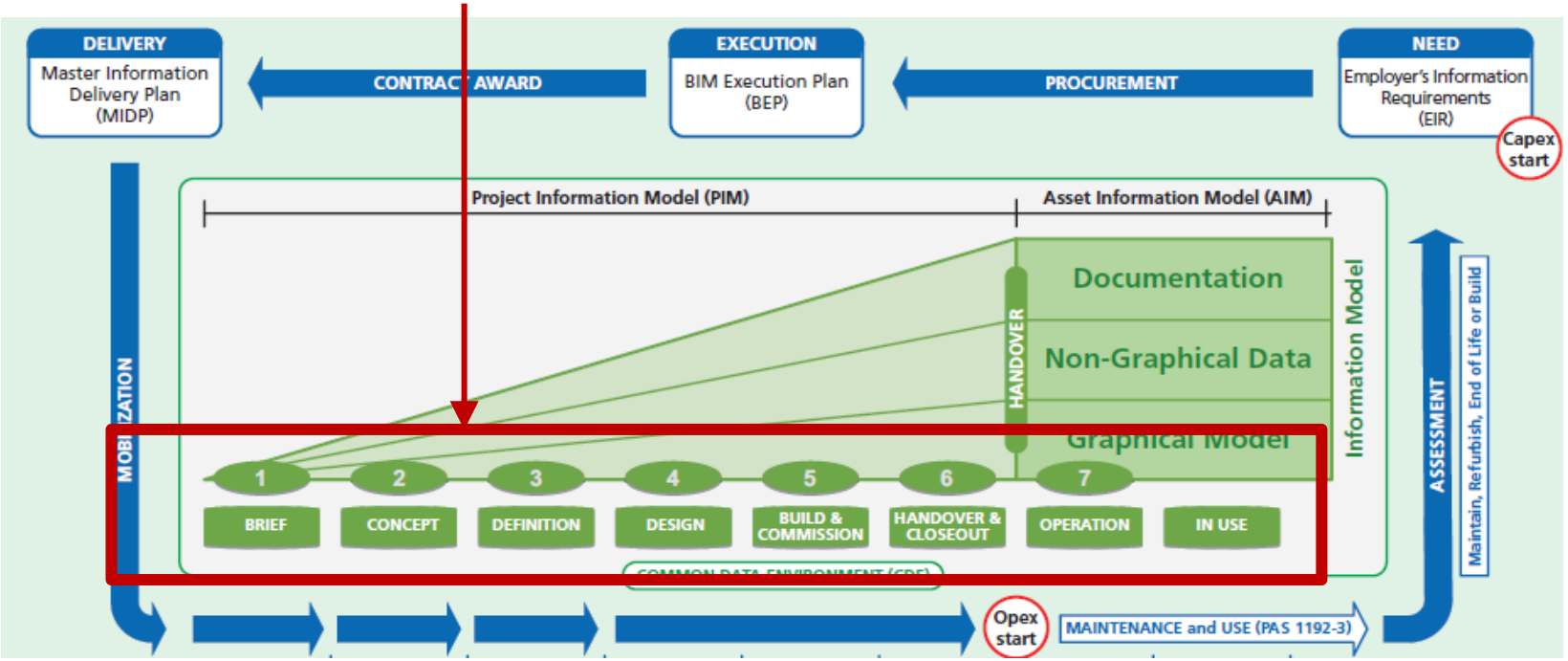
Source: BIM guideline for Germany, Research initiative: ZukunftBAU

BIM: Building Information Modeling

C1.1 BIM (BUILDING INFORMATION MODELING)

BIM covers all life cycle phases of buildings

- design -> construction -> operational phase -> deconstruction (wrecking)



Source: http://shop.bsigroup.com/navigate-by/pas/pas-1192-22013/

What is BIM?

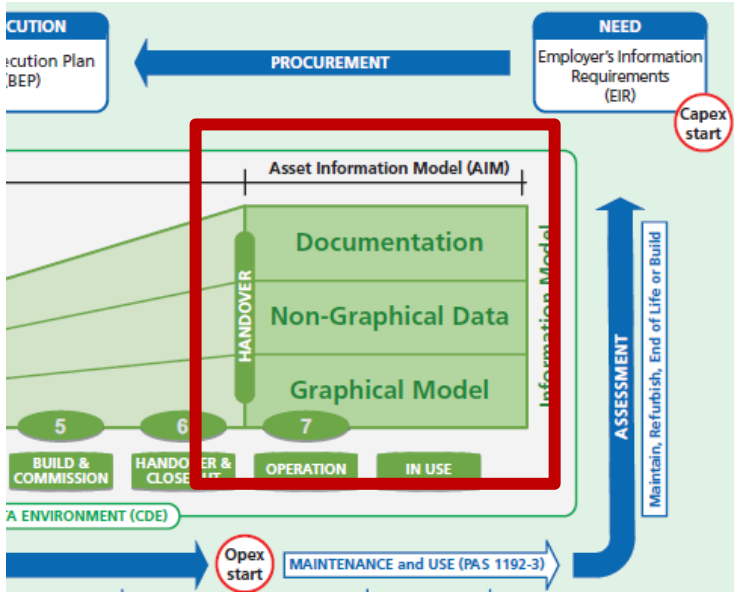
C1.1 BIM (BUILDING INFORMATION MODELING)

“It’s all about Assets” – “system asset"

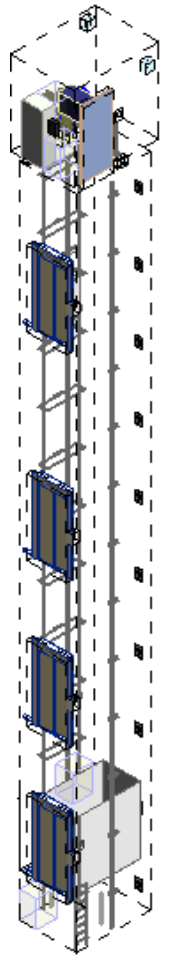
- The elevator is an asset in the building

Asset Information Model (AIM) besteht aus:

- Documentation (information for elevator operators)
- Non-graphical data (e.g. energie data)
- Graphical 3D model



not only a graphic 3D model



What is BIM?

C1.1 BIM (BUILDING INFORMATION MODELING)

B – Building

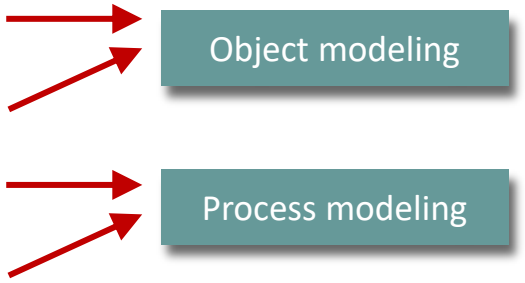
- Scope: Buildings

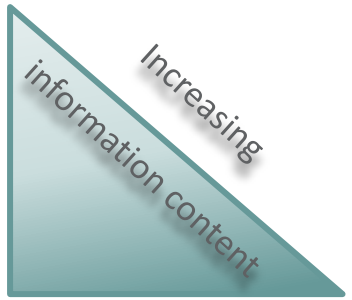
I – Information

- Information, Content
- Structured and standardized (ideally)
- Linking of different information creats added value

M – Modeling

- Modeling
- Model creation, LOD/LOI/LOG
- Method (Collaboration)
- Management (Communikation)





BIM Goals

C1.1 BIM (BUILDING INFORMATION MODELING)

Summary:

Consistent use of model data over the entire life cycle from initial preliminary planning to deconstruction

- BIM refers to a cooperative method
  - Information and data relevant to the life cycle are consistently recorded, managed and exchanged or transferred in transparent communication.

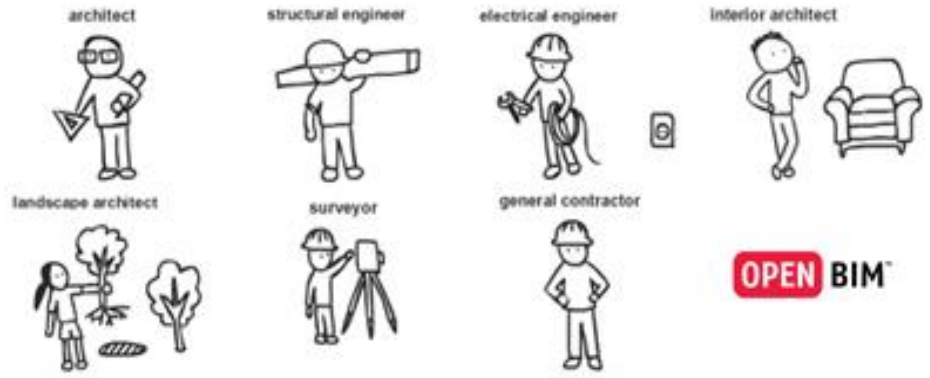
Goals:

- Planing security
- Improved communication and interface coordination
- Increased transparency through traceability
- Increased schedule and cost certainty
- Improved integration of users and operators

Source: planen bauen 4.0

BIM Standards - Foundation of Cooperative, Trustworthy, Digital Collaboration

- Collaborating together requires a foundation: uniform, practical, and reliable standards, meaning norms, guidelines, directives, and templates that all stakeholders know and apply.
- A central aspect of the BIM strategy is the development of system- and product-neutral standards and data foundations. They aim to enable the implementation of projects with open data formats and secure lossless data transfer in the long term.



Source: www.bimdeutschland

BIM Standards

C1.1 BIM (BUILDING INFORMATION MODELING)

digipara® liftdesigner

There are various standards

National BIM Standard - United States®
an initiative of the National Institute of Building Sciences buildingSMARTalliance®

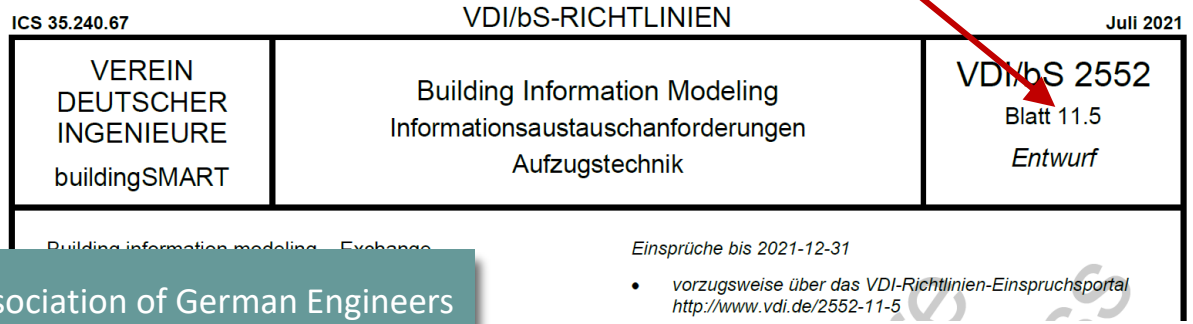
bsi.

british standards

buildingSMART
International home of openBIM®

Content of IFC files developed by buildingSMART

BIM standard elevator technology, Germany


ICS 35.240.67

VDI/bS-RICHTLINIEN

Juli 2021

VEREIN DEUTSCHER INGENIEURE

buildingSMART

Building Information Modeling
Informationsaustauschanforderungen
Aufzugstechnik

VDI/bS 2552
Blatt 11.5
Entwurf

Einsprüche bis 2021-12-31

- *vorzugsweise über das VDI-Richtlinien-Einspruchsportal http://www.vdi.de/2552-11-5*

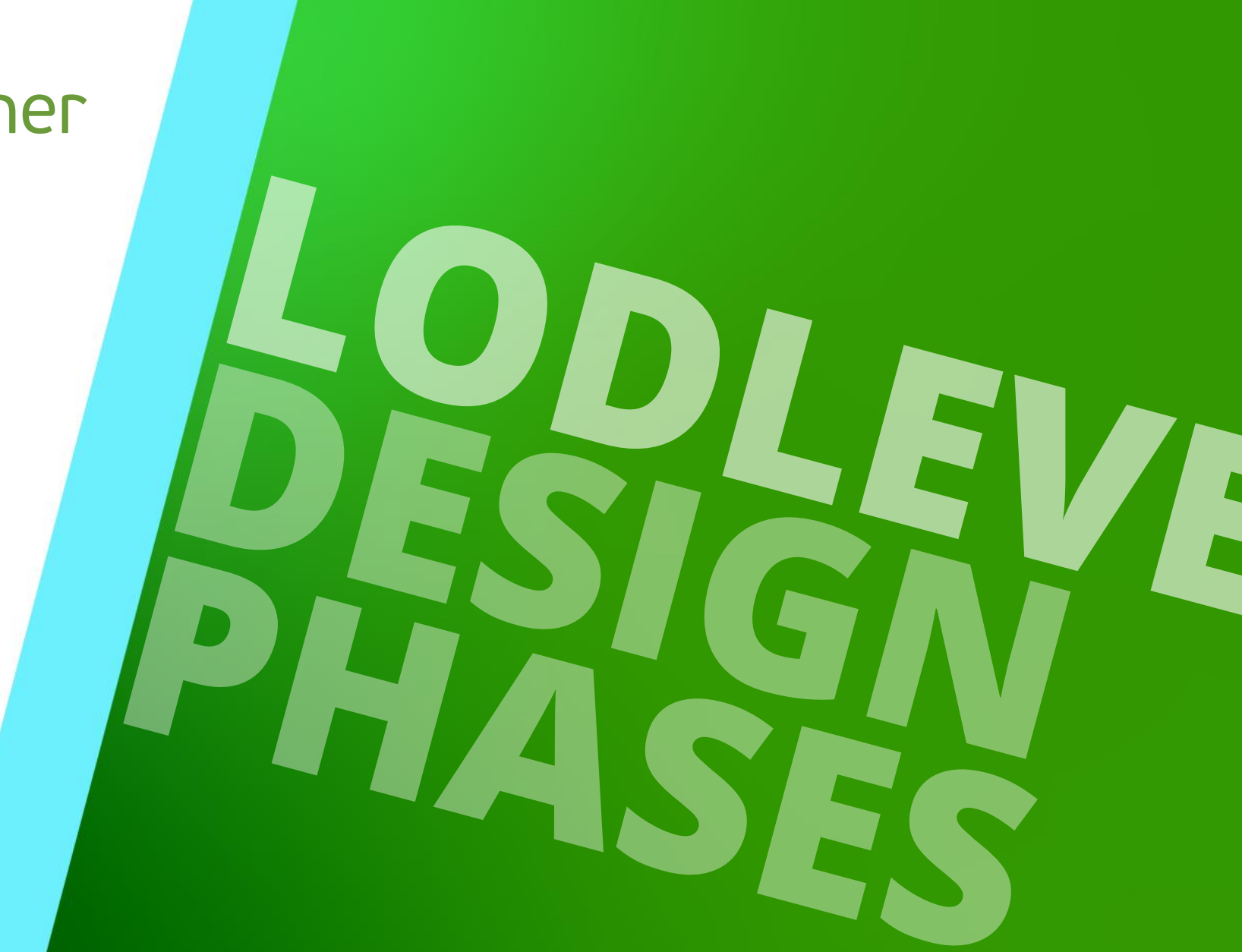
VDI = Association of German Engineers
VDI**/bS** = Developed together with building SMART

digipara® liftdesigner

C1.2

LOD-Level & Design phasen

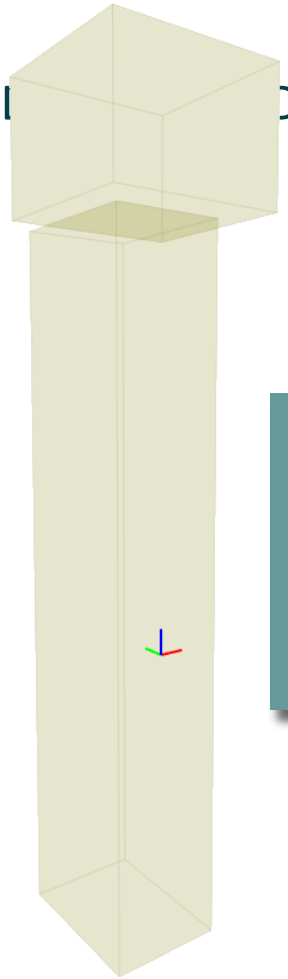
(according to German VDI)



Design phases A, B and C

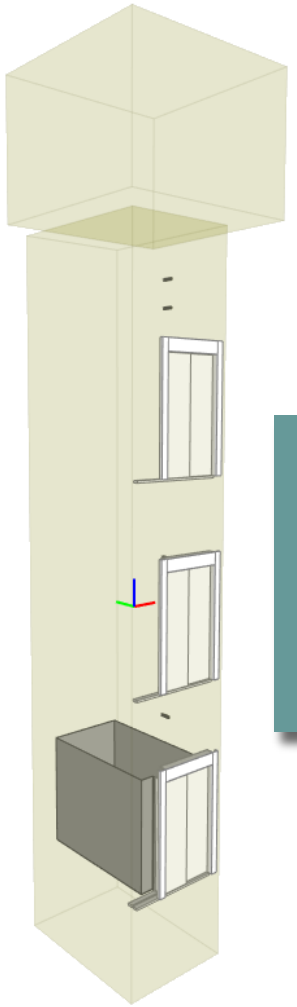
digipara® liftdesigner

C1.2 LOI Design phases



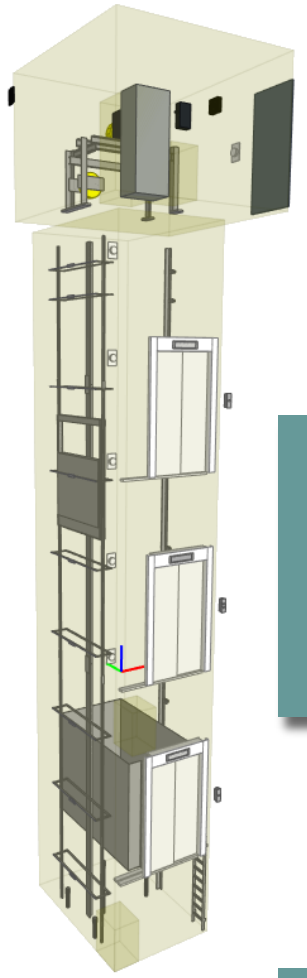
Phase A

Predesign planning
≙
LOD 100



Phase B

Quotation planning
≙
LOD 200



Phase C

Execution planning
≙
LOD 300

Source: DigiPara Liftdesigner

Phase A – LOD 100

Phase A – LOD 100

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

Phase A:

- e.g. rough planning
- e.g. design concept

LOD 100

Phase B:

- e.g. design planning

LOD 200

Phase C:

- e.g. execution planning

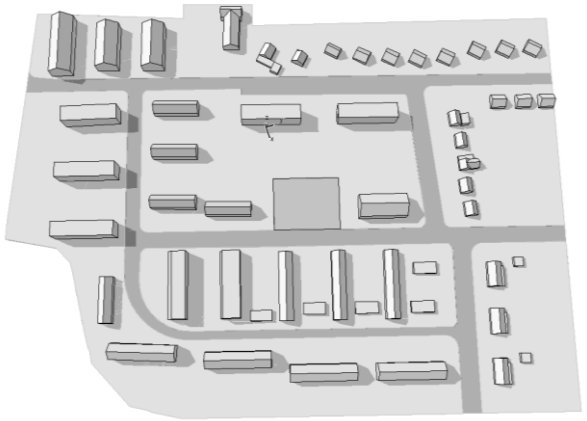
LOD 300

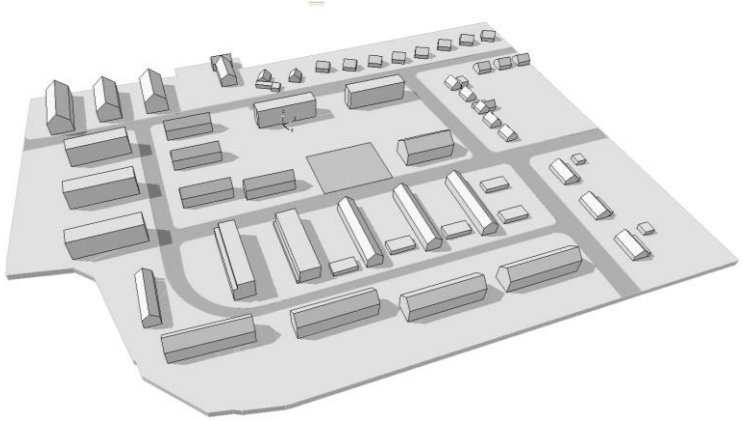
The VDI (Association of German Engineers) includes LOD 100 - 300

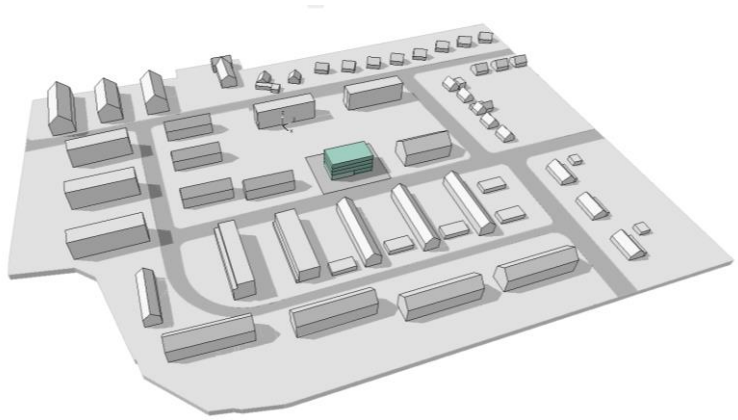
Phase A – LOD 100

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

A building is being planned





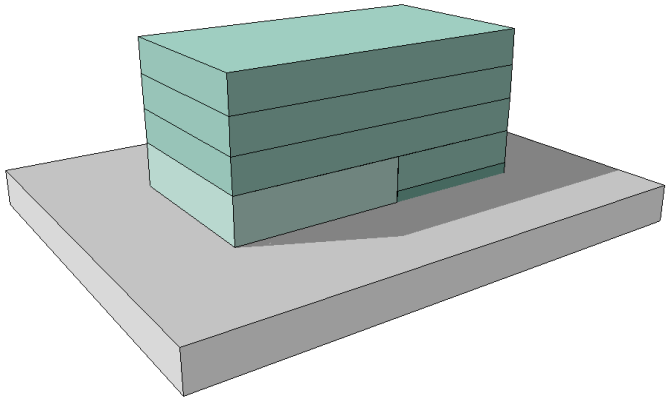


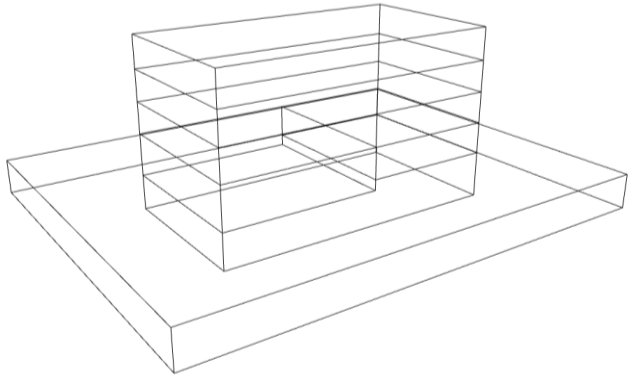
Phase A – LOD 100

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

A building in a rough planning stage

- Utilization
- Building cubature
- Plot utilization





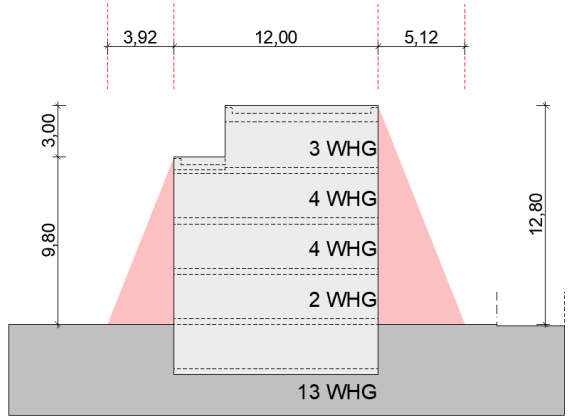
Höhe 12,80 m x 0,4 = 5,12 m Abstandsfläche

Höhe 9,80 m x 0,4 = 3,92 m Abstandsfläche

BGF / BRI Berechnung

Baukörper		Nutzung	BGF	BRI
Variante 03.01				
BK 01	UG	Keller	400	1.490
BK 01	EG	Gewerbe	220	869
BK 01	EG	Wohnen	179	527
BK 01	1. OG	Wohnen	400	1.175
BK 01	2. OG	Wohnen	400	1.175
BK 01	3. OG	Wohnen	400	1.215
			1.999 m²	**6.451 m³**

Area and volume calculations



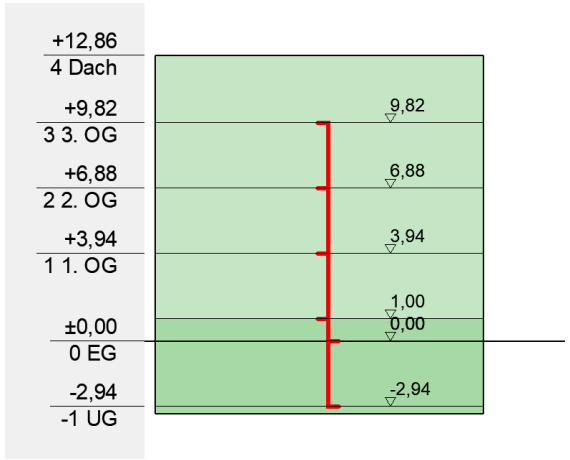
Phase A – LOD 100

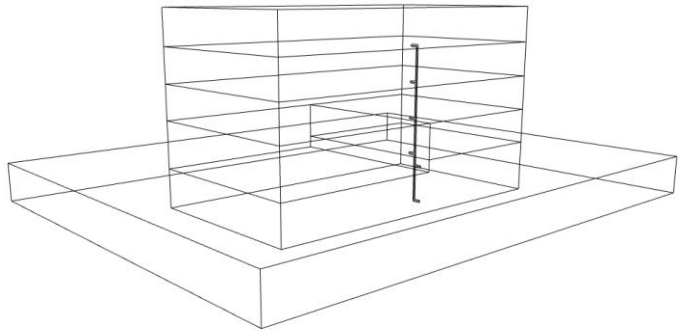
C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

digipara® liftdesigner

A building in a rough planning stage

- Requirements
- Knowledge
- Information





Elevator symbol (from VDI) is planned in the building

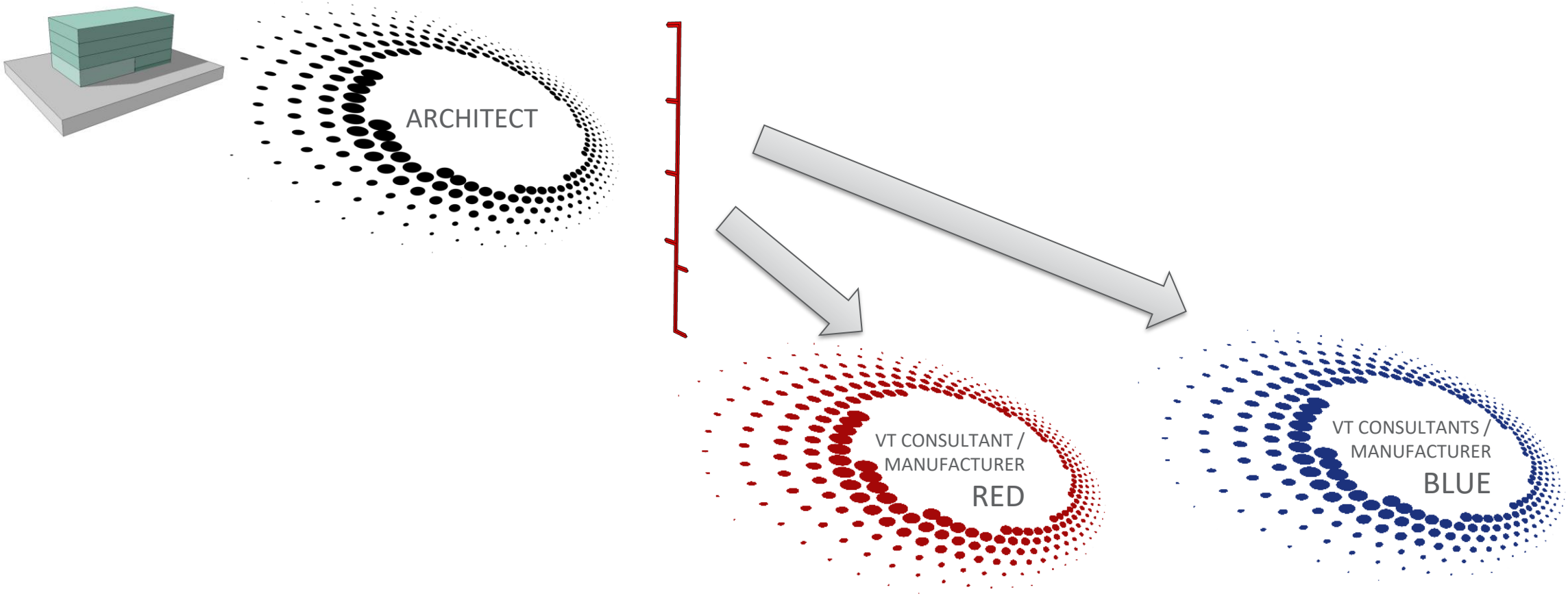
Klassifizierung und Eigenschaften	
KLASSIFIZIERUNGEN	
ARCHICAD Klassifizierung - 23	Aufzug
ID UND KATEGORIEN	
UMBAU	
Allgemeine Werte	
Produktinformationen	
IFC-EIGENSCHAFTEN	
IFC Typ	IfcTransportElement
ARCHICAD IFC ID	3DxSrskHjAqgfSyjSZ2
GlobalId (Attribute)	3DxSrskHjAqgfSyjSZ2
Name (Attribute)	Aufzug 01
Tag (Attribute)	CDEDCD76-B91B-4AD
PredefinedType (Attribute)	ELEVATOR
RequiredElevatorUse (VDI2552_11_5_RequirementsMandatory)	Personenbeförderung
RequiredMRLocation (VDI2552_11_5_RequirementsMandatory)	Maschinenraumlos
RequiredStopsFront (VDI2552_11_5_RequirementsMandatory)	0; -2.94
RequiredStopsLeft (VDI2552_11_5_RequirementsMandatory)	
RequiredStopsRear (VDI2552_11_5_RequirementsMandatory)	1; 3.94; 6.88; 9.82
RequiredStopsRight (VDI2552_11_5_RequirementsMandatory)	
RequiredBarrierFree (VDI2552_11_5_RequirementsOptional)	TRUE
RequiredCapacityWeightMin (VDI2552_11_5_RequirementsOptional)	800,00
RequiredRatedSpeedMin (VDI2552_11_5_RequirementsOptional)	0,00
	IFC-Eigenschaften verwalten...

First attributes: basic requirements

Phase A – LOD 100

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

Architecture provides building model including the elevator symbol



Phase A – LOD 100

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

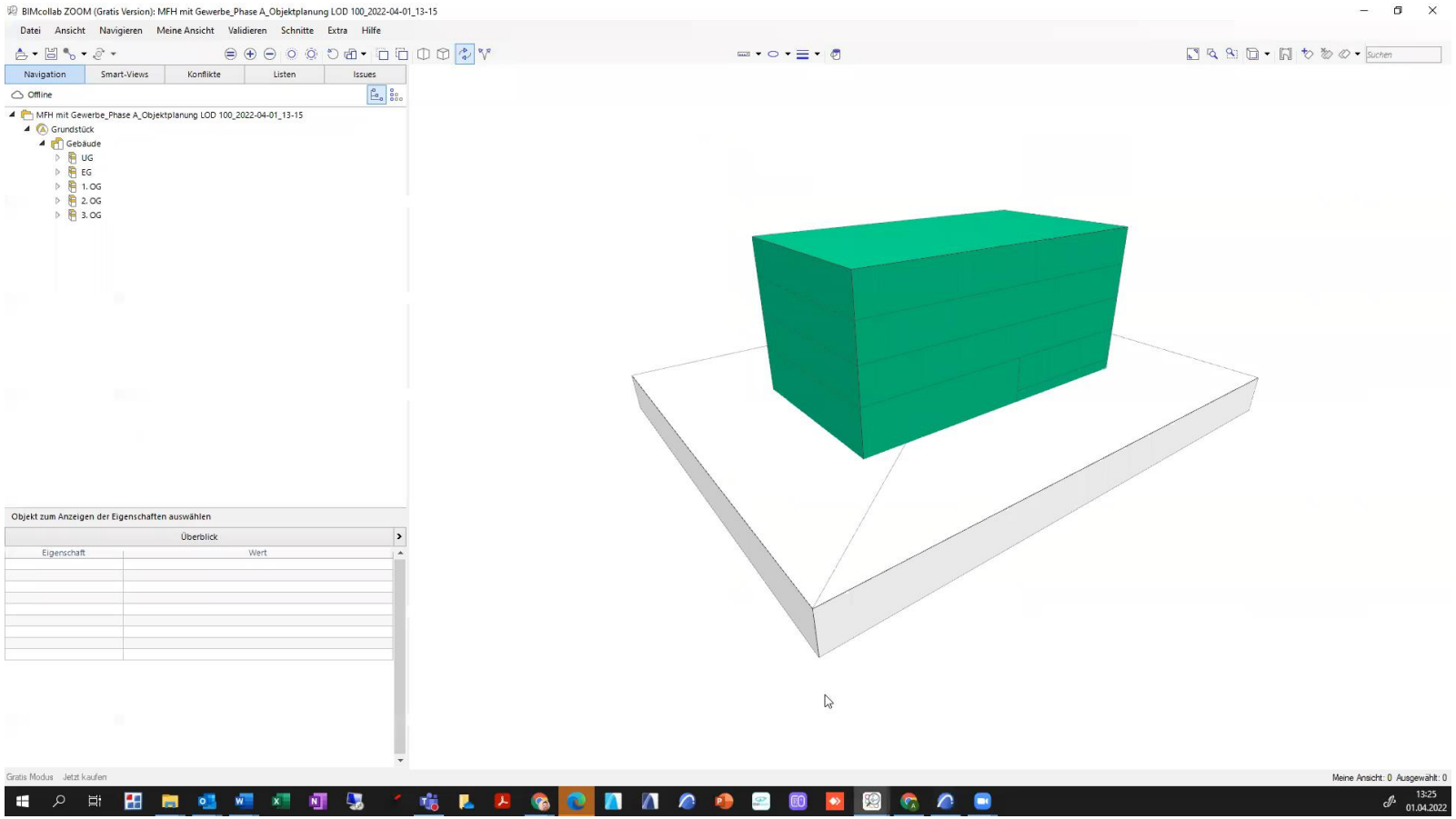
digipara® liftdesigner

VT consultant/manufacturer receives input for elevator planning

- receives the IFC of the building
- read out and evaluate the contained VDI data (basic requirements: payload 800kg)

BIMcollab ZOOM
or
BIMVision

(IFC Viewer)



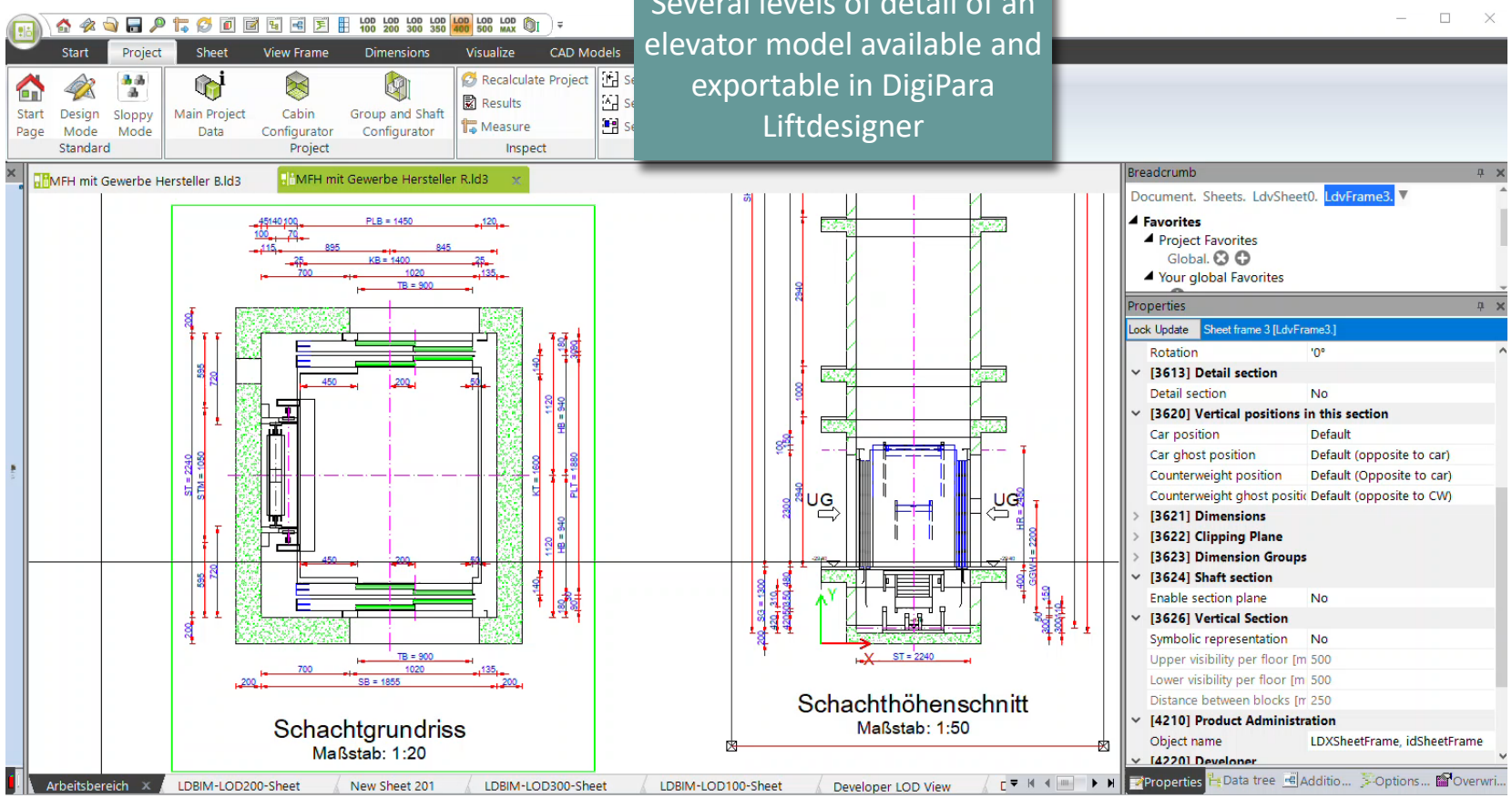
Phase A – LOD 100

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

VT consultant/manufacturer (red) plans the elevator model in LOD 100

- Based on the information in the IFC files received

Several levels of detail of an elevator model available and exportable in DigiPara Liftdesigner



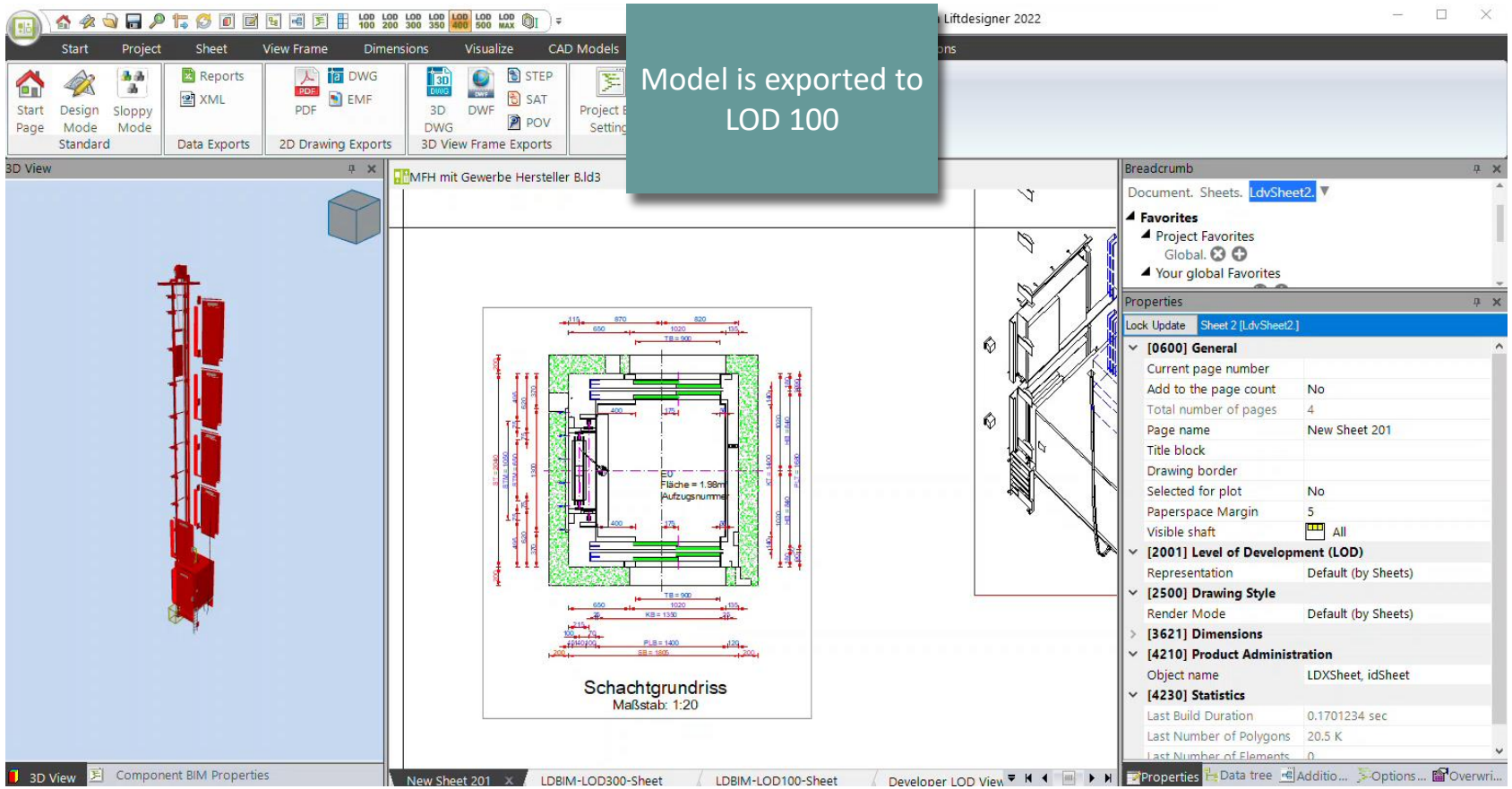
Phase A – LOD 100

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

digipara® liftdesigner

VT consultant/manufacturer (red) checks his model

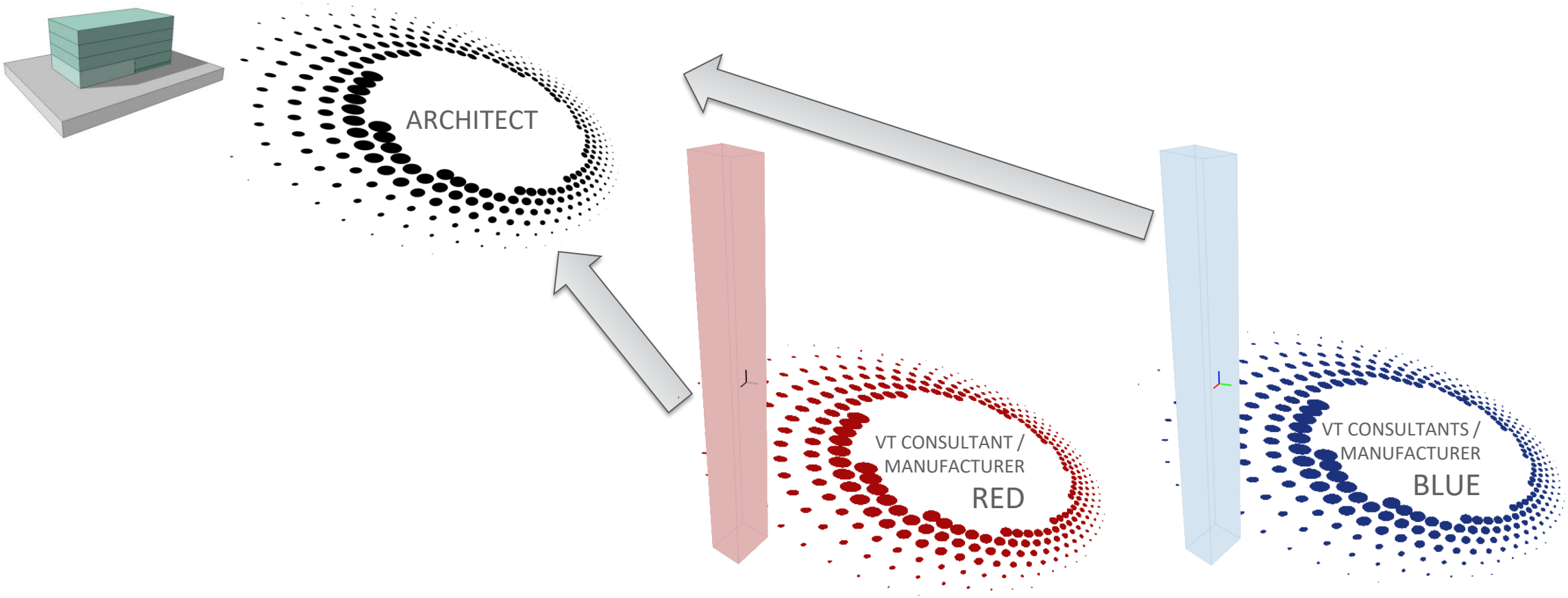
- Model consists of more than just geometry
- BIM properties are also transferred
  - VDI specifies which information should be transferred to the architect



Phase A – LOD 100

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

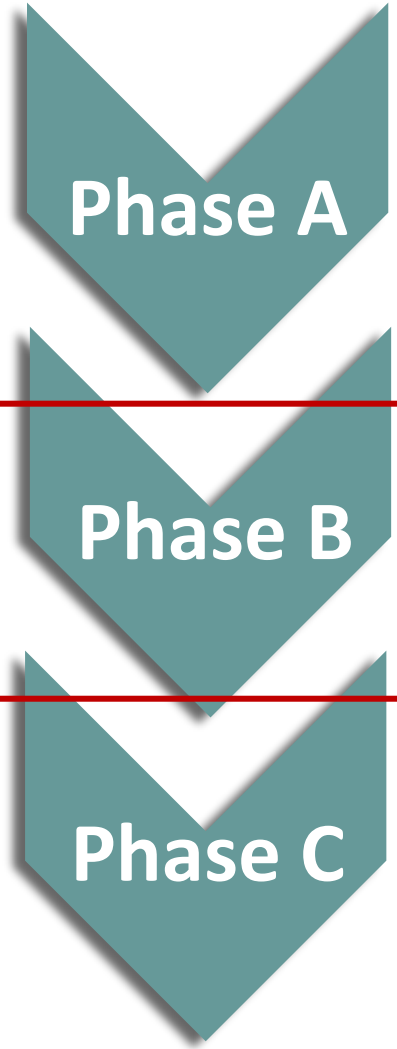
Architecture receives elevator models in LOD 100



Phase B – LOD 200

Phase B – LOD 200

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)



Phase A:

- e.g. rough planning
- e.g. design concept

LOD 100

Phase B:

- e.g. design planning

LOD 200

Phase C:

- e.g. execution planning

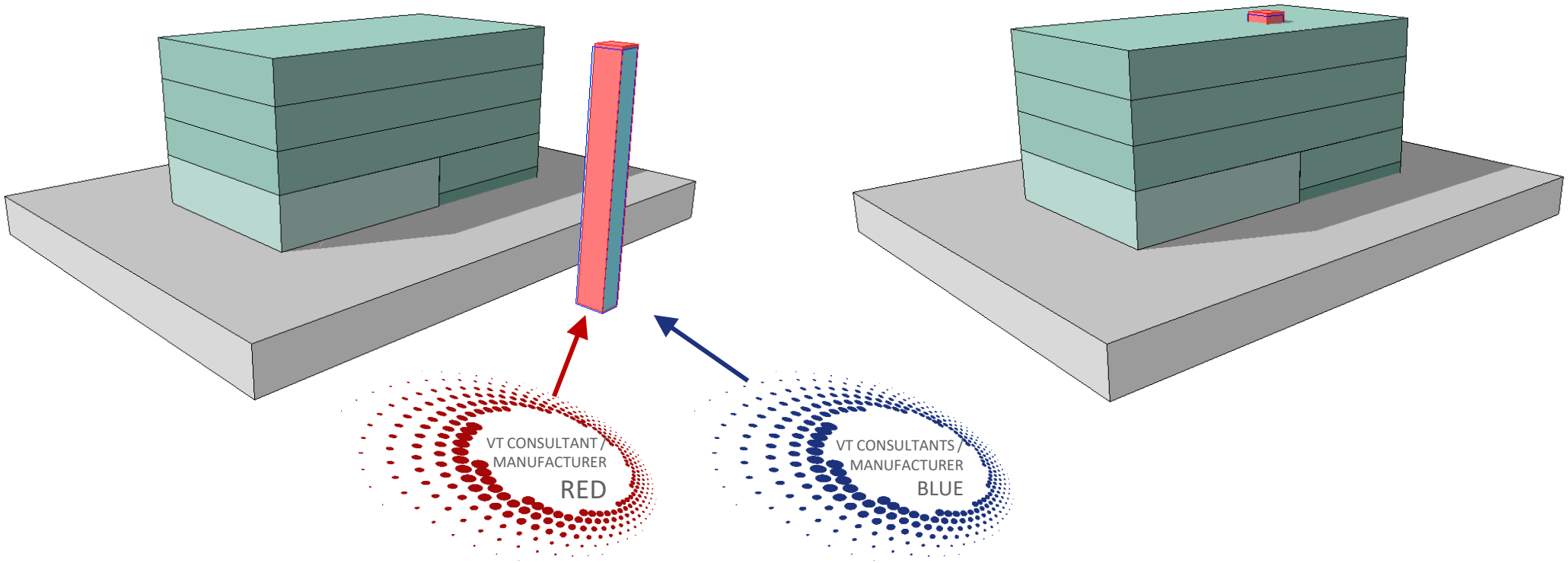
LOD 300

Phase B – LOD 200

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

Architecture plans LOD 200 buildings

- with the received BIM models of the elevator

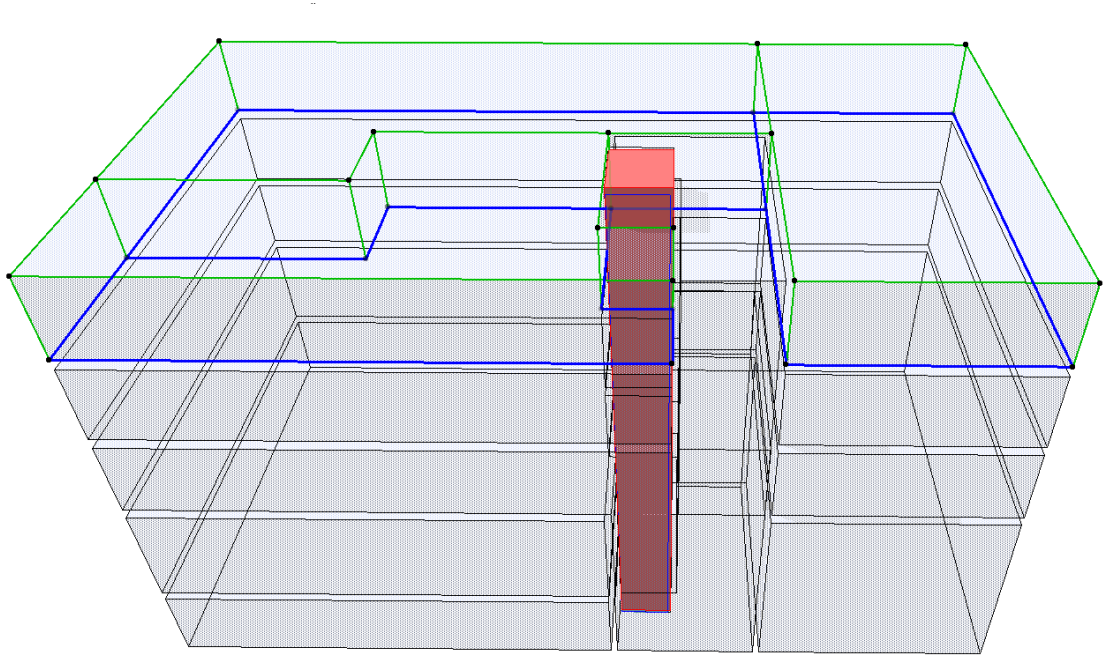


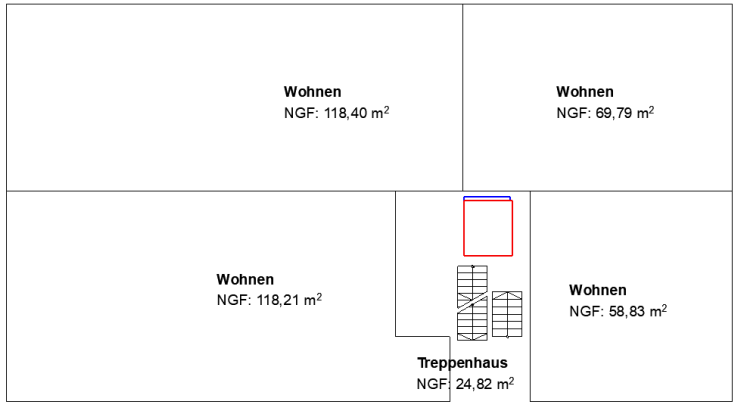
Phase B – LOD 200

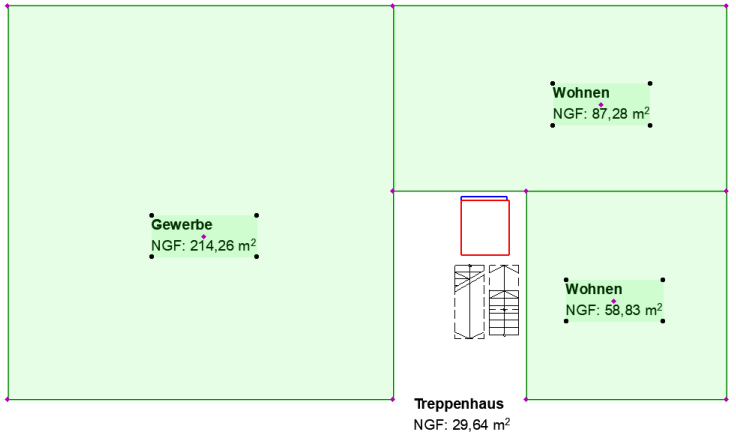
C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

Architecture plans LOD 200 buildings

- further planning (staircase) taking into account the BIM models of both elevator companies





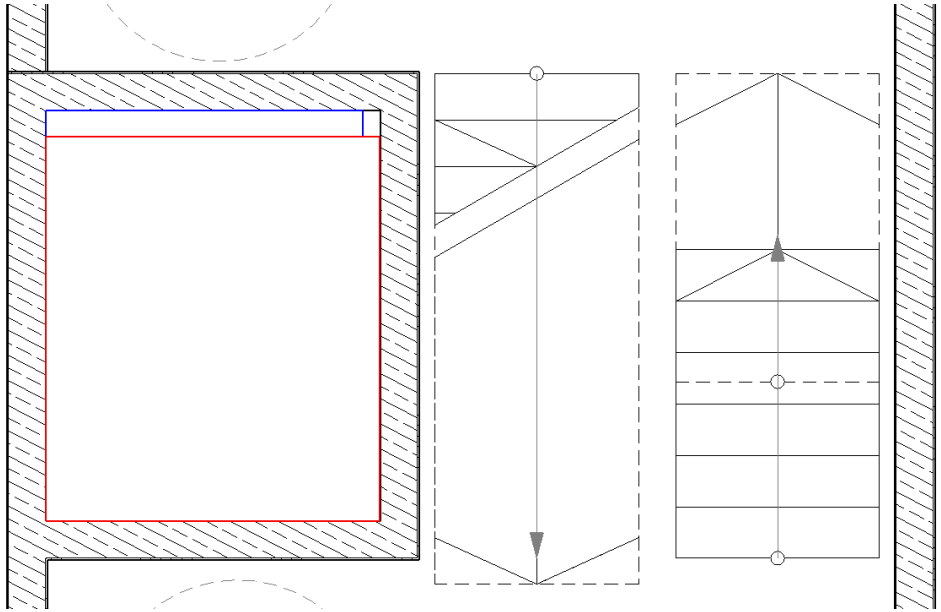


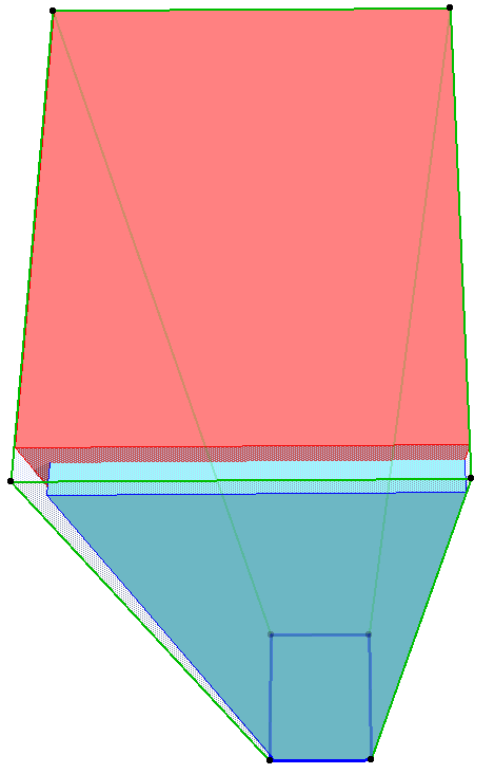
Phase B – LOD 200

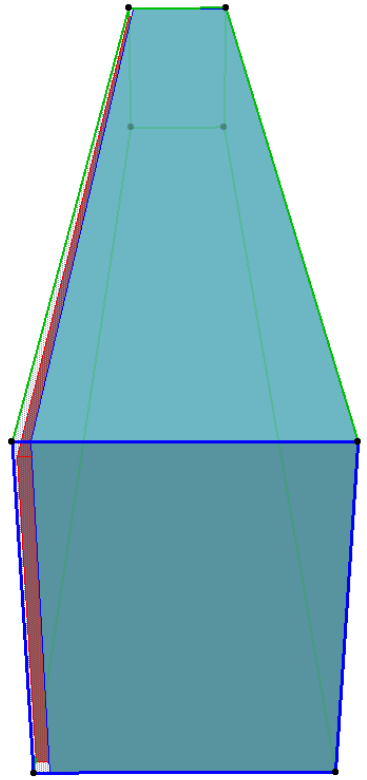
C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

Architecture plans LOD 200 buildings

- neutral shaft
  - both elevator variant possible





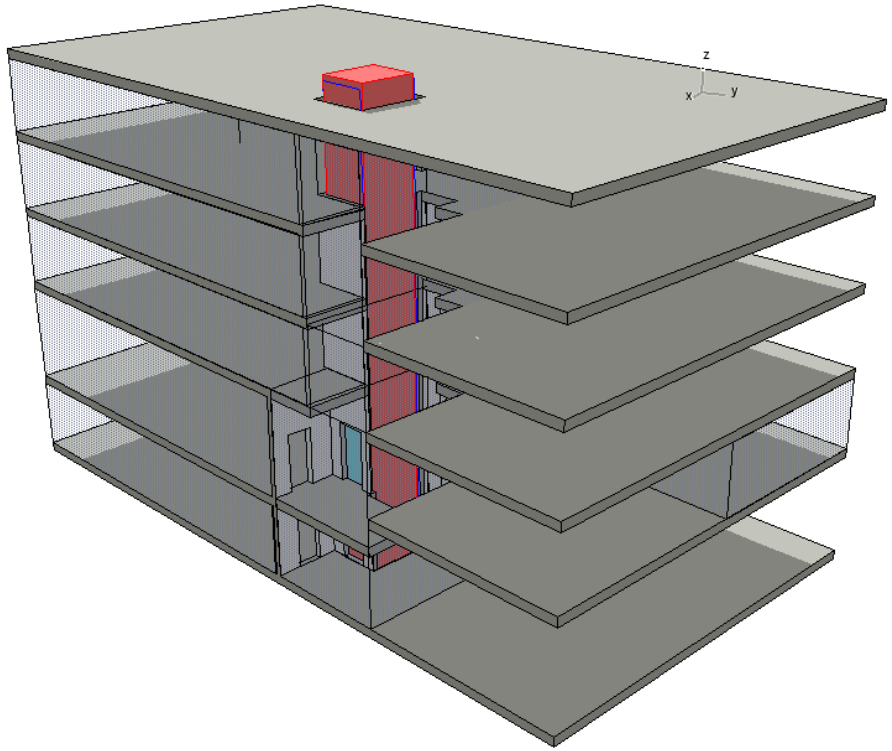


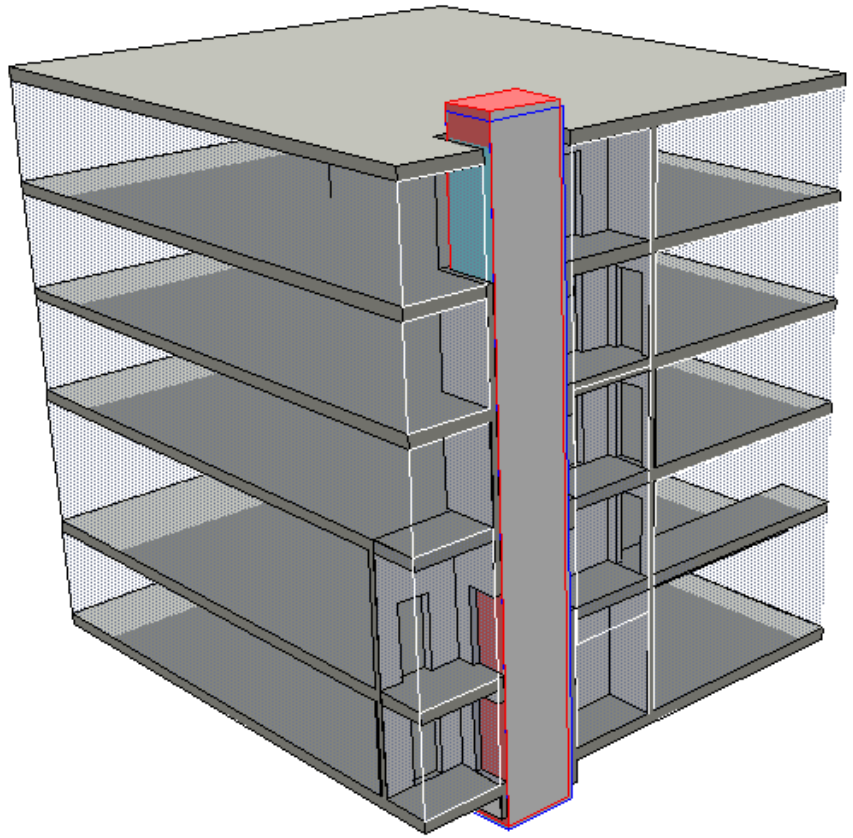
Phase B – LOD 200

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

Architecture plans LOD 200 buildings

- neutral shaft



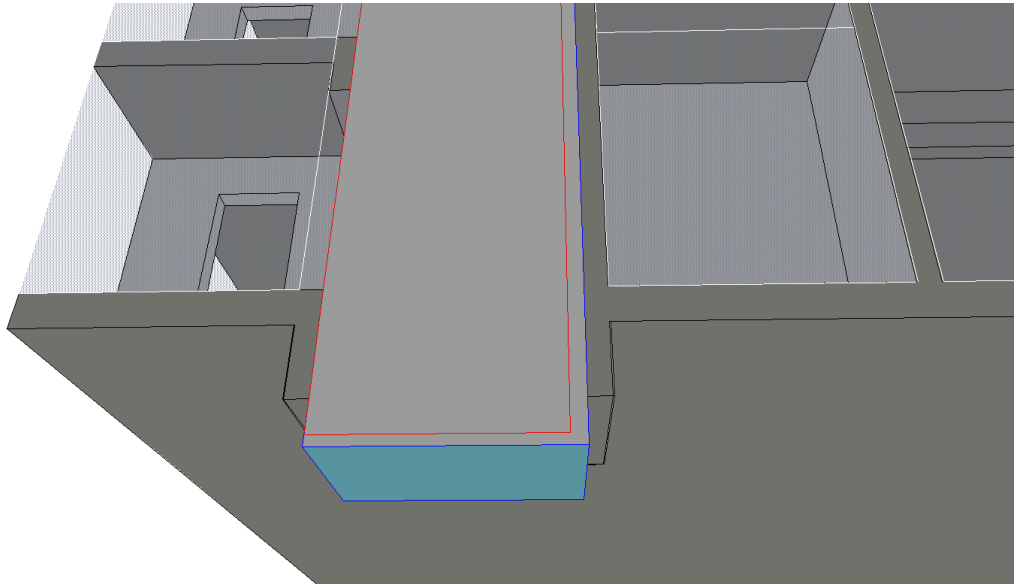


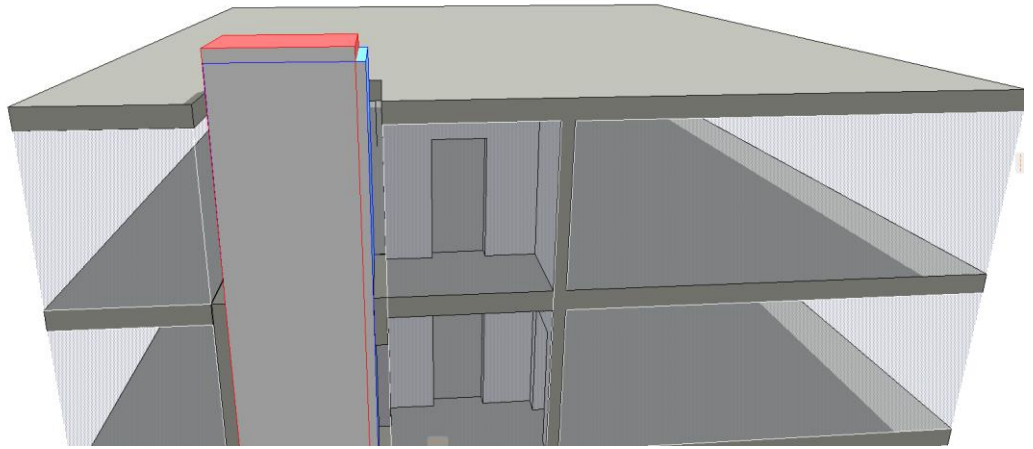
Phase B – LOD 200

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

Architecture plans LOD 200 buildings

- neutral shaft
  - adjusting the shaft head and pit



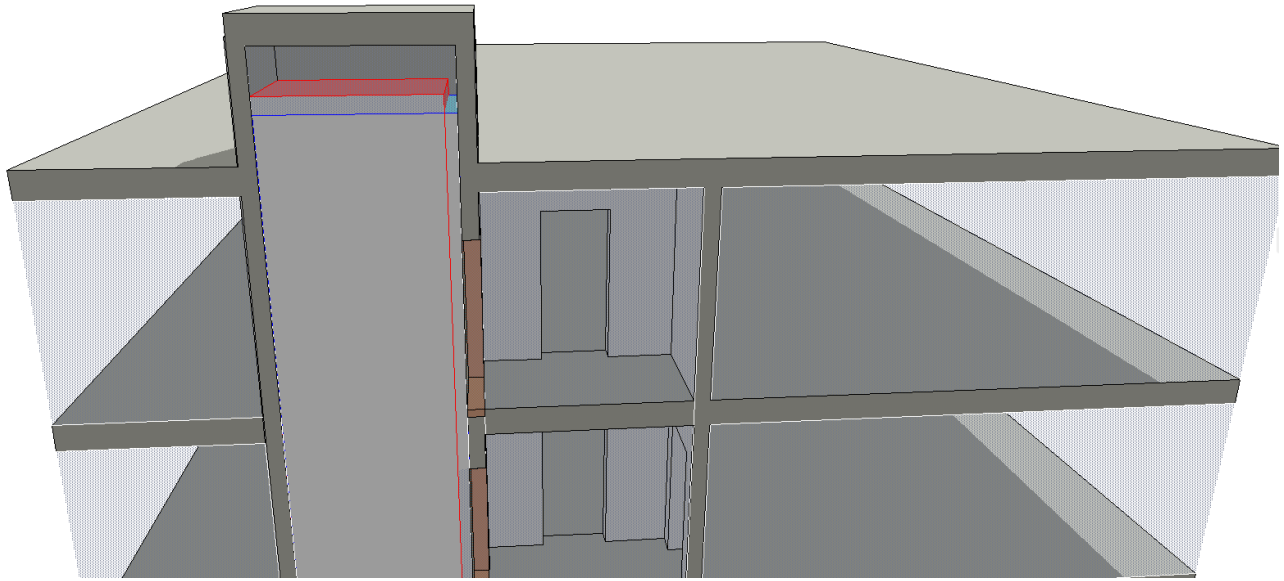


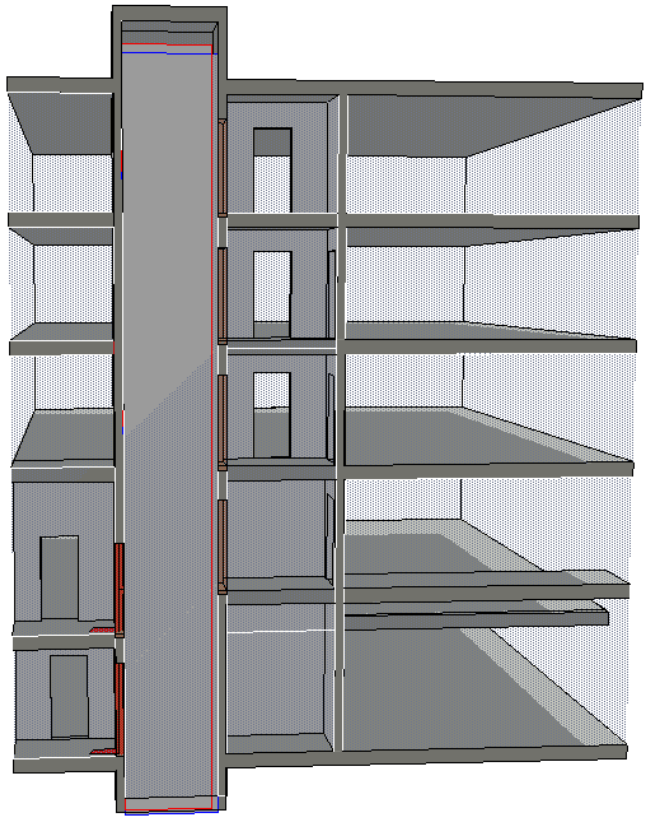
Phase B – LOD 200

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

Architecture plans LOD 200 buildings

- neutral shaft
  - adjusting the shaft head and pit for both elevator variants



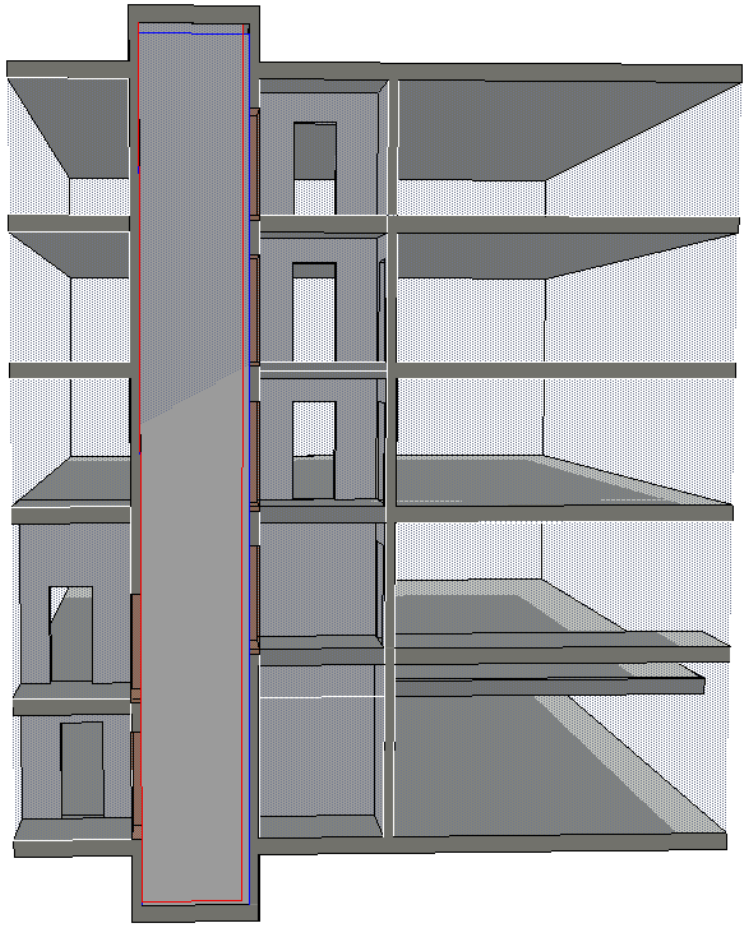


Phase B – LOD 200

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

Architecture plans LOD 200 buildings

- completed pre-planning



Phase B – LOD 200

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

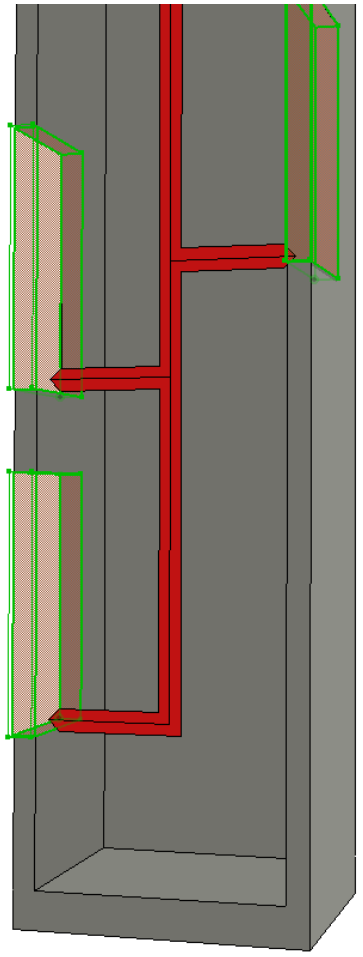
digipara® liftdesigner

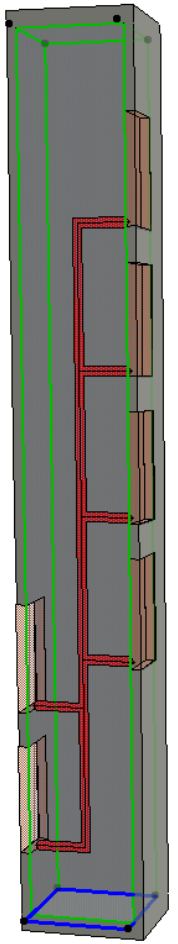
Architecture plans LOD 200 buildings

- Planning of the openings / opening proposals are created

ID UND KATEGORIEN	
UMBAU	
Allgemeine Werte	
Produktinformationen	
Schlitze und Durchbrüche	
IFC-EIGENSCHAFTEN	
IFC Typ	IfcBuildingElementProxy
ARCHICAD IFC ID	2DuVILA9H6_QOIgL$DPxBp
GlobalId (Attribute)	2DuVILA9H6_QOIgL$DPxBp
Name (Attribute)	Öffnungsvorschlag
Tag (Attribute)	8DE1F493-2894-46F9-A62F-A95FCD67B2F3
PredefinedType (Attribute)	PROVISIONFORVOID
Reference (Pset_BuildingElementProxyCommon)	ELEVATORDOOR
ReferredTransportElementName (VDI2552_11_5_RequirementsMand...	Aufzug 01
RequiredDoorClearOpeningHeightMin (VDI2552_11_5_Requirement...	2,10
RequiredDoorClearOpeningWidthMin (VDI2552_11_5_Requirement...	0,90
RequiredDoorTypeOperation (VDI2552_11_5_RequirementsMandat...	SLIDING_TO_LEFT
RequiredStopAtElevation (VDI2552_11_5_RequirementsMandatory)	-2,94
RequiredStopServiceSide (VDI2552_11_5_RequirementsMandatory)	1
	IFC-Eigenschaften verwalten...

Opening proposals are planned larger in the first step



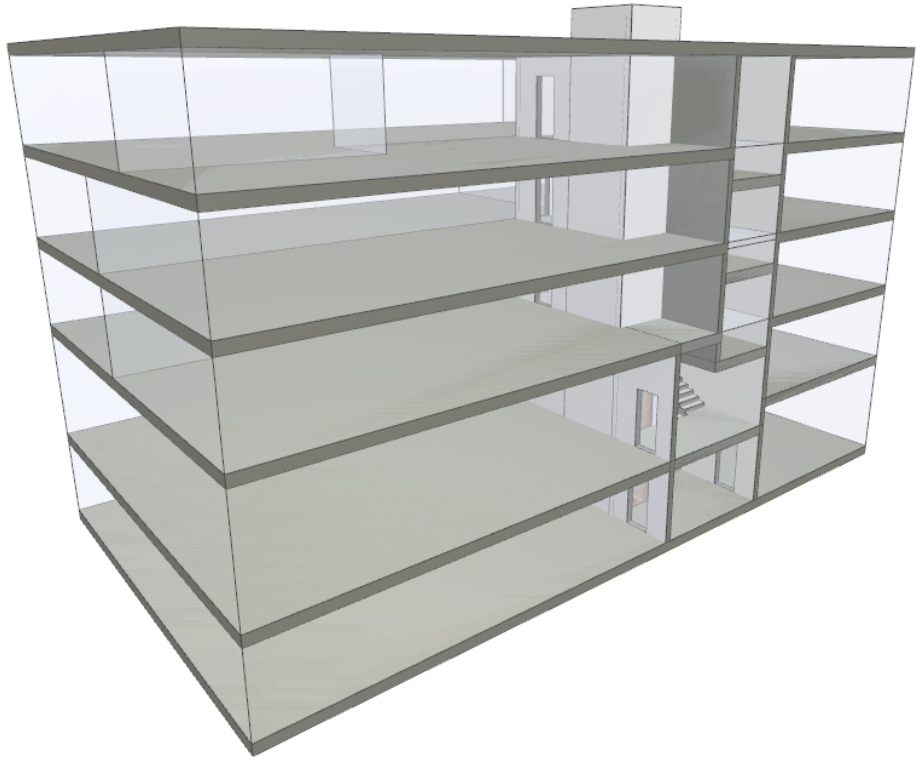


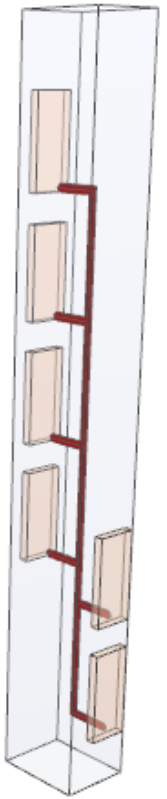
Phase B – LOD 200

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

Architecture plans LOD 200 buildings

- Export of the building model





Presentation of the required information for elevator companies

elevator symbol

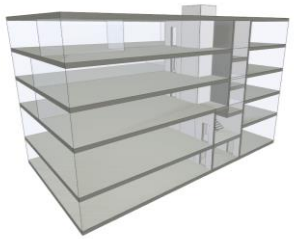
neutral shaft

opening suggestions

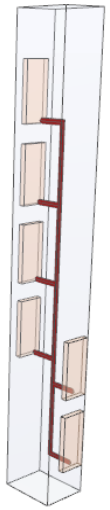
Phase B – LOD 200

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

Architecture provides building model



ARCHITECT



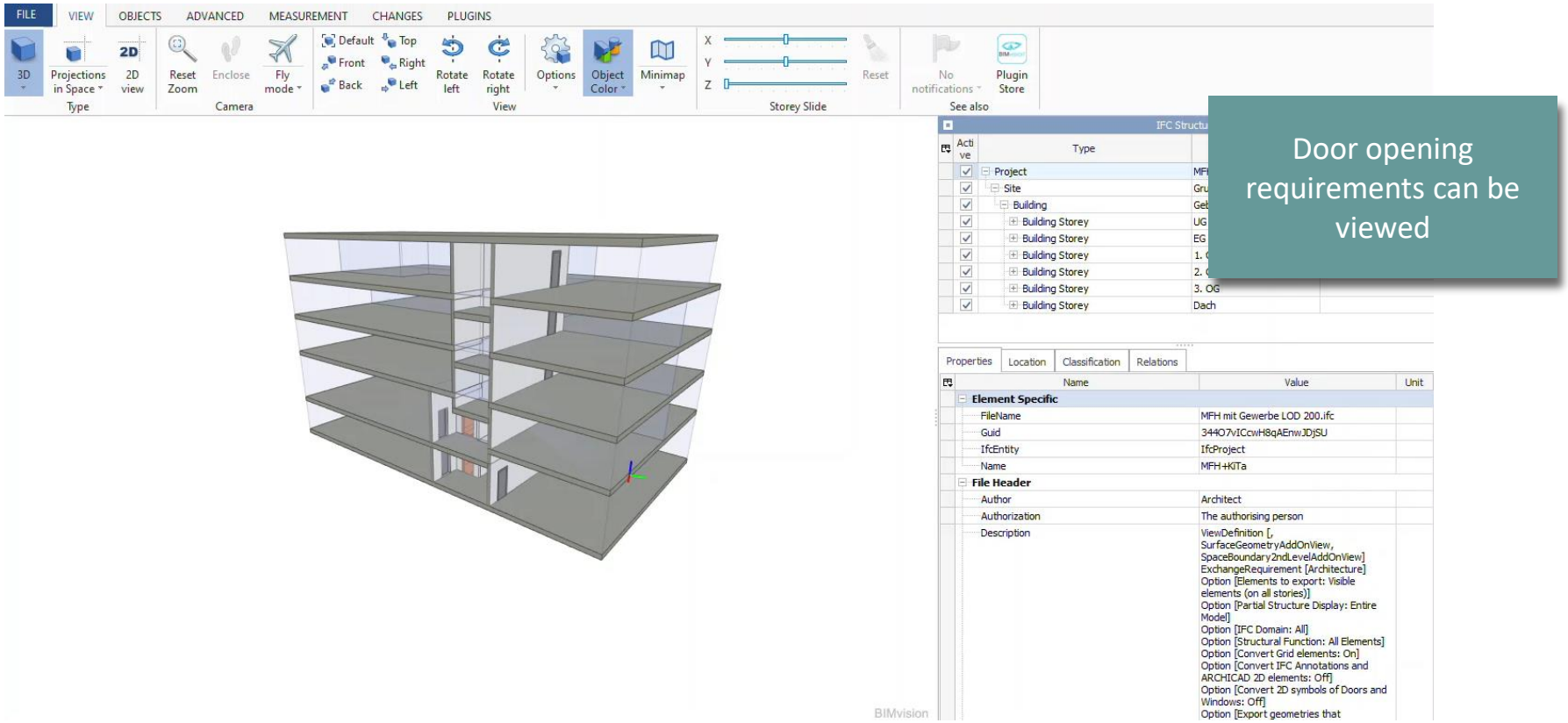
VT CONSULTANT / MANUFACTURER RED

VT CONSULTANTS / MANUFACTURER BLUE

Phase B – LOD 200

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

VT consultant/manufacturer receive input for the elevator planning process



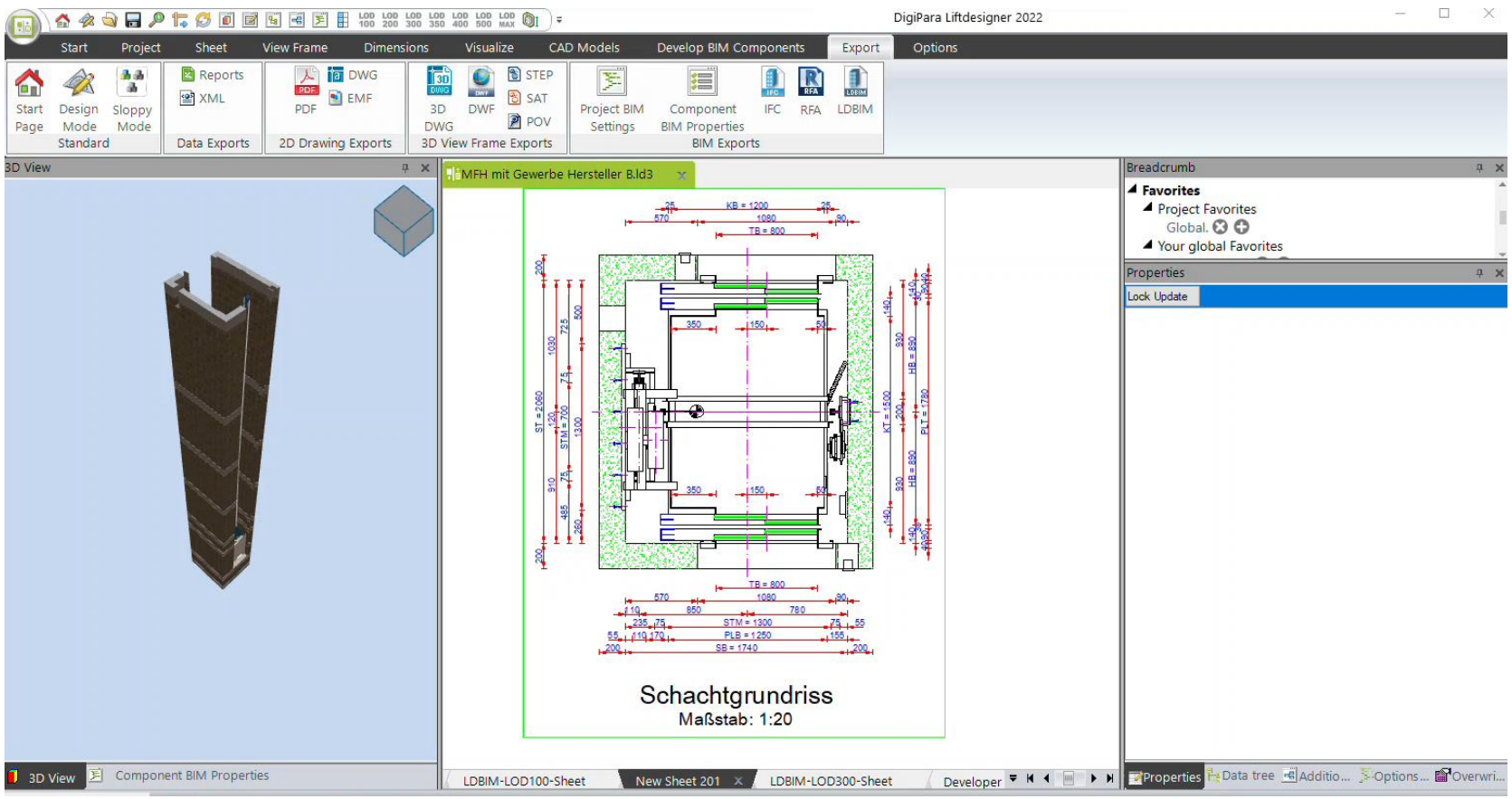
Phase B – LOD 200

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

digipara® liftdesigner

VT consultant/manufacturer (blue) plans the elevator model in LOD 200

- related to the requirements of the architecture



VT CONSULTANTS / MANUFACTURER BLUE

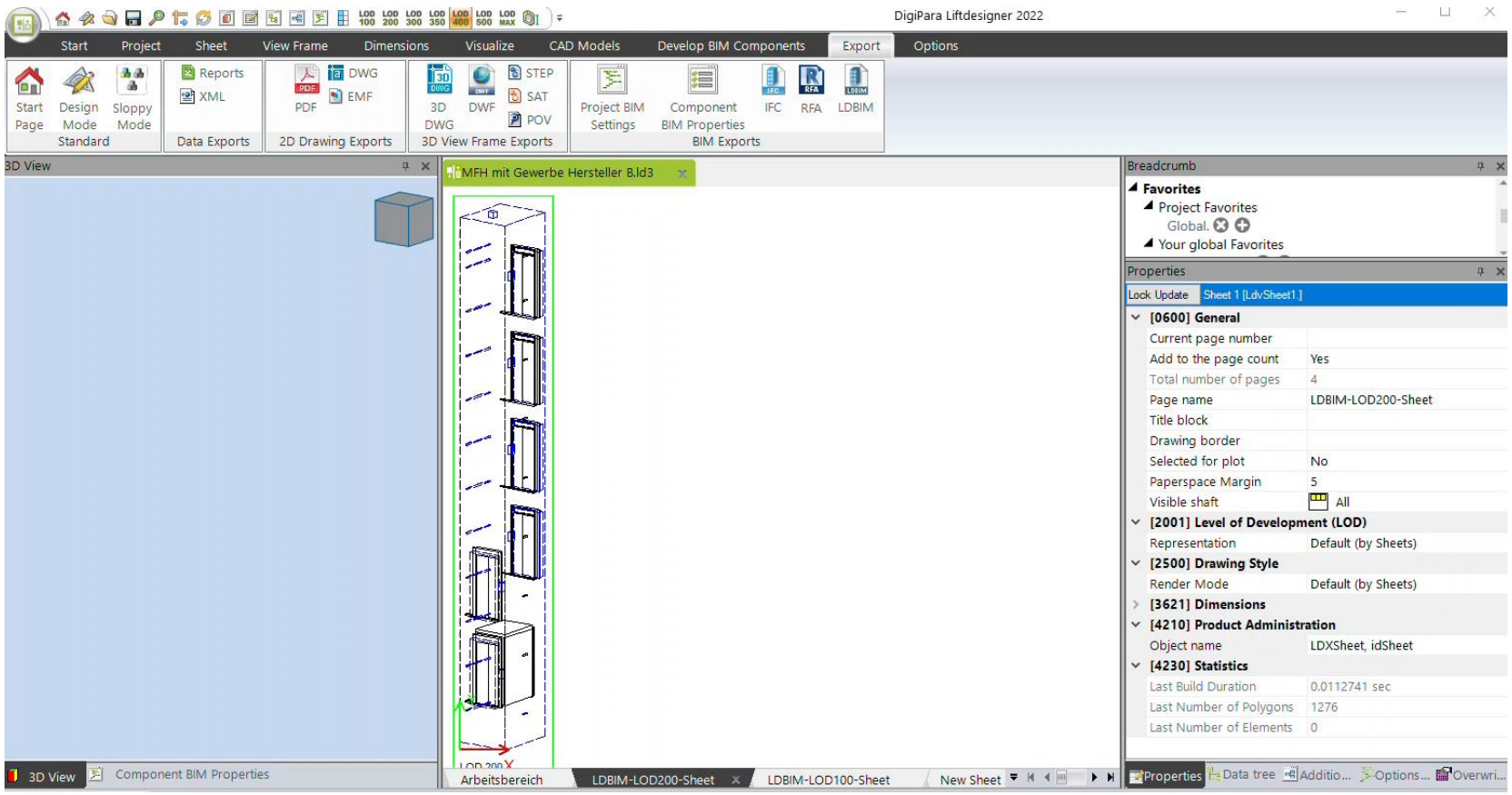
Phase B – LOD 200

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

digipara® liftdesigner

VT consultant / manufacturer (blue) checks his model

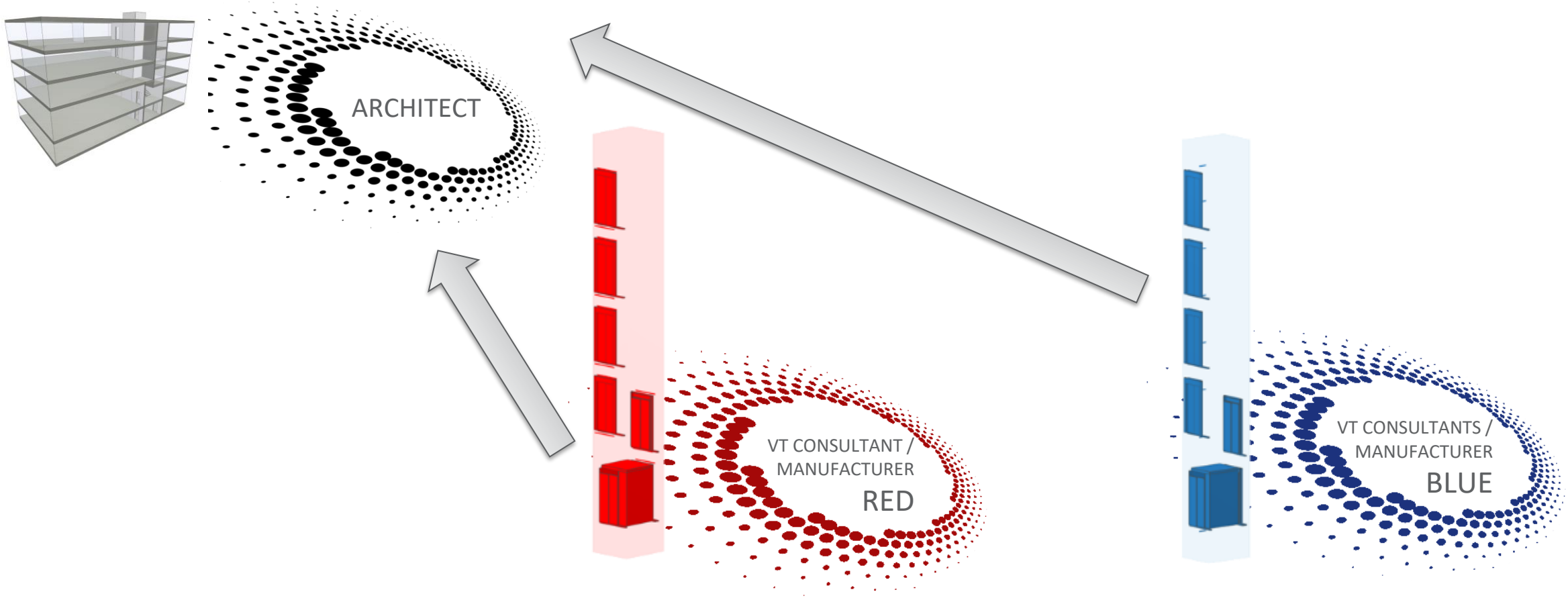
- in the building export of the architecture



Phase B – LOD 200

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

Architecture receives elevator models in LOD 200

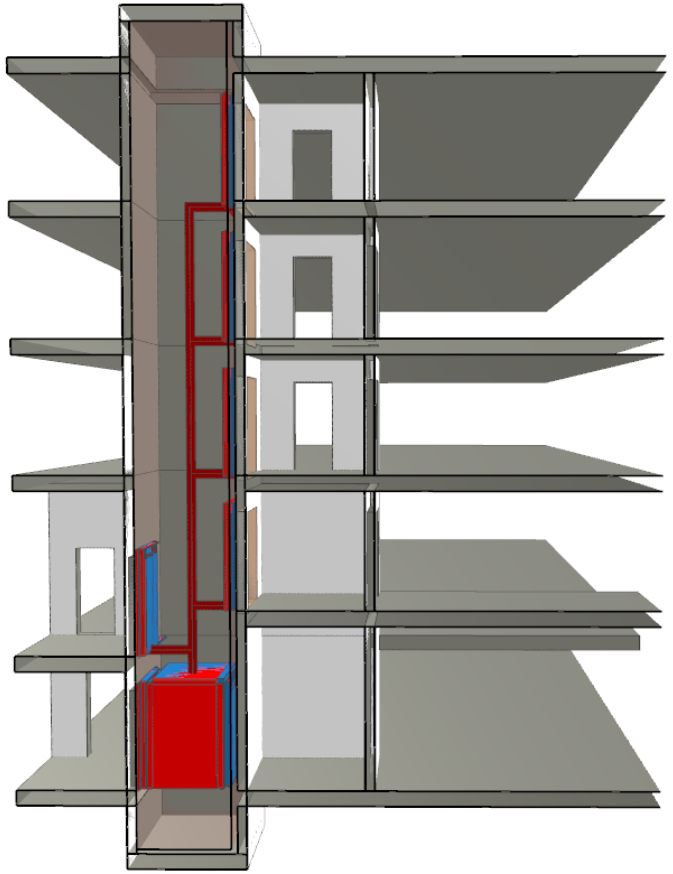


Phase B – LOD 200

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

Architecture receives elevator models in LOD 200

- Check if openings fit
- Collision check



Phase C – LOD 300

Phase B – LOD 300

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

Phase A:

- e.g. rough planning
- e.g. design concept

LOD 100

Phase B:

- e.g. design planning

LOD 200

Phase C:

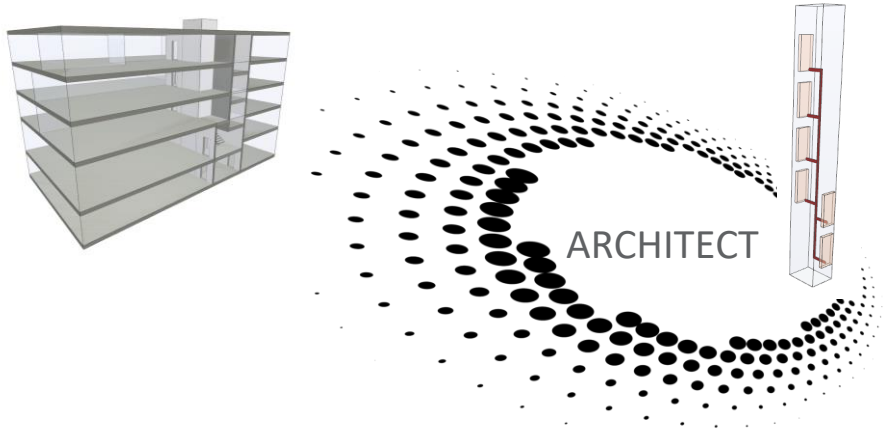
- e.g. execution planning

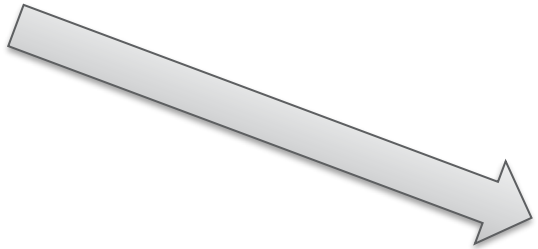
LOD 300

Phase B – LOD 300

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

Architecture provides the chosen manufacturer with a customized building model

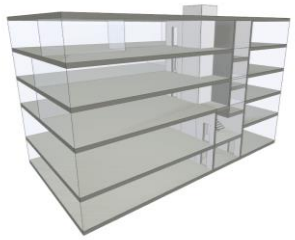




Phase B – LOD 300

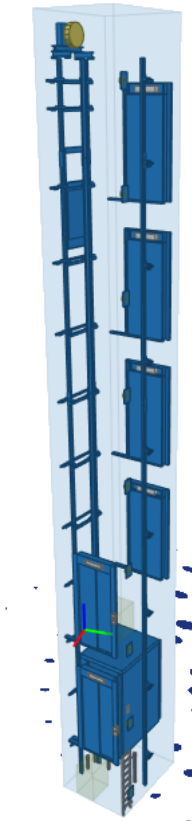
C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

Architecture receives elevator model LOD 300



ARCHITECT

Further components and information are transferred.



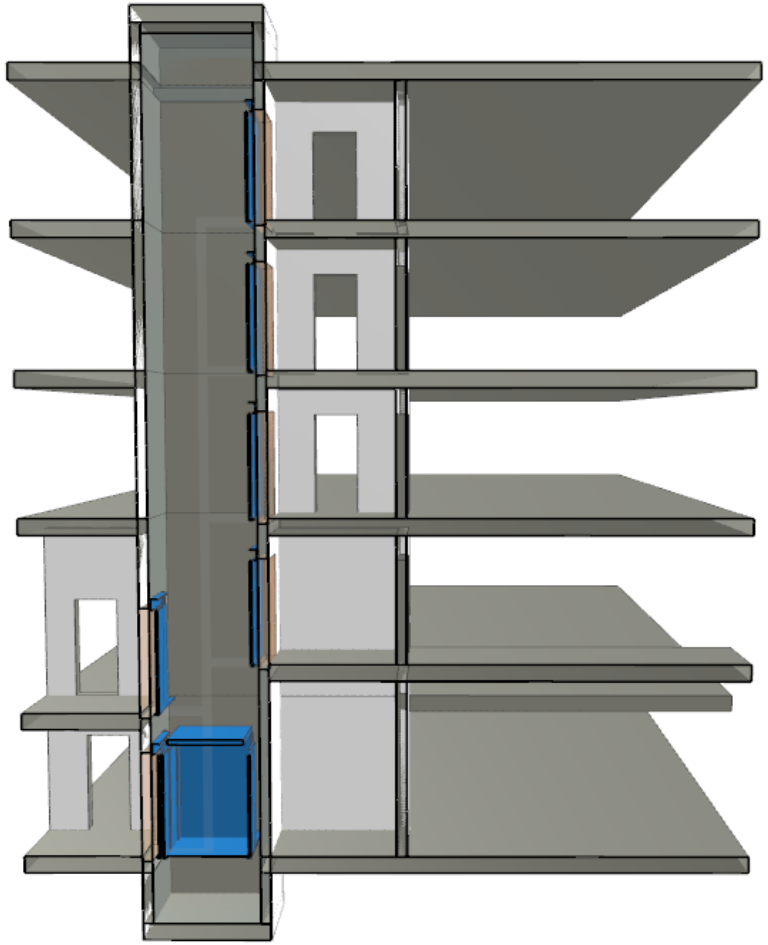
VT CONSULTANTS / MANUFACTURER

BLUE

Phase B – LOD 300

C1.2 LOD-LEVEL & DESIGN PHASES (ACCORDING TO VDI)

- Collision check



digipara® liftdesigner

C1.3

LOD & LOI

General information: LOD & LOI

General information

C1.3 LOD & LOI

Level of Development

LOD

- How detailed must the model be and at which point in time?

- **Consisting of:**

LOG – Level of Geometry

  - Which components or individual parts are relevant and need to be displayed?
  - How detailed must the individual components be represented? (number of polygons)

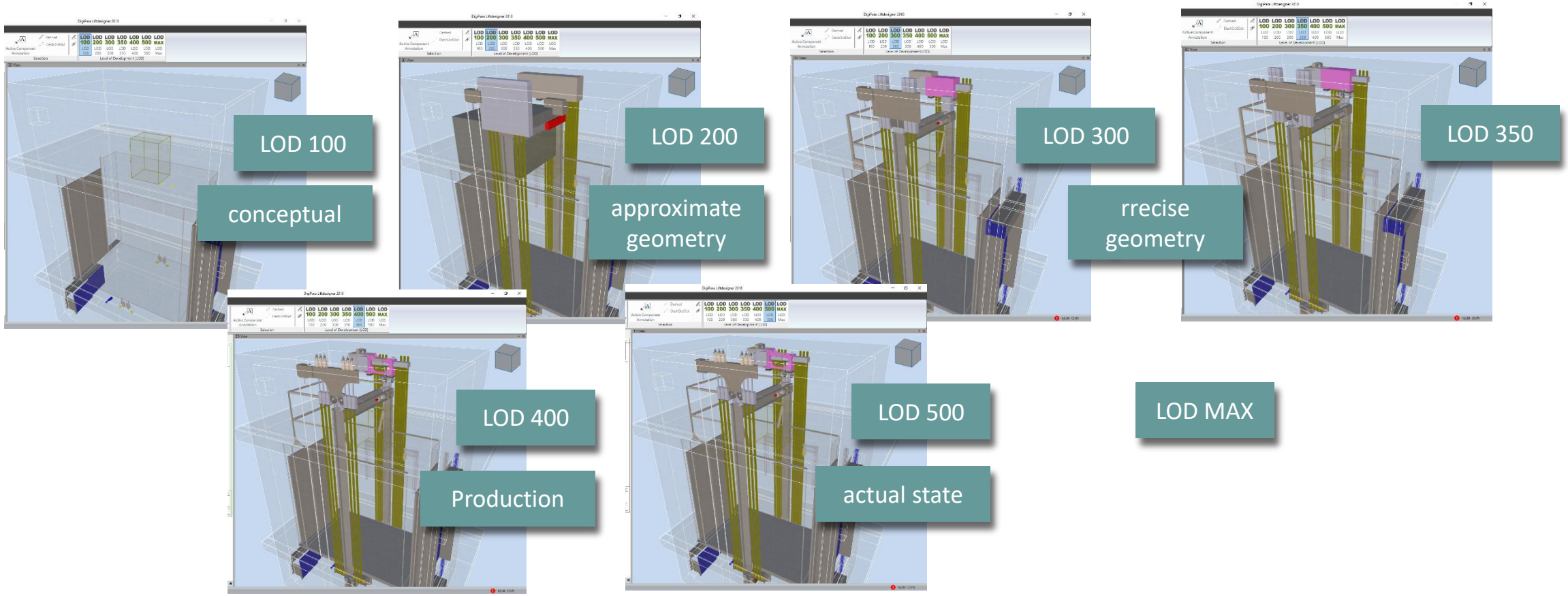
LOI – Level of Information

  - Which information needs to be integrated and which does not? **Specified in the EIR document (Employer Information Requirements)**
  - Relevant information with an assignment to a planning phase

General information

C1.3 LOD & LOI

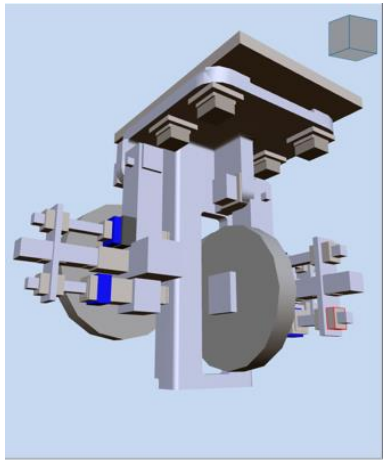
DigiPara Liftdesigner provides 3D elevator models for different LOD levels

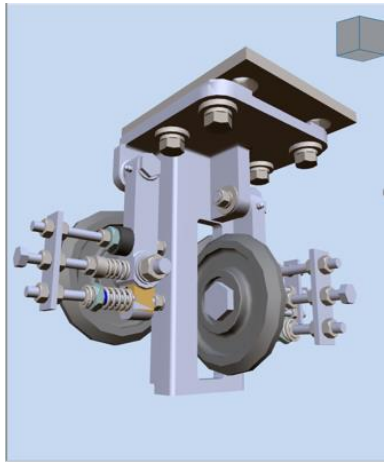


DigiPara Liftdesigner 3D BIM library

- LOD - Level of Development
  - Manufacturers provide elevator components in LOD 100, 200, 300, ... MAX via the DigiPara Liftdesigner Cloud

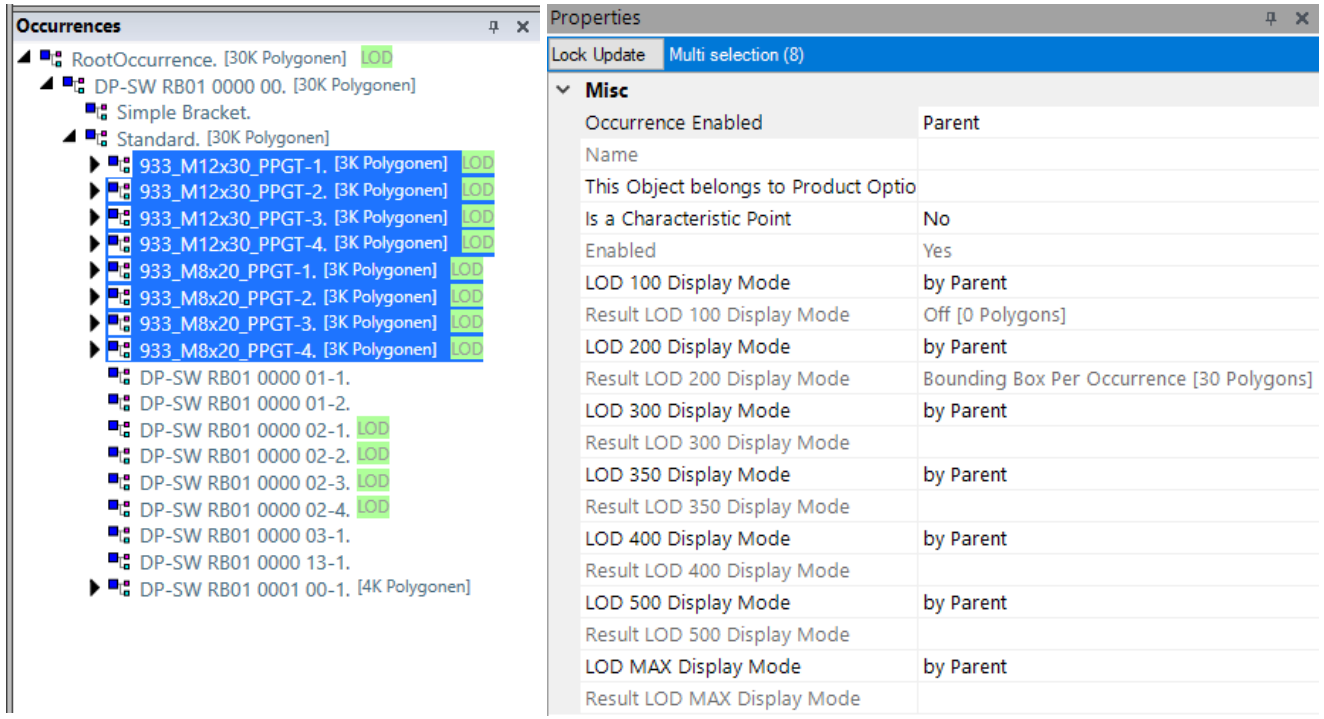
- Protection of intellectual property
  - through automatic simplification of the components

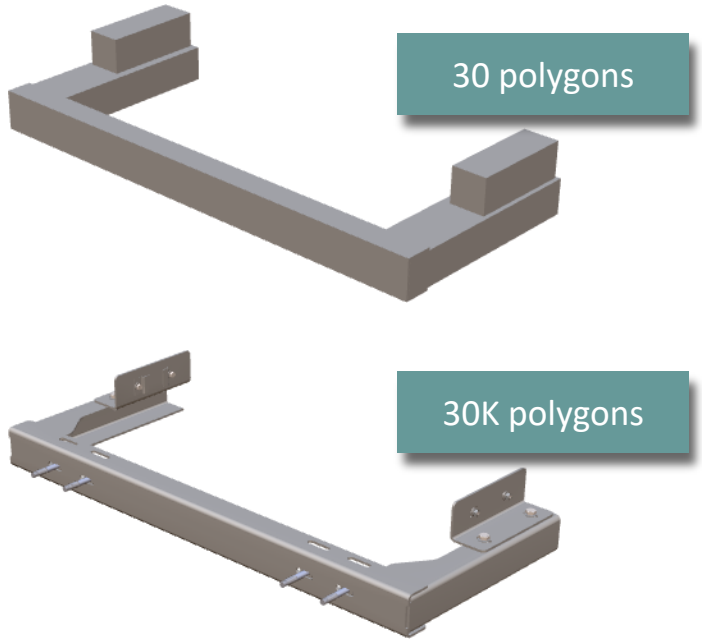




Recommendation for the use of 3D CAD models in the DigiPara Liftdesigner project

- Simplification of geometries and reduction of polygons from which the body of a component is composed.





CAD Models & Automation → EL4

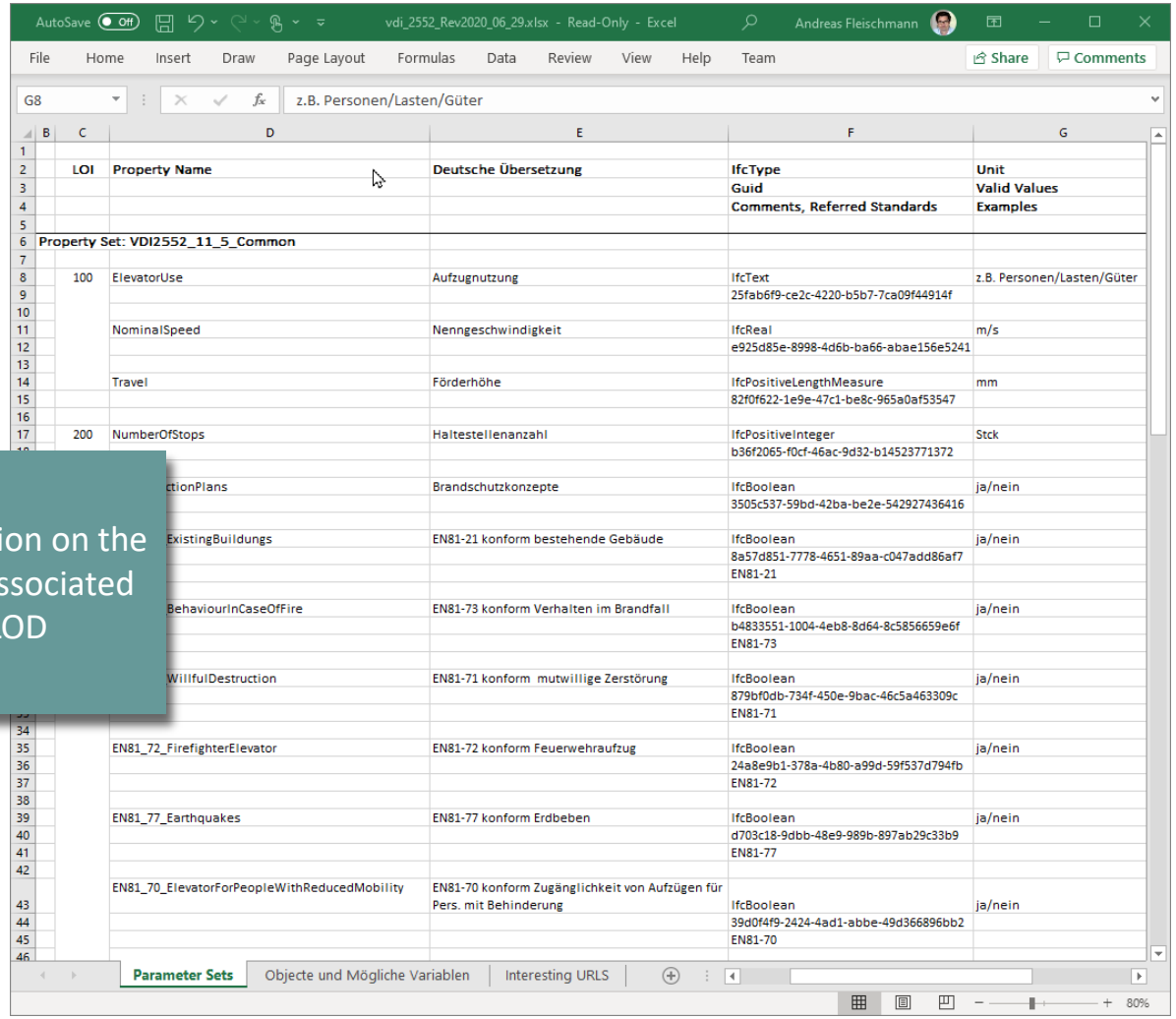
General information

C1.3 LOD & LOI

BIM Standard (Germany): VDI 2552.11 Page 5

- DigiPara AG is part of the VDI working group

Contains relevant information on the geometry (LOG) and the associated information (LOI) = LOD



vdi_2552_Rev2020_06_29.xlsx - Read-Only - Excel

	LOI	Property Name	Deutsche Übersetzung	IfcType / Guid / Comments, Referred Standards	Unit / Valid Values / Examples
6	Property Set: VDI2552_11_5_Common				
8	100	ElevatorUse	Aufzugnutzung	IfcText 25fab6f9-ce2c-4220-b5b7-7ca09f44914f	z.B. Personen/Lasten/Güter
11		NominalSpeed	Nenngeschwindigkeit	IfcReal e925d85e-8998-4d6b-ba66-abae156e5241	m/s
14		Travel	Förderhöhe	IfcPositiveLengthMeasure 82f0f622-1e9e-47c1-be8c-965a0af53547	mm
17	200	NumberOfStops	Haltestellenanzahl	IfcPositiveInteger b36f2065-f0cf-46ac-9d32-b14523771372	Stck
		tionPlans	Brandschutzkonzepte	IfcBoolean 3505c537-59bd-42ba-be2e-542927436416	ja/nein
		ExistingBuildungs	EN81-21 konform bestehende Gebäude	IfcBoolean 8a57d851-7778-4651-89aa-c047add86af7 EN81-21	ja/nein
		BehaviourInCaseOfFire	EN81-73 konform Verhalten im Brandfall	IfcBoolean b4833551-1004-4eb8-8d64-8c5856659e6f EN81-73	ja/nein
		WillfulDestruction	EN81-71 konform mutwillige Zerstörung	IfcBoolean 879bf0db-734f-450e-9bac-46c5a463309c EN81-71	ja/nein
35		EN81_72_FirefighterElevator	EN81-72 konform Feuerwehraufzug	IfcBoolean 24a8e9b1-378a-4b80-a99d-59f537d794fb EN81-72	ja/nein
39		EN81_77_Earthquakes	EN81-77 konform Erdbeben	IfcBoolean d703c18-9dbb-48e9-989b-897ab29c33b9 EN81-77	ja/nein
43		EN81_70_ElevatorForPeopleWithReducedMobility	EN81-70 konform Zugänglichkeit von Aufzügen für Pers. mit Behinderung	IfcBoolean 39d0f4f9-2424-4ad1-abbe-49d366896bb2 EN81-70	ja/nein

Parameter Sets | Objecte und Mögliche Variablen | Interesting URLS

LDBIM LOD sheet templates

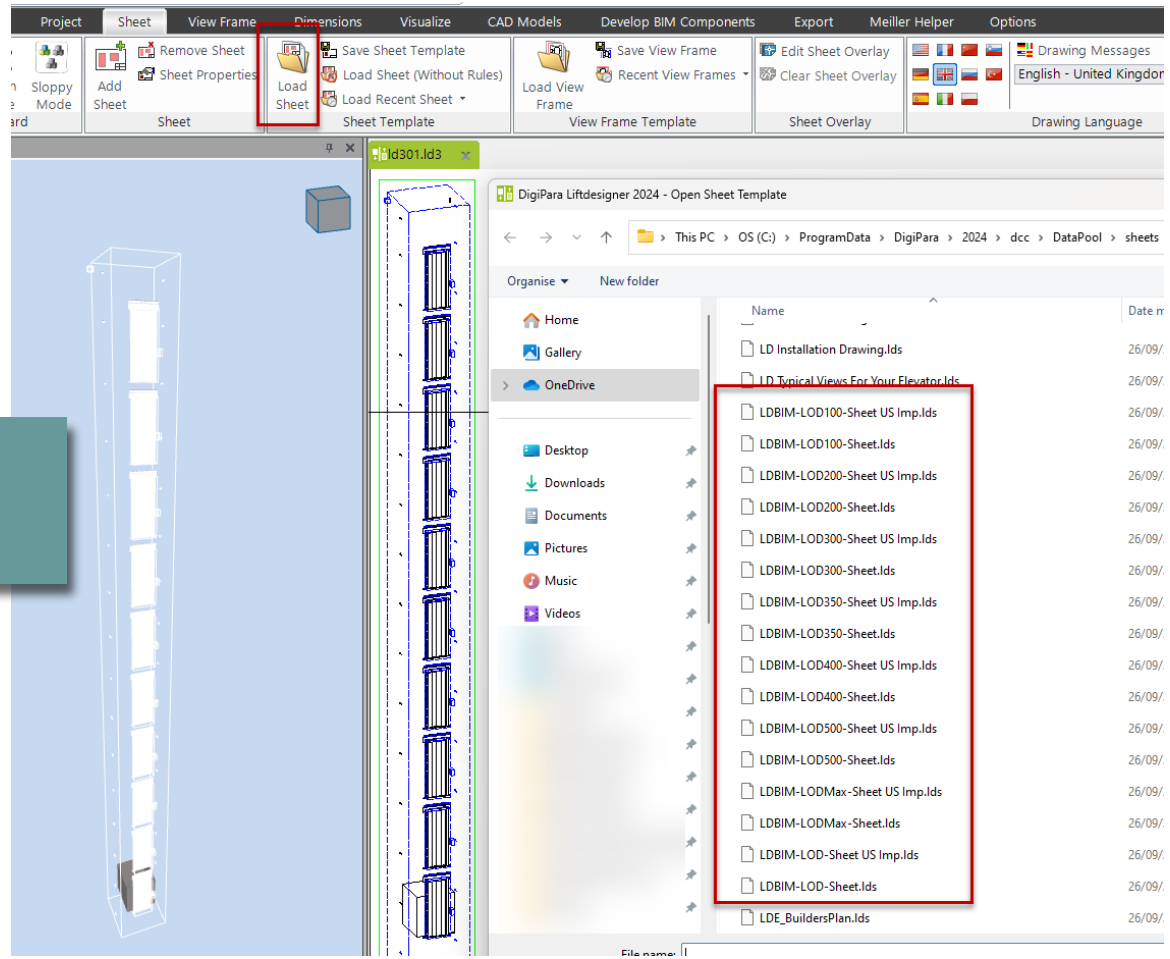
LDBIM LOD sheet templates

C1.3 LOD & LOI

DigiPara Liftdesigner offers a prepared set of LOD drawing sheets

- standard data pool path:
  C:\ProgramData\DigiPara\20**\dcc\DataPool\sheets

metric and imperal

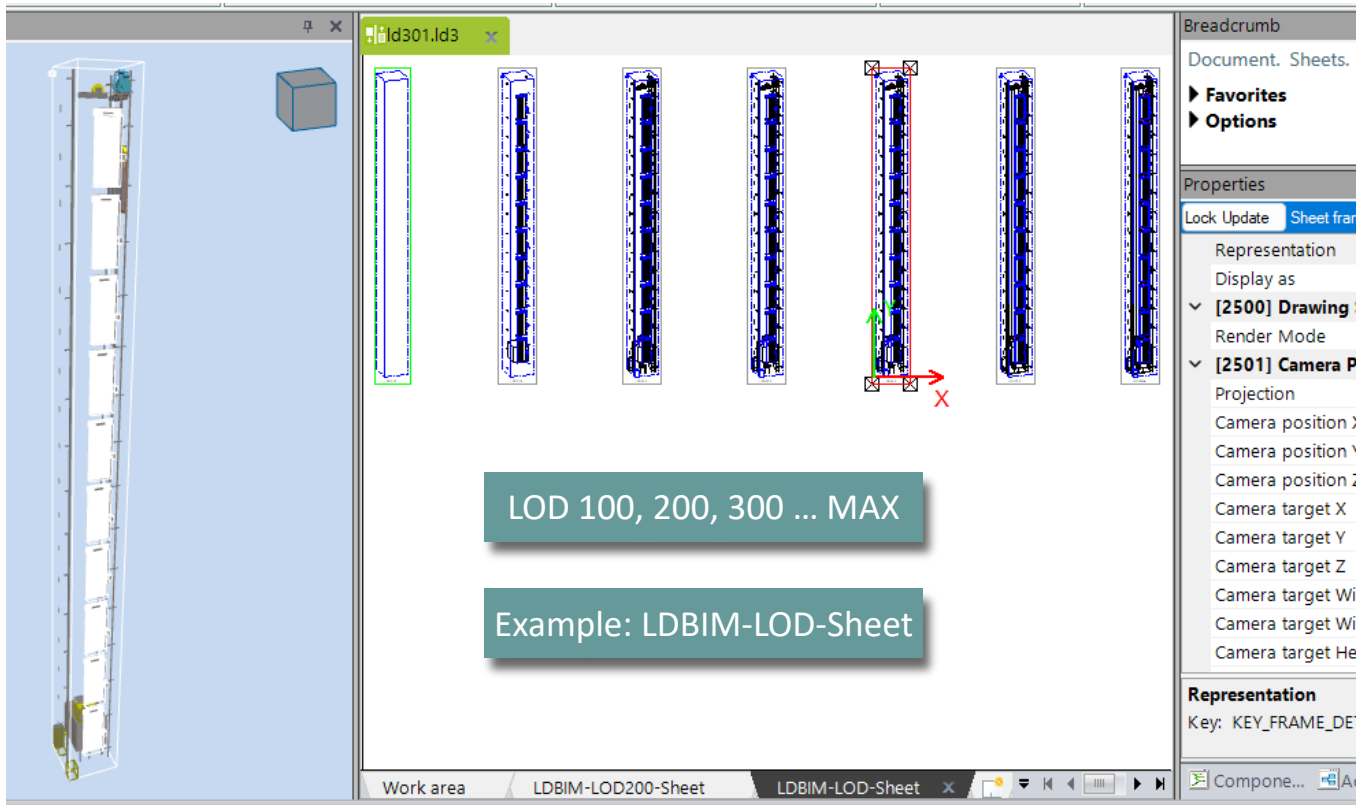


LDBIM LOD sheet templates

C1.3 LOD & LOI

DigiPara Liftdesigner offers a prepared set of LOD drawing sheets

- whose specifically defined view frames can be used directly for the 3D BIM export

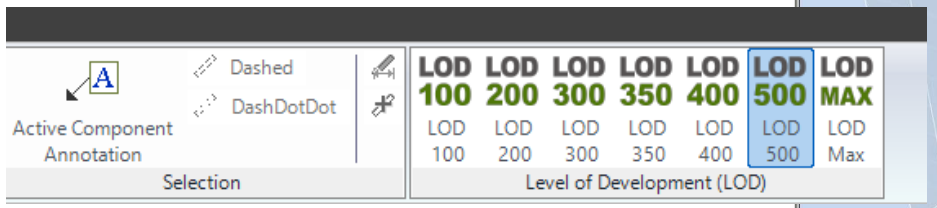


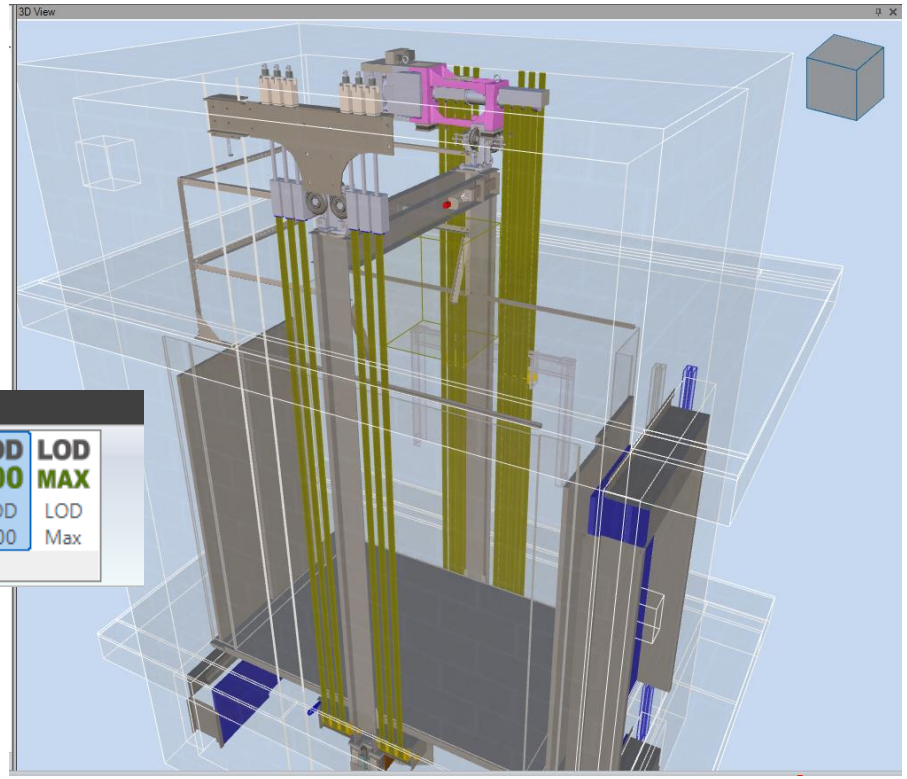
LDBIM LOD sheet templates

C1.3 LOD & LOI

General information

- The LOD settings for the entire elevator project can be defined under the view frame tab.
  - Further setting options for the individual view frames follow in the next training step.





Setting options for view frames

Preparation steps

C1.3 LOD & LOI

Creating an elevator project

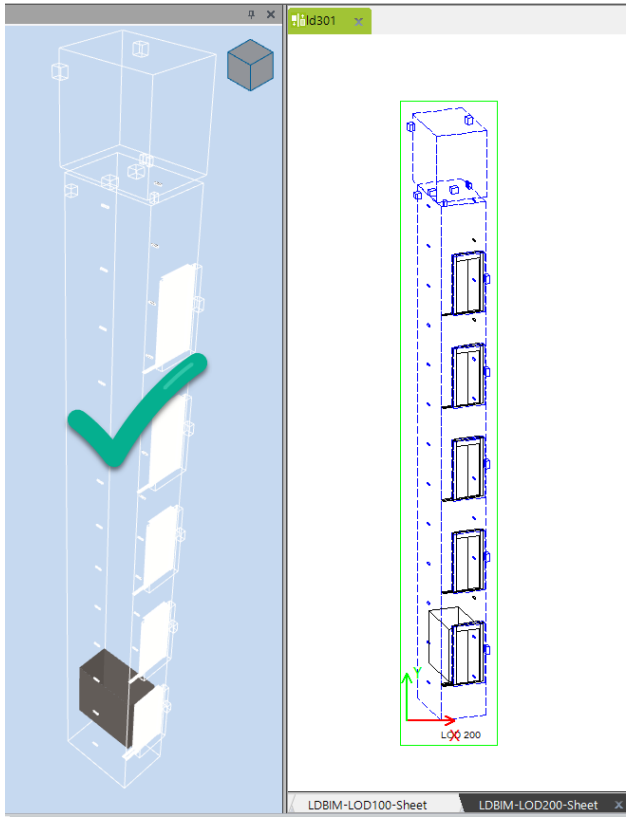
- 5 floors
- Typical floor to floor distance 3500 mm
  - Consider travel - no
  - Create building floor levels - no
- 13 persons / 1000 kg, 1 m/s
- Traction elevator 1:1
- Machine room
  - top
- Car roping
  - direct
  - without Counterweight safety gear
- Counterweight roping
  - direct
  - Counterweight left
- Sheet Templates
  - LDBIM-LOD100, 200, 300-Sheet
  - LDBIM-LOD-Sheet
- Car size
  - Car width: 1600 mm
  - Car depth: 1400 mm
- Save the project under the following file name: LDTrainingSampleC1_01.ld3

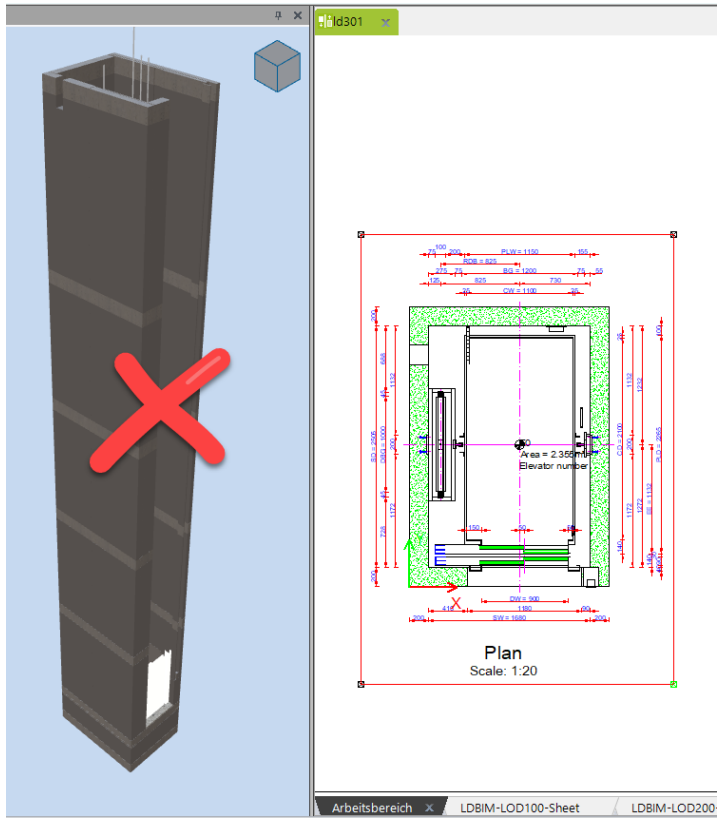
Setting options for view frames

C1.3 LOD & LOI

General information

- The current content of the selected view is always used for the BIM export.



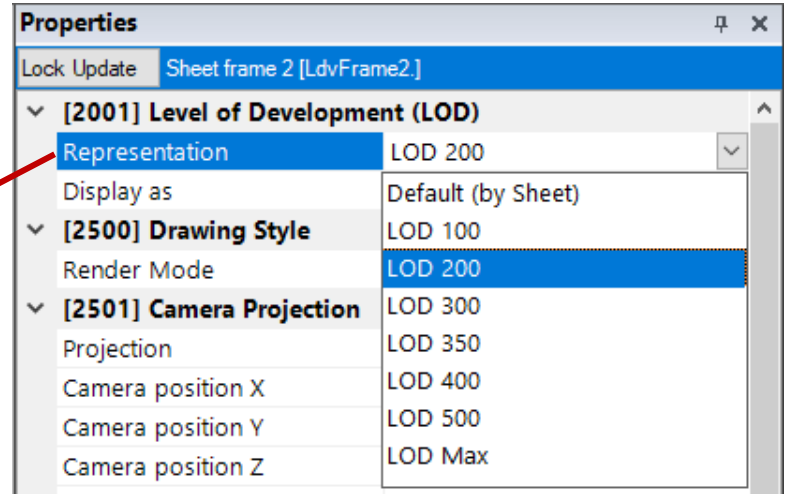


Setting options for view frames

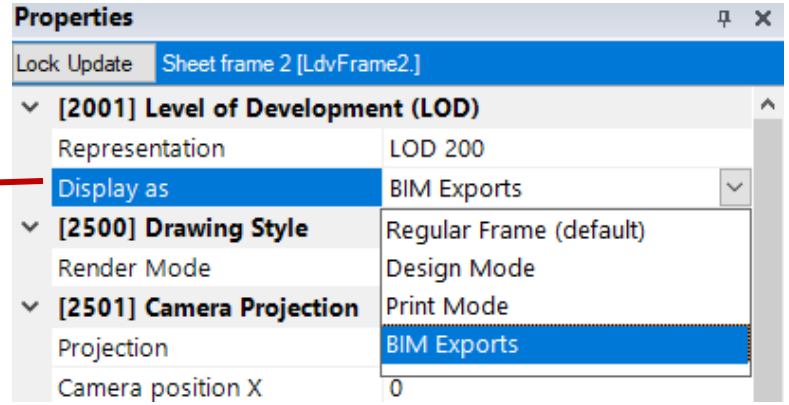
C1.3 LOD & LOI

LOD view frame settings via the Properties docking window: Level of Development

- Representation
  - LOD level settings for the selected view frame



- Display as
  - shows the elevator model in other display variants for control and overview purposes
  - this does not affect the export itself



Available in drawing sheets that contain BIM or LOD in the sheet name.

digipara® liftdesigner

Let's take a break!

digipara® liftdesigner

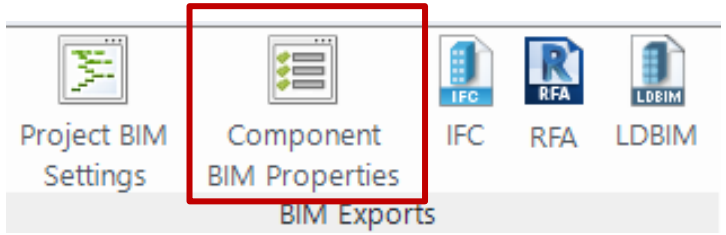
C1.4

Create own BIM properties

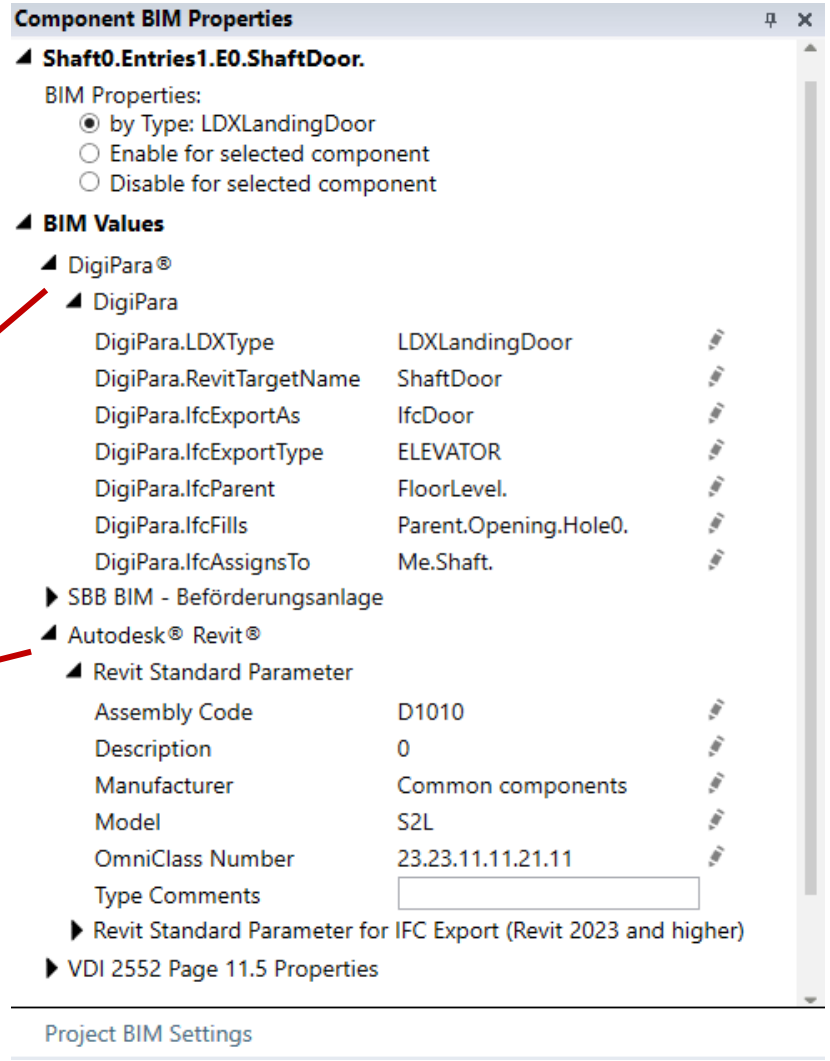
Docking windows for BIM properties

C1.4 CREATE OWN BIM PROPERTIES

Component BIM Properties



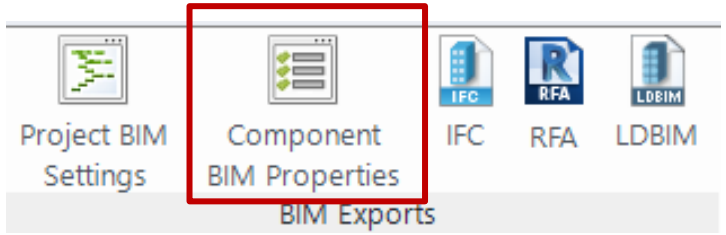
- DigiPara® BIM Values
  - preset and are always exported as well
- Autodesk® Revit® BIM Value
  - switched on by default for new projects



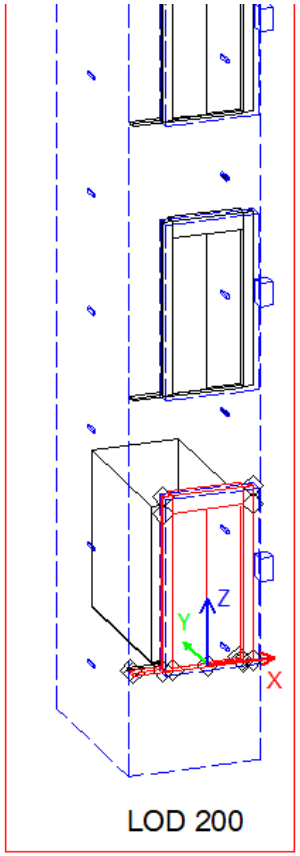
Docking windows for BIM properties

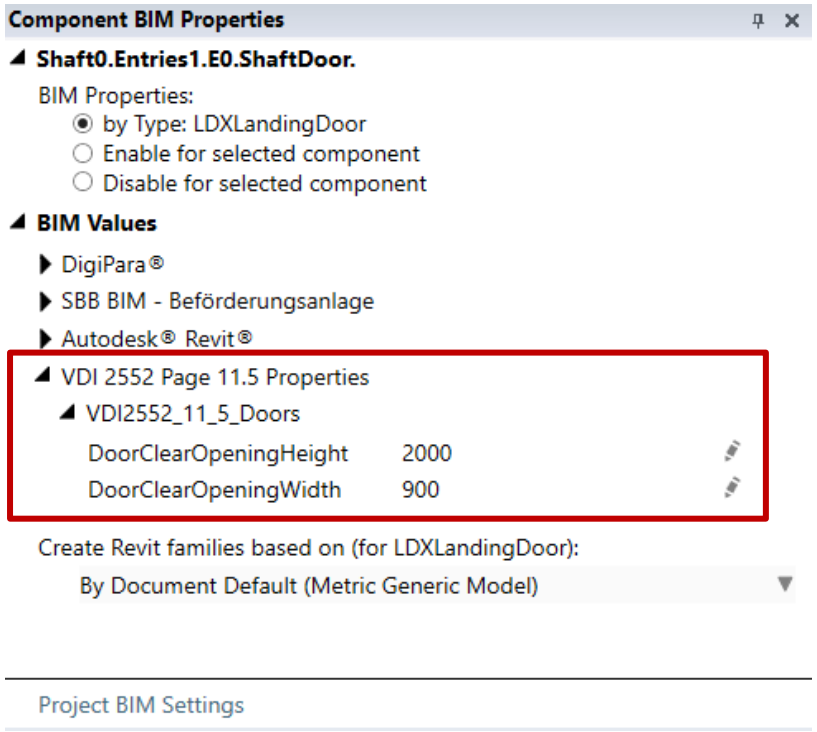
C1.4 CREATE OWN BIM PROPERTIES

Component BIM Properties



- VDI 2552 Page 11.5 Properties
  - The VDI 2552 module must be part of the data pool.



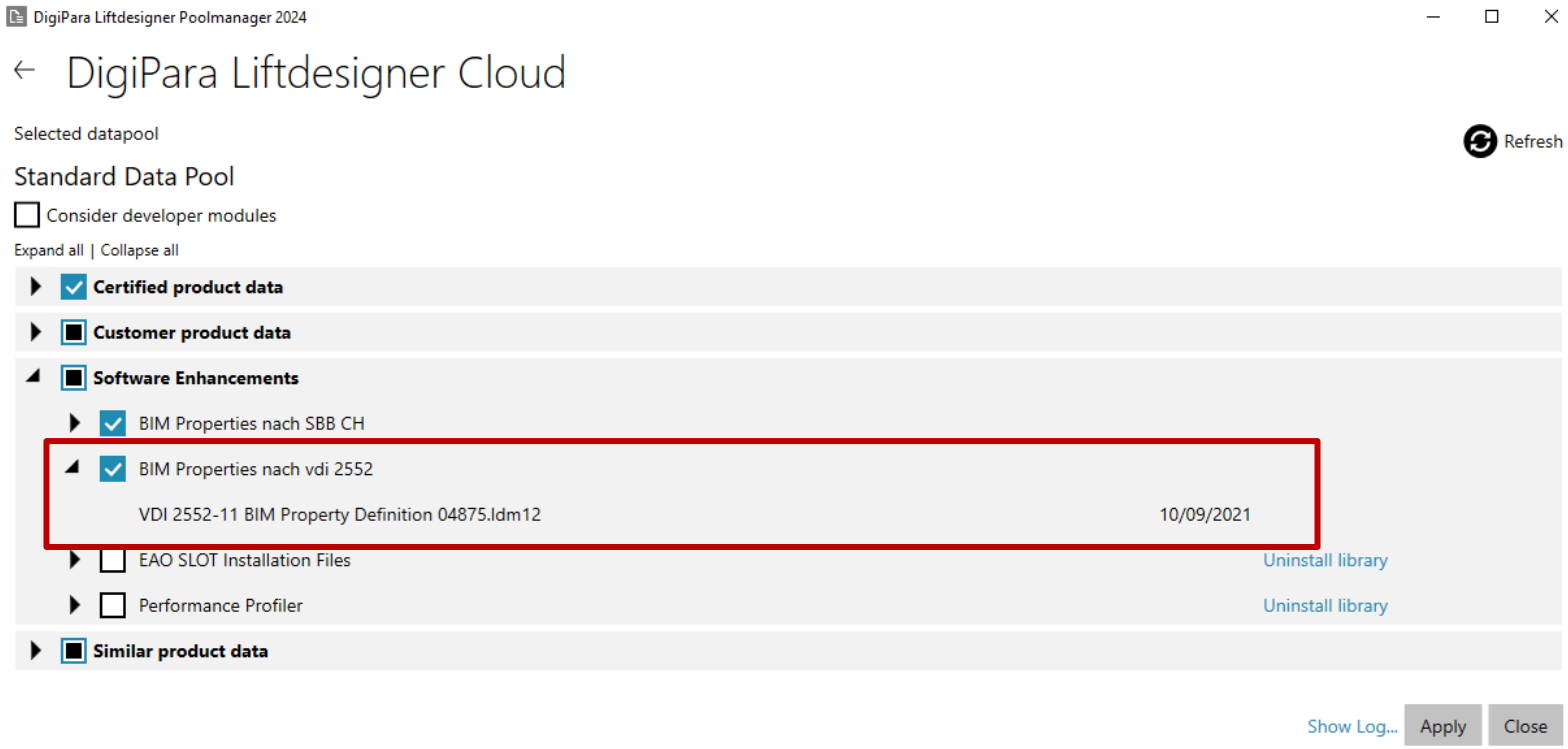


VDI 2552 DigiPara Liftdesigner module

C1.4 CREATE OWN BIM PROPERTIES

VDI 2552 Page 11.5 BIM Properties

- The corresponding software extension can be downloaded via the DigiPara Liftdesigner Cloud.



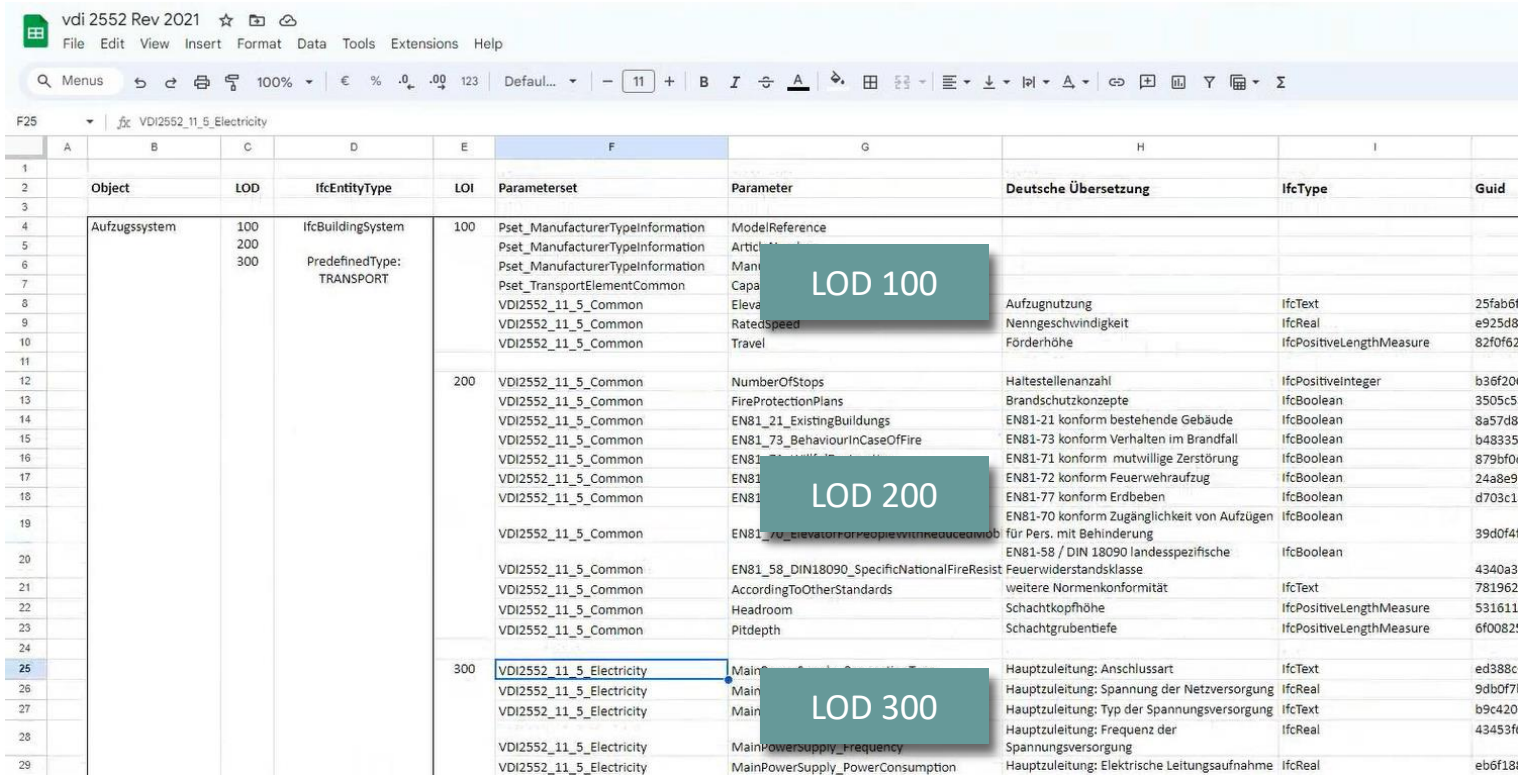
DigiPara Liftdesigner Fundamentals A1

VDI 2552 for BIM Properties

C1.4 CREATE OWN BIM PROPERTIES

General information

- VDI 2552 contains an overview with the corresponding definitions of LOD 100 - LOD 300



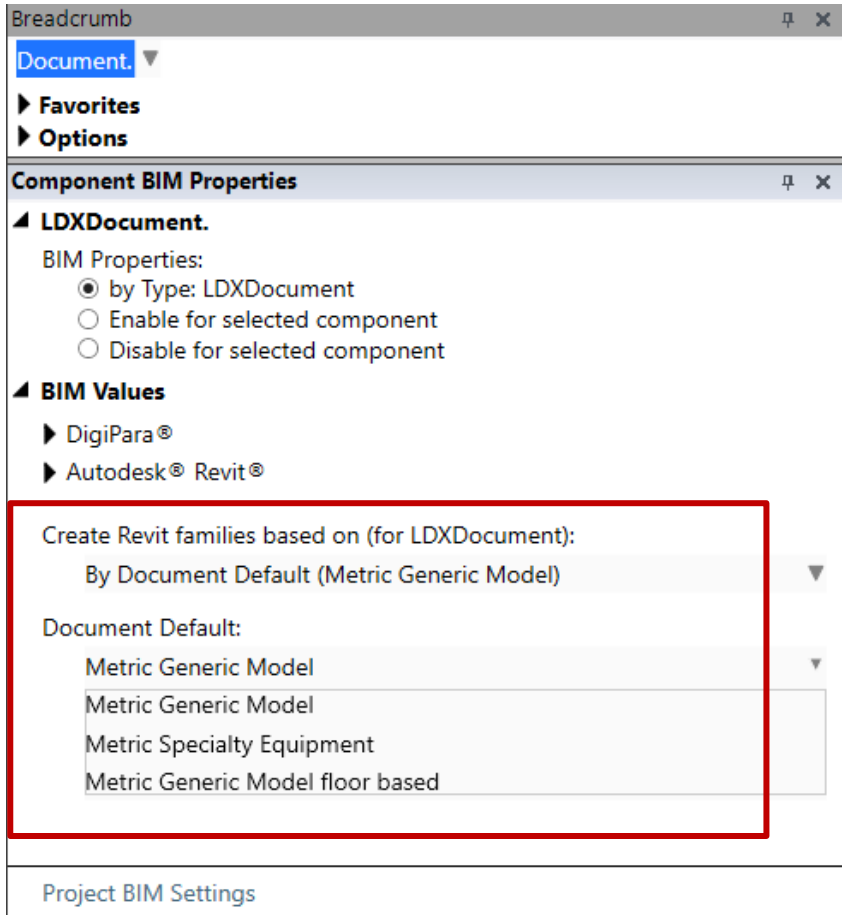
Object	LOD	IfcEntityType	LOI	Parameterset	Parameter	Deutsche Übersetzung	IfcType	Guid
Aufzugssystem	100	IfcBuildingSystem	100	Pset_ManufacturerTypeInformation	ModelReference			
	200			Pset_ManufacturerTypeInformation	Artic			
	300	PredefinedType: TRANSPORT		Pset_ManufacturerTypeInformation	Man			
				Pset_TransportElementCommon	Capa			
				VDI2552_11_5_Common	Eleva	Aufzugnutzung	IfcText	25fab6
				VDI2552_11_5_Common	RatedSpeed	Nenngeschwindigkeit	IfcReal	e925d8
				VDI2552_11_5_Common	Travel	Förderhöhe	IfcPositiveLengthMeasure	82f0f62
			200	VDI2552_11_5_Common	NumberOfStops	Haltestellenanzahl	IfcPositiveInteger	b36f20
				VDI2552_11_5_Common	FireProtectionPlans	Brandschutzkonzepte	IfcBoolean	3505c5
				VDI2552_11_5_Common	EN81_21_ExistingBuildungs	EN81-21 konform bestehende Gebäude	IfcBoolean	8a57d8
				VDI2552_11_5_Common	EN81_73_BehaviourInCaseOfFire	EN81-73 konform Verhalten im Brandfall	IfcBoolean	b48335
				VDI2552_11_5_Common	EN81	EN81-71 konform mutwillige Zerstörung	IfcBoolean	879bf0
				VDI2552_11_5_Common	EN81	EN81-72 konform Feuerwehraufzug	IfcBoolean	24a8e9
				VDI2552_11_5_Common	EN81	EN81-77 konform Erdbeben	IfcBoolean	d703c1
				VDI2552_11_5_Common	EN81_70_ElevatorForPeopleWithReducedMob	EN81-70 konform Zugänglichkeit von Aufzügen für Pers. mit Behinderung	IfcBoolean	39d0f4
				VDI2552_11_5_Common	EN81_58_DIN18090_SpecificNationalFireResist	EN81-58 / DIN 18090 landesspezifische Feuerwiderstandsklasse	IfcBoolean	4340a3
				VDI2552_11_5_Common	AccordingToOtherStandards	weitere Normenkonformität	IfcText	781962
				VDI2552_11_5_Common	Headroom	Schachtkopfhöhe	IfcPositiveLengthMeasure	531611
				VDI2552_11_5_Common	Pitdepth	Schachtgrubentiefe	IfcPositiveLengthMeasure	6f0082
			300	VDI2552_11_5_Electricity	Main	Hauptzuleitung: Anschlussart	IfcText	ed388c
				VDI2552_11_5_Electricity	Main	Hauptzuleitung: Spannung der Netzversorgung	IfcReal	9db0f7
				VDI2552_11_5_Electricity	Main	Hauptzuleitung: Typ der Spannungsversorgung	IfcText	b9c420
				VDI2552_11_5_Electricity	MainPowerSupply_Frequency	Hauptzuleitung: Frequenz der Spannungsversorgung	IfcReal	43453f
				VDI2552_11_5_Electricity	MainPowerSupply_PowerConsumption	Hauptzuleitung: Elektrische Leitungsaufnahme	IfcReal	eb6f18

Docking windows for BIM properties

C1.4 CREATE OWN BIM PROPERTIES

Export settings for Revit® families

- define the template that is used to create the family for the BIM export
  - Metric Generic Model (recommended)
    - sectional view of imported models
  - Metric Specialty Equipment
    - no section display recommended
    - for escalator exports



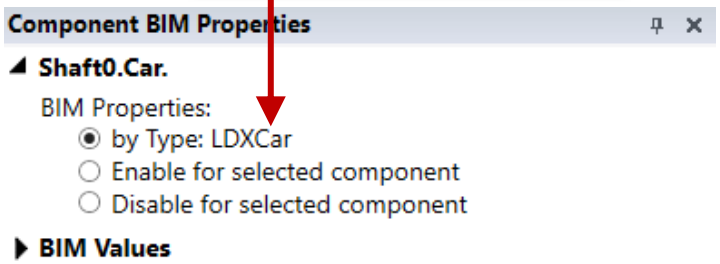
Docking windows for BIM properties

C1.4 CREATE OWN BIM PROPERTIES

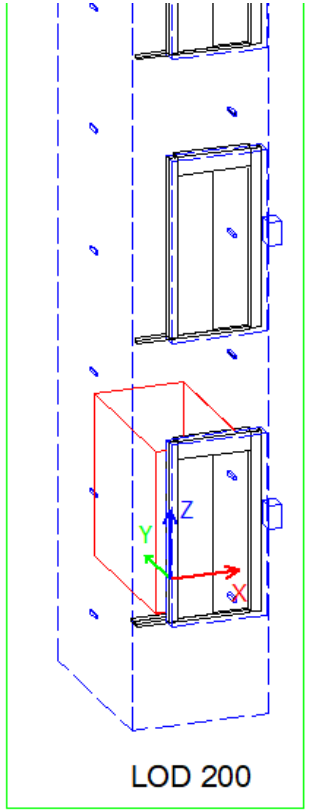
Deactivate BIM properties for selected components

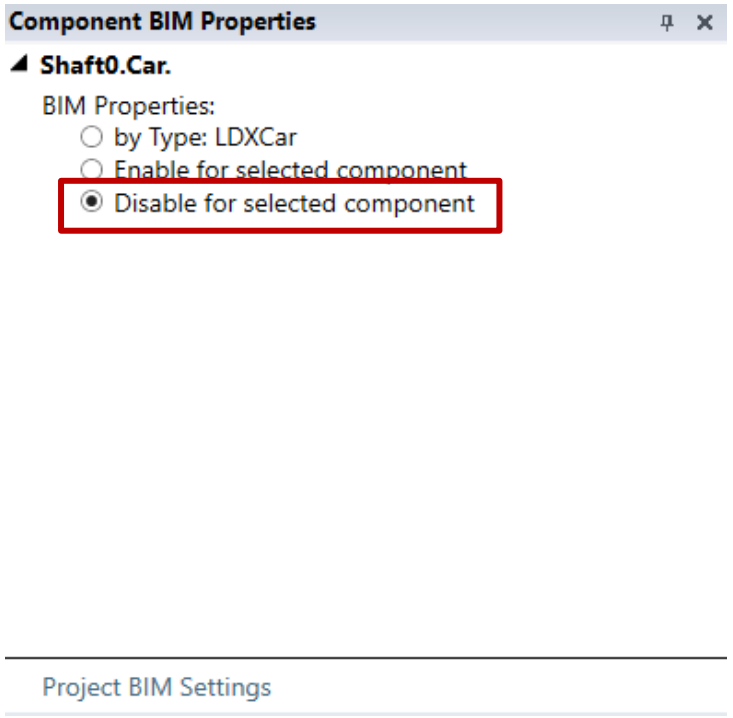
- are not taken into account for export

Default setting:
by Typ: *



Specified in:
Project BIM Settings



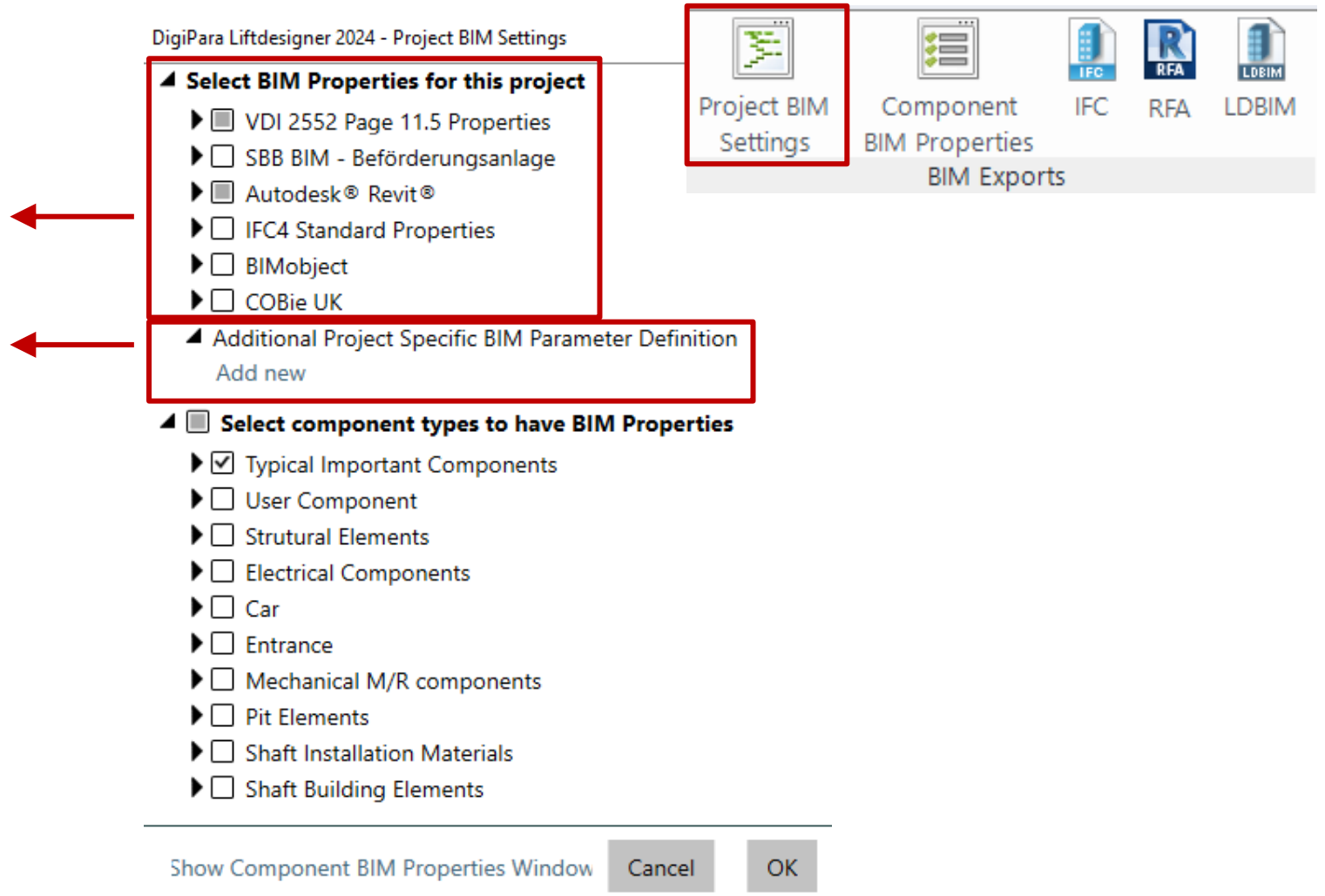


Docking windows for BIM properties

C1.4 CREATE OWN BIM PROPERTIES

Project BIM Settings

- selecting predefined BIM standards for BIM export
- creating own project-specific BIM parameter definitions

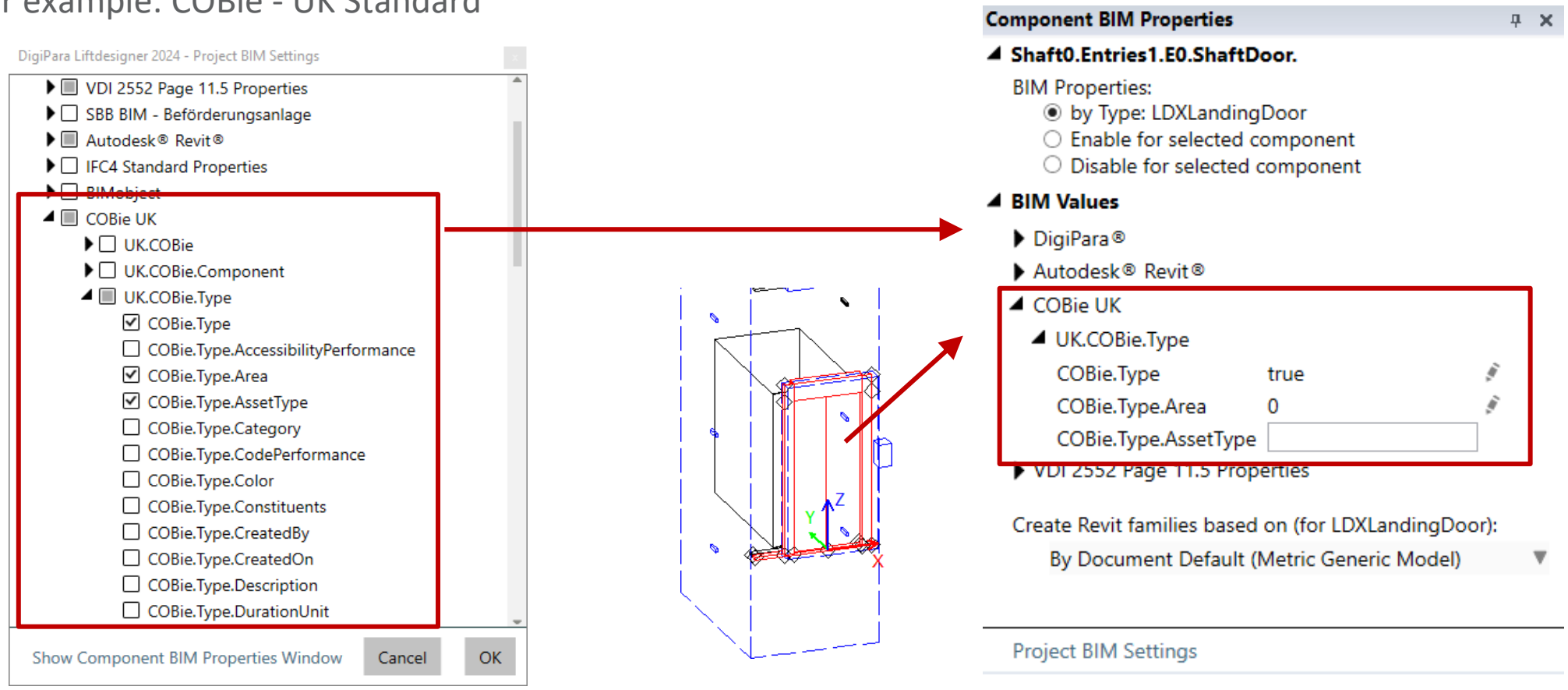


Docking windows for BIM properties

C1.4 CREATE OWN BIM PROPERTIES

Selection activated availability of BIM values on the component

- For example: COBie - UK Standard

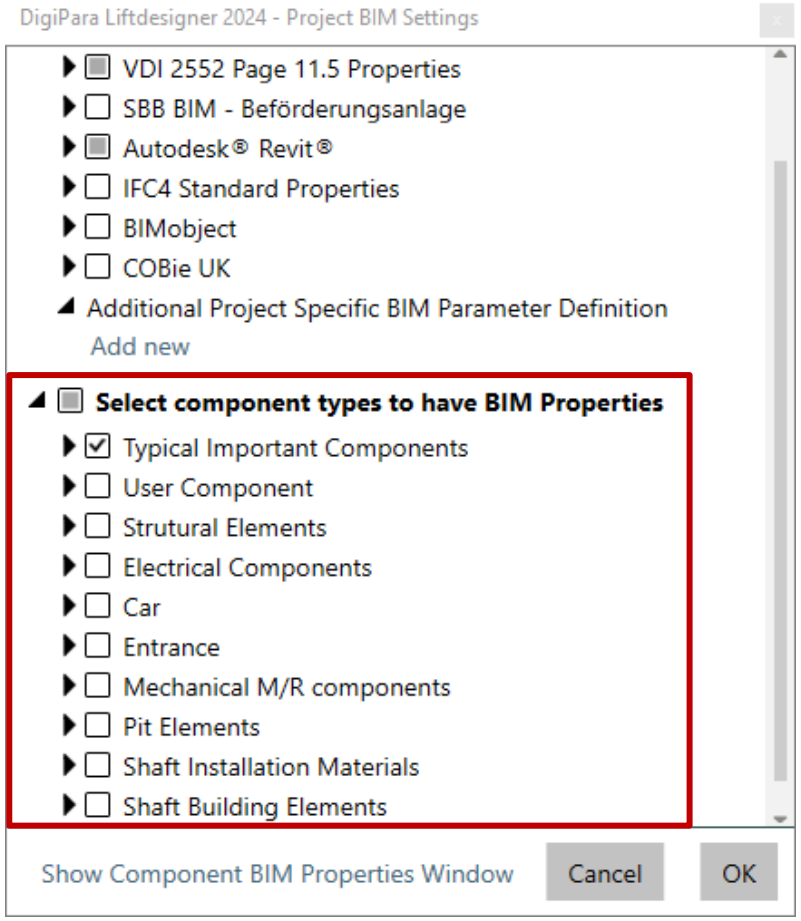


Docking windows for BIM properties

C1.4 CREATE OWN BIM PROPERTIES

Project BIM Settings

- selecting component types

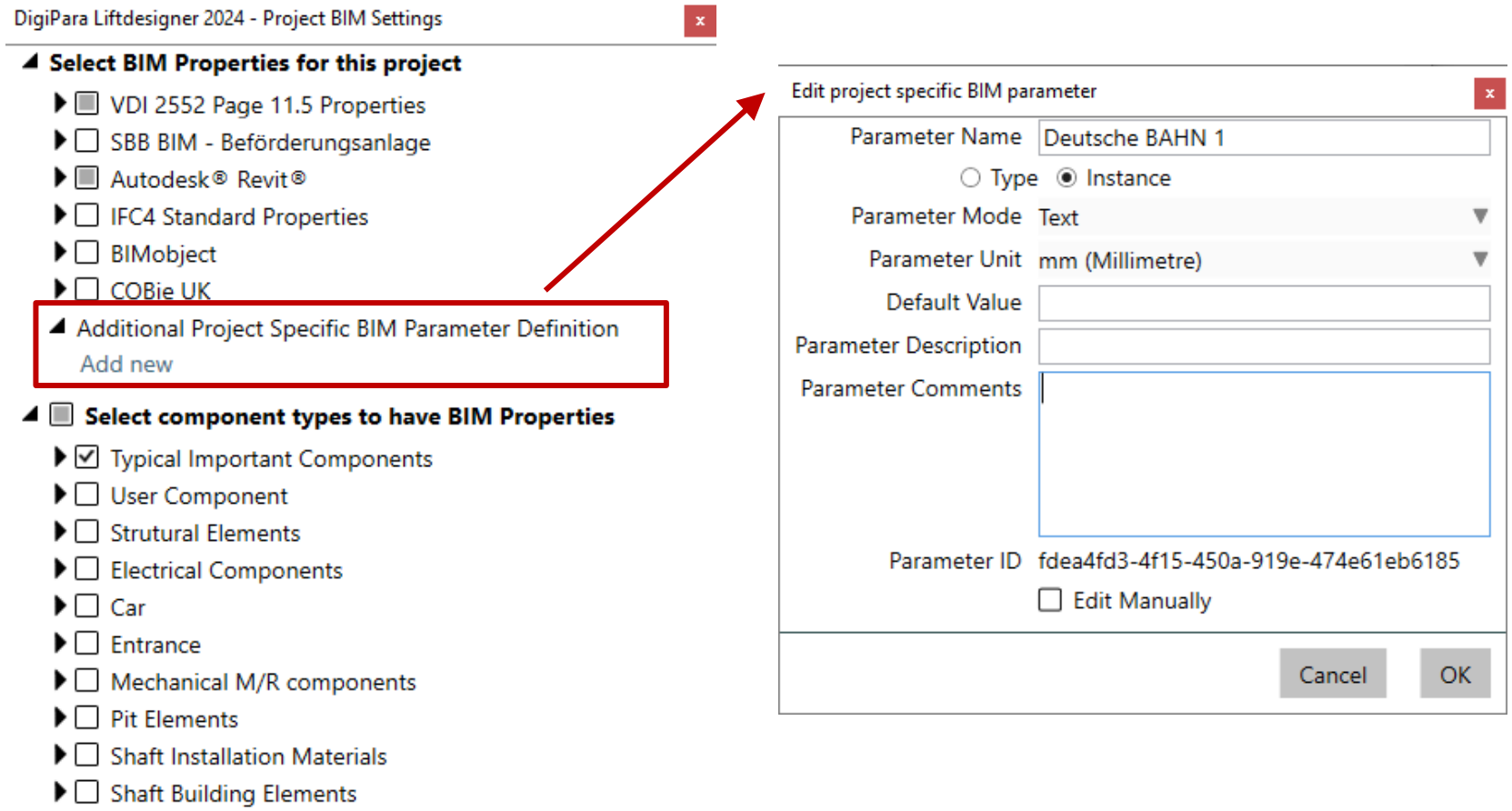


Project-related setting options

Project-related setting options

C1.4 CREATE OWN BIM PROPERTIES

Creating your own BIM standard

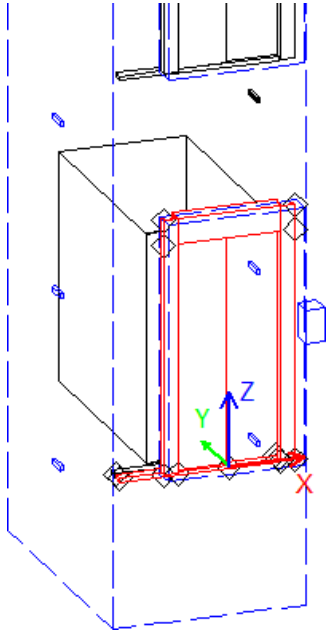


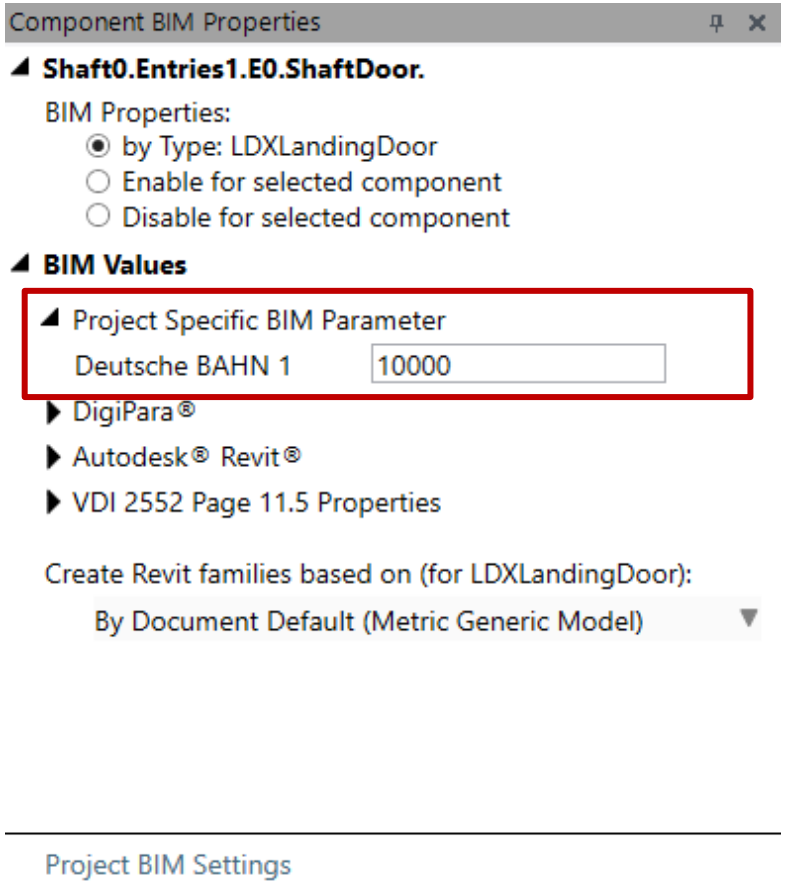
Project-related setting options

C1.4 CREATE OWN BIM PROPERTIES

Creating your own BIM standard

- Further information can be found in the DigiPara online help: Project BIM Settings



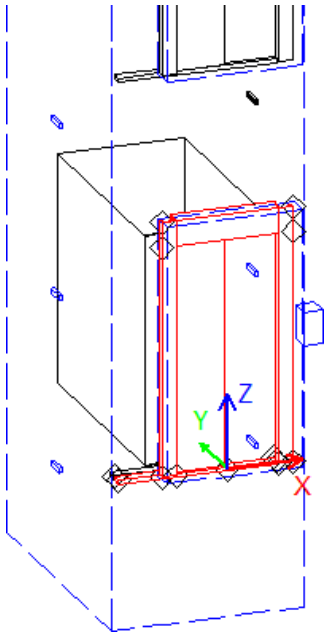


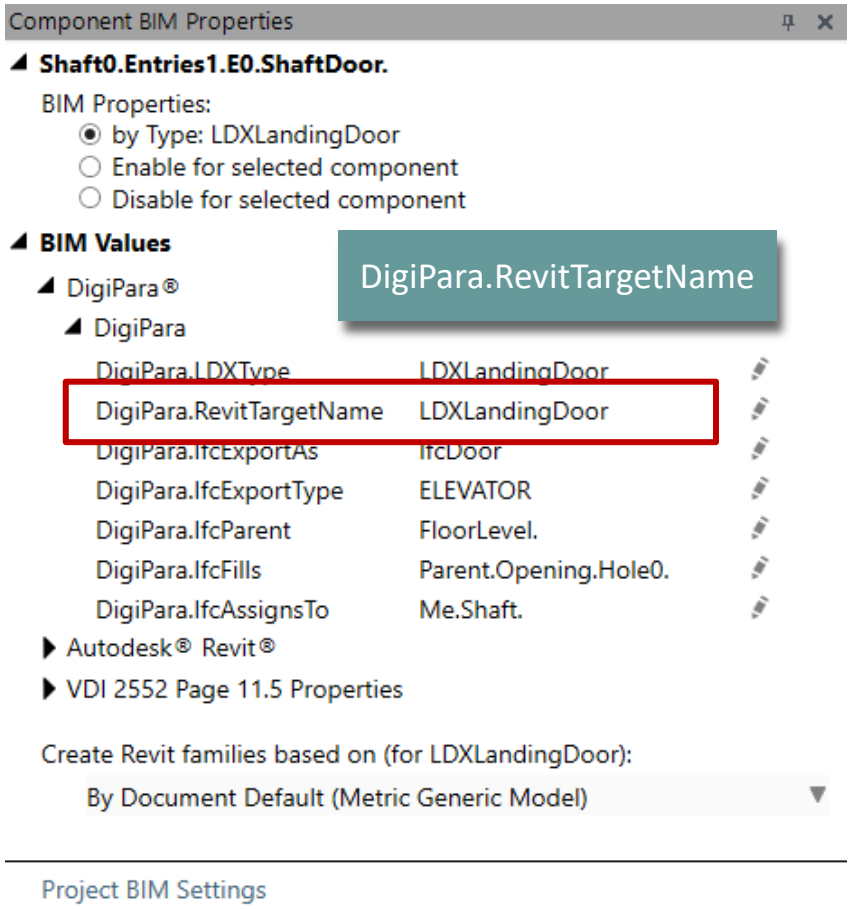
Project-related setting options

C1.4 CREATE OWN BIM PROPERTIES

Customization of BIM Revit family names

- for a single DigiPara Liftdesigner project



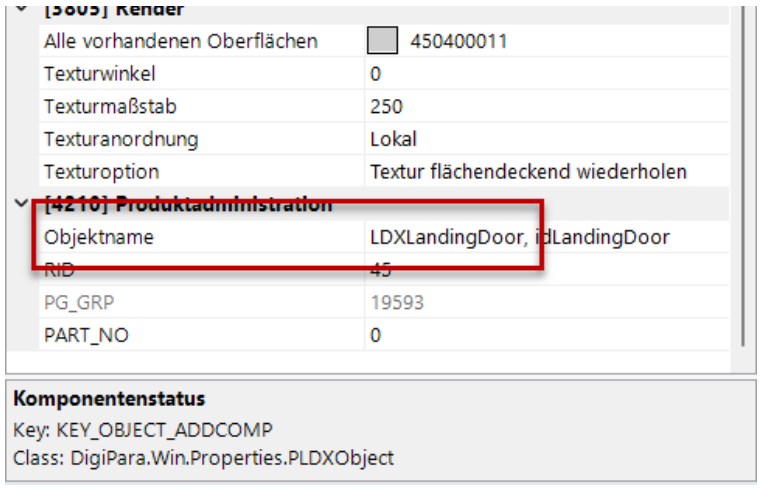


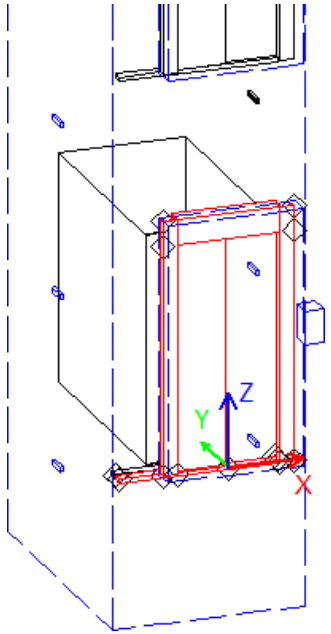
Project-related setting options

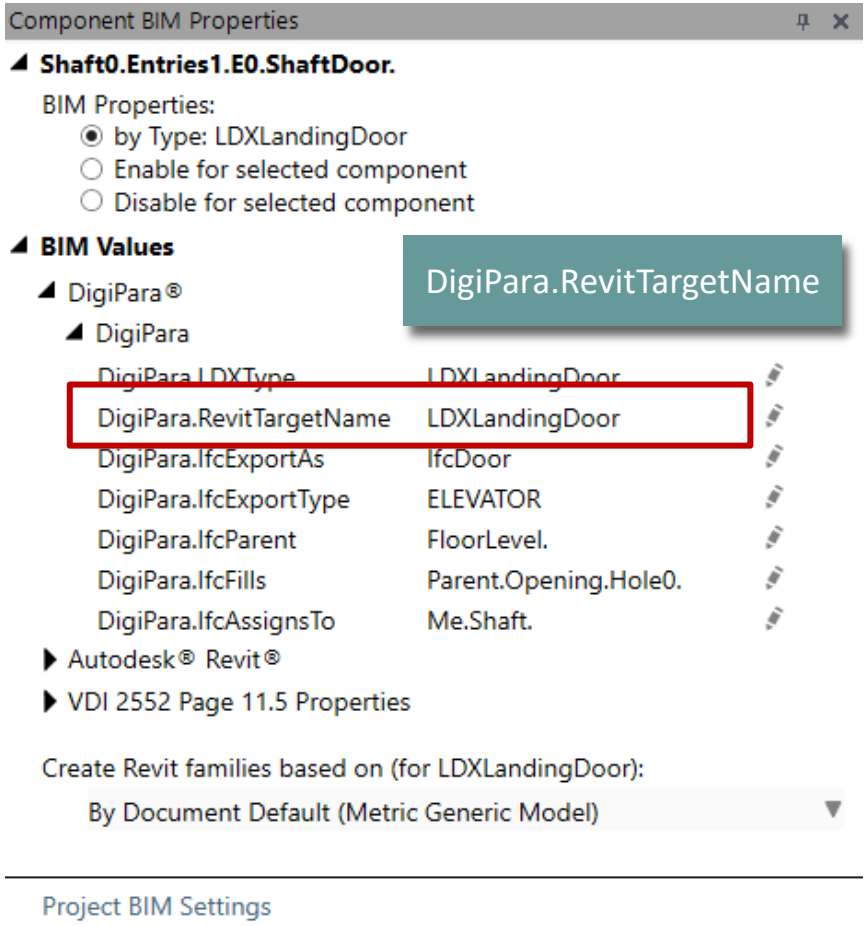
C1.4 CREATE OWN BIM PROPERTIES

Customization of BIM Revit family names

- for a single DigiPara Liftdesigner project
- the DigiPara Liftdesigner object name of the components is preset
  - starting with LDX*







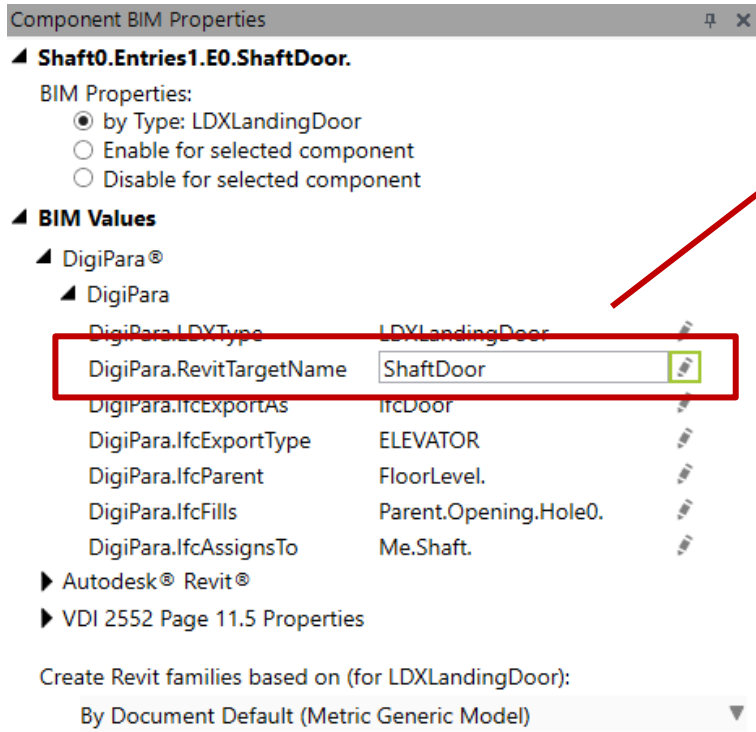
DigiPara.RevitTargetName

Project-related setting options

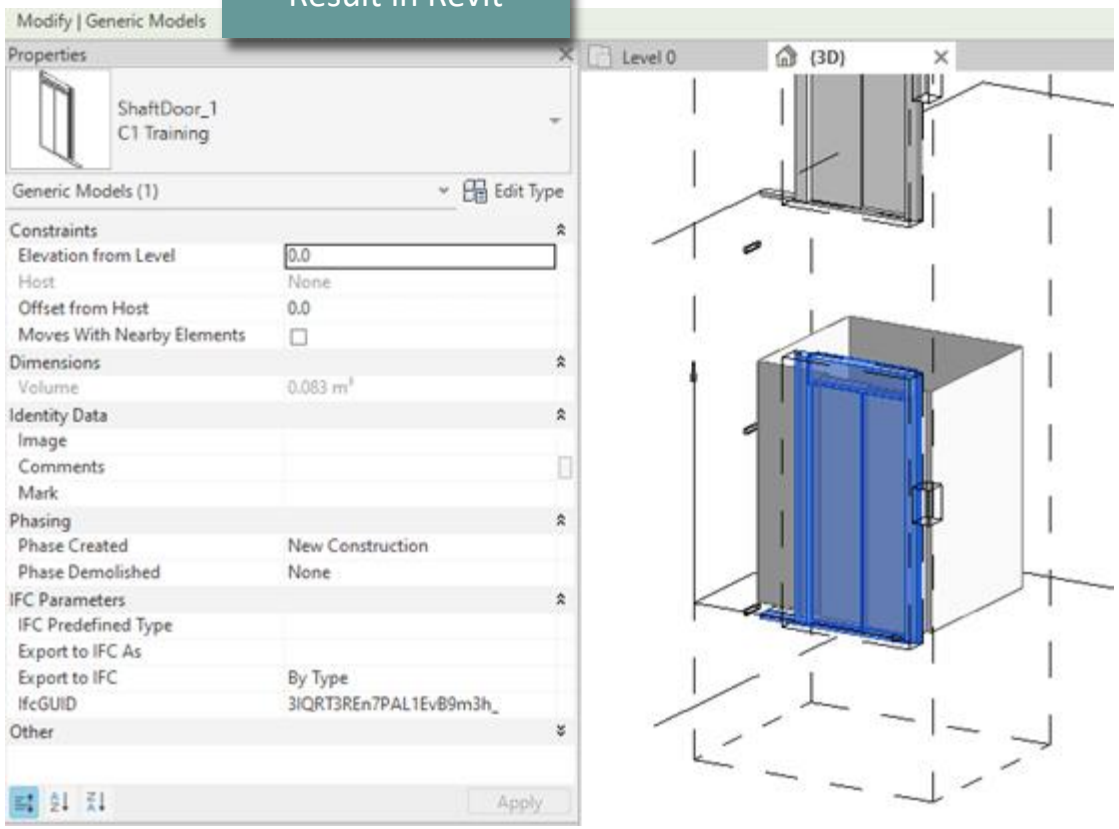
C1.4 CREATE OWN BIM PROPERTIES

Customization of BIM Revit family names

- project-related via the Component BIM Properties docking window



Result in Revit



Create in the database table and distribute the data

Creating in the database table

Benefit: Global setting options for all projects and DigiPara Liftdesigner users

To prepare for working in the DigiPara database, the **DigiPara Liftdesigner Datamanager** application intended for this purpose should be thoroughly understood.

- The following training materials can be downloaded and used for this purpose:
  A4 - Customization Fundamentals

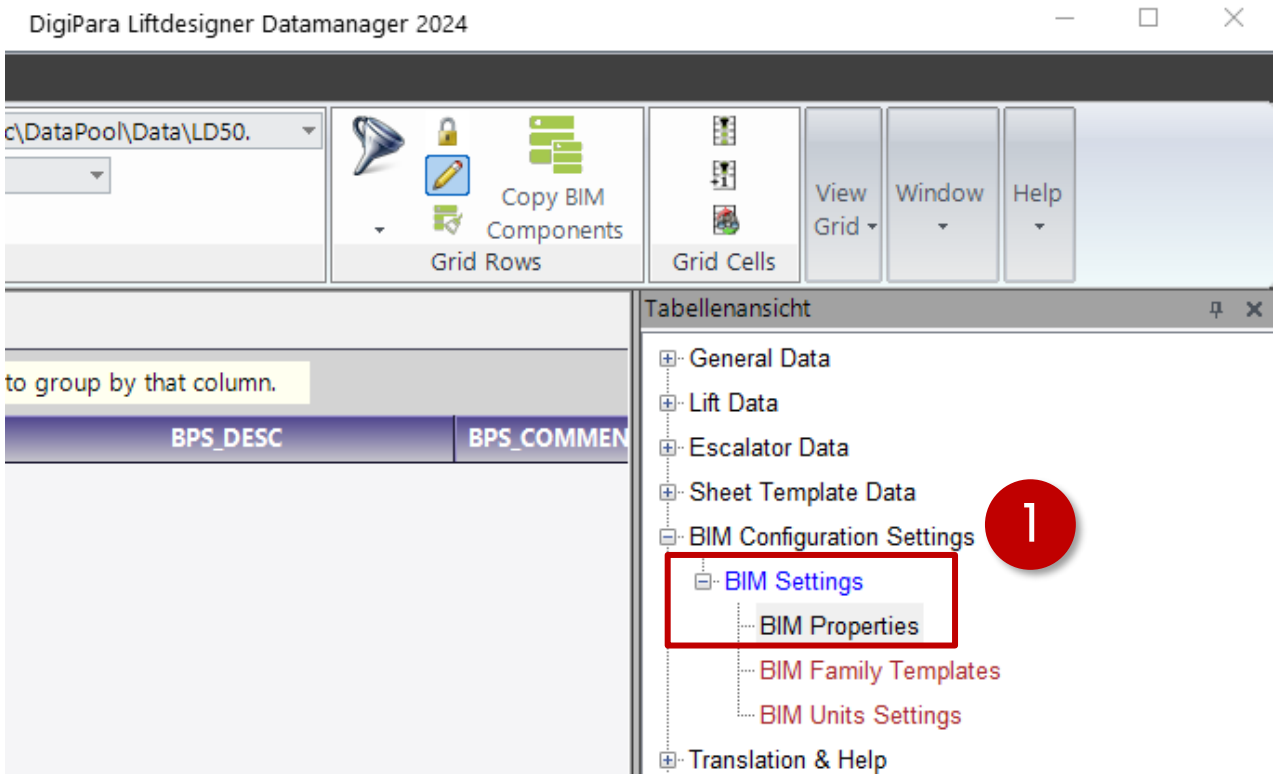
Customization Fundamentals A4

Creating in the database table

C1.4 CREATE OWN BIM PROPERTIES

Define DigiPara.RevitTargetName in the database

1. Data base table: BIM Properties

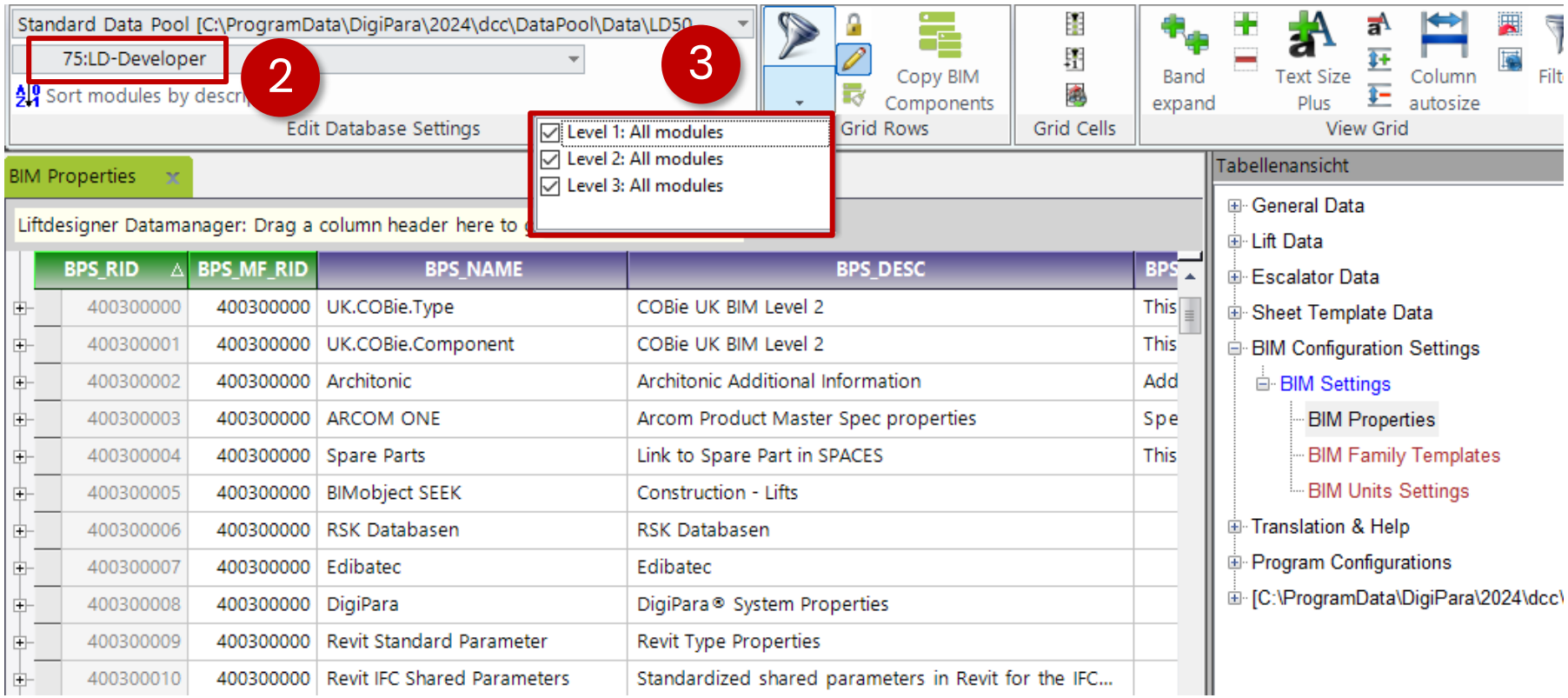


Creating in the database table

C1.4 CREATE OWN BIM PROPERTIES

Define DigiPara.RevitTargetName in the database

2. Module / Library: 75:LD-Developer (RID 75 for training purposes only!)
3. Set filter

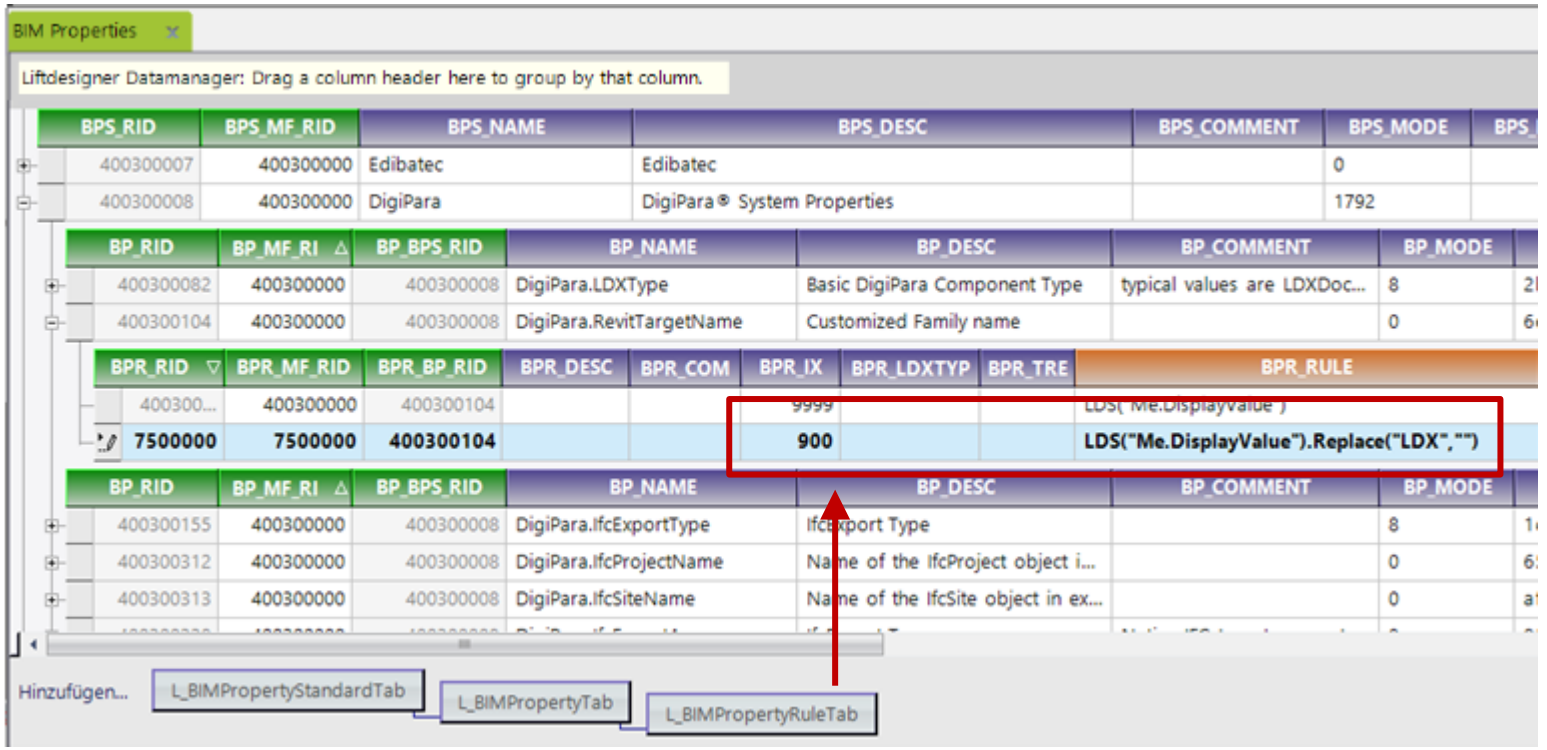


Creating in the database table

C1.4 CREATE OWN BIM PROPERTIES

Option 1: Exclude LDX

- LDS("Me.DisplayValue").Replace("LDX","")

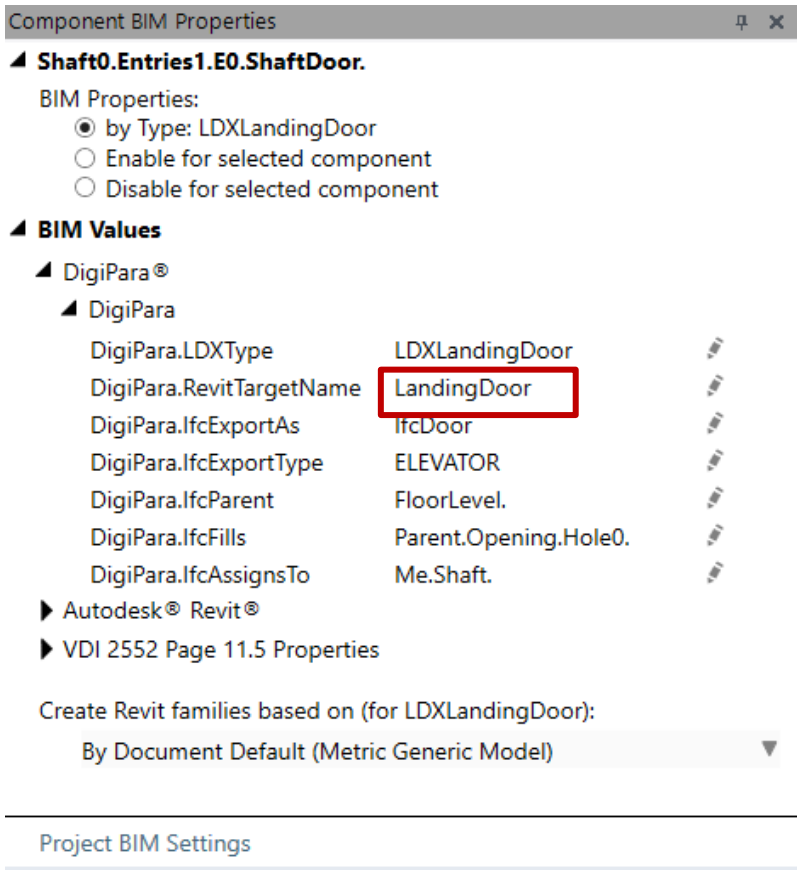


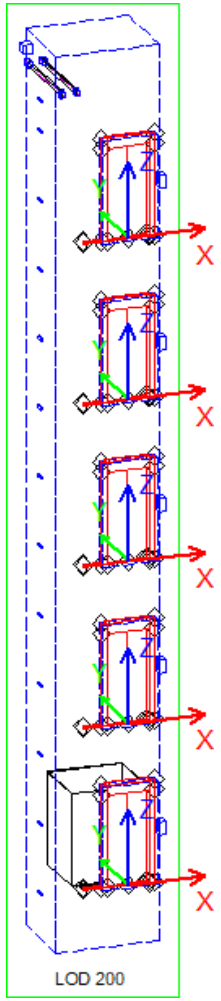
Creating in the database table

C1.4 CREATE OWN BIM PROPERTIES

Option 1: Exclude LDX

- for all components in DigiPara Liftdesigner



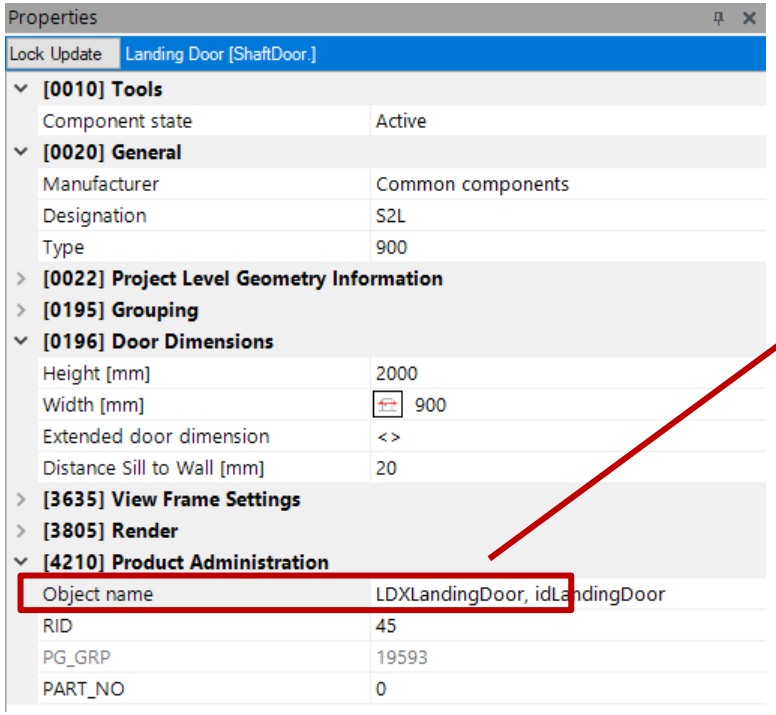


Creating in the database table

C1.4 CREATE OWN BIM PROPERTIES

Option 2: Define your own designation

- BPR_LDXTYPES: LDXLandingDoor (create component reference)
- BPR_RULE: "Shaft Door“



	0	0: Text	1: Text	Customized Family name
T	BPR_IX	BPR_LDXTYPES	BPR_TREENAME_FILTER	BPR_RULE
	901			LDS("Me.DisplayValue").Replace("LDX","")
	900	**LDXLandingDoor**		**"ShaftDoor"**
	9999			LDS("Me.DisplayValue")

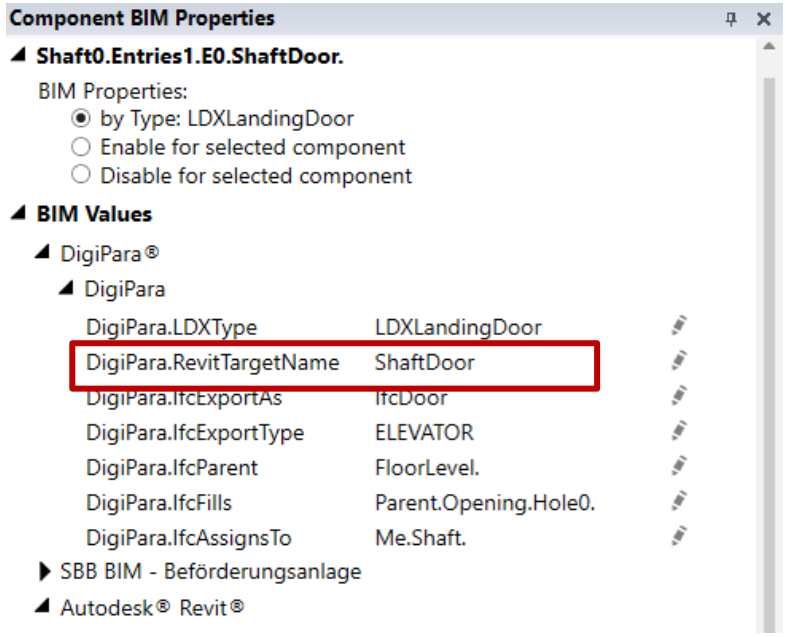
Note the order:
BPR_IX

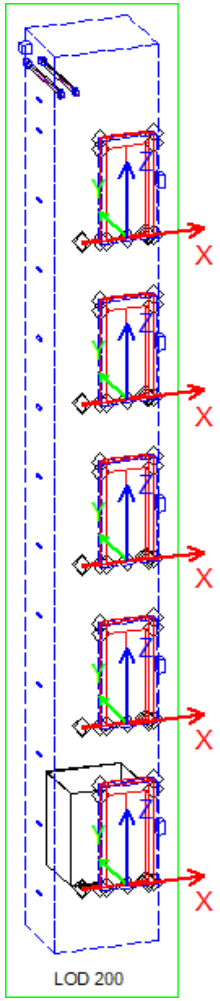
Creating in the database table

C1.4 CREATE OWN BIM PROPERTIES

Option 2: Define your own designation

- Global for all projects





Creating in the database table

Further information on managing BIM standards and values in the DigiPara®Liftdesigner database.

- DigiPara® Online Help:
  - Globally adjusting BIM Revit Family names (digipara.com)
  - Create your custom BIM Properties in DigiPara Liftdesigner Datamanager

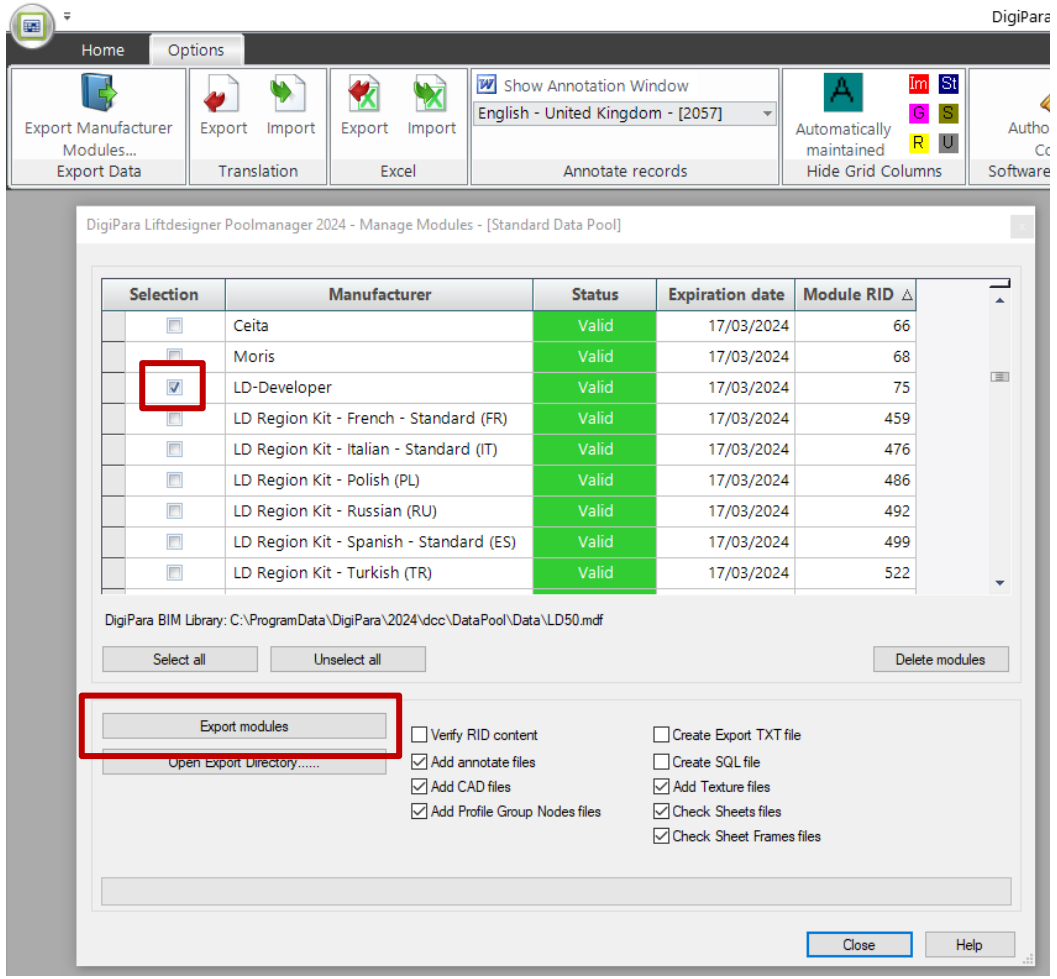
Distributing the data

C1.4 CREATE OWN BIM PROPERTIES

Export manufacturer modules

- into the data pool:

A4 - Customization Fundamentals



Customization Fundamentals A4

digipara® liftdesigner

C1.5

BIM file export

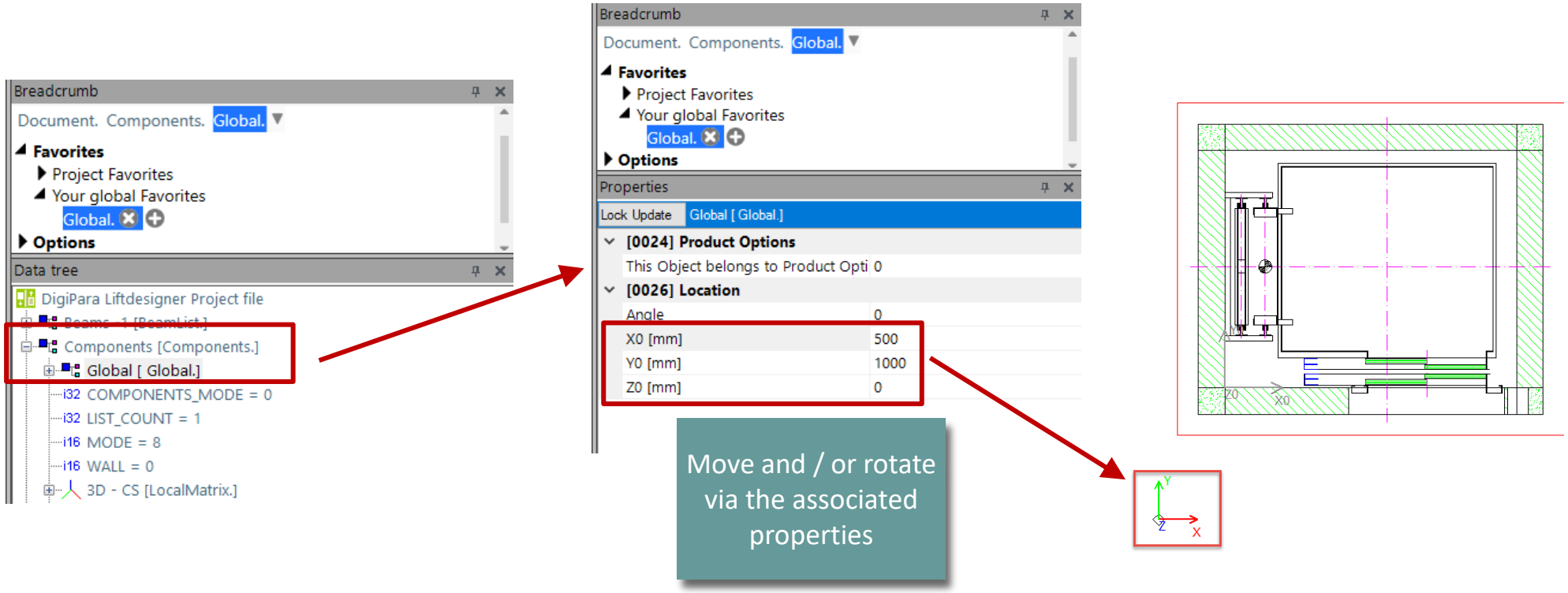
BIM DATEI-EXPORT

Coordinate settings

C1.5 BIM FILE EXPORT

Select the elevator coordinate system via the data tree → Component → Global

- also available in the respective export dialog



IFC exports

IFC exports

C1.5 BIM FILE EXPORT

digipara® liftdesigner

IFC = **I**ndustry **F**oundation **C**lasses

- Comprehensive, standardized data format
- Manufacturer neutral
- Foundation for BIG Open BIM

- IFC versions:
  - **IFC 4.3 is now ISO standard** (published on January 9, 2024, buildingSMART)
  - https://technical.buildingsmart.org/standards/ifc/ifc-schema-specifications/

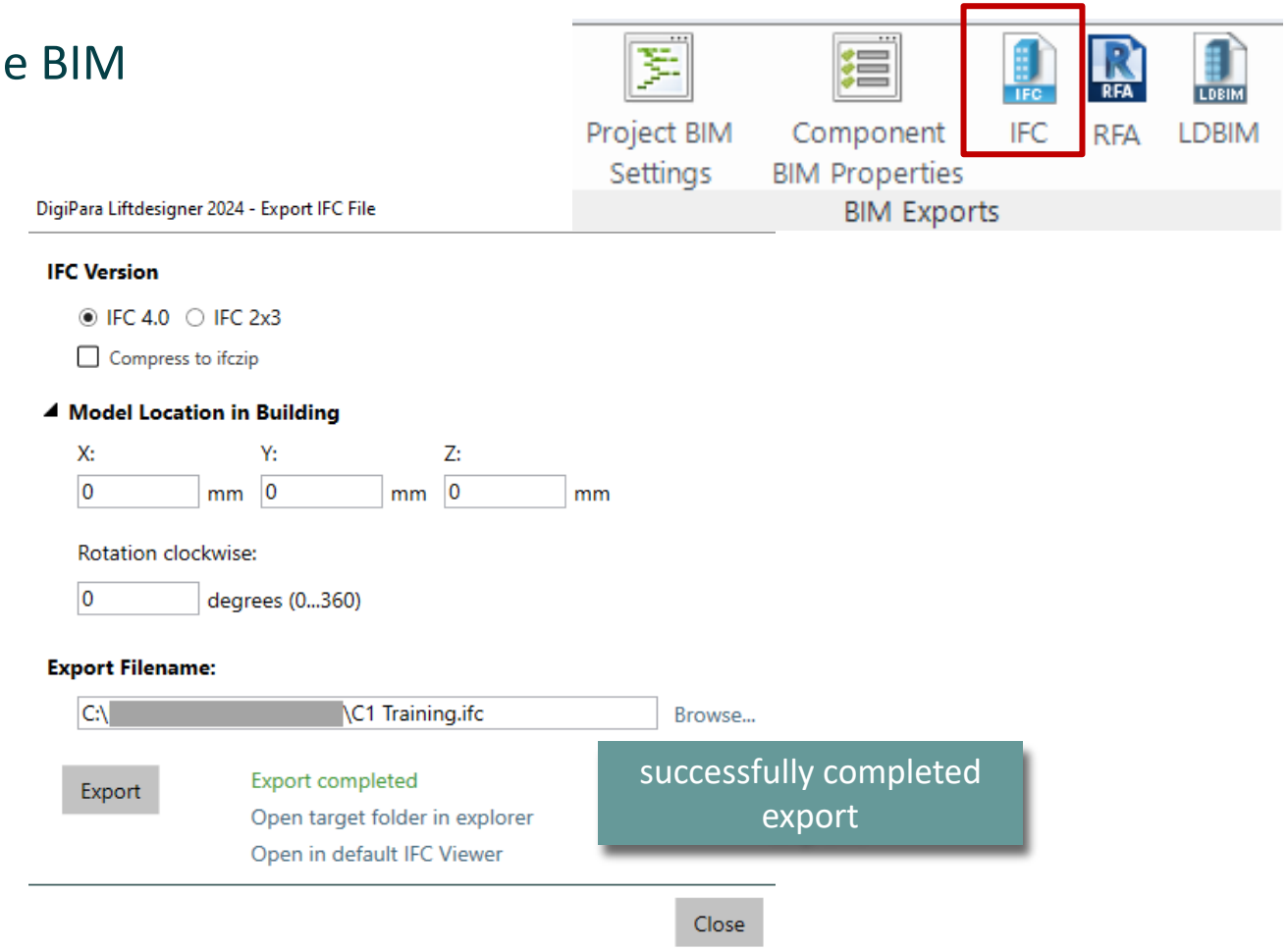
IFC exports

C1.5 BIM FILE EXPORT

digipara® liftdesigner

Selecting the export format, including the BIM properties and defining the location

- IFC 4.0 exports BIM values
- Set coordinates
- Choose export path and file name
- Export and open file

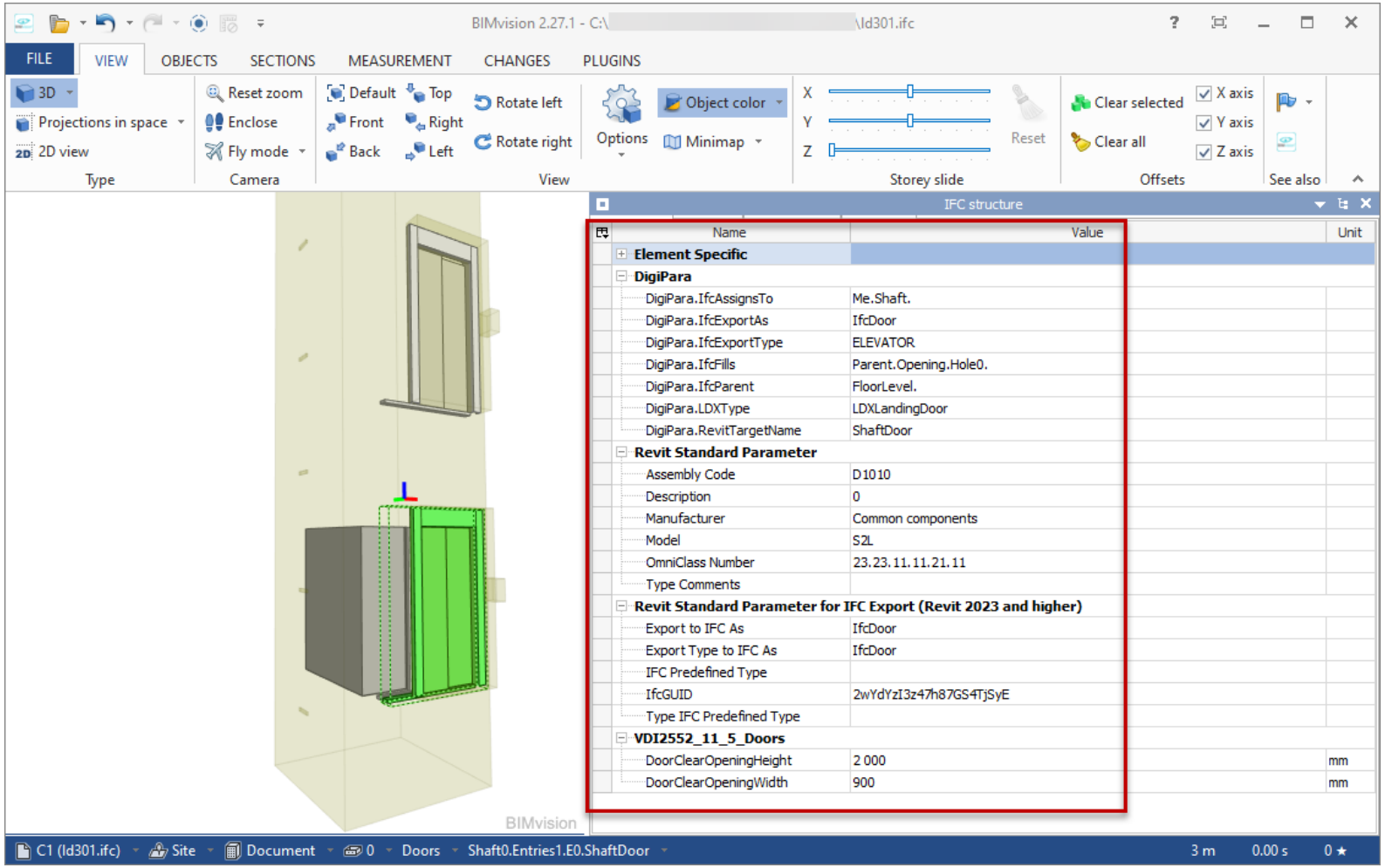


IFC exports

C1.5 BIM FILE EXPORT

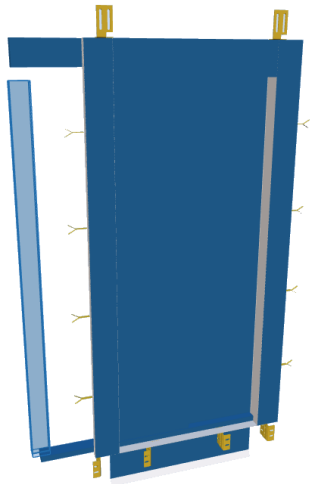
DigiPara Liftdesigner IFC export result

- DigiPara Liftdesigner BIM properties in BIM Vision

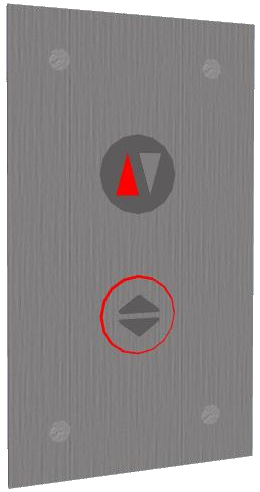


Interface: IFC object types (example)

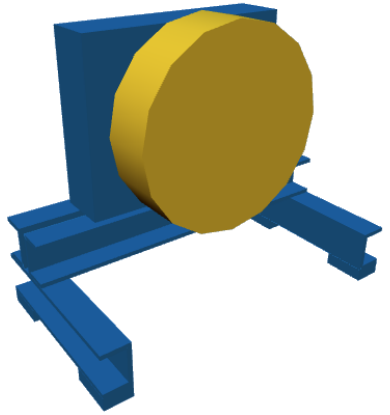
- contained in the IFC export: geometries incl. necessary information content and descriptions
  - fixed definitions of elements by buildingSMART



IfcDoor



IfcSwitchingDevice



IfcElectricMotor

LDBIM exports

LDBIM exports

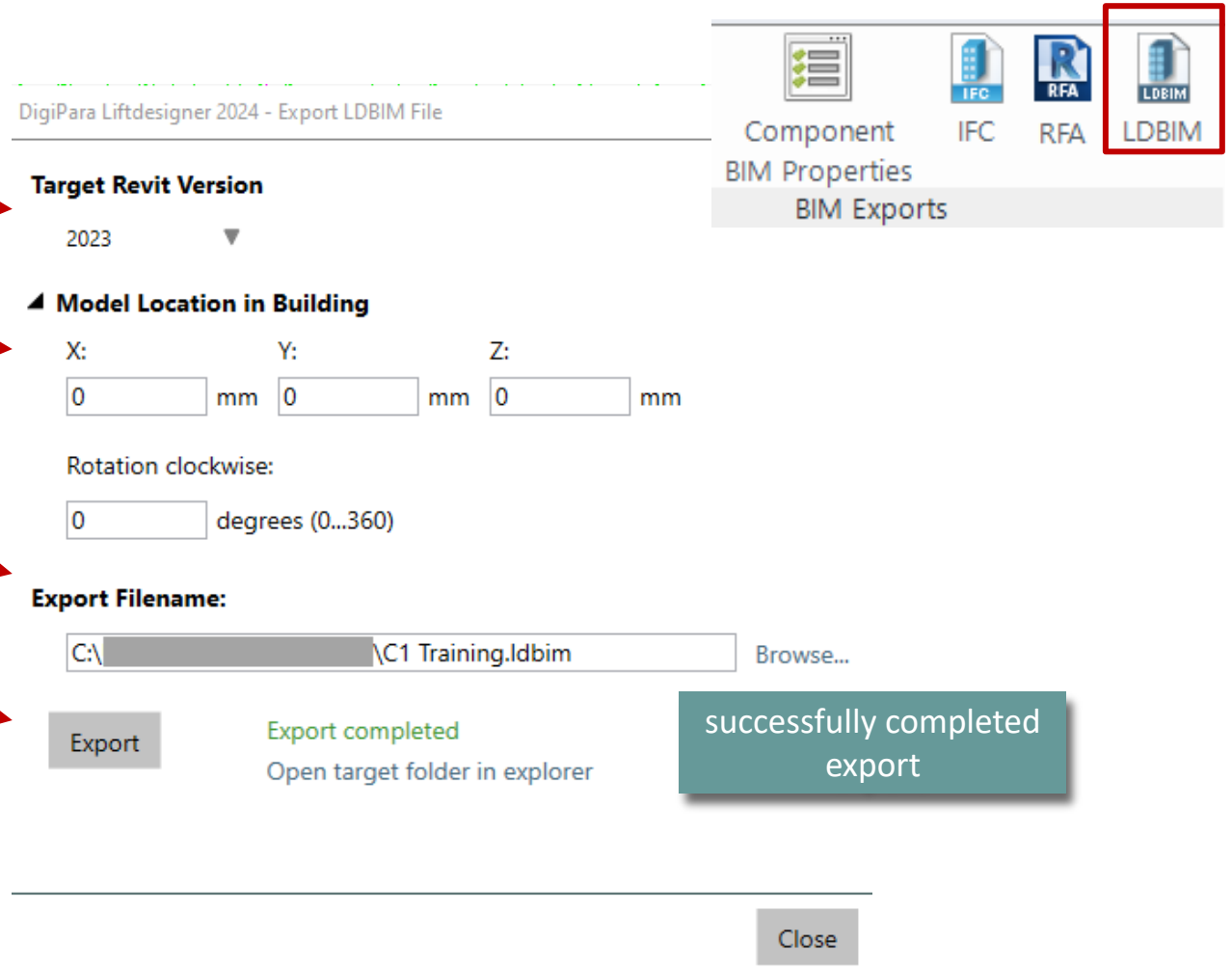
C1.5 BIM FILE EXPORT

digipara® liftdesigner

LDBIM = **Lift**Designer**BIM**

- selectable Revit version
- set coordinates
- choose export path and file name
- export and open file

Export of all defined BIM values



successfully completed export

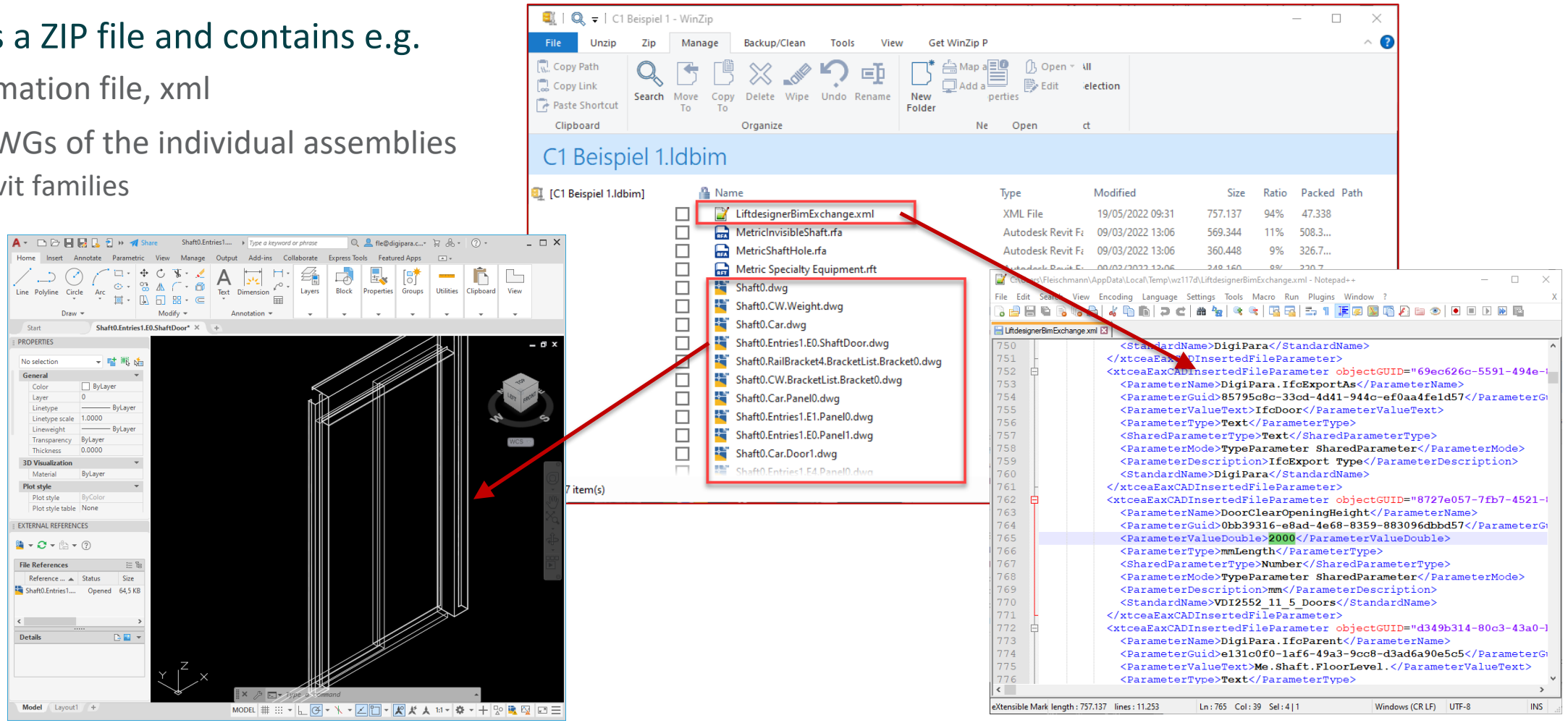
LDBIM exports

C1.5 BIM FILE EXPORT

digipara® liftdesigner

LDBIM is a ZIP file and contains e.g.

- Information file, xml
- 3D DWGs of the individual assemblies
  - Revit families

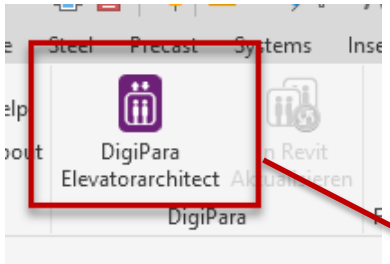


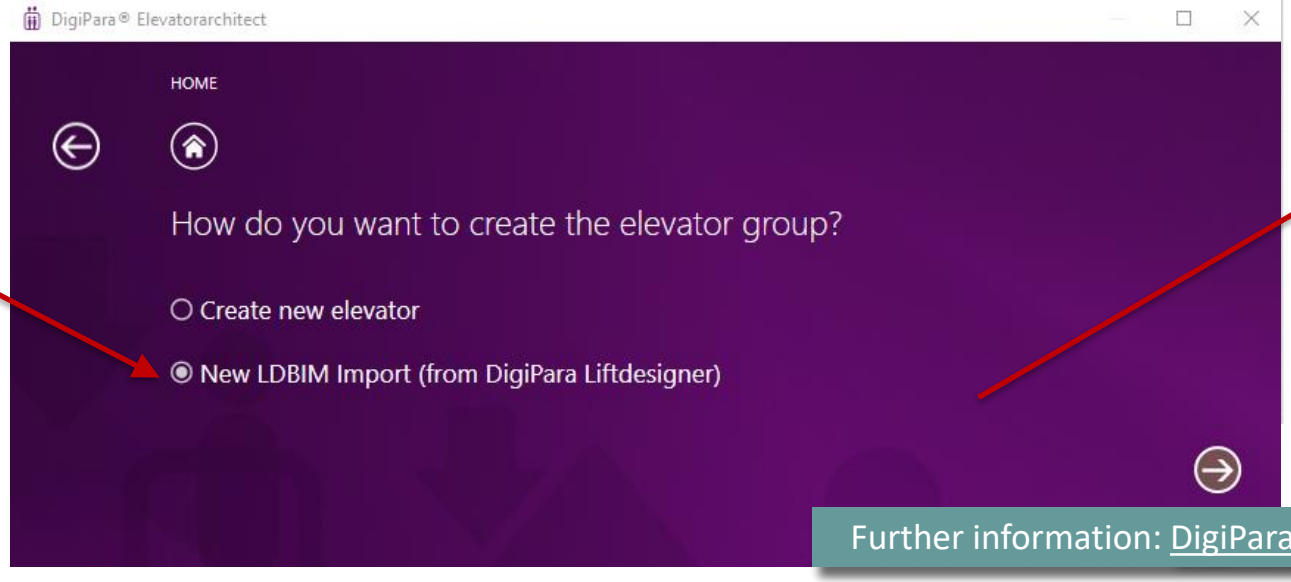
LDBIM exports

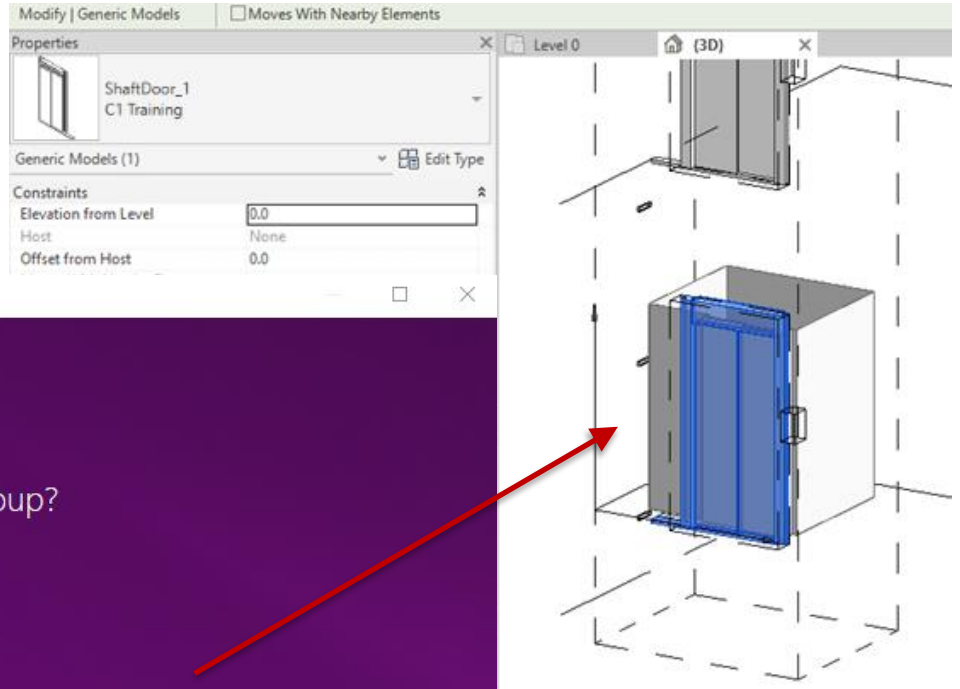
C1.5 BIM FILE EXPORT

DigiPara Liftdesigner LDBIM export result in Autodesk® Revit®

- Inserted by the architect via DigiPara Elevatorarchitect
  - Free download: DigiPara Elevatorarchitect







Further information: DigiPara Elevatorarchitect

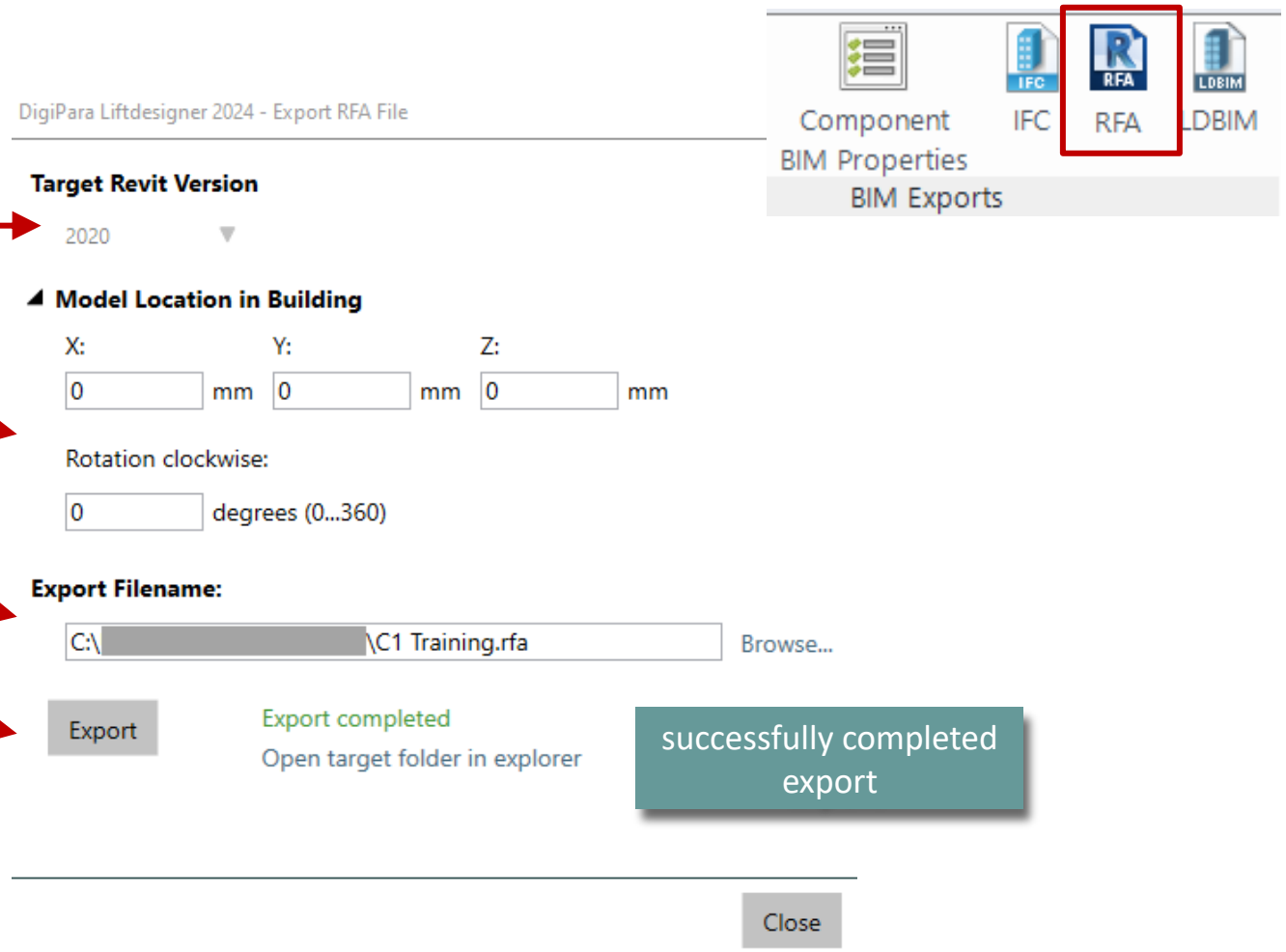
RFA exports

RFA exports

C1.5 BIM FILE EXPORT

Revit file format (Revit Family)

- selectable Revit version
- set coordinates
- choose export path and file name
- export and open file



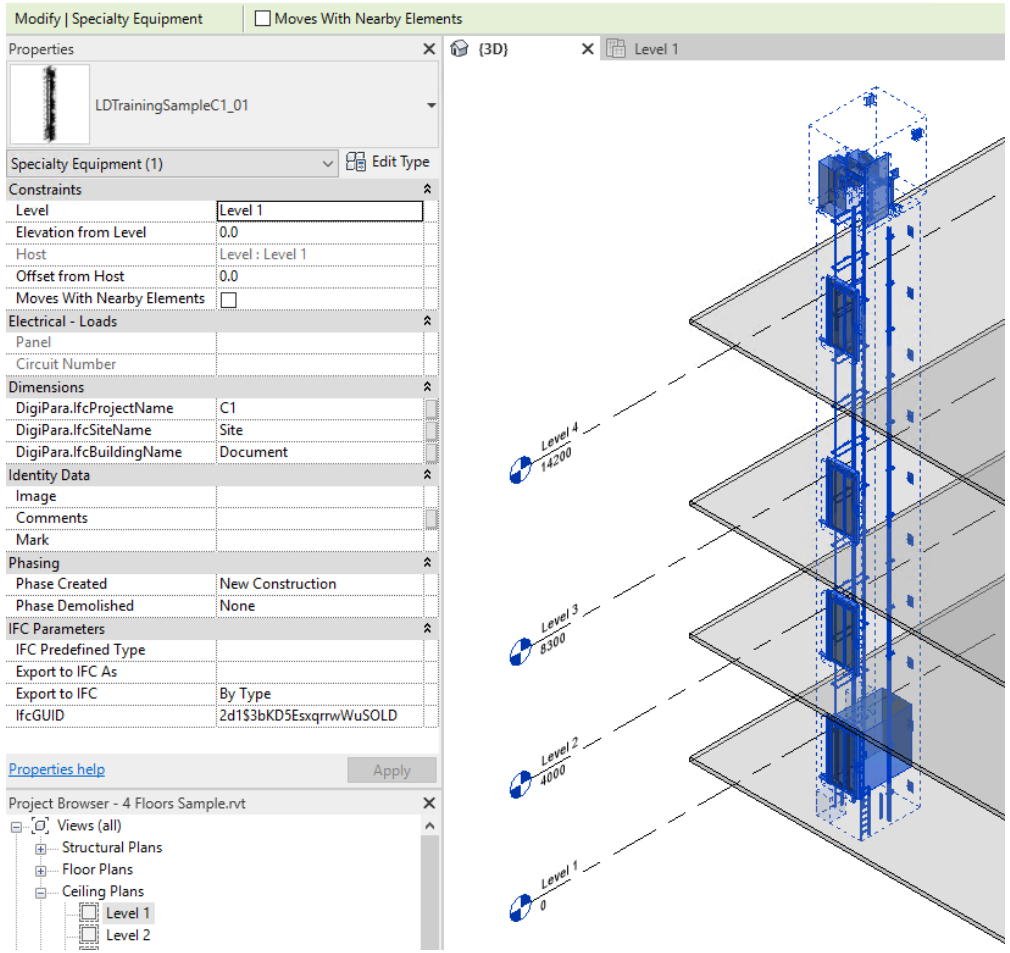
RFA exports

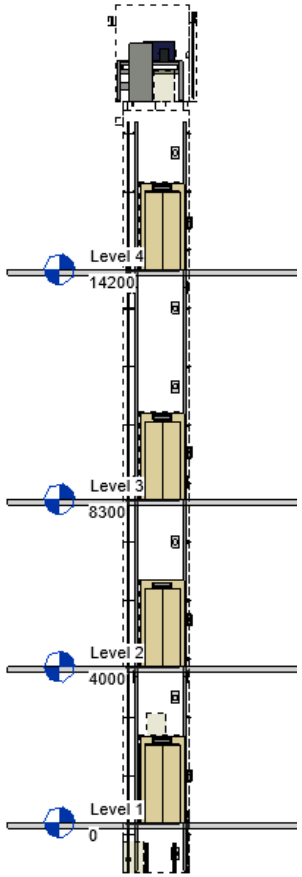
C1.5 BIM FILE EXPORT

digipara® liftdesigner

Disadvantage:

- No or only a few BIM properties / values are transferred.
- Consists of only one Revit family or a single element.
- Closed BIM principle

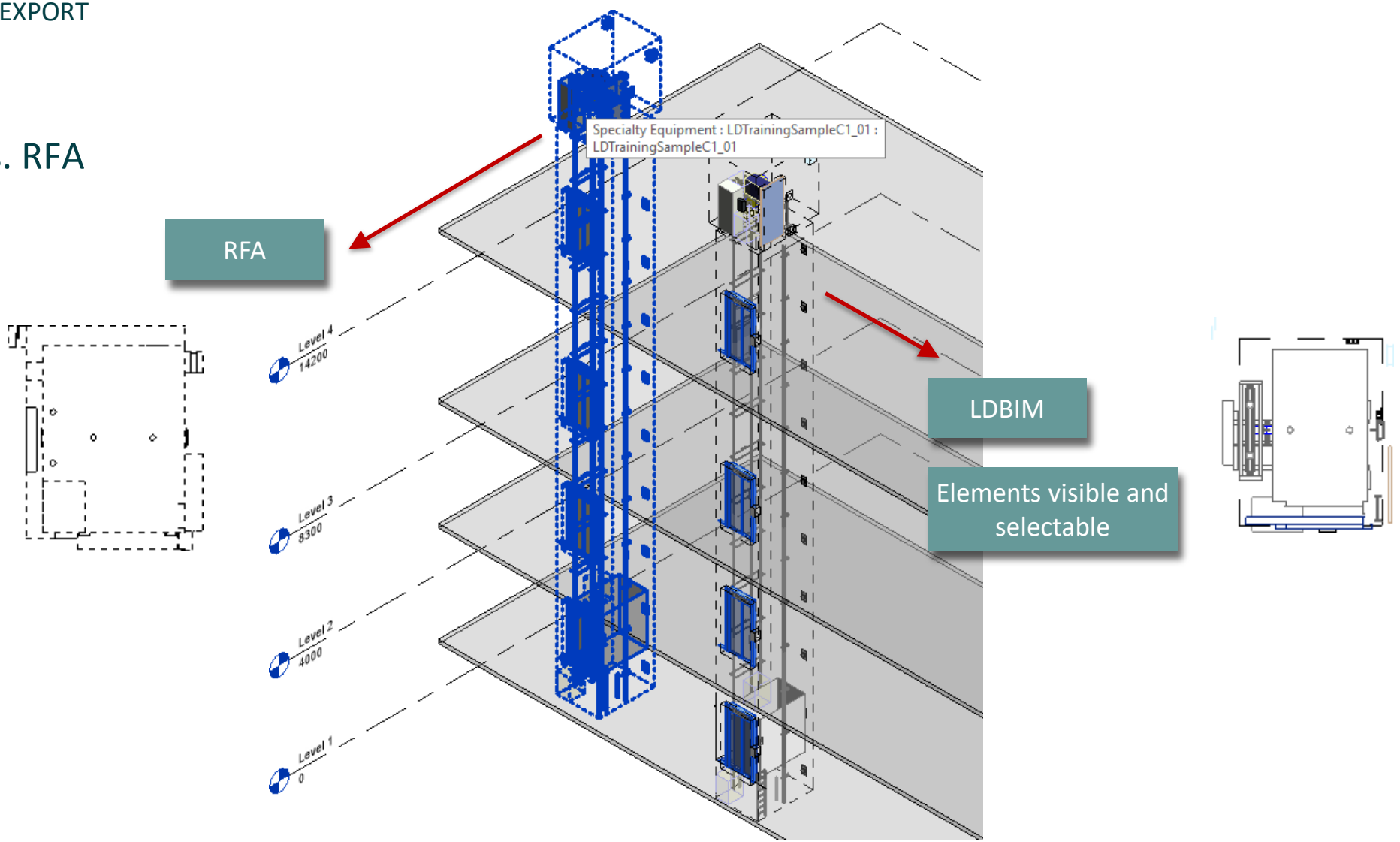




RFA exports

C1.5 BIM FILE EXPORT

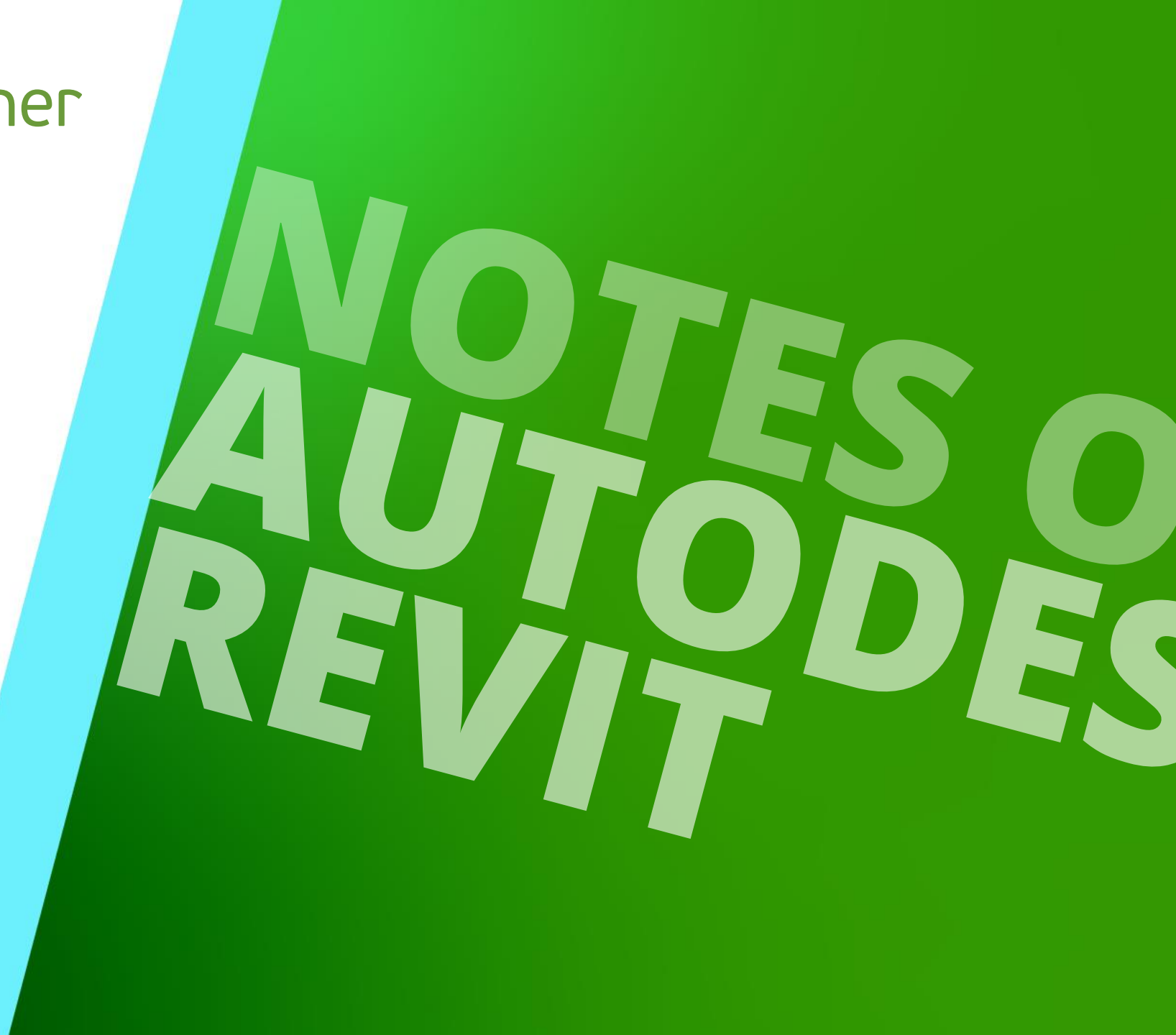
LDBIM vs. RFA



digipara® liftdesigner

C1.6

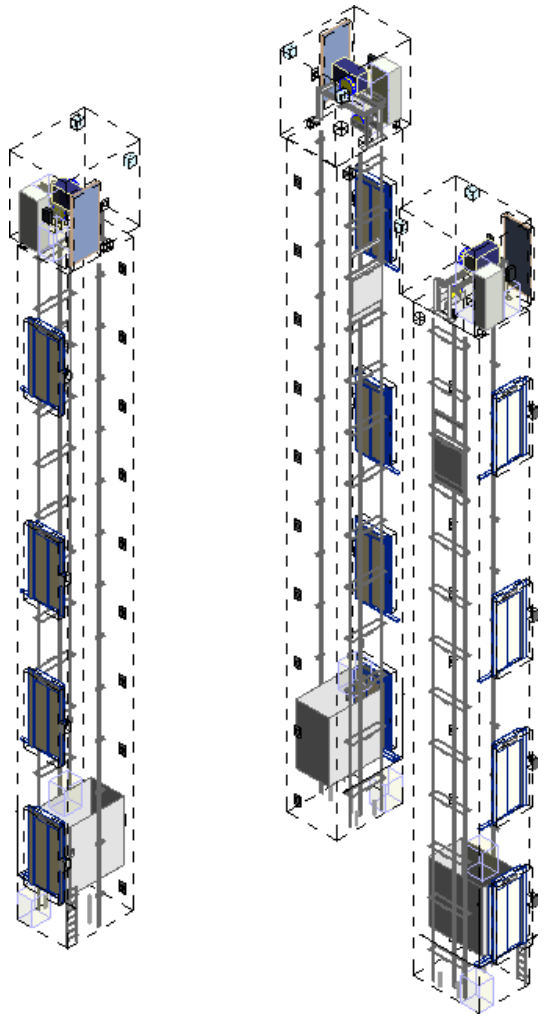
Notes on Autodesk® Revit®



Insert LDBIM into Revit

Inserting LDBIM into an RVT project file

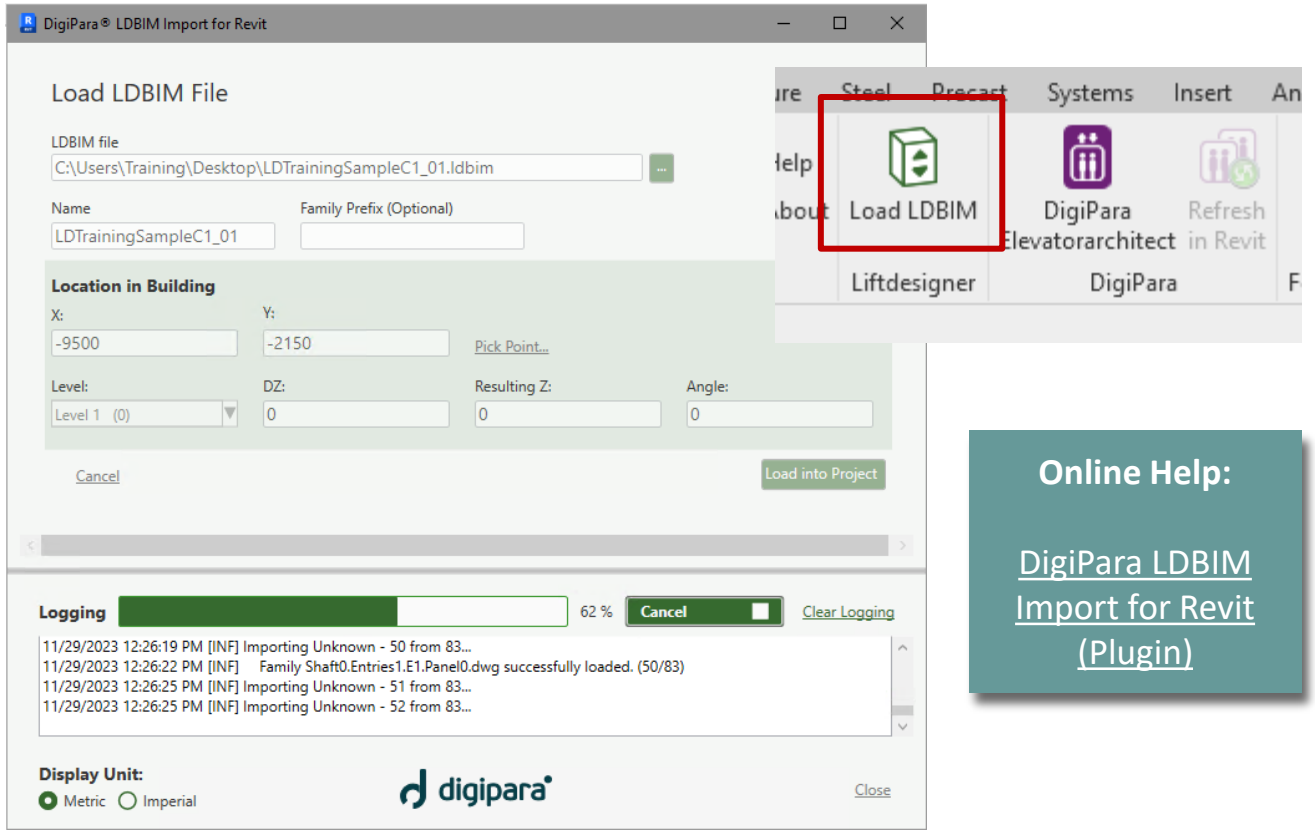
- Useful for arranging several elevators in one file for larger projects.
- Transfer of all elevator models in the correct position in one file (.ifc) for transfer.



Insert LDBIM into Revit

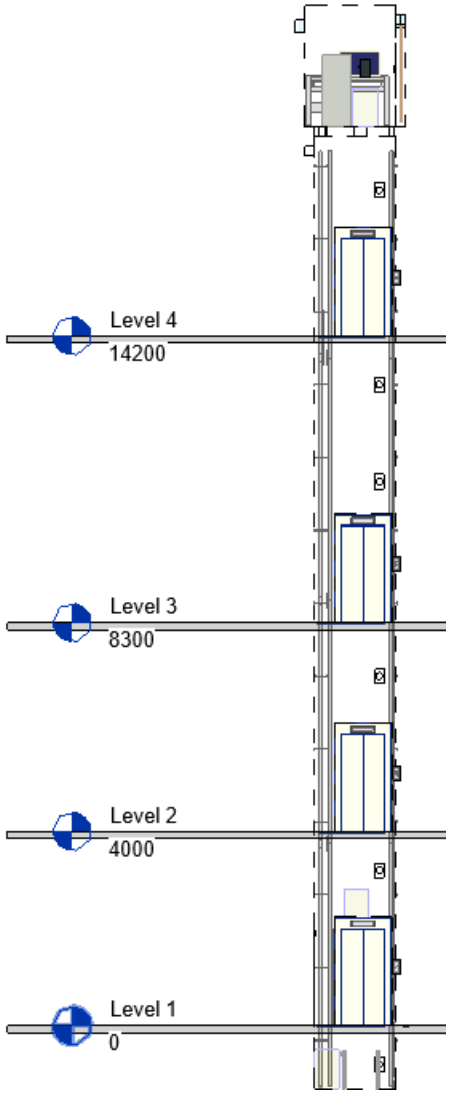
C1.6 NOTES ON AUTODESK REVIT

The Liftdesigner plug-in enables easy integration and quick updates whenever required.



Online Help:

DigiPara LDBIM Import for Revit (Plugin)



The Revit "Shared Parameter" file

C1.6 NOTES ON AUTODESK REVIT

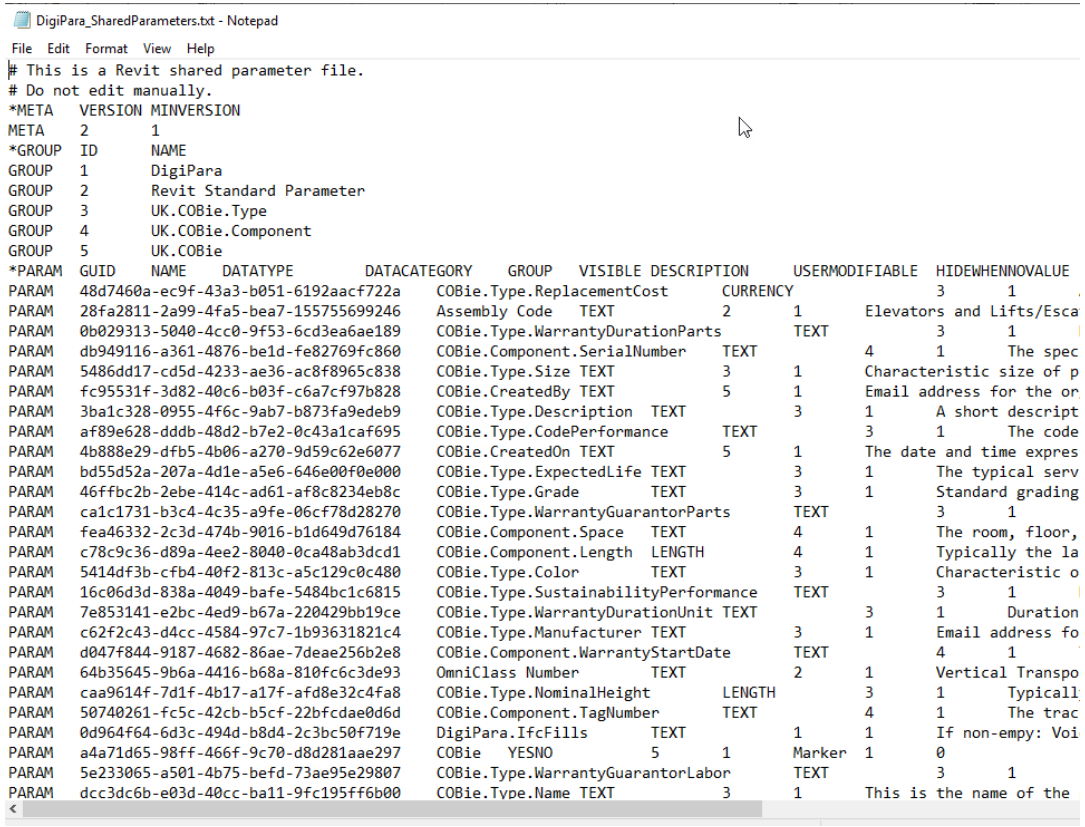
Each "shared" = global parameter gets a unique Id (GUID)

GUID = **G**lobally **U**nique **I**dentifier

- uniquely identifies each component in an IFC file

Autodesk COBie Extension has predefined unique GUIDS for ist parameters

- DigiPara COBie uses the same GUIDs



digipara® liftdesigner

C1.7

Practice

BIM values & IFC exports

C1.7 PRACTICE

Creating an elevator project

- 3 floors
- Typical floor to floor distance 3500 mm
  - Consider travel - no
  - Create building floor levels - no
- 13 persons / 1000 kg, 1 m/s
- Traction elevator 1:1
- MRL
  - top
- Car roping
  - direct
  - without Counterweight safety gear
- Counterweight roping
  - direct
  - Counterweight left
- Sheet Templates
  - LDBIM-LOD100, 200, 300-Sheet
- Entrances
  - Front: all floors
  - Right: last floor
- Floor Level Distances
  - Pit: 1300 mm
  - E1: Description K = -2800 mm (Niveau)
  - E2: Description EG = 2800 mm
  - E3: Description 1 = 3500 mm
  - Shaft Head: 4500 mm
- Save the project under the following file name: LDTrainingSampleC1_02.ld3

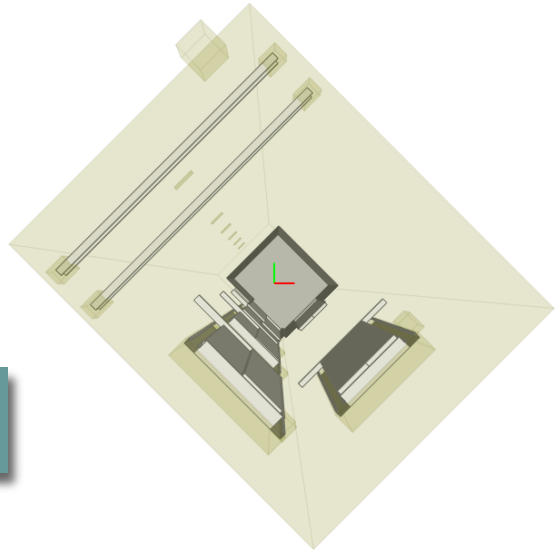
DigiPara Liftdesigner Fundamentals A1

BIM values & IFC exports

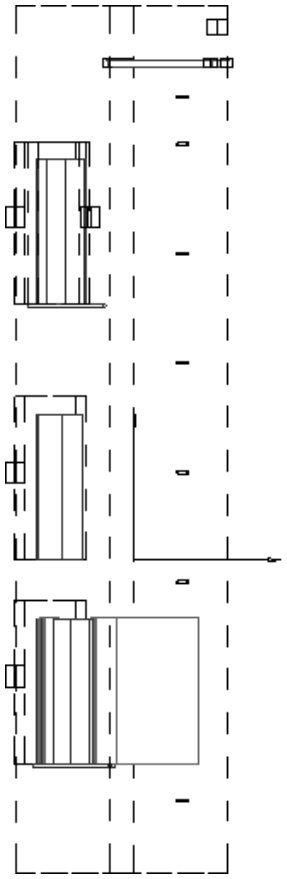
C1.7 PRACTICE

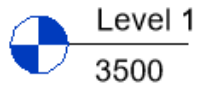
Export BIM format

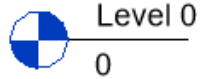
- Switch on COBie UK Properties
- Create your own project-specific BIM parameters
- Export ICF 4.0
  - LOD 200
  - Model location: Rotation 45°
  - Location Z0: -4300 mm
- Check result in BIM Viewer



IFC in BIM Vision







LDBIM in Revit®

digipara® liftdesigner

C1.8

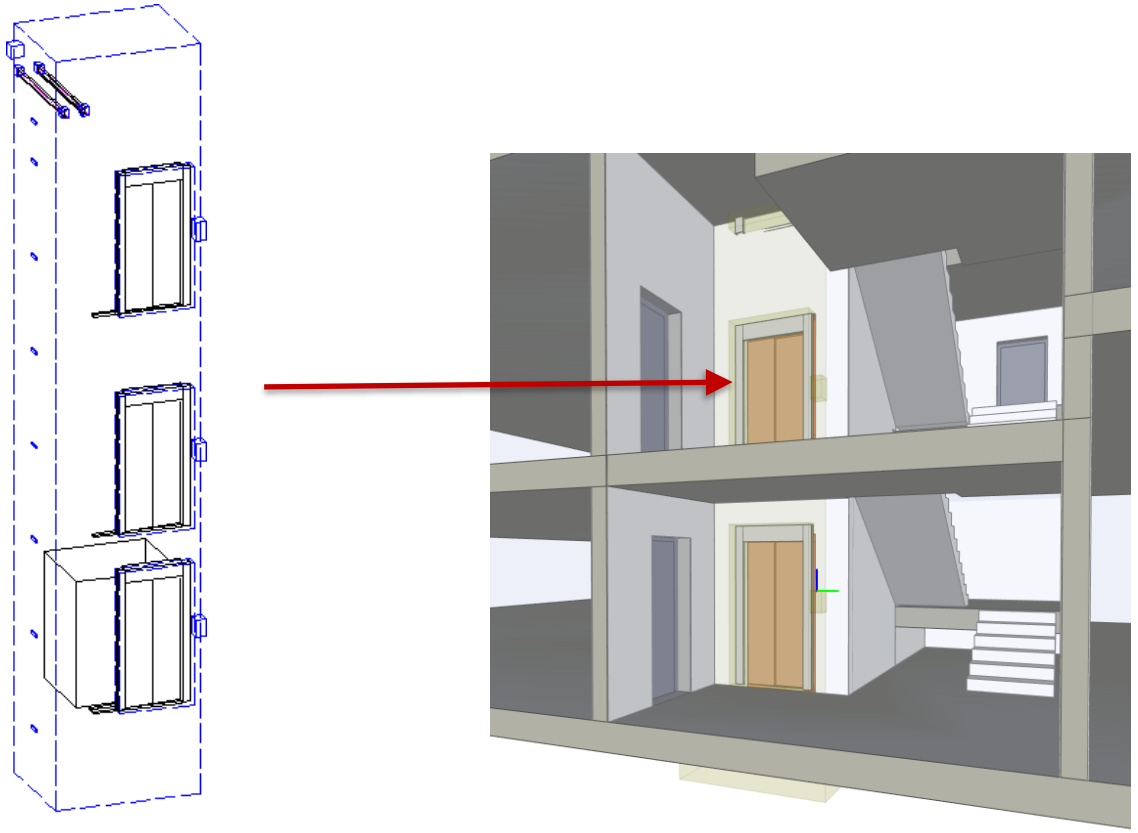
Summary & custom Q&A's

Further information & feedback

C1.8 SUMMARY & CUSTOM Q&A

Example of inserting the elevator for testing in a building (.ifc)

- in BIM Vision



Congratulations

You reached the next level

digipara® liftdesigner

digipara® liftdesigner

Your instructor will be available for individual questions after the module training.

training@digipara.com

digipara®

digipara®

www.digipara.com