

# NORM3D

3D DATA PROCESSING SERVICES

## **BIMQA2D : Time-saving solution for reliability checks on 2D digital models**



<https://bim.norm3d.com>



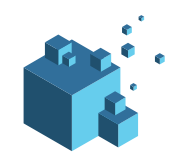
[contact@norm3d.com](mailto:contact@norm3d.com)



+33 (0)2 61 53 66 13



<https://cal.norm3d.com>

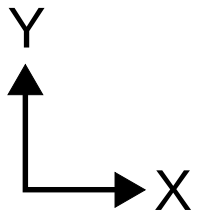
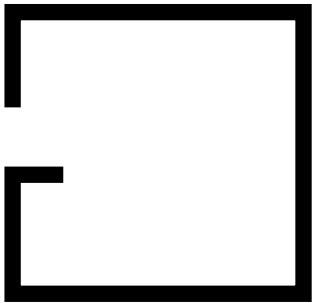


# Solution for reliability checks on digital mock-ups

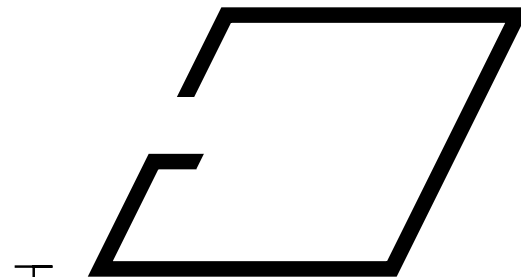
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**BIMAQ2D : BIMAQ for 2D plane**  
**BIMAQ : BIM Assurance Quality**

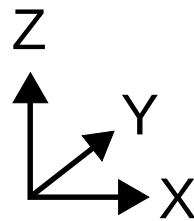
Input 2D plane



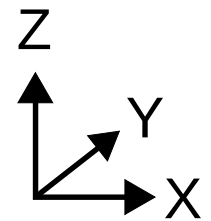
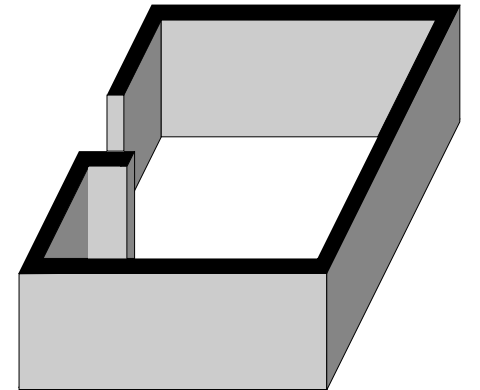
Place 2D plane in 3D space



Z floor (input) + Z offset (1 meter)



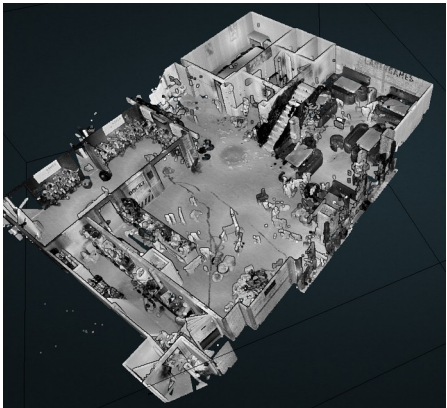
3D Extrusion





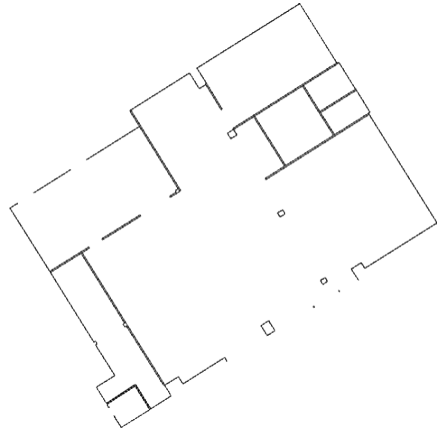
# Solution for reliability checks on digital mock-ups

3D Point cloud

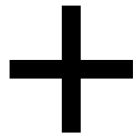


E57  
LAS / LAZ  
RCP / RCS  
PLY ...

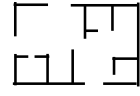
2D Digital model



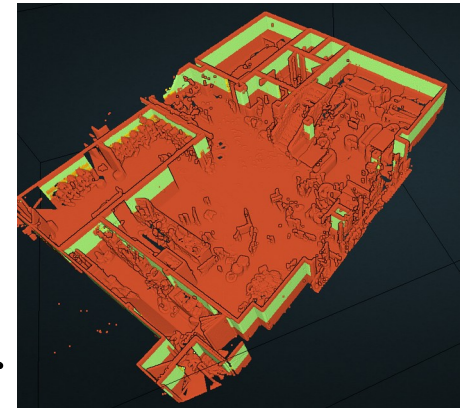
.DGN  
.DWG  
.DXF




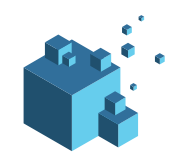
E57  
LAS / LAZ  
RCP / RCS  
PLY ...

+  +  $Z_{floor}$   
.DGN  
.DWG  
.DXF

Quality control



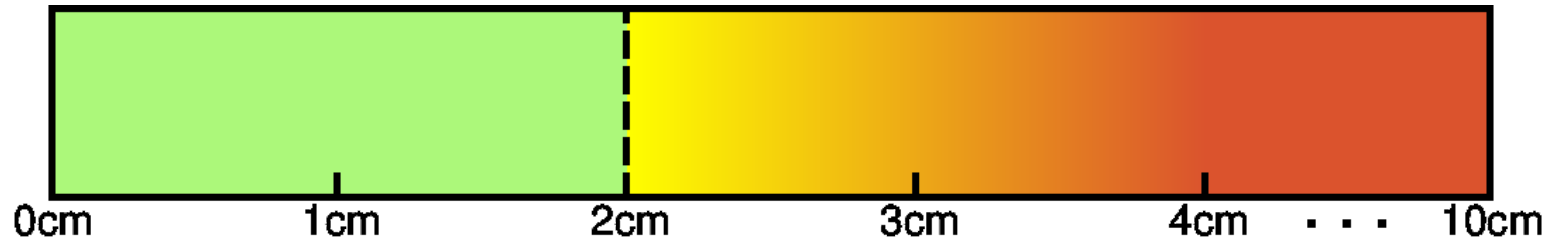
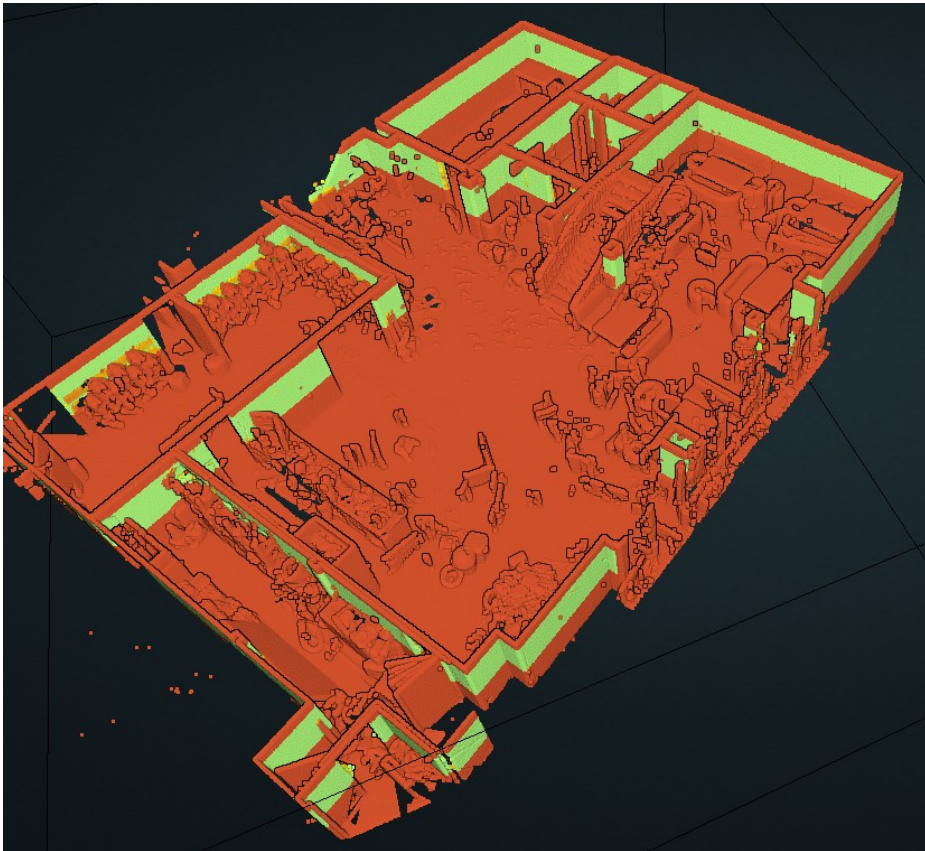
E57  
RCS +   
.BCF

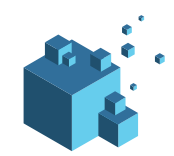


# Solution for reliability checks on digital mock-ups

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Reliability between the digital model and the point cloud is indicated by the coloring of the generated point cloud.





# View BIMAQ results for digital mock-up reliability

BIMAQxy Viewer - NORM3D

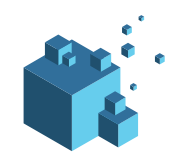
Aligned | Misaligned | No matching

0cm 1cm 2cm 3cm 4cm ... 10cm

↑ ↓

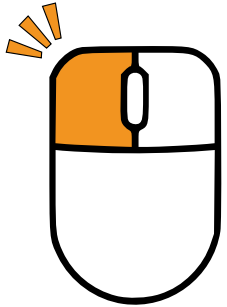
+ -

- Display point cloud
- Display digital model
- Cut point cloud or digital mock-up
- Change rendering mode
- Display report table
- Display 2D mini-map



# Solution for reliability checks on digital mock-ups

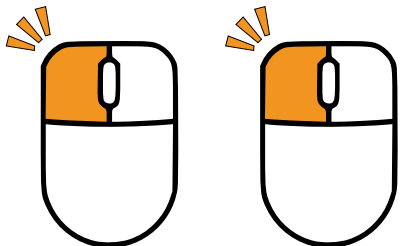
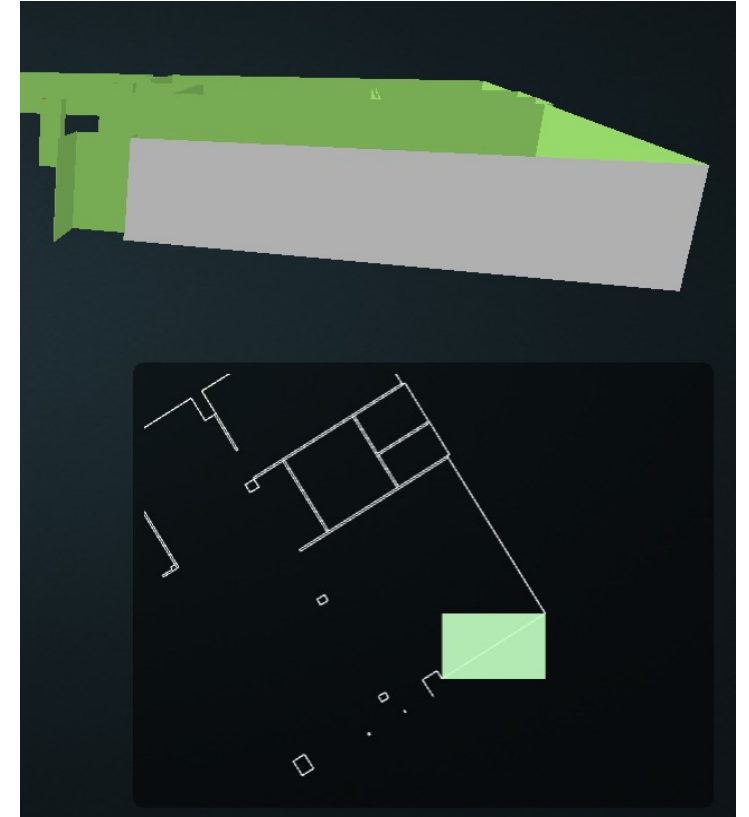
At any time, you can select an element (either in the 2D or 3D view) with a left click of the mouse, to retrieve information about the selected element in the information window at top left.



Left mouse click to select a 2D or 3D element



Element identifier in  
the .DGN / .DWG / .DXF file



Double left mouse click to teleporte 2D and 3D viewer toward an element

# Solution for reliability checks on digital mock-ups

The button with the BCF icon displays the information contained in a report table, dividing the information according to object classification (Aligned, Misaligned or No Matching).

Download .DGN / .DWG / .DXF file

Download .BCF file

Aligned (69)

Misaligned (7)

Element identifier in the digital model

Aligned (number of aligned elements)  
Misaligned (number of misaligned elements)

Location of the element. Click on the thumbnail to teleport the 2D and 3D viewers to the indicated location.

Deviation in cm of the element in the digital model

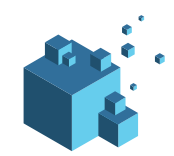
	HANDLE	ERR_CM
	327	3.2
	32B	9.1
	32F	3.8



Press Ctrl-f to search for an element by ID.

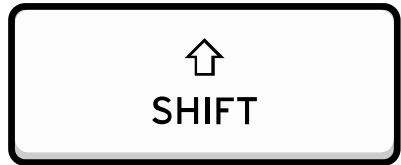


You can sort the columns by clicking on the ▲ ▼ icons.

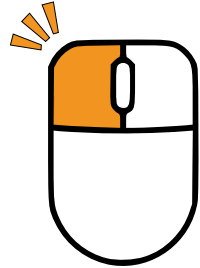


# Solution for reliability checks on digital mock-ups

You can also select an element (either in the 2D or 3D view) by holding down the Shift key and a left click of the mouse to retrieve information relating to the selected element in the report table information window.



+



to find an element in the report table

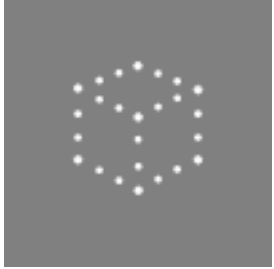
	32F	4.2
	33A	9.8
	33C	7.6
	347	6.5
	34B	9.3
	35B	6.6



A flashing red rectangle indicates the selected element.



# Solution for reliability checks on digital mock-ups

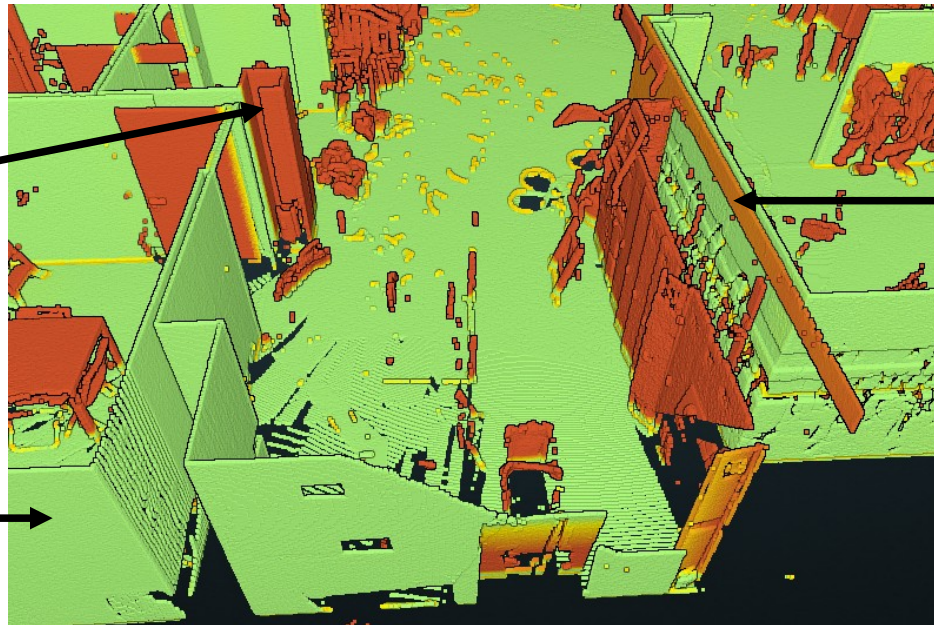


The point cloud display allows you to check the fidelity of the point cloud to the model, using the following color palette:



Element not present in

Element aligned with model



Element not aligned with model



# Solution for reliability checks on digital mock-ups



Digital mock-up display for checking fidelity of model elements in relation to point clouds, with the following colorization :

Aligned

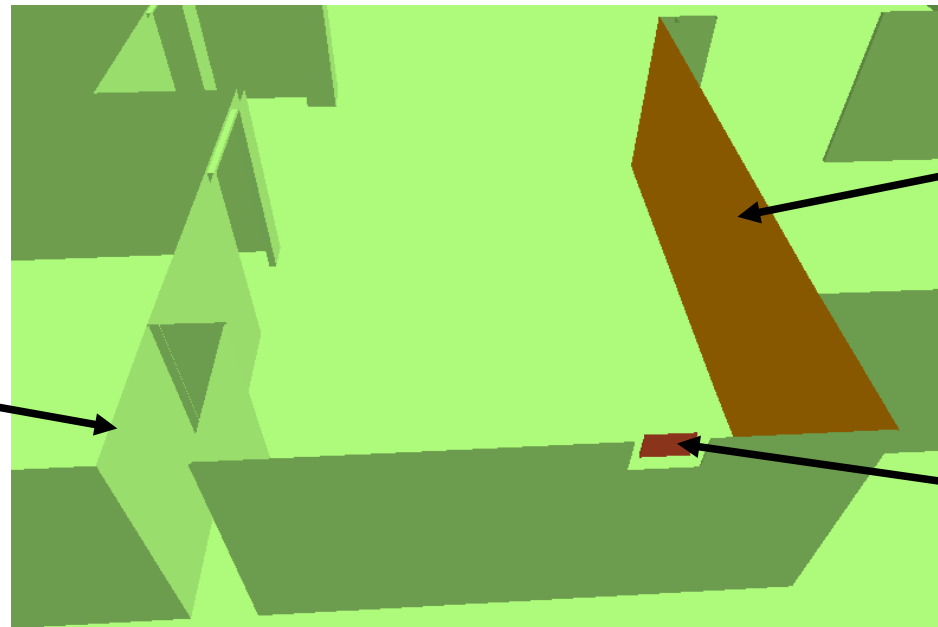
Elements aligned, geometric error  $< 2\text{cm}$

Misaligned

Elements not aligned, geometrical error  $[2\text{cm}, 10\text{cm}]$ .

No matching

Elements without correspondence with 3D point cloud, error  $> 10\text{ cm}$



Aligned

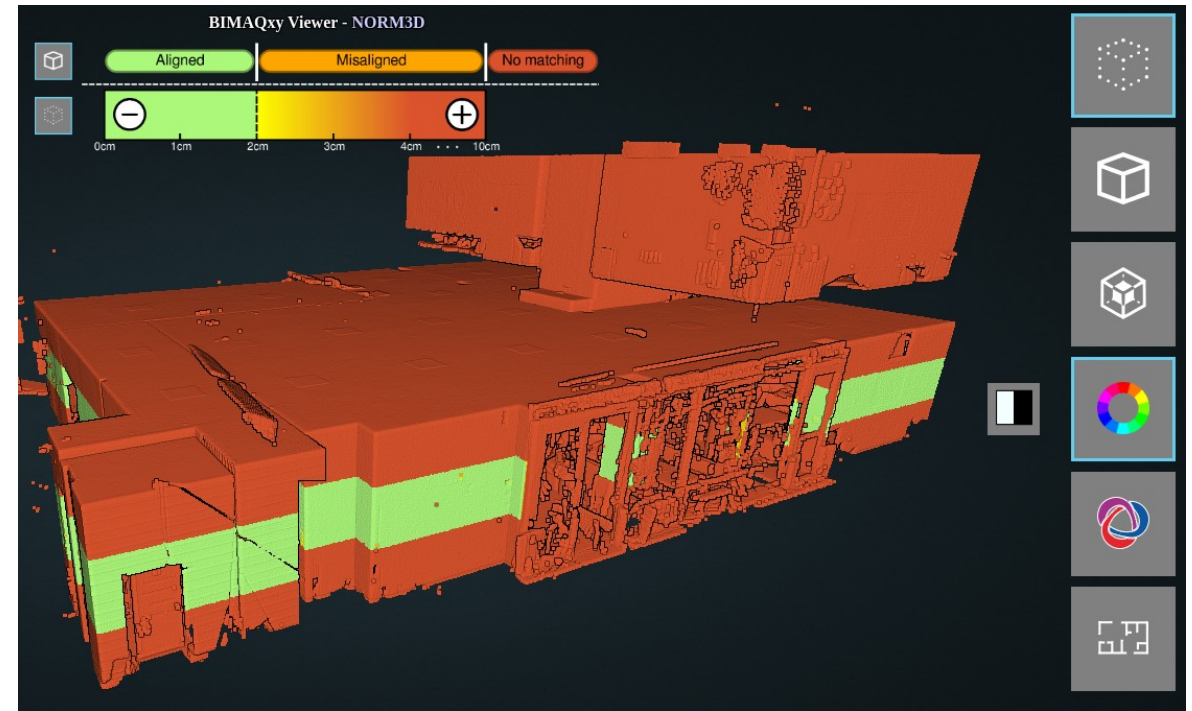
Misaligned

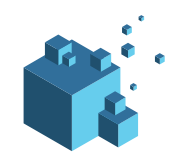
No matching



# Solution for reliability checks on digital mock-ups

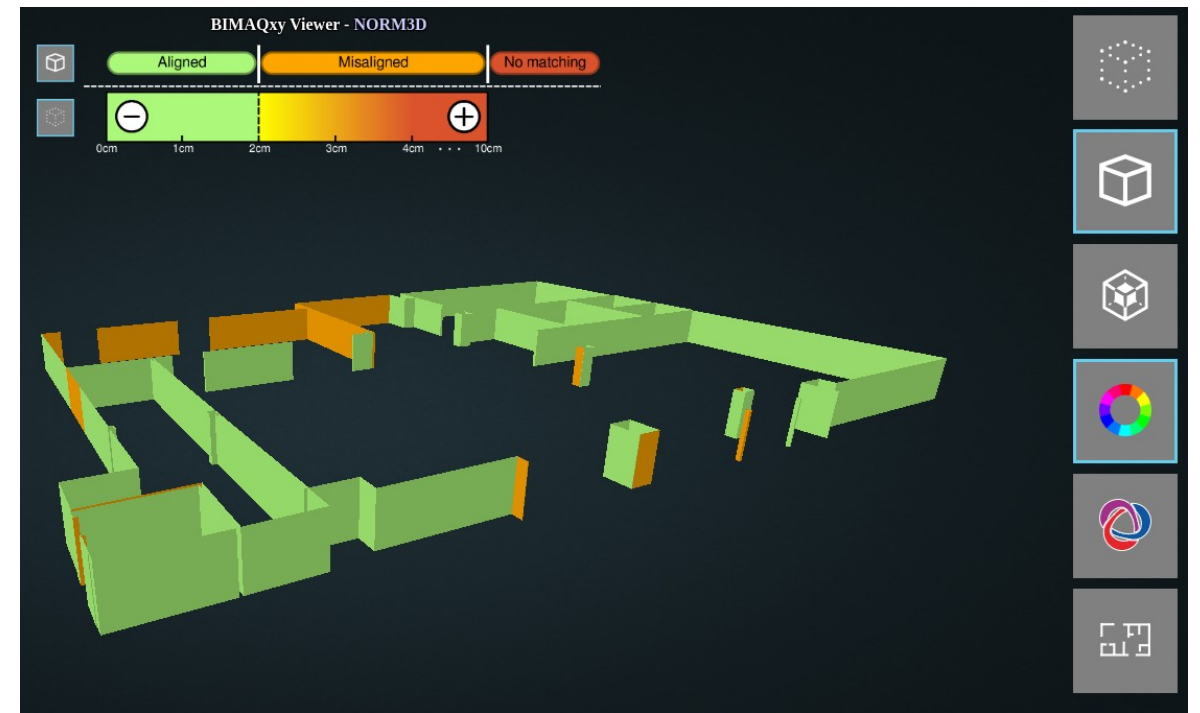
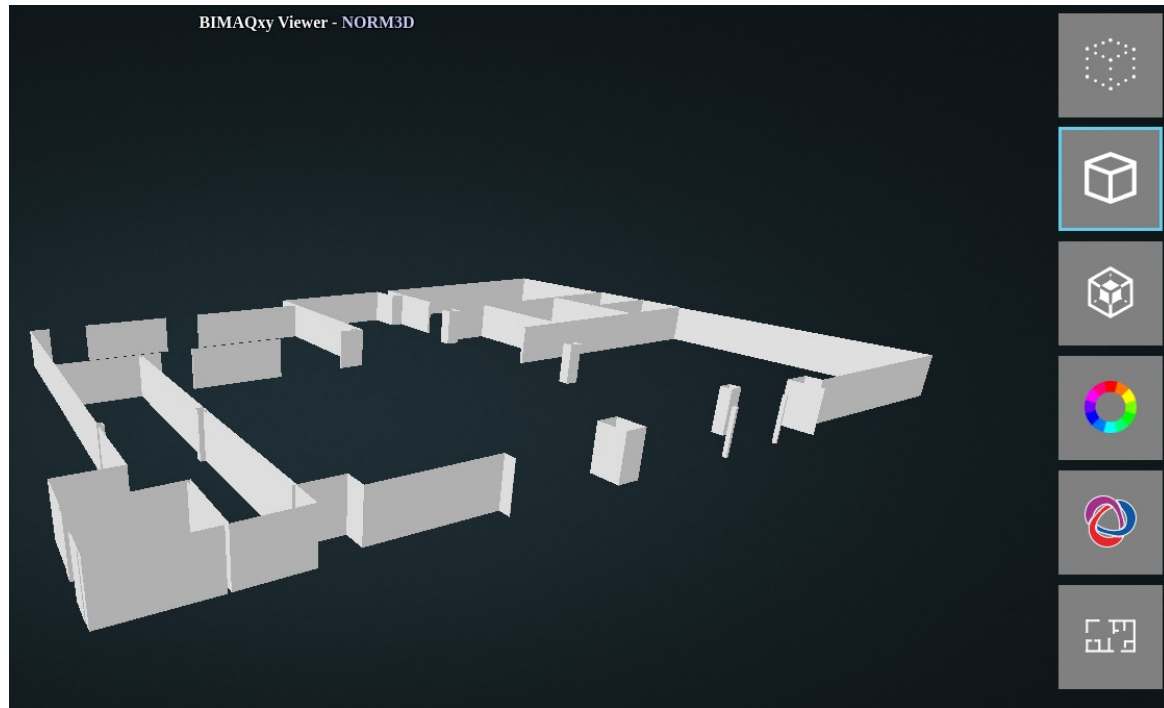
To display the 3D point cloud with its original colors, or the model colored, click on the following icon :

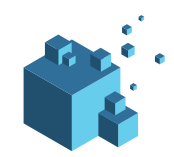




# Solution for reliability checks on digital mock-ups

To display the 3D point cloud with its original colors, or the model colored, click on the following icon :



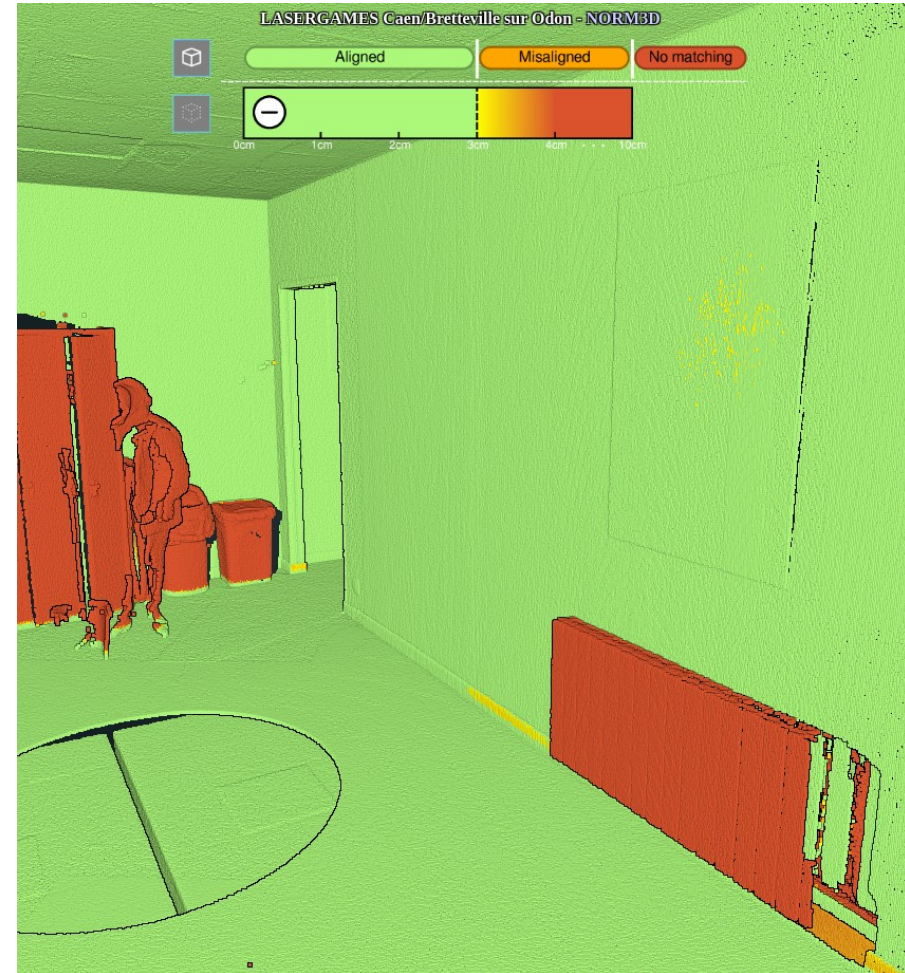


# Solution for reliability checks on digital mock-ups

The color palette can be adjusted with the (+) and (-) buttons to vary the tolerance level.



2cm tolerance

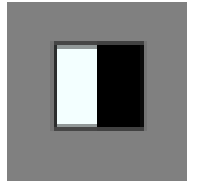


3cm tolerance

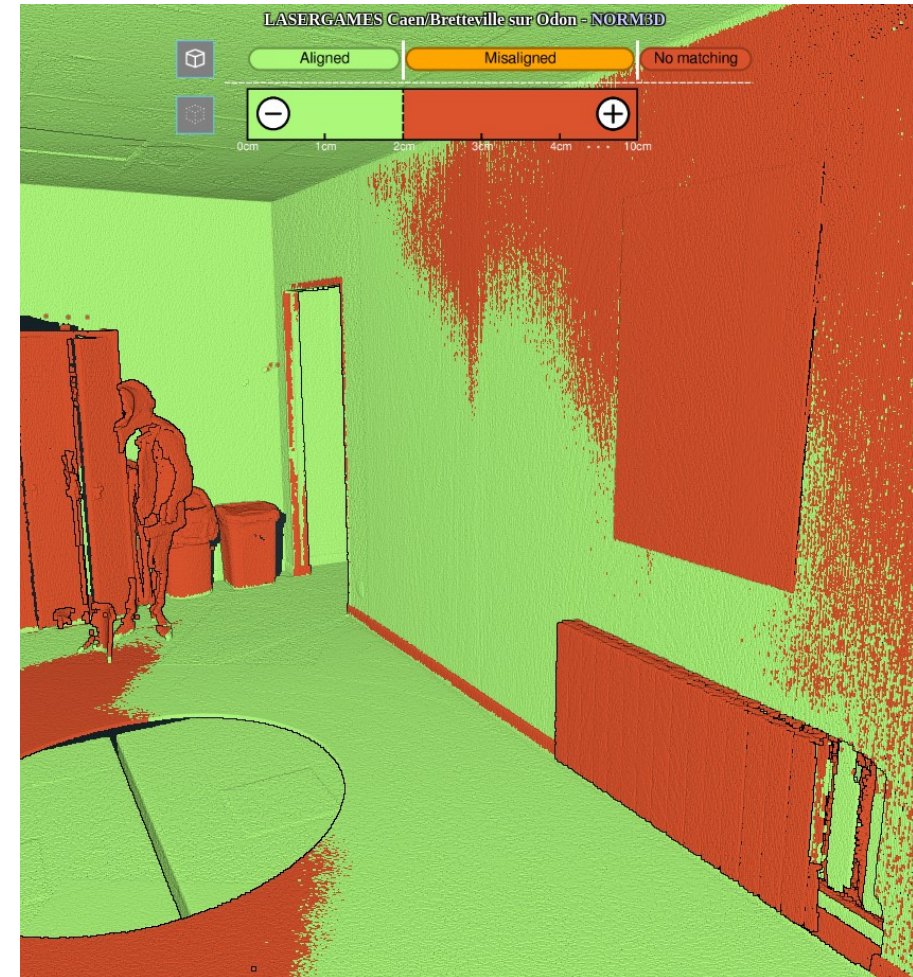


# Solution for reliability checks on digital mock-ups

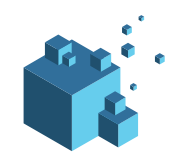
To classify points into 2 categories (within or beyond tolerance), click on the binarization button.



2cm tolerance



2cm tolerance with binarization



# Solution for reliability checks on digital mock-ups

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- BIMAQ generates a .BCF (BIM Collaborative Format) file to help track problem management within a digital model.

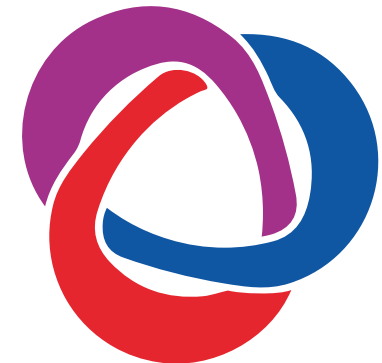
- The following identified elements are included in the generated .BCF file:

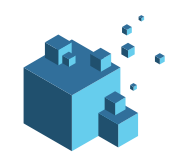
Misaligned

No matching

- The elements identified as aligned are not included in the generated .BCF file.

Aligned





# Solution for reliability checks on digital mock-ups

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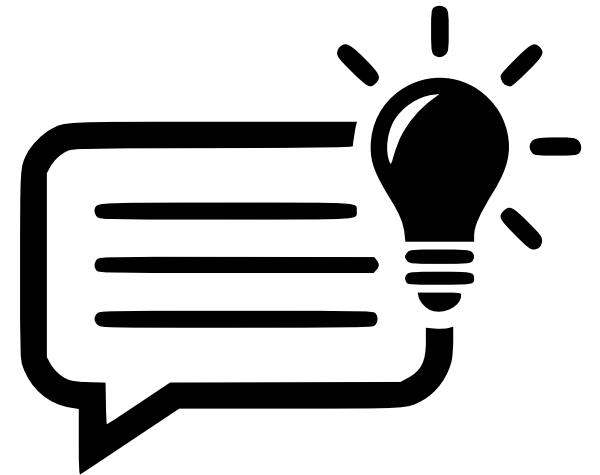
- NORM3D welcomes your recommendations, suggestions and experience sharing, so that we can best meet your expectations for a 3D data processing solution.
- You can reach NORM3D via the following channels:

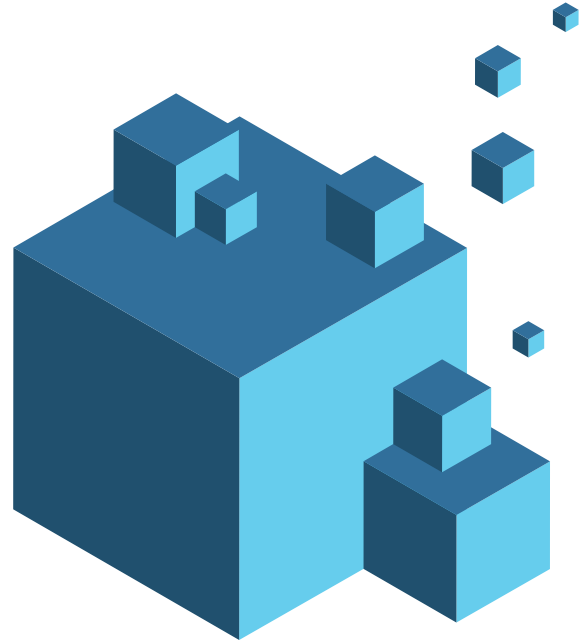


[contact@norm3d.com](mailto:contact@norm3d.com)



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# NORM3D

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