SBS Lift Forum on BIM in the lift sector

27th May 2021

State of the art and future challenges for the lift sector

Online Meeting

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EFESME

European Federation for Elevator Small and Medium-sized Enterprises aisbl

Some topics to be covered to understand the importance and inevitability of BIM in the sector

- From 2D to BIM: the design evolution
- How can lift SMEs approach BIM? Some practical advices

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FROM 2D TO BIM

The design evolution

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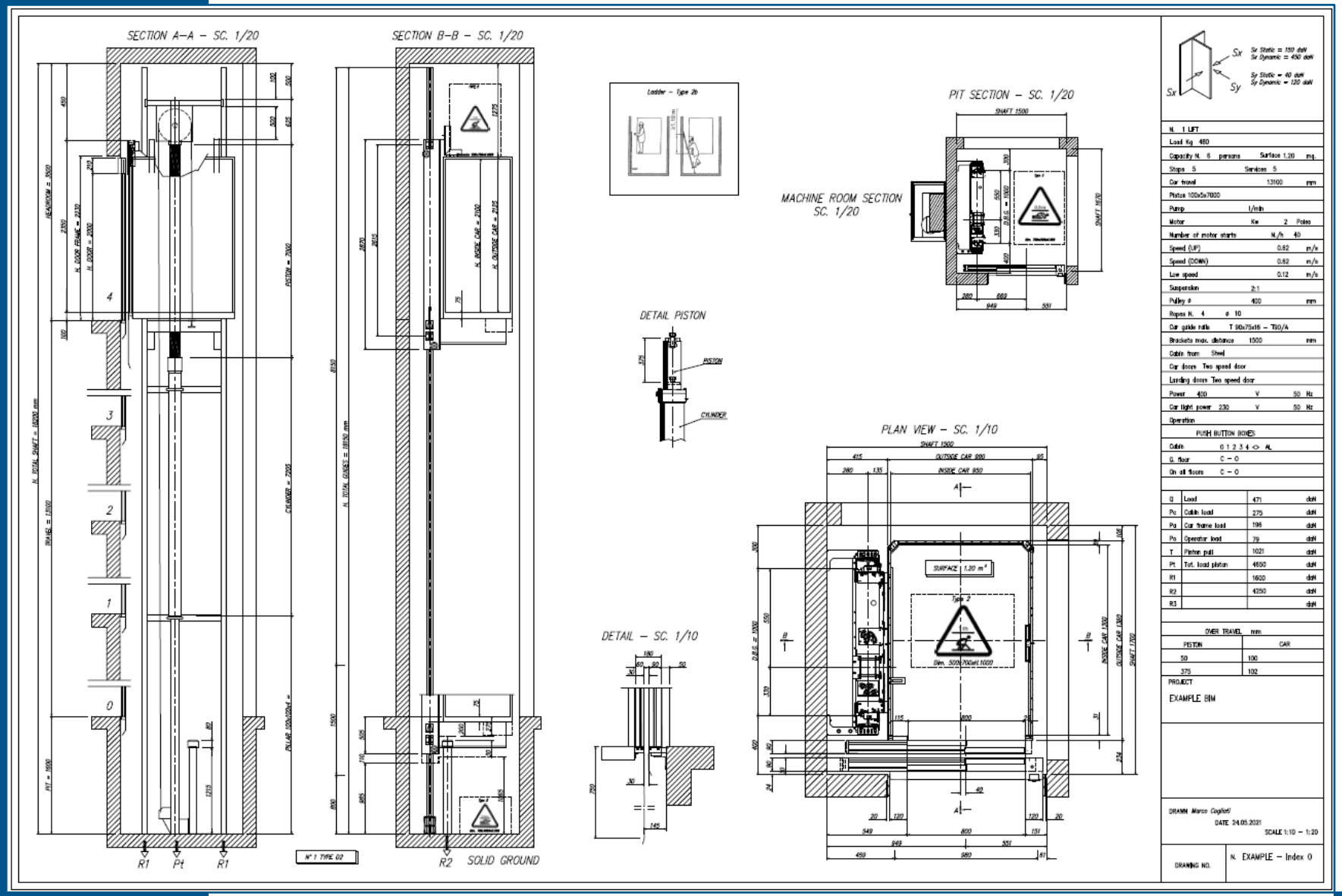
DWG – 2D



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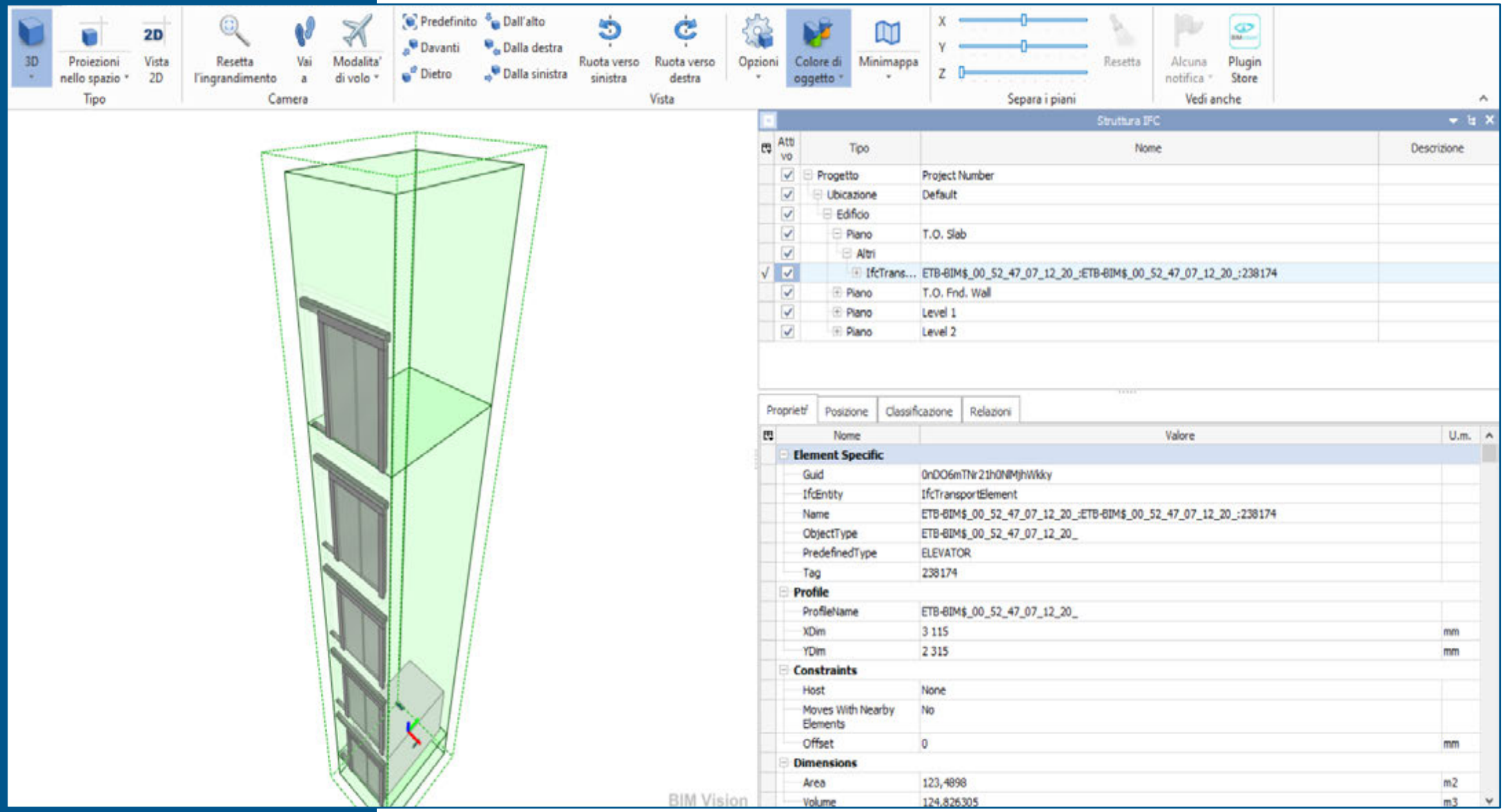
BIM – 3D



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BIM Dimensions

3D

- Existing Conditions Model
  -Scanning
  -Ground Penetration
- Safety & Logistics Models
- Animation, renderings, walkthroughs
- BIM driven prefabrication
- Laser accurate BIM driven field layout

4D

SCHEDULING

- Project Phasing Simulations
- Lean Scheduling
  -Last Planner
  -Just In Time (JIT)
  -Detailed Simulation Installation
- Visual Validation for Payment Approval

5D

ESTIMATING

- Real time conceptual modeling and cost planning
- Quantity extraction support detailed cost estimates
- Trade Verifications
  -Structural Steel
  -Mechanical Plumbing
  -Electrical
- Value Engineering
  -Visualisations
  -Quantity Extractions
- Prefabrication Solutions
  -Equpment Rooms
  -MEP Systems
  -Unique architectural and structural elements

6D

SUSTANABILITY

- Conceptual energy analysis via D Profiler
- Detail energy analysis via Eco Tech
- Sustainable element tracking
- LEED Tracking

7D

FACILITY MANAGEMENT APPLICATION

- LIfe Cycle BIM Strategies
- BIM As-Builts
- BIM embedded O&M Manuals
- COBie data population and extraction
- BIM Maintenance Plans and Technical Support
- BIM file hosting on lend lease's Digital Exchange System

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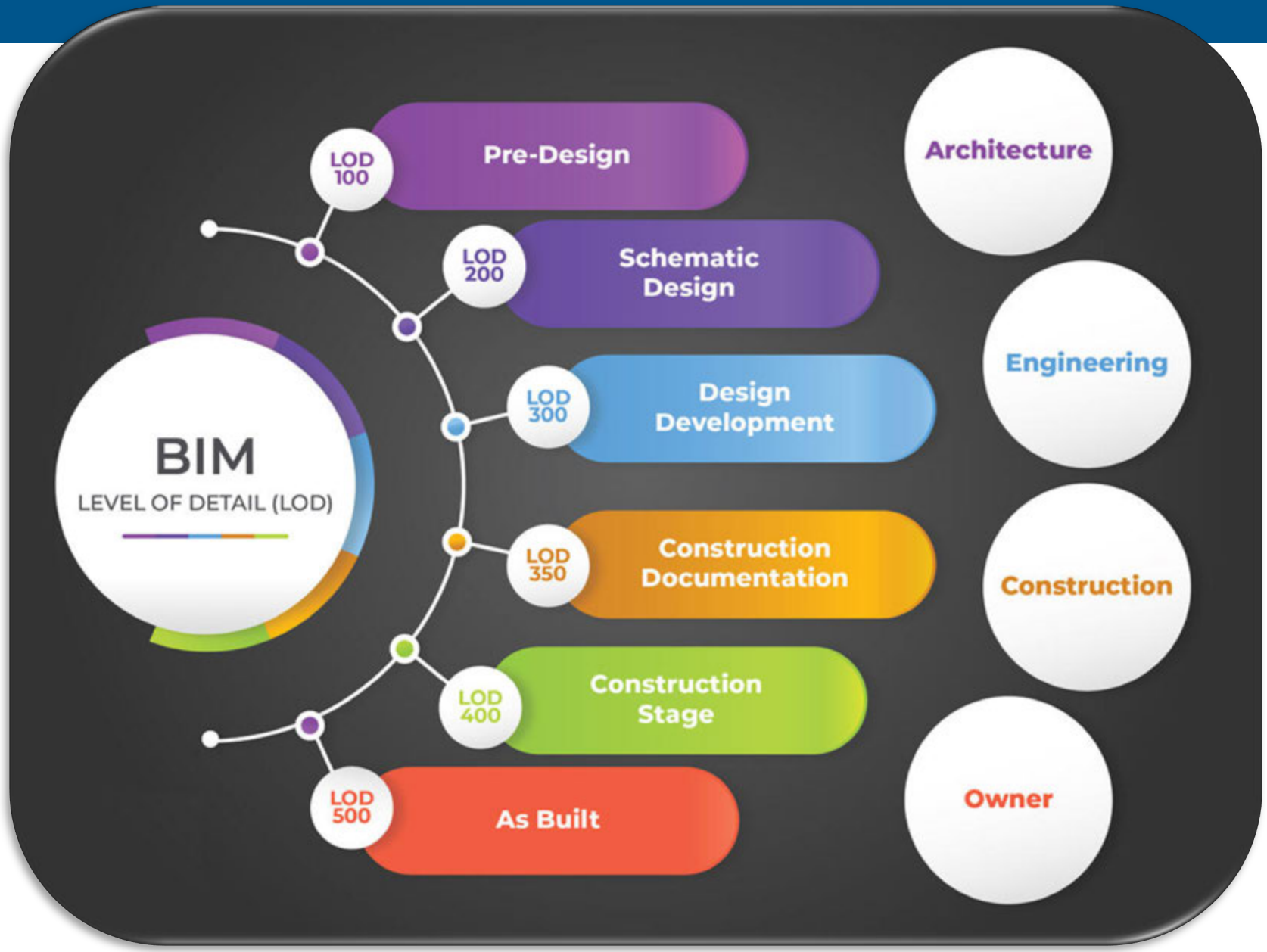
BIM Level of detail



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LOD – Level of detail

The information required for LOD is of two types:

Geometric parameters (LOG - Level of Geometry)

3D drawings of the product (compartment dimensions, cabin, doors...)

Non-geometric parameters (LOI - Level of Information)

General information (load capacity, capacity, speed...)

The detail of the quantity/quality of the information to provide depends on the stage the project is at.

Phase / Model Element	Concept	Preliminary design	Developed design	Detailed design	Construction	Operation
Stairs, ladders and ramps	200	200	300	400	500	
Platforms and landings	200	200	300	400	500	
Roof	200	200	300	350		
Seismic bracing		200	300	400	500	
Chambers and manholes	200	200	300	400	500	
Maintenance and access zones	200	200	300	300		
Building services						
Plumbing systems	200	200	200	300		200
Electrical systems	200	200	200	300		200
Security system	200	200	200	300		200
Firefighting system	200	200	200	300		200
Lifts and escalators	200	200	200	300		200

Example

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BIM – Documentation

LOD 100 Conceptual	LOD 200 Approximate geometry	LOD 300 Precise geometry	LOD 400 Fabrication	LOD 500 As-built
				
The Model Element **may be** graphically represented in the Model with a **symbol or other generic representation**, but does not satisfy the requirements for LOD 200. Information related to the Model Element (i.e. cost per square metre, etc.) can be derived from other Model Elements.	The Model Element **is** graphically represented in the Model as a **generic** system, object, or assembly with **approximate** quantities, size, shape, location, and orientation. Non-graphic information may also be attached to the Model Element.	The Model Element **is** graphically represented in the Model as a **specific** system, object, or assembly **accurate** in terms of quantity, size, shape, location, and orientation. Non-graphic information may also be attached to the Model Element.	The Model Element **is** graphically represented in the Model as a **specific** system, object, or assembly that is **accurate** in terms of quantity, size, shape, location, and orientation with **detailing, fabrication, assembly, and installation information**. Non-graphic information may also be attached to the Model Element.	The Model Element **is a field verified** representation **accurate** in terms of size, shape, location, quantity, and orientation. Non-graphic information may also be attached to the Model Element.

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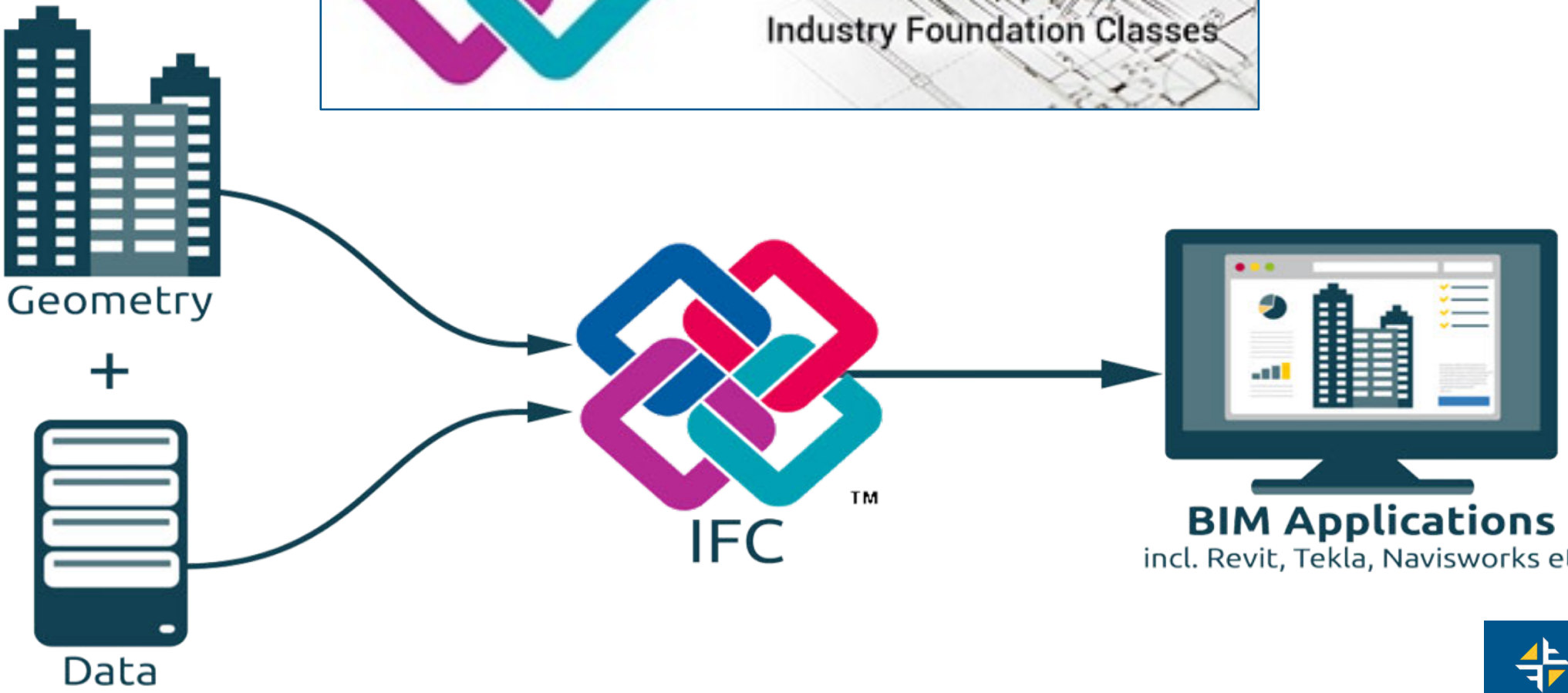
BIM – File ICF



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BIM – Documentation

What openBIM does for you

The transversality of the BIM approach requires maximum accessibility of information to all stakeholders.

The key to this accessibility is the IFC – acronym for **Industry Foundation Classes** – the **open international standard** developed by buildingSMART and used by the most widely used and common design software.

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BIM – Building Information Modeling

Lifts, good hoists, elevating platforms, escalators

Standardised models

- 3D objects
- Product features :
- Maintenance management
- ON-LINE libraries
- Market : Worldwide visibility

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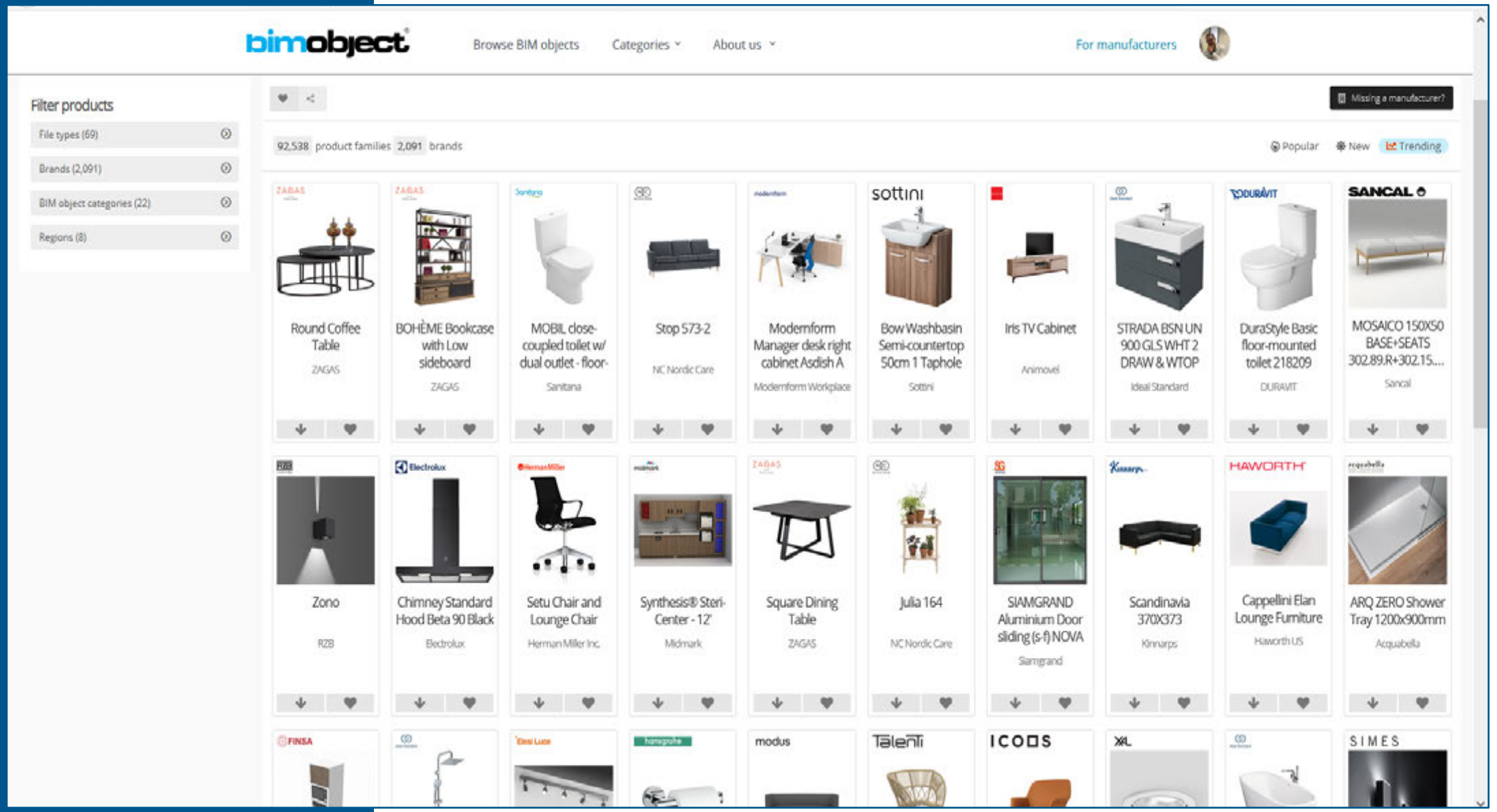
BIM – Libraries



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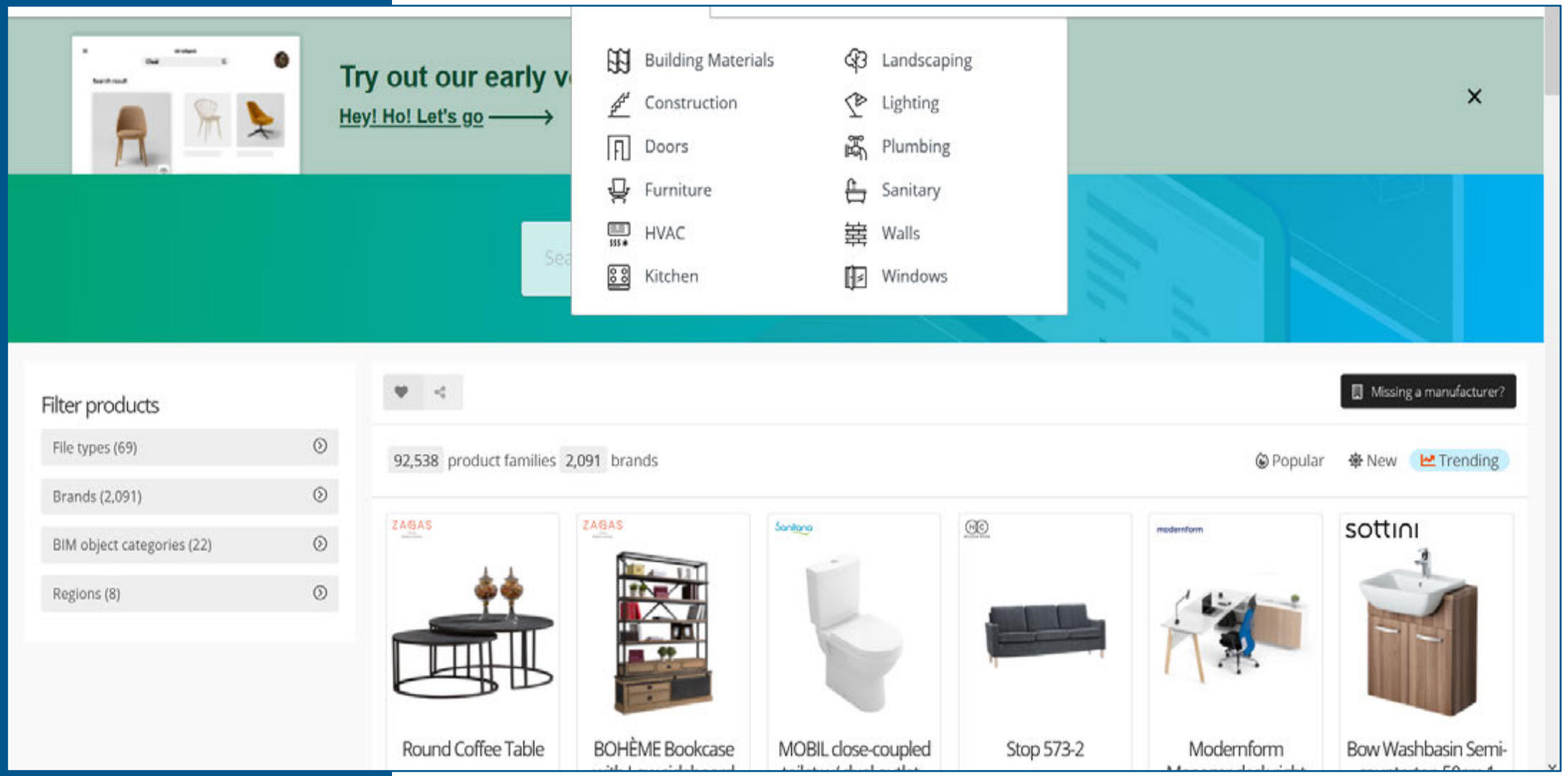

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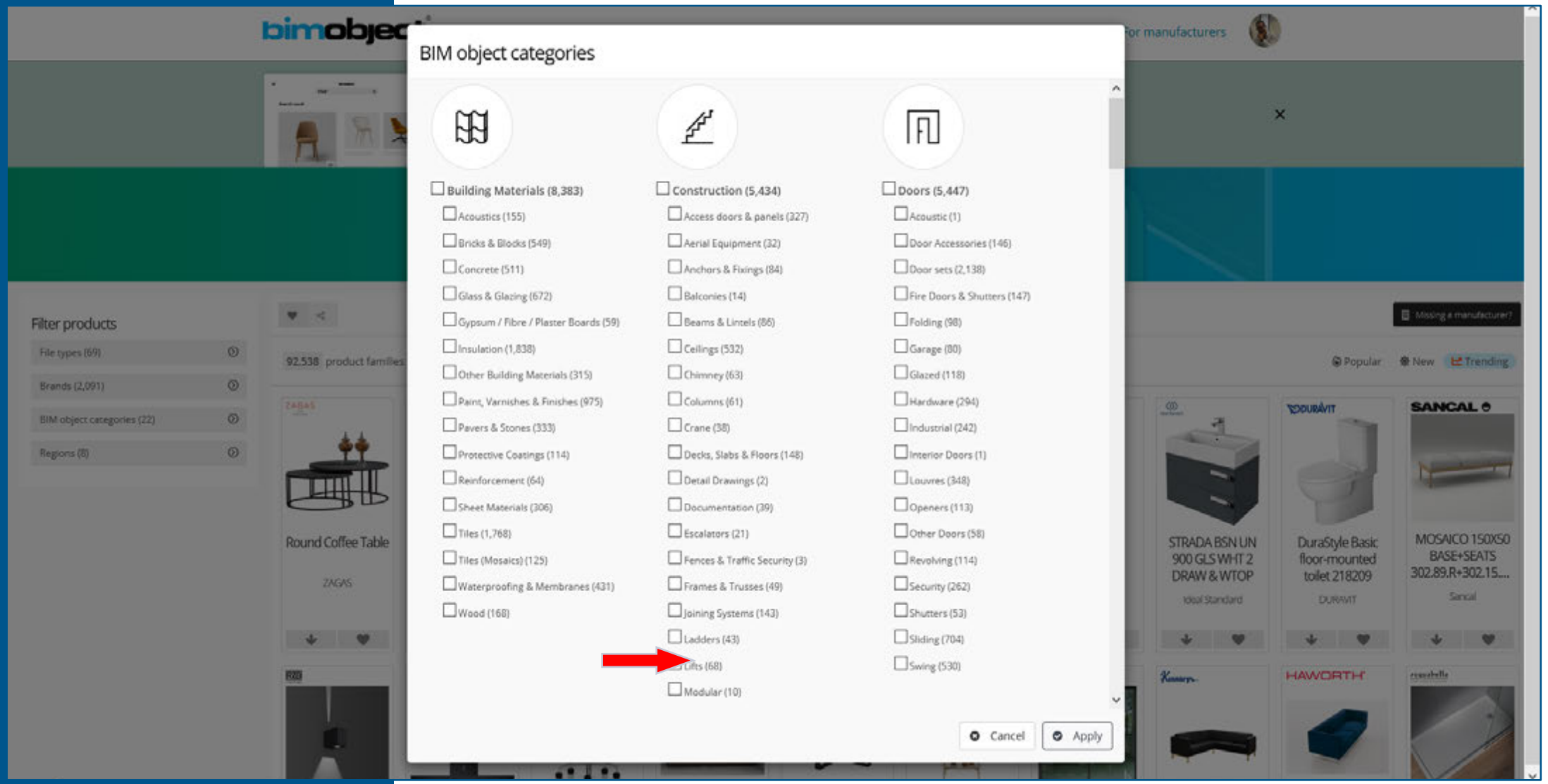

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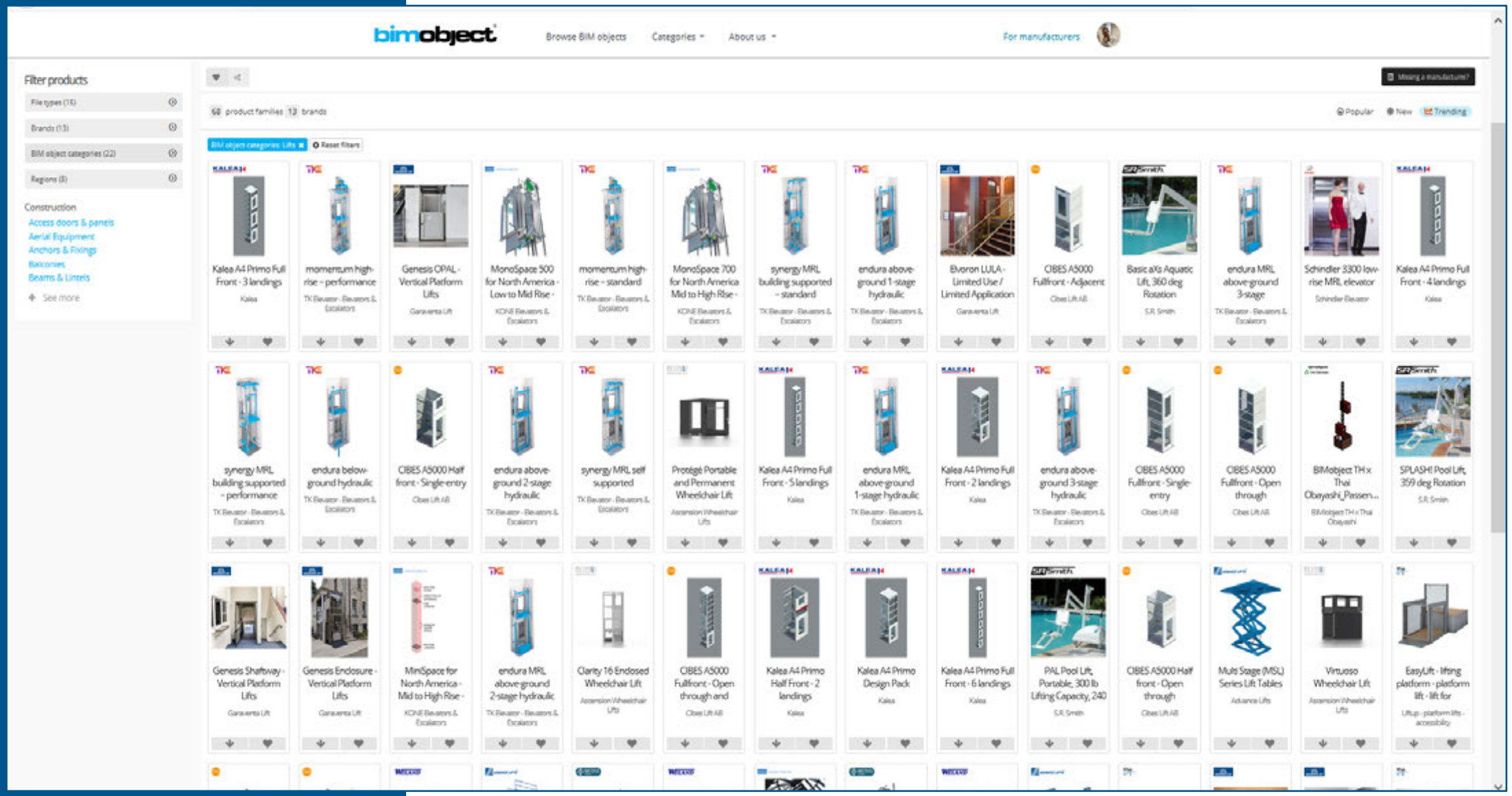

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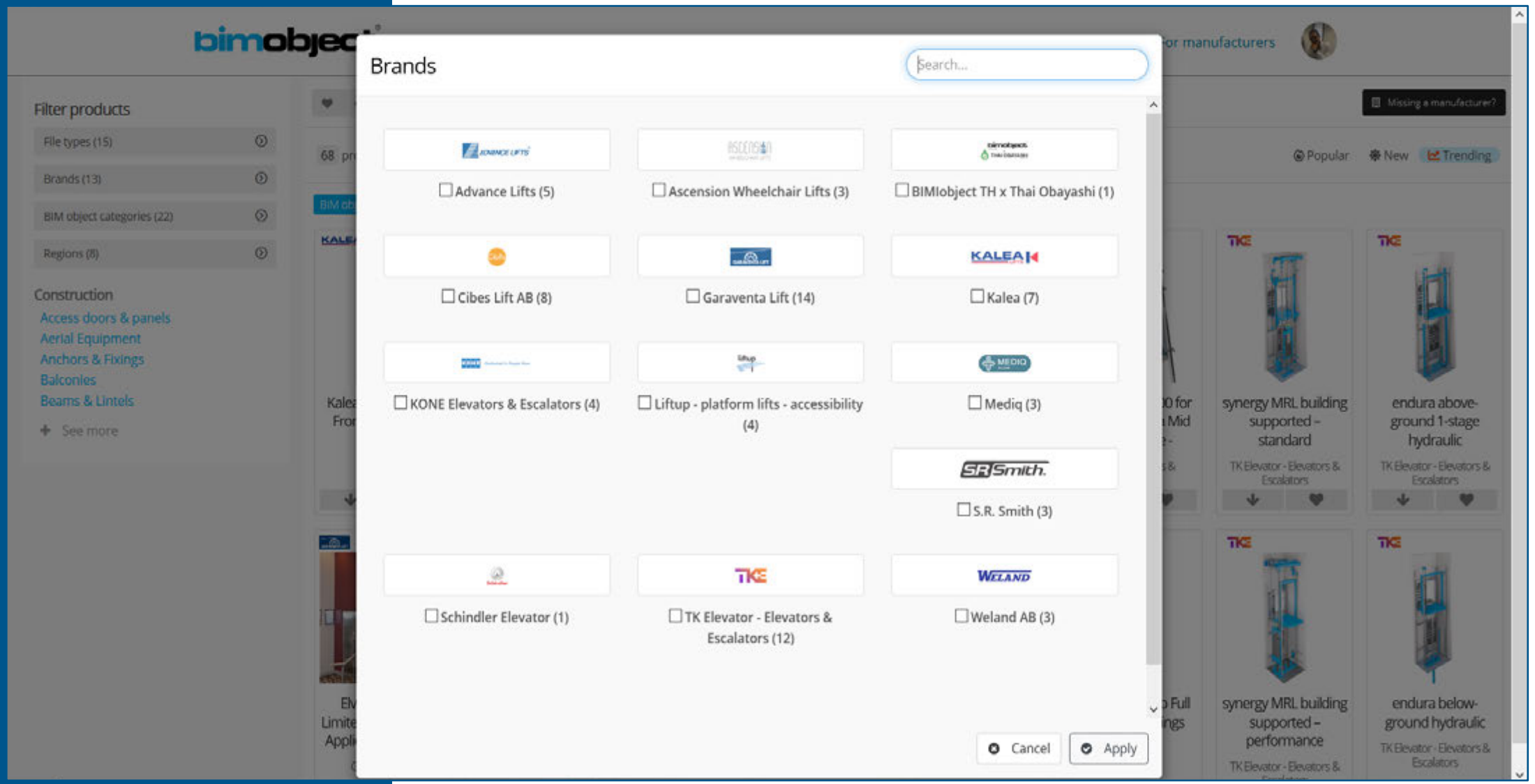

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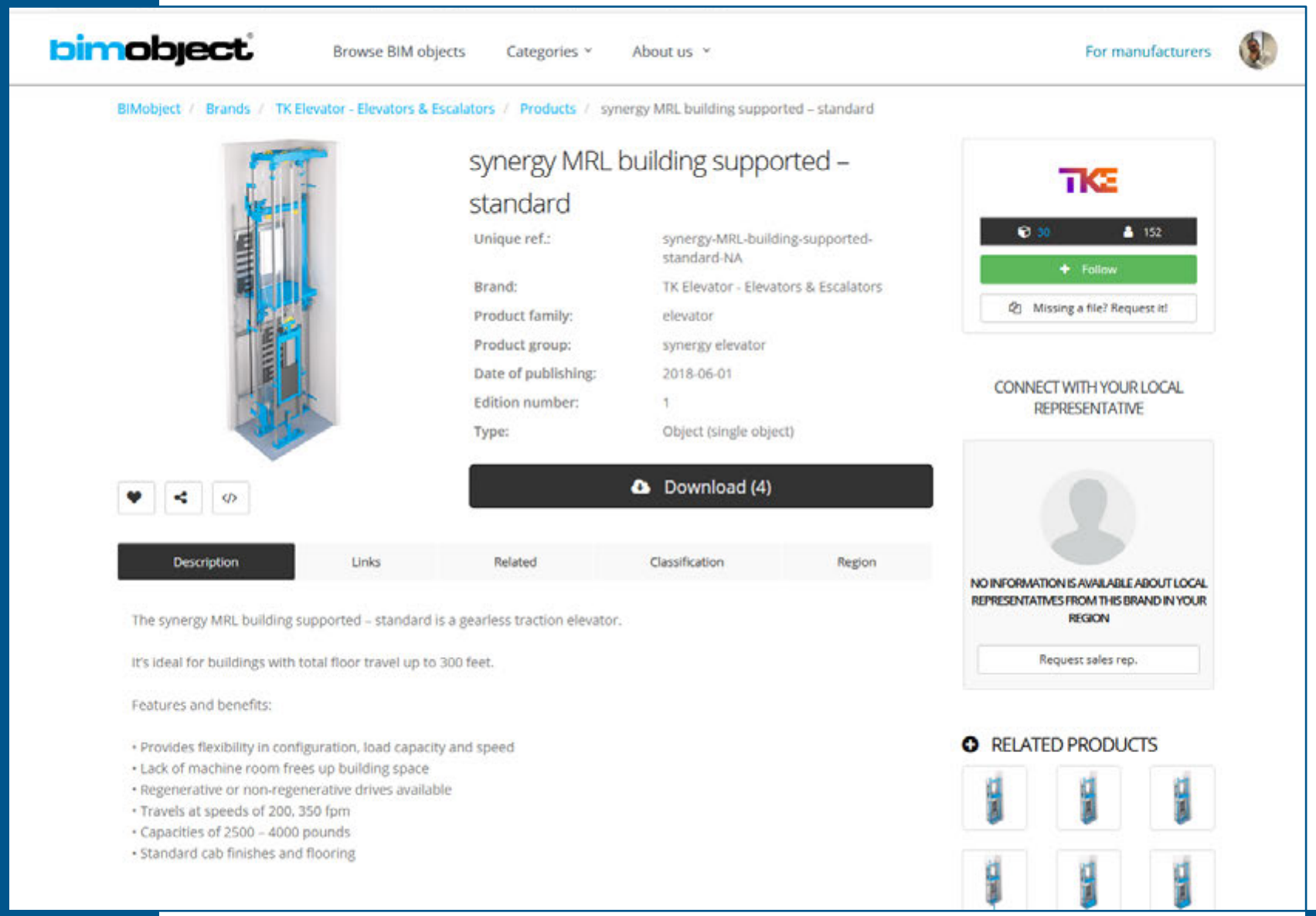

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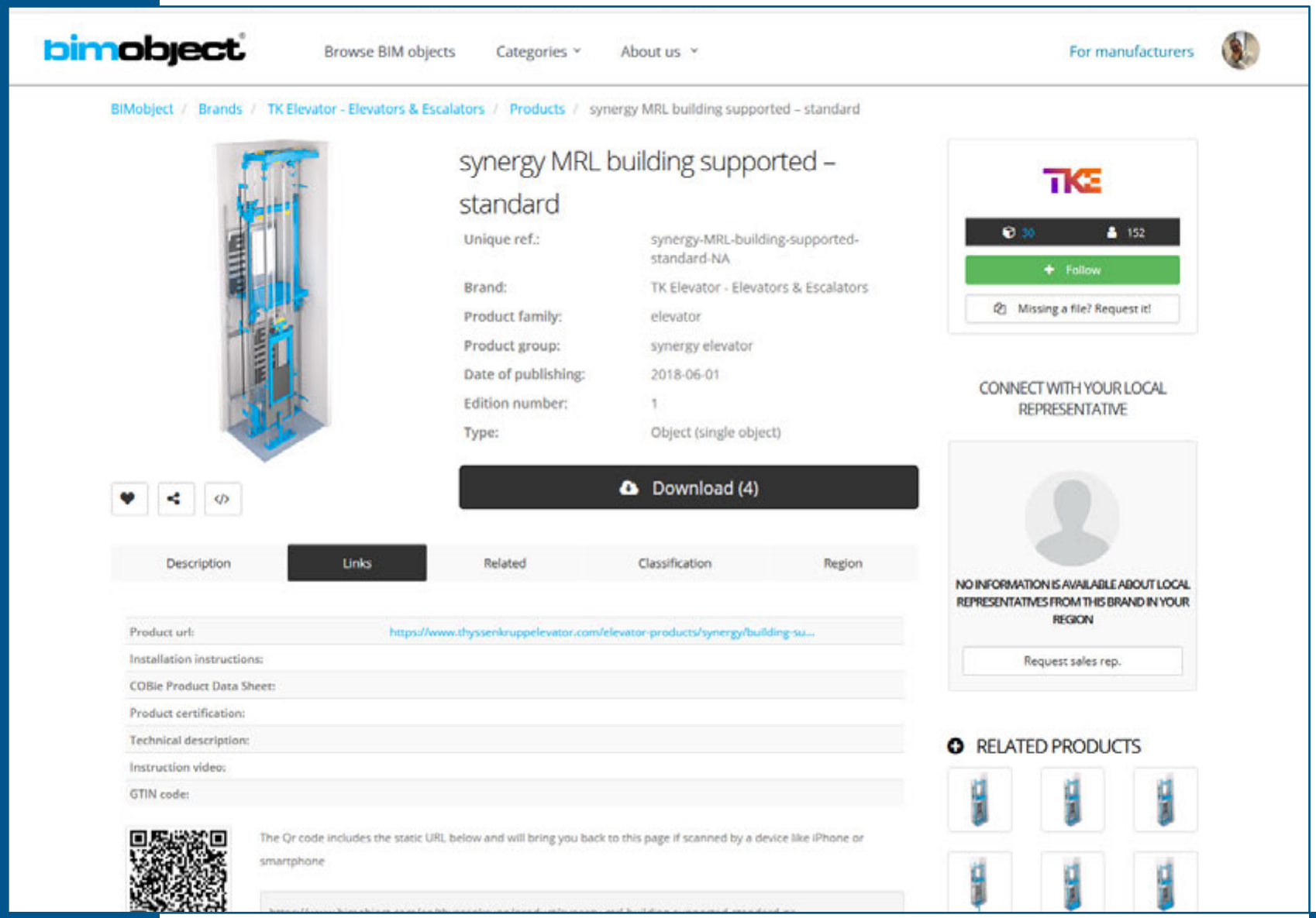

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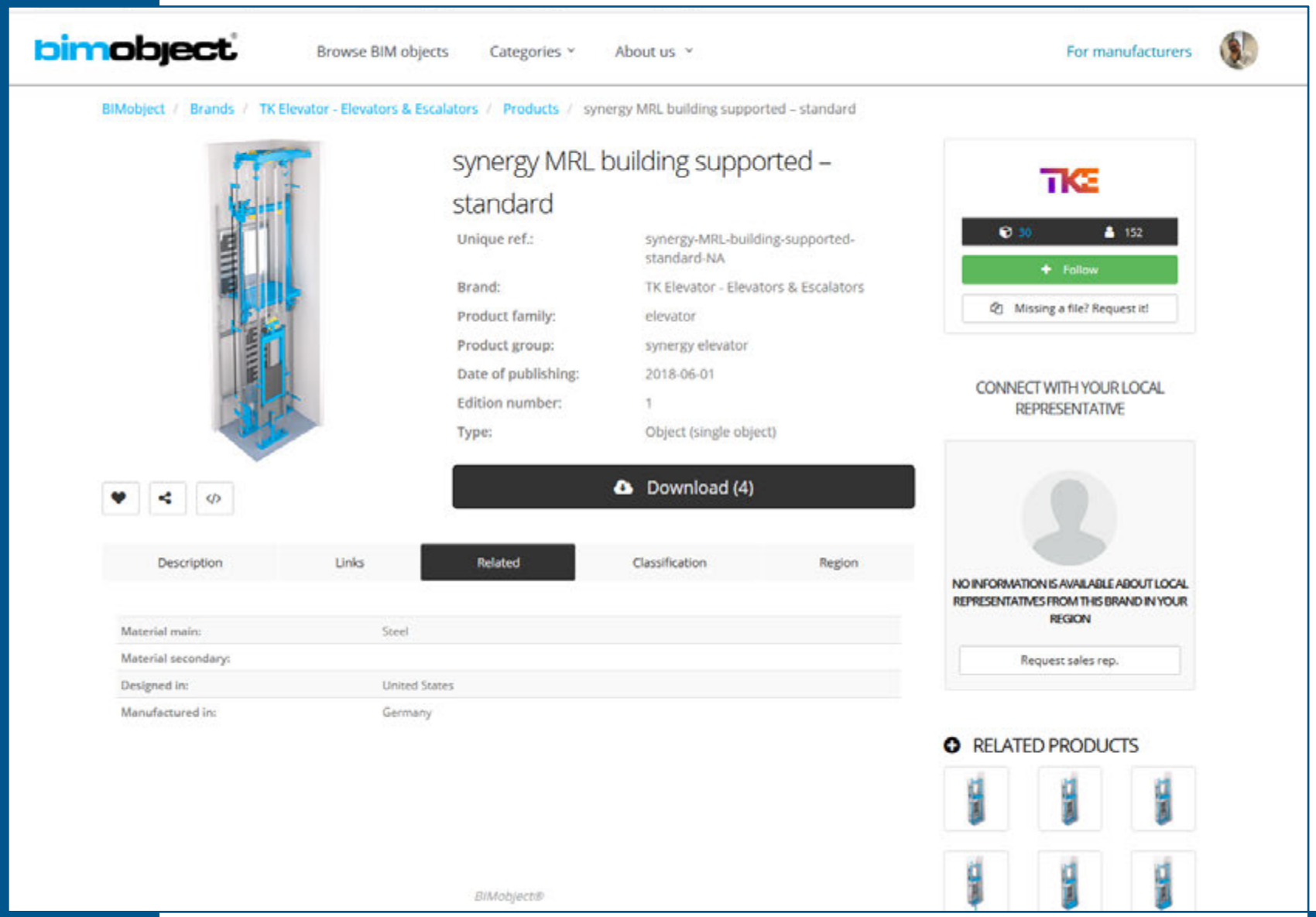

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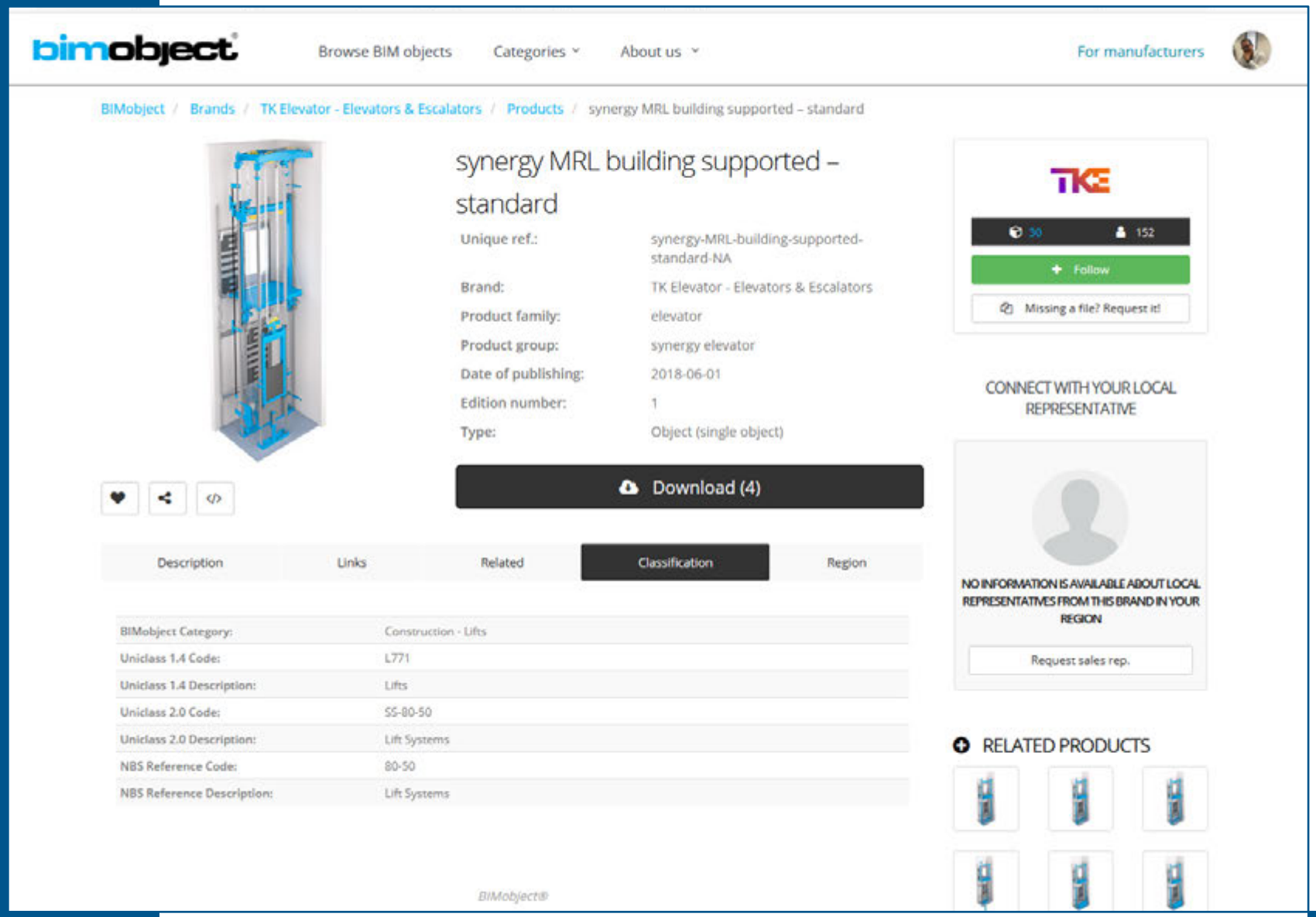

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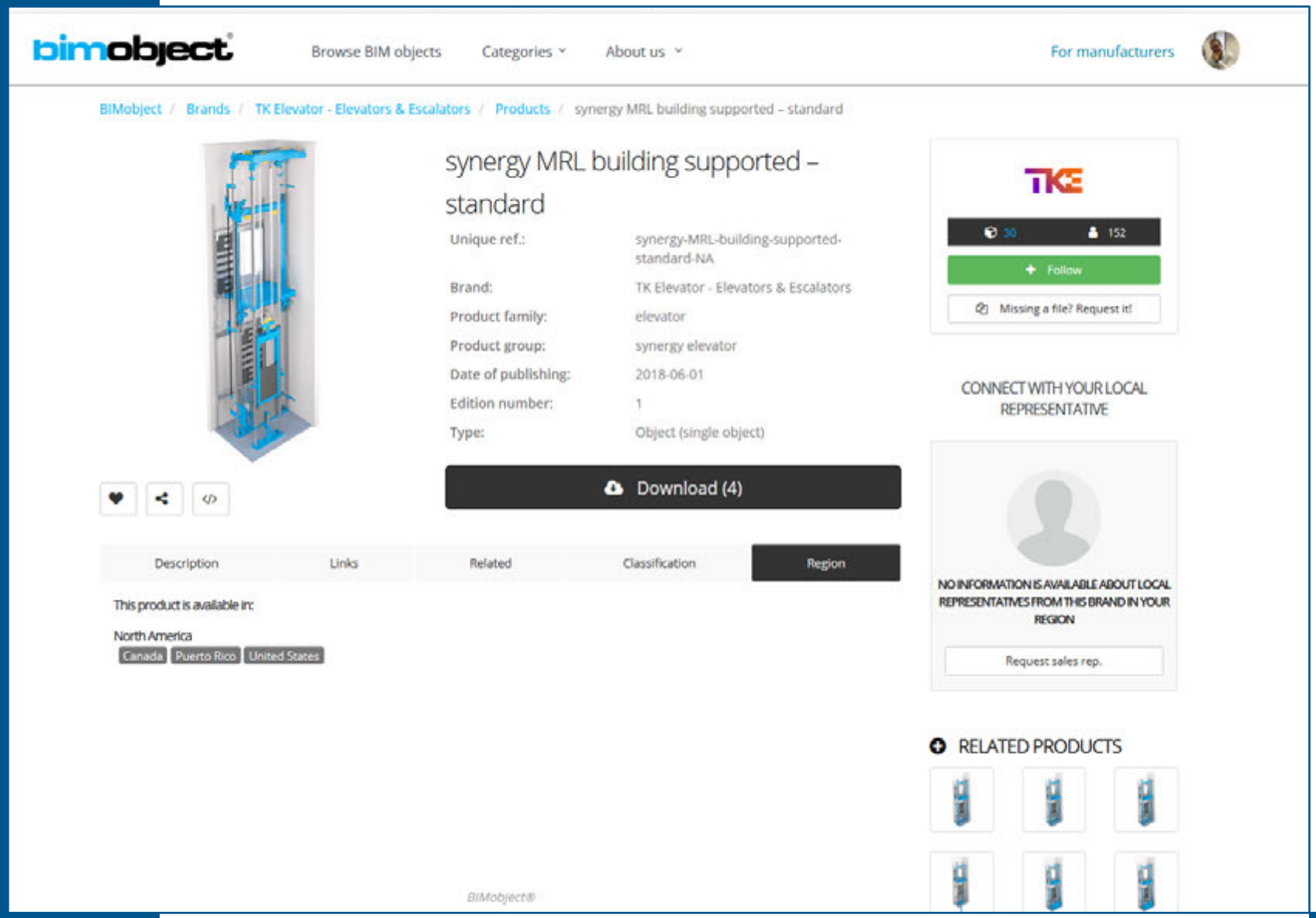

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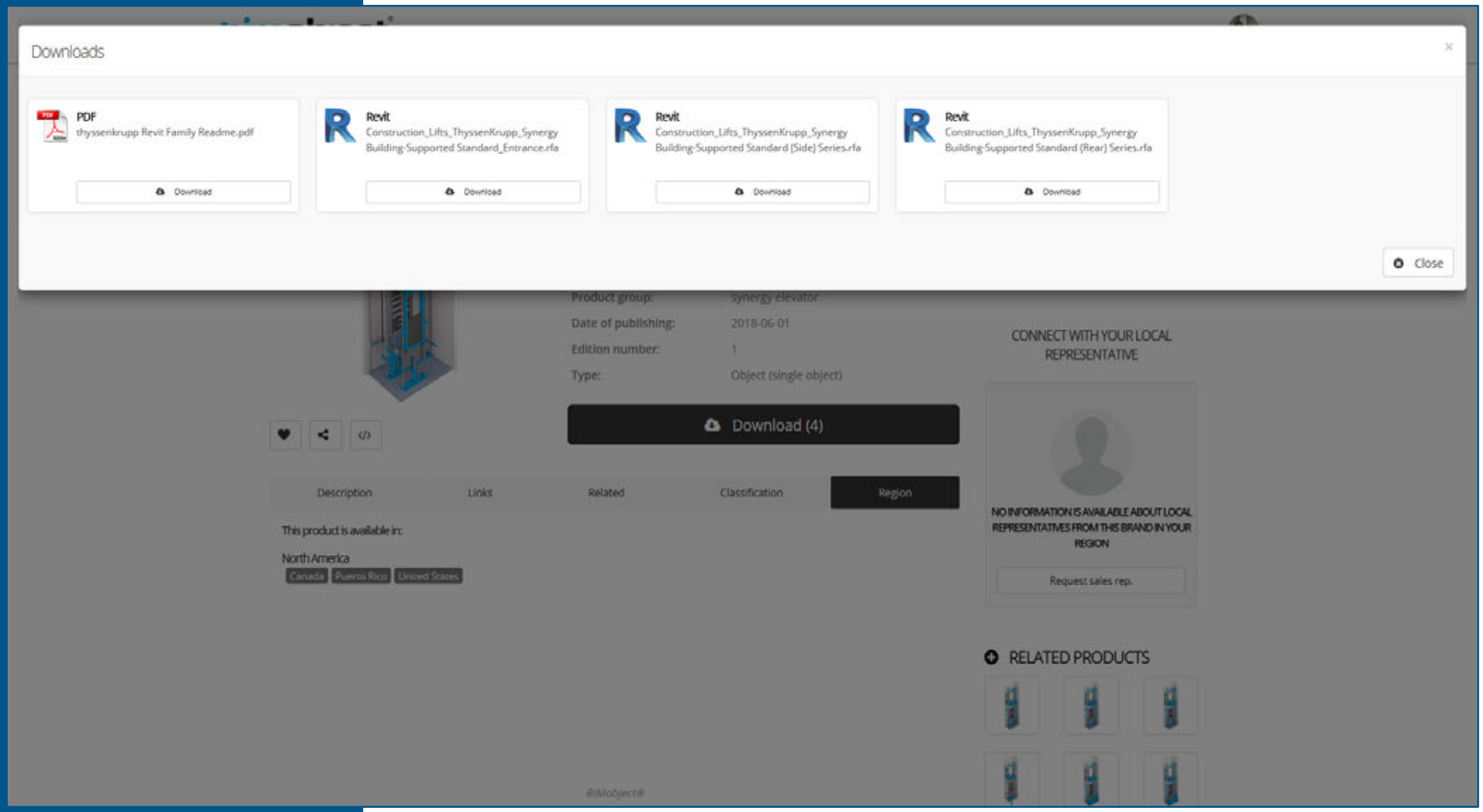

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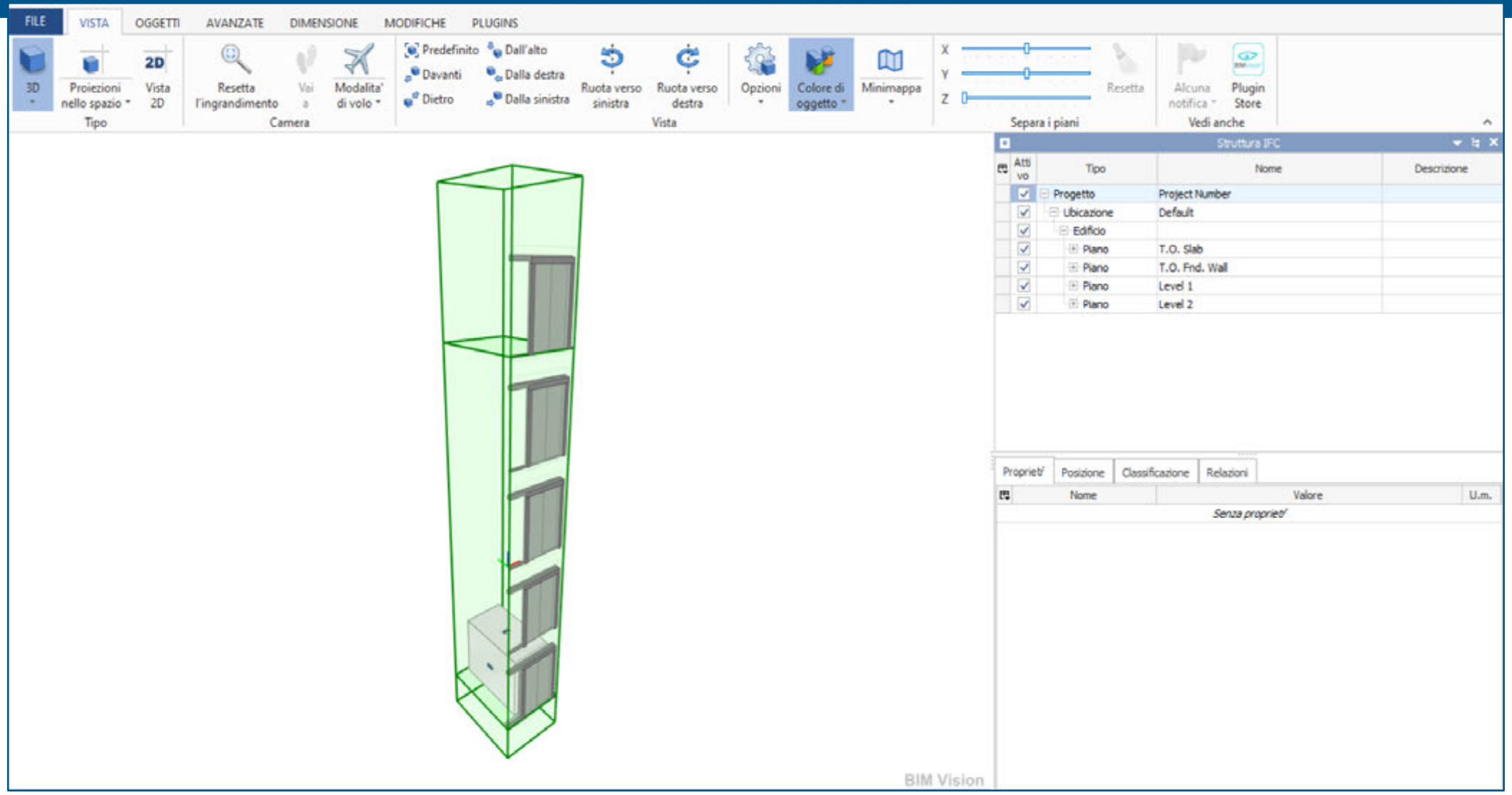
BIM – Libraries – File ICF



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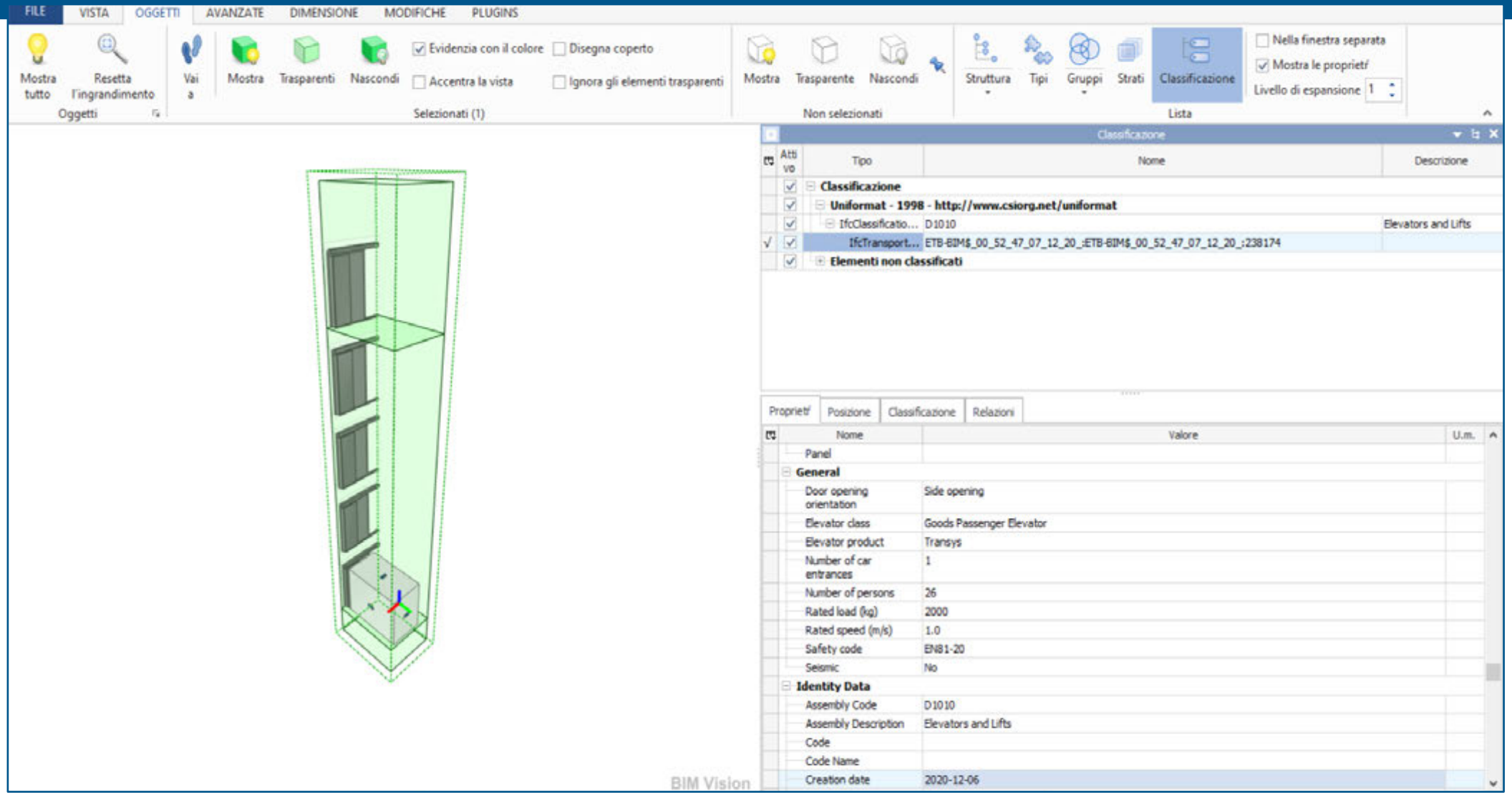

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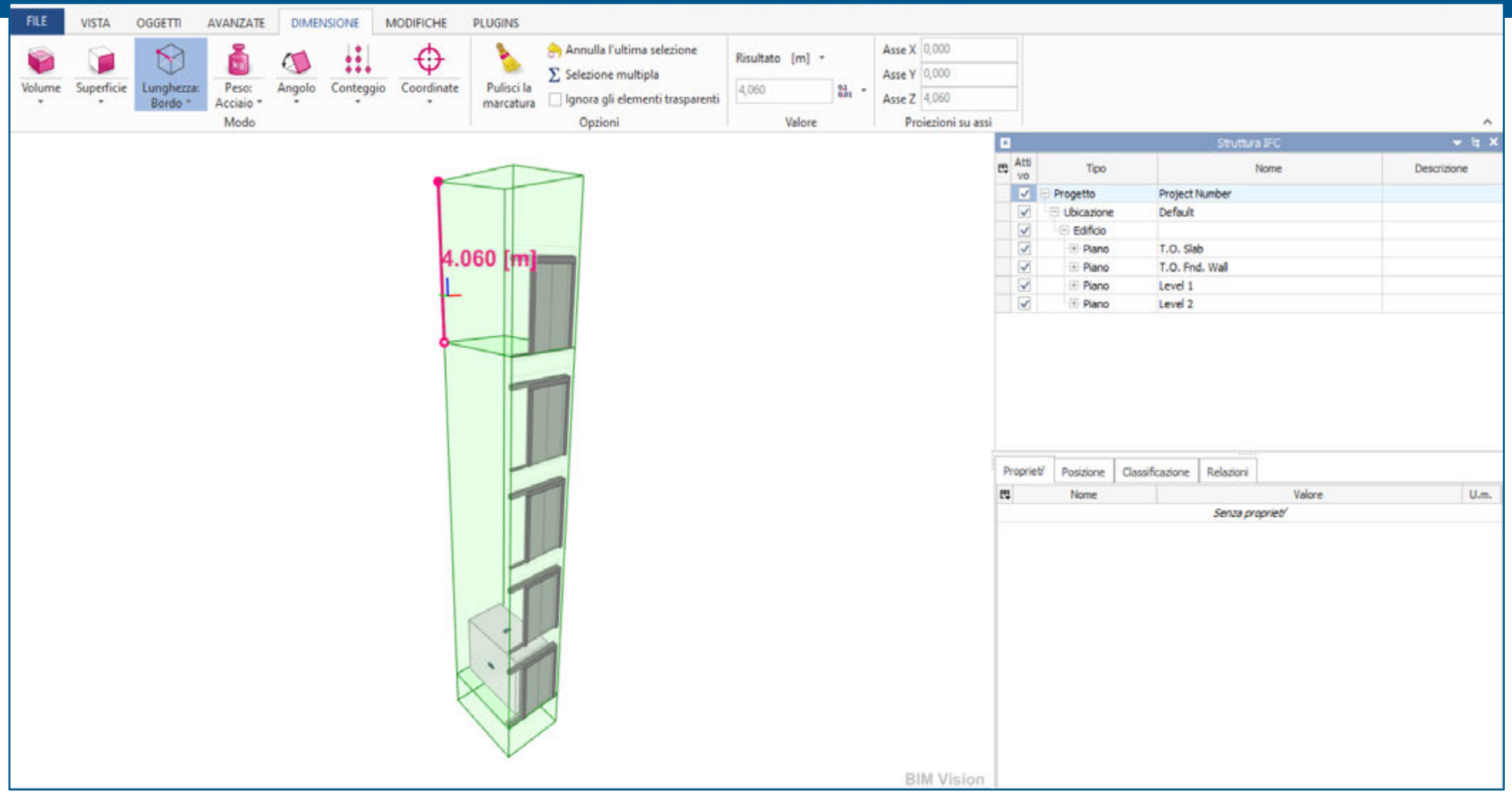

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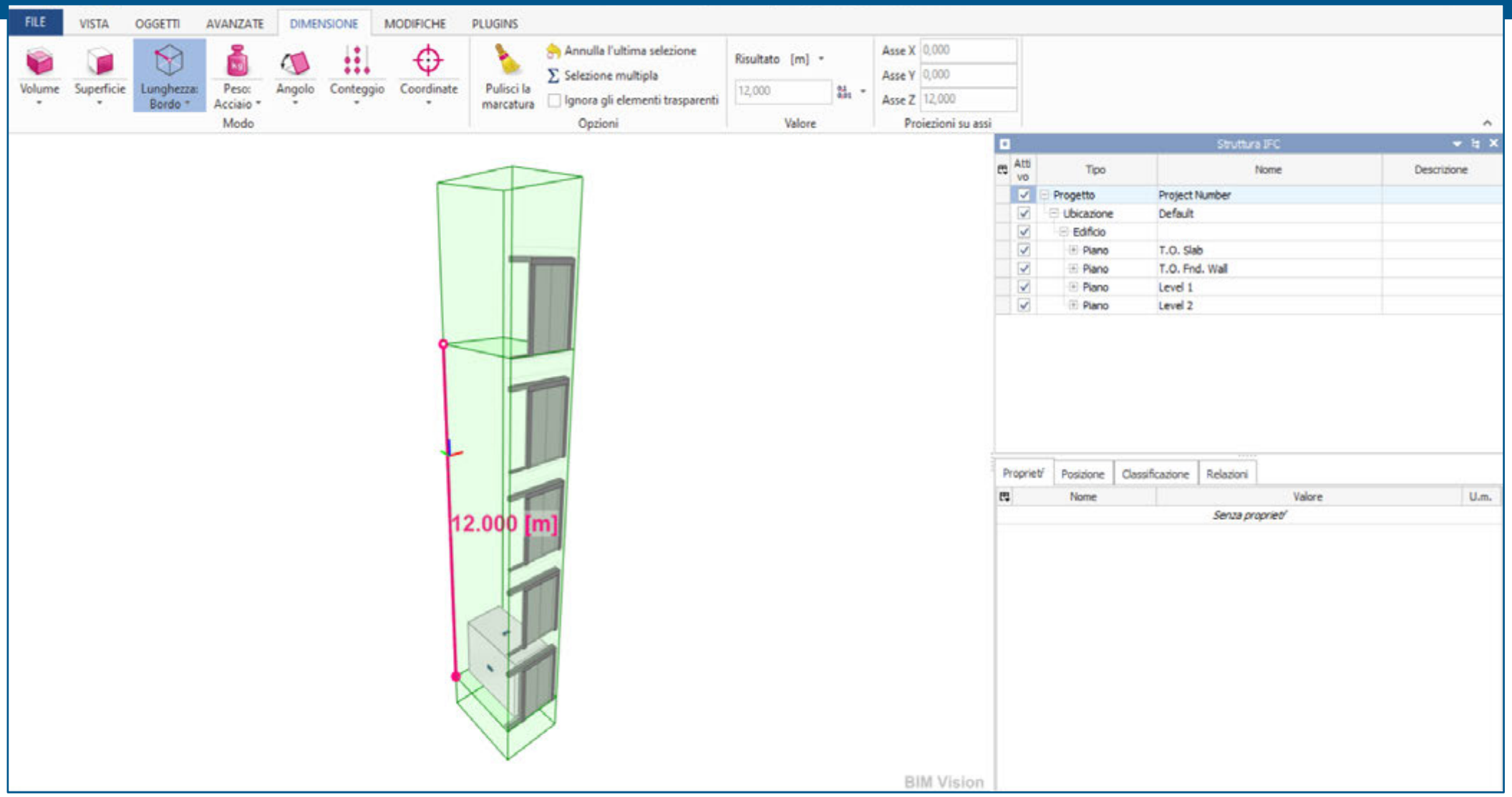

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HOW CAN LIFT SMES APPROACH BIM?

Some practical advices

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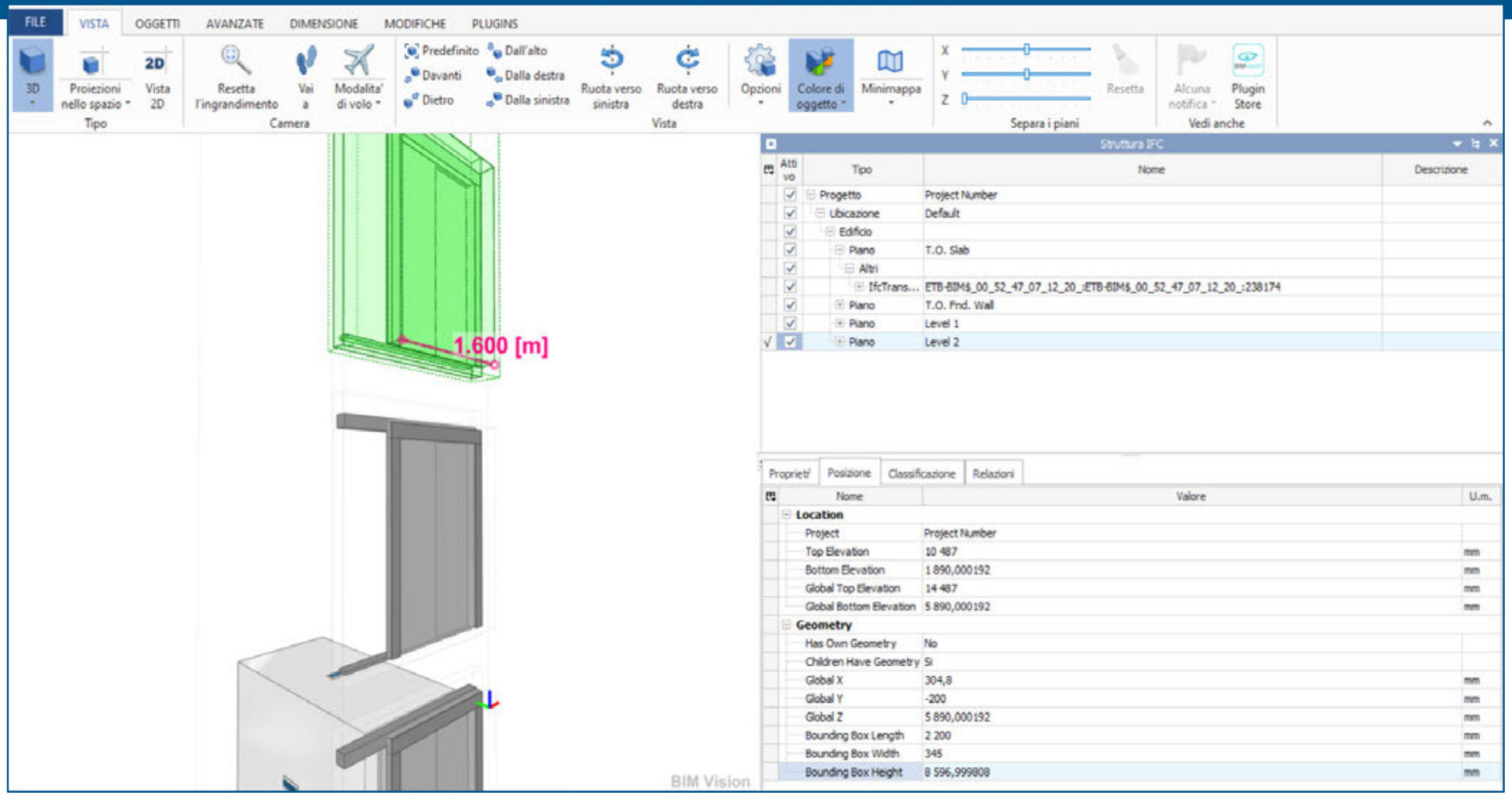
BIM – Libraries – File ICF



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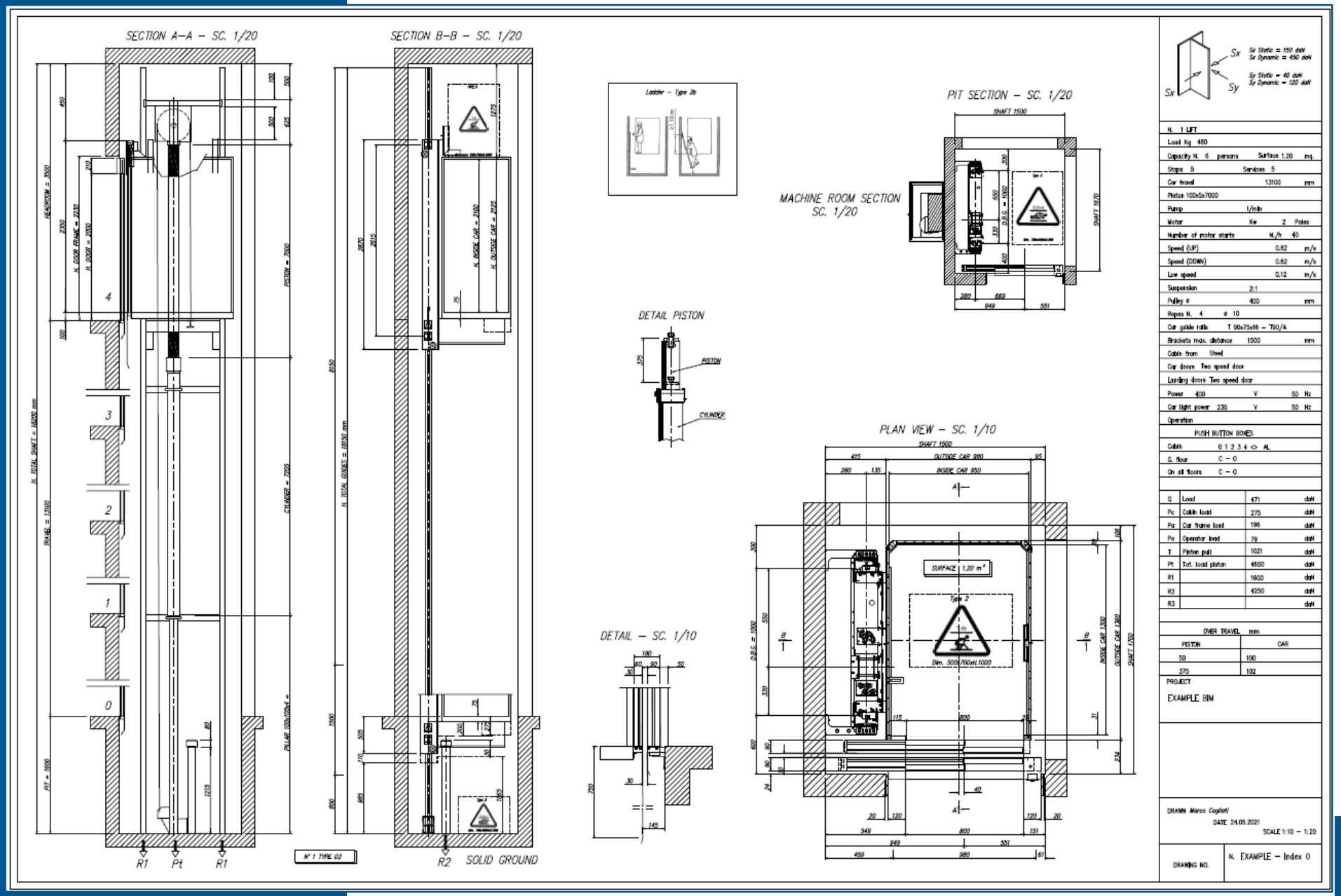
The project today



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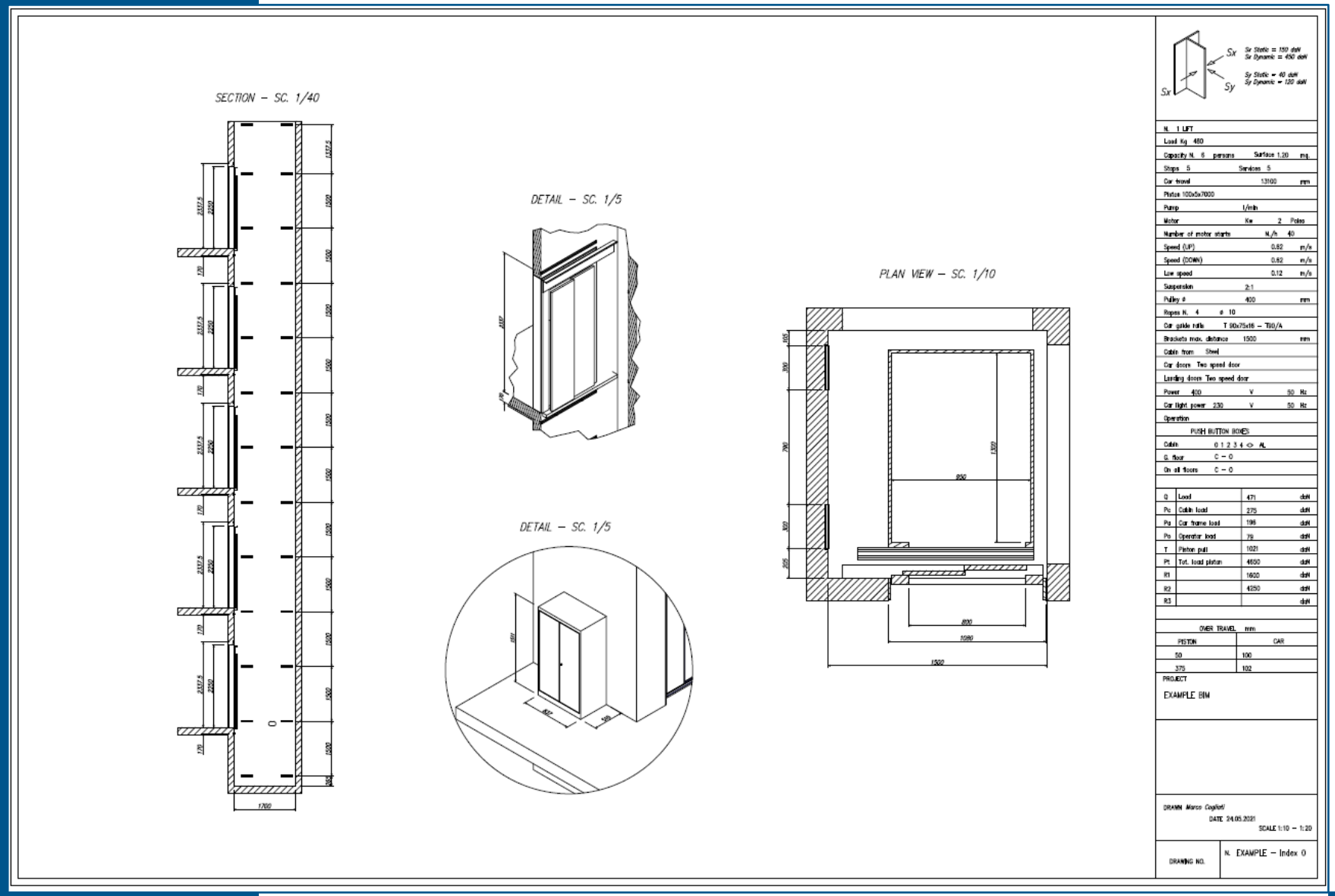

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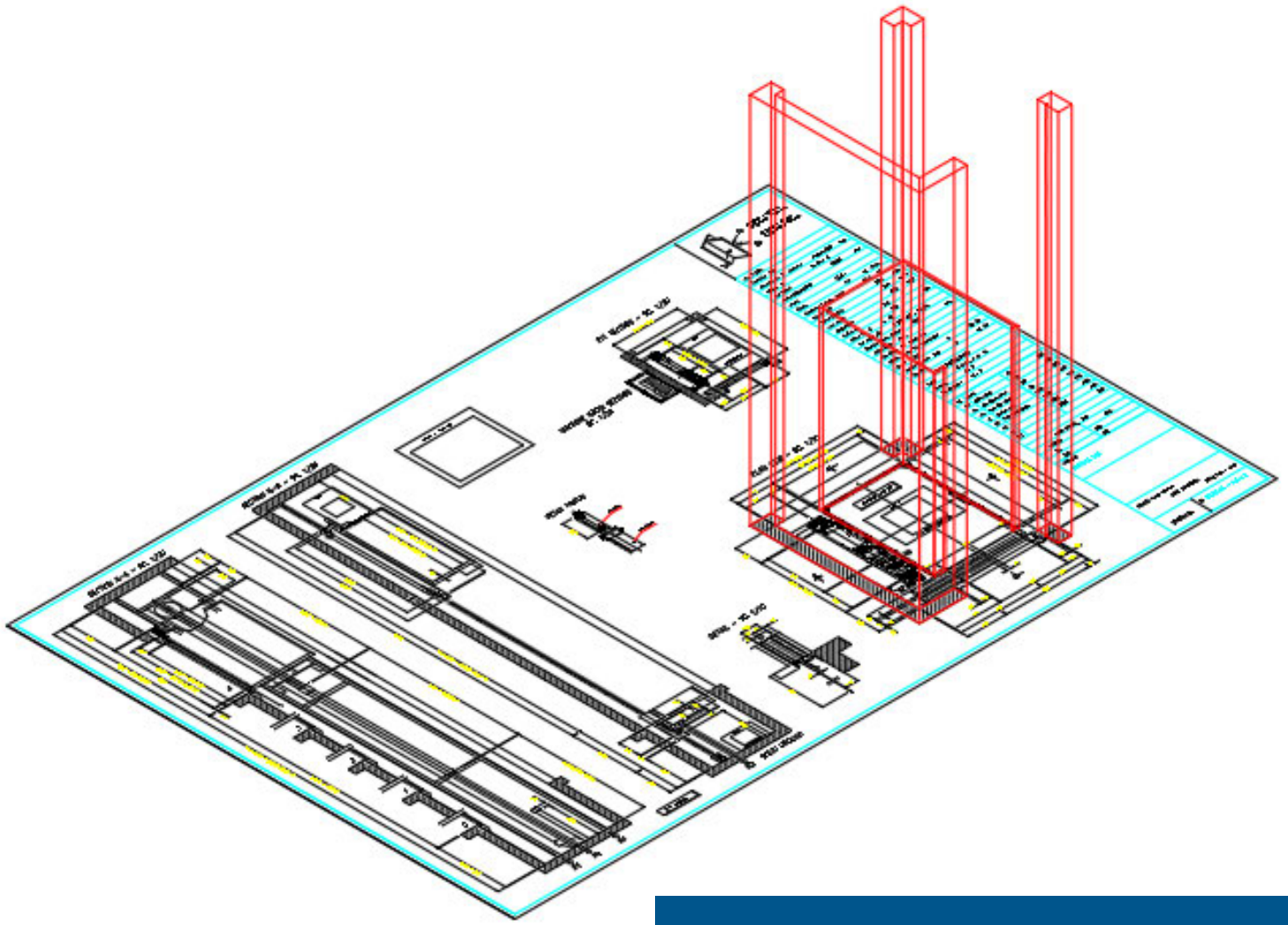

From 2D to 3D

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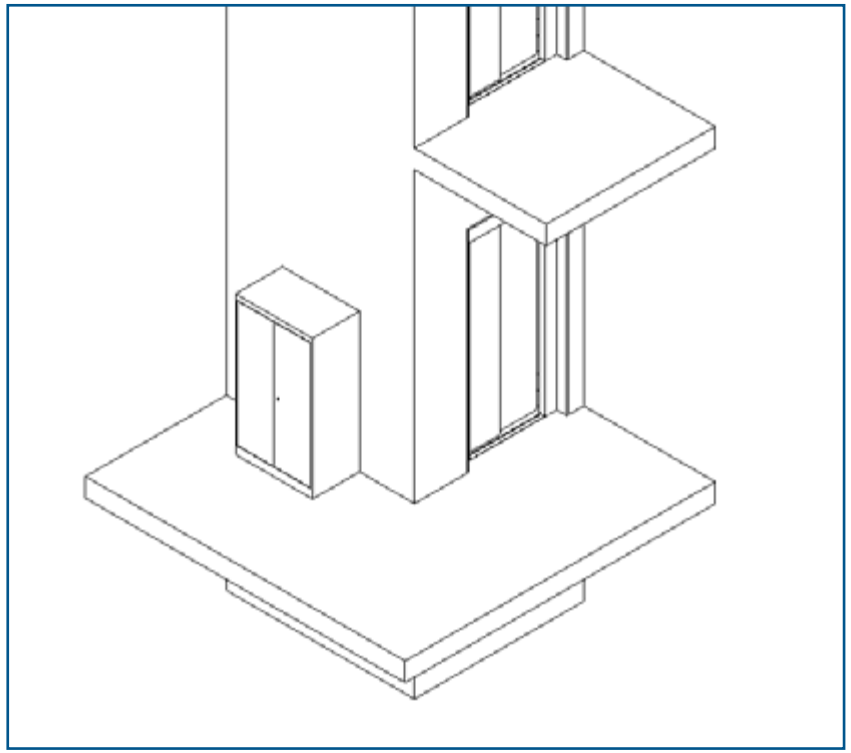
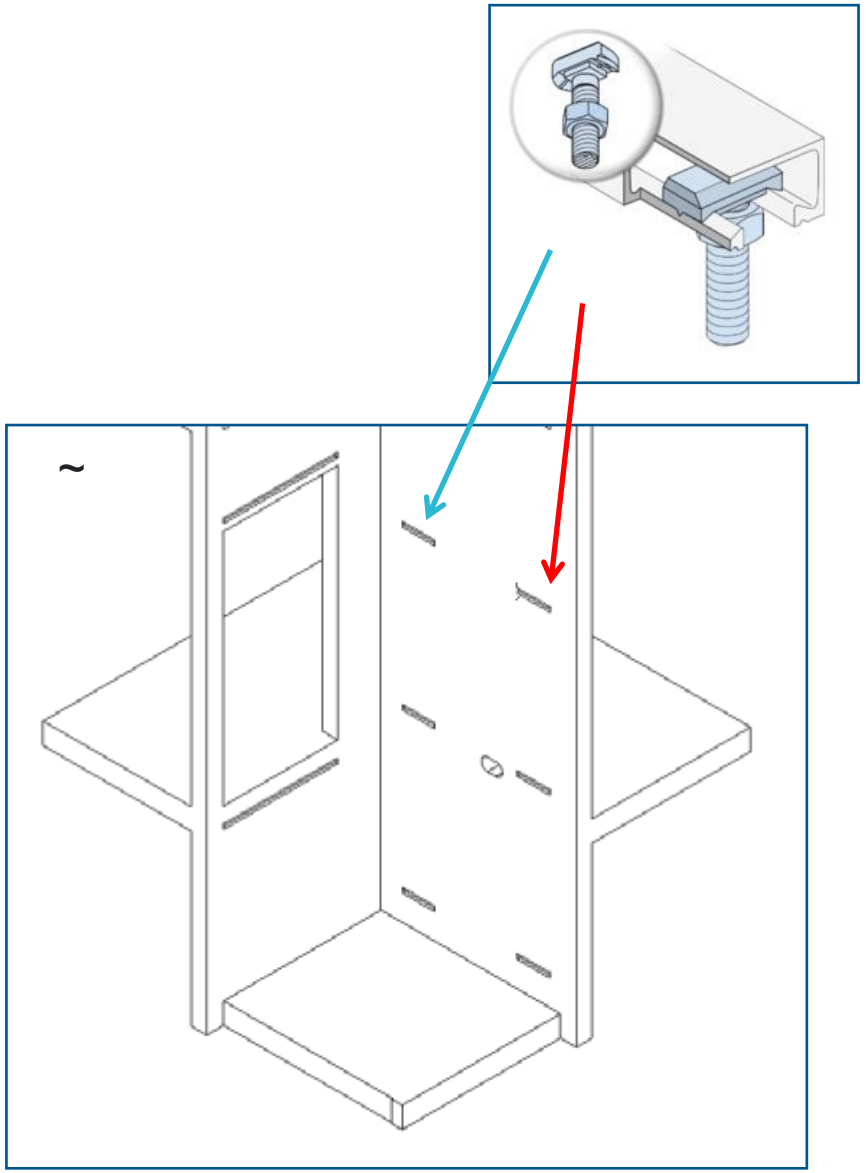
3D Model and different levels of detail (L.O.D.)

LOW L.O.D





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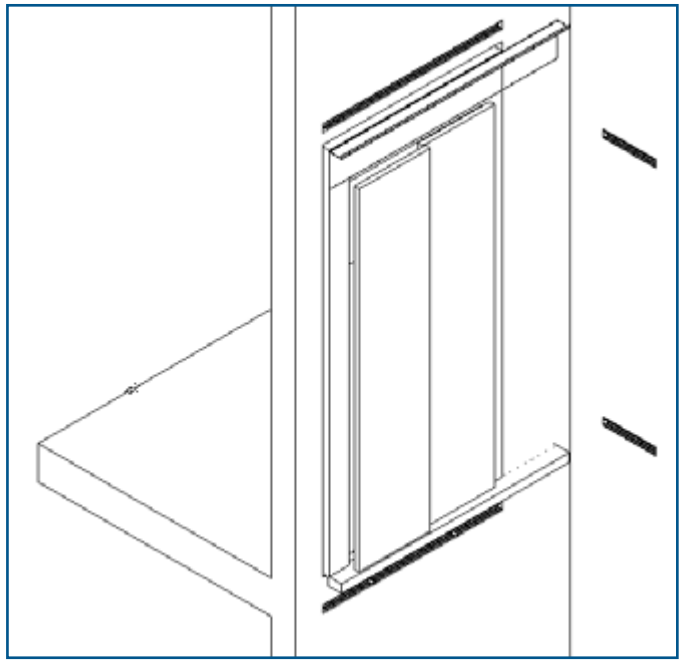

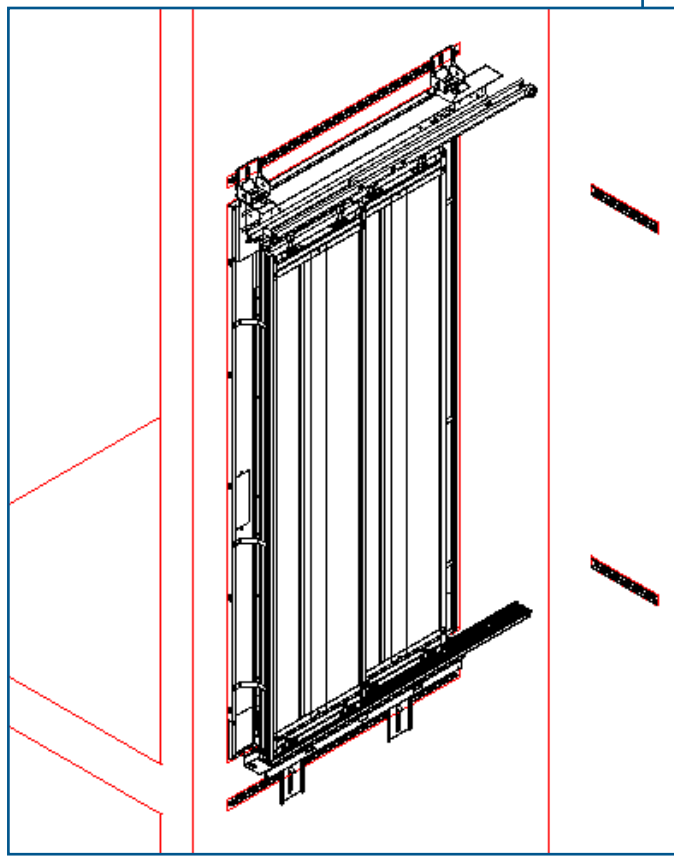

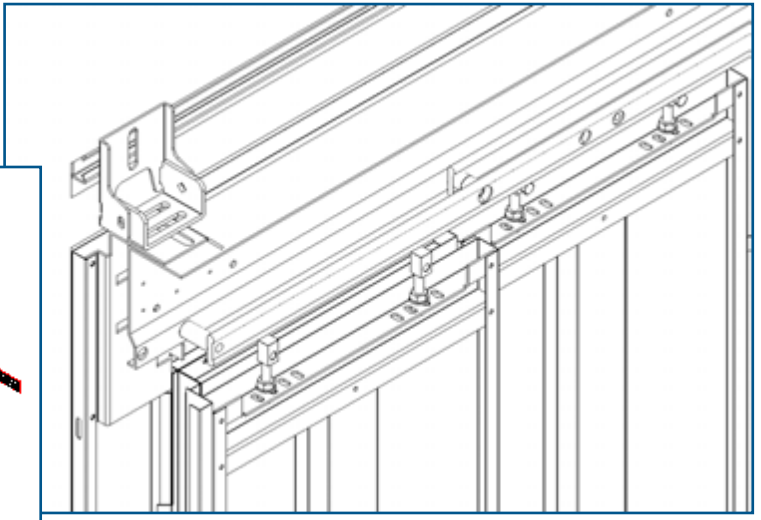

HIGH L.O.D

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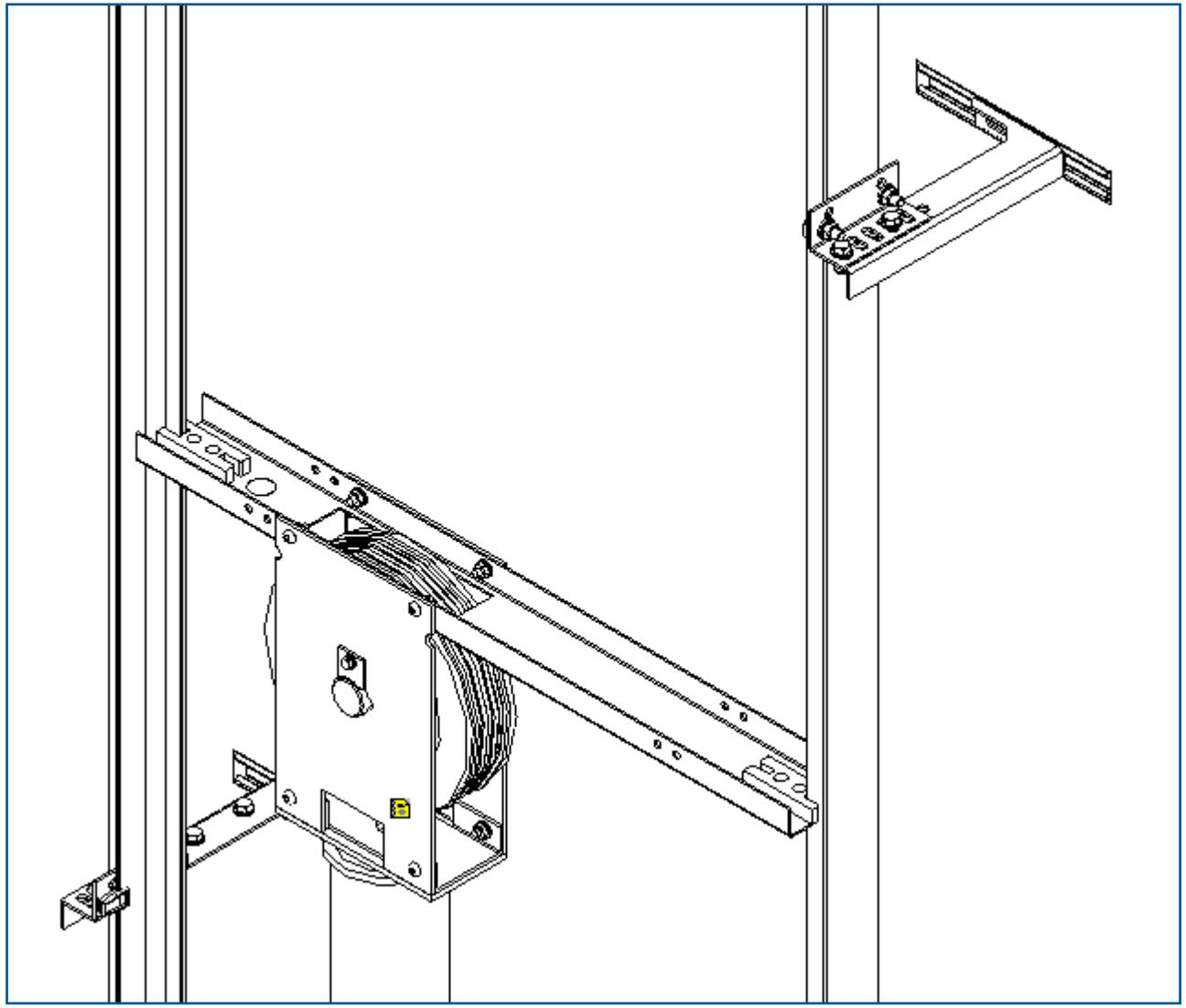
HIGH L.O.D



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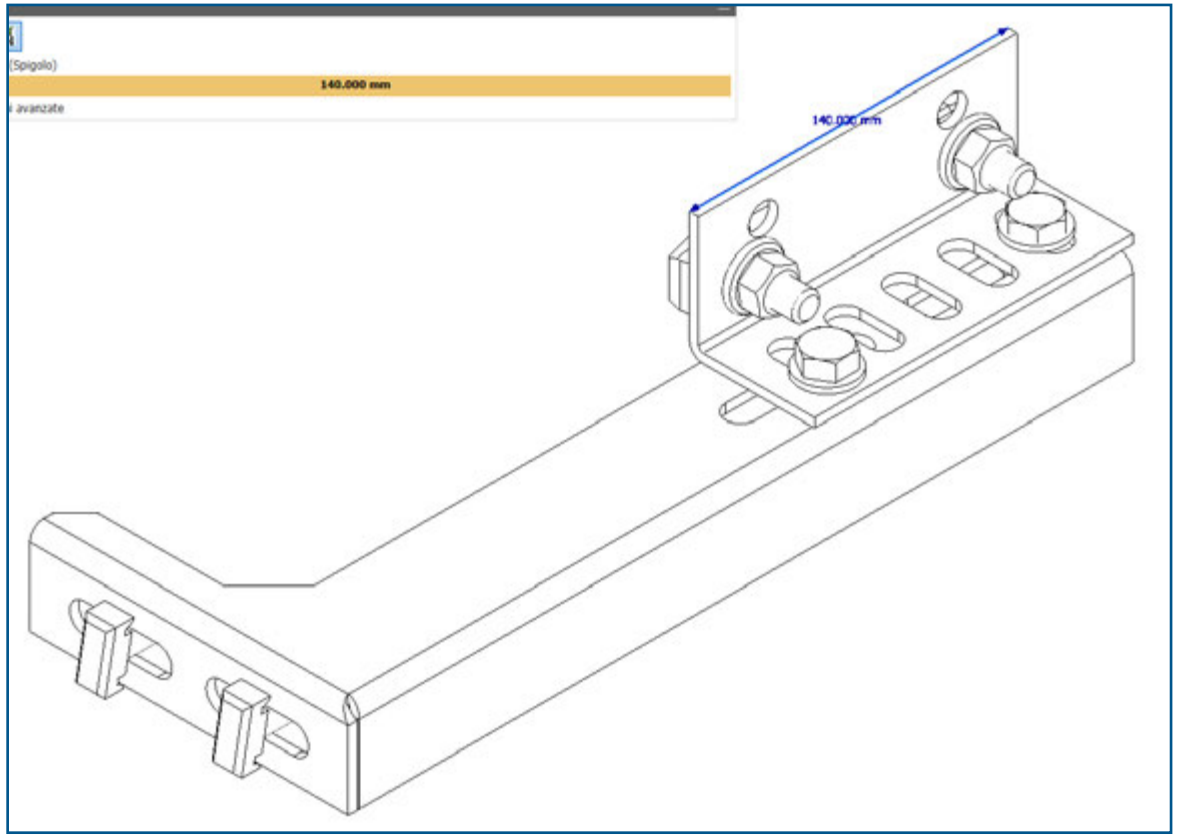
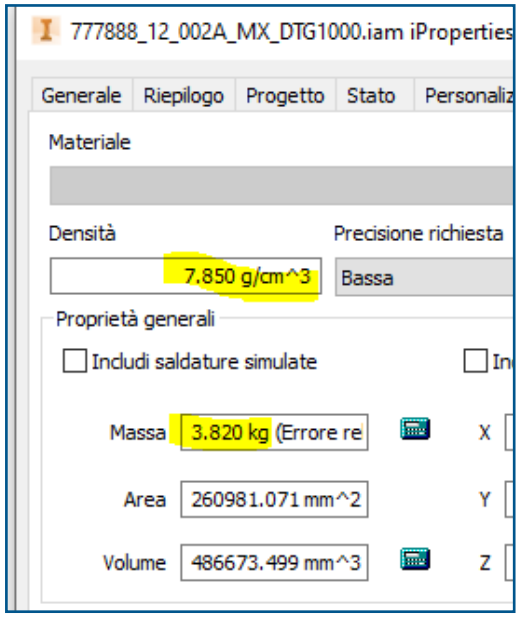
Information such as...

WEIGHT





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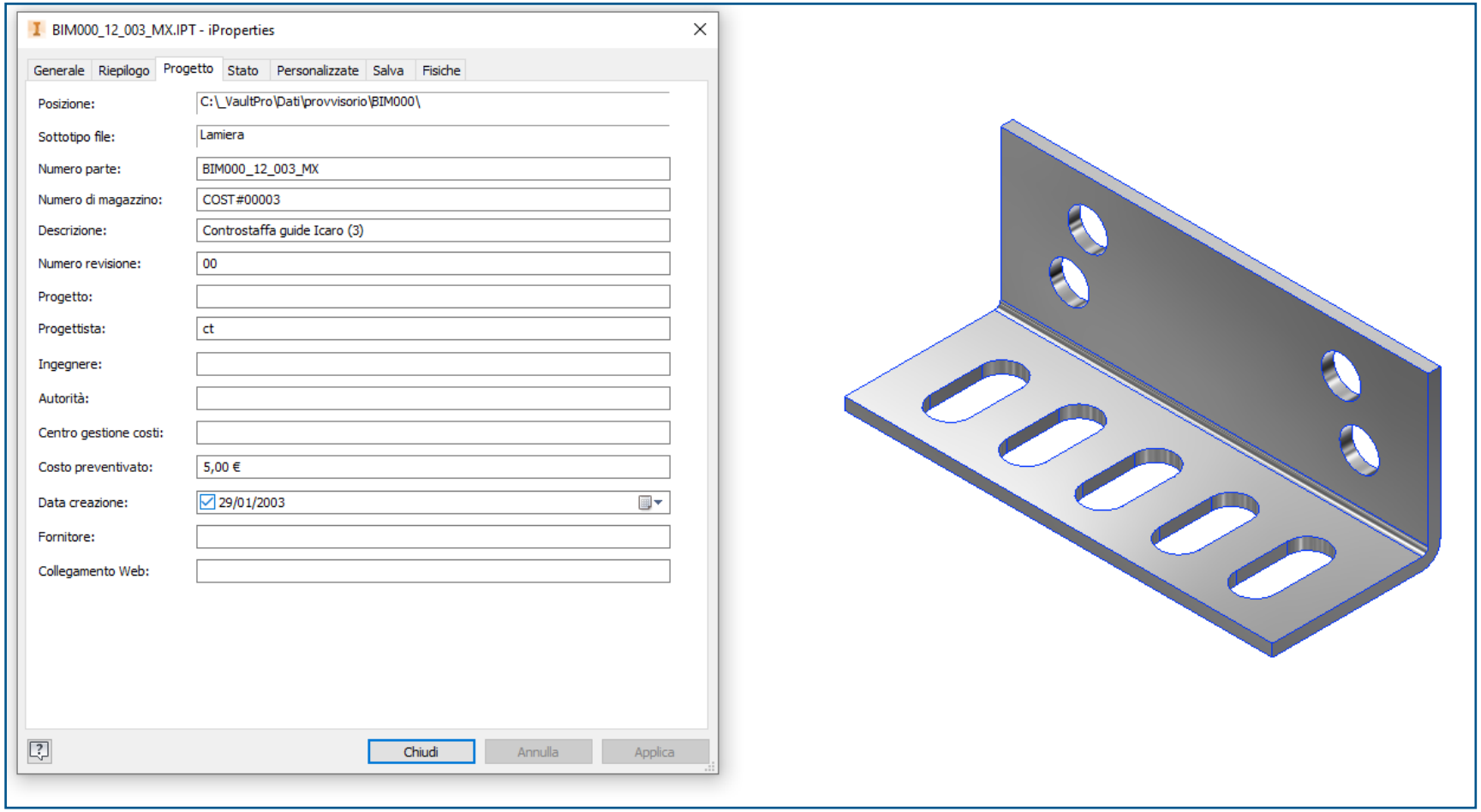

STORE COD

COSTS

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INFORMATION

For every components (such as the door, the piston, the hydraulic pump, the Motor, etcetera), **it is possible to add various info like**:

- Supplier;
- Type of material;
- Norm reference;
- Etcetera

BUILDING INFORMATION MODELING

Opportunities

1. Enlarged market (Europe / world)
2. Simplified product understanding
3. Immediate availability of information

Risks & difficulties

1. Protection of the SME know-how
2. Different costs and planning time (at least in the initial phase)
3. Staying out of the market

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5 STEPS TO A SUCCESSFUL BIM IMPLEMENTATION IN COMPANIES, ORGANISATIONS AND DESIGN STUDIOS

1. Goals definition and check-up of the current capabilities of the company;
2. Analysis of the currents business processes;
3. Analysis of the digitalization need of the company;
4. BIM pilot project, involving all the business sectors;
5. Redefinition of roles.

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5 STEPS TO A SUCCESSFUL BIM IMPLEMENTATION IN COMPANIES, ORGANISATIONS AND DESIGN STUDIOS

IN PARTICULAR:

4. BIM pilot project, involving all the business sectors

This stage is the core of the whole implementation, where:

- All the classic processes will be redefined;
- Training of the employees will be vital;
- There will be a need to hire new figures (Linked to step 5);
- The develop of a BIM pilot project will be monitored, in order to understand critical points/difficulties encountered along the path.

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5 STEPS TO A SUCCESSFUL BIM IMPLEMENTATION IN COMPANIES, ORGANISATIONS AND DESIGN STUDIOS

IN PARTICULAR:

5. Redefinition of roles

The final step regards people who work in the company: some roles will be new, like:

- BIM Manager;
- BIM Coordinator;
- BIM Specialist;
- CDE Manager.

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FOR YOUR ATTENTION

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