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Before using these sets of documents, make sure you have everything installed correctly. Installation instructions are here:

<https://github.com/gicentre/litvis/blob/main/documents/tutorials/introduction/installingLitvis.md>.

In this file you can put the visualization based on the sample dataset

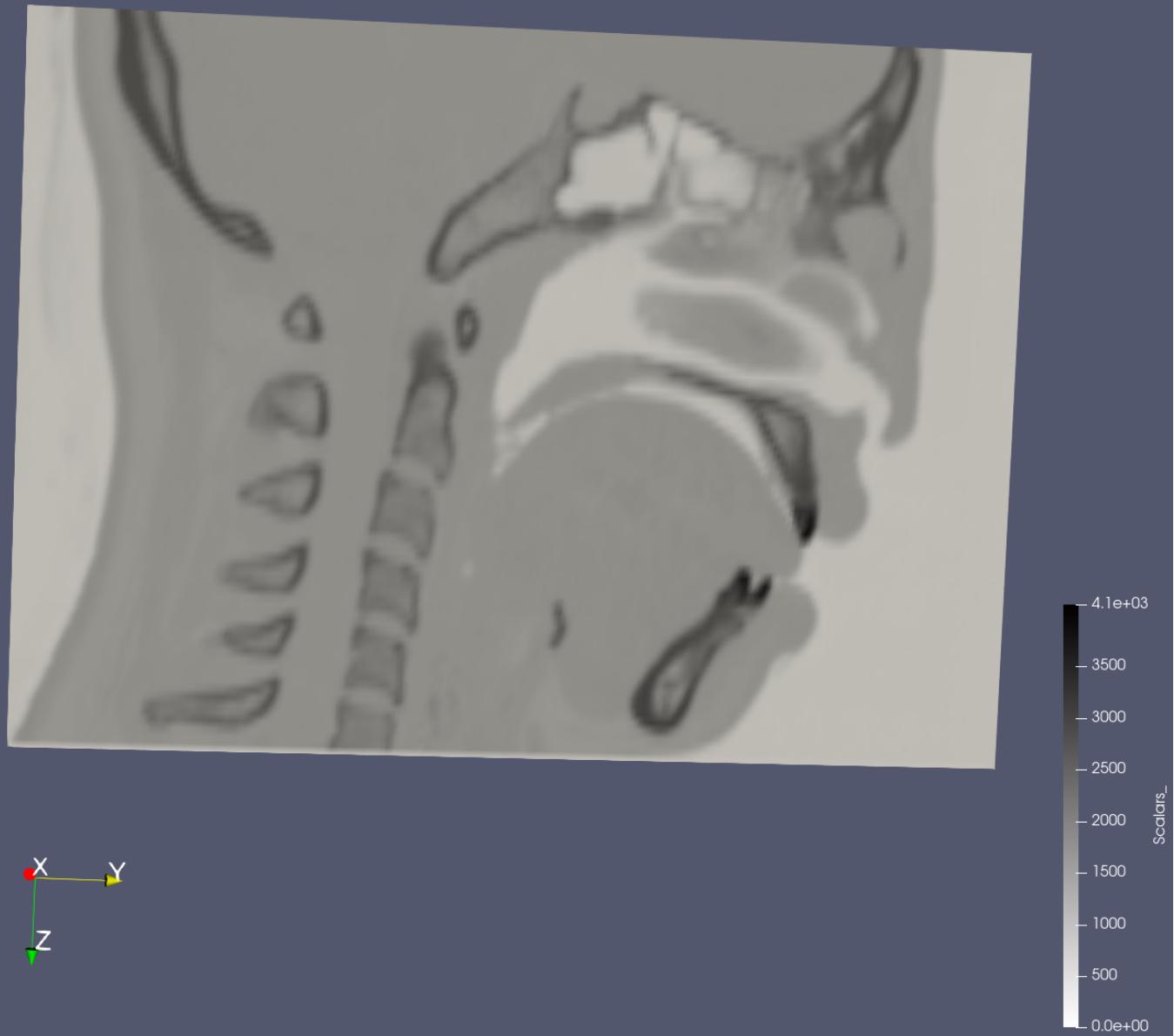
What can we learn from the visualization?

After visualizing the object, a user will be able to understand that the object presented is a human head.

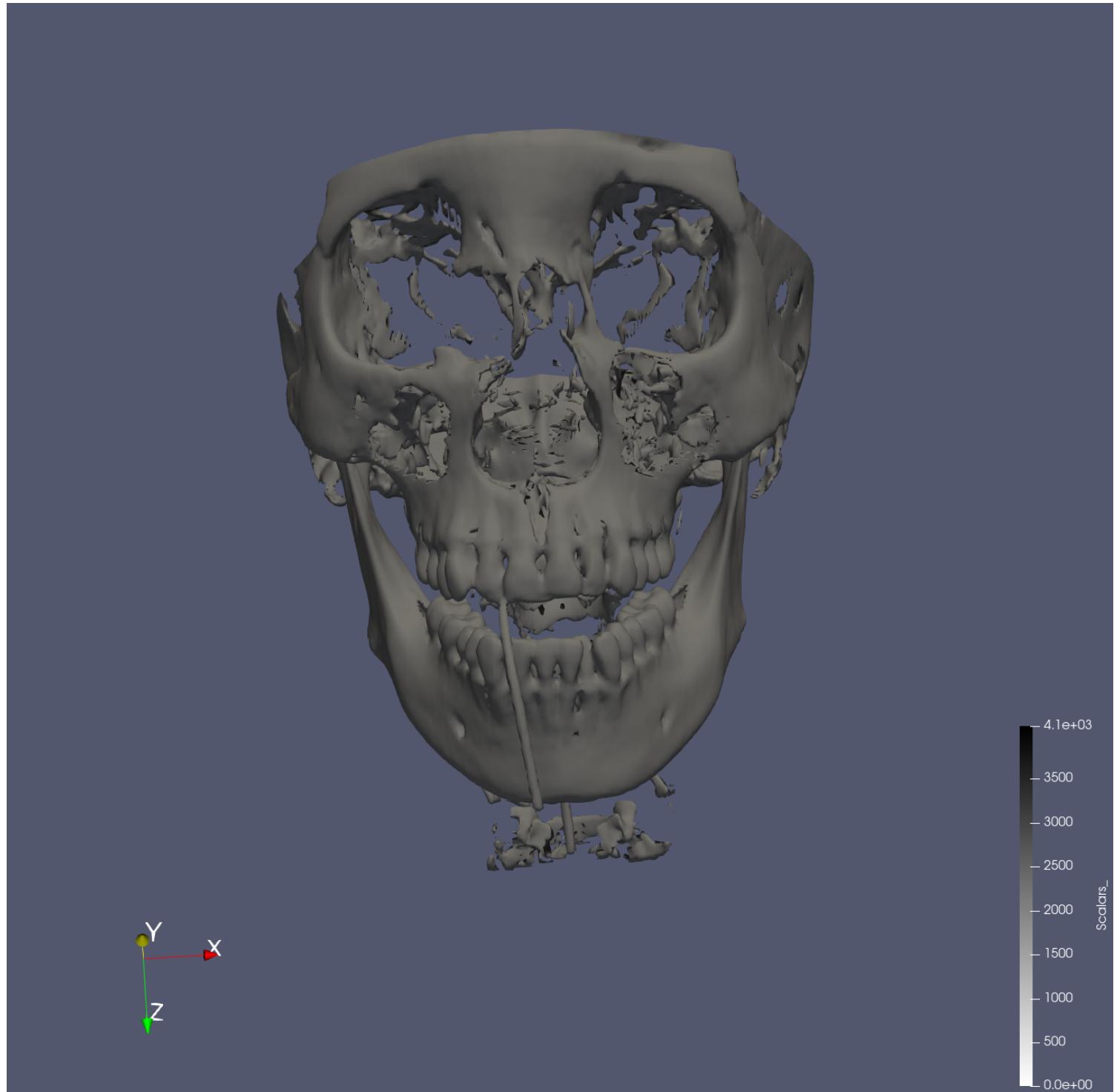
For the human head, the user can see different aspects of the visualization, which includes:

- 1- The skull,
- 2- The organs present in the head,
- 3- The slice through the middle of the head to see what the skeleton and the organs look like in the middle.
- 4- The combination of the skull, the organs and the human flesh using the opacity.

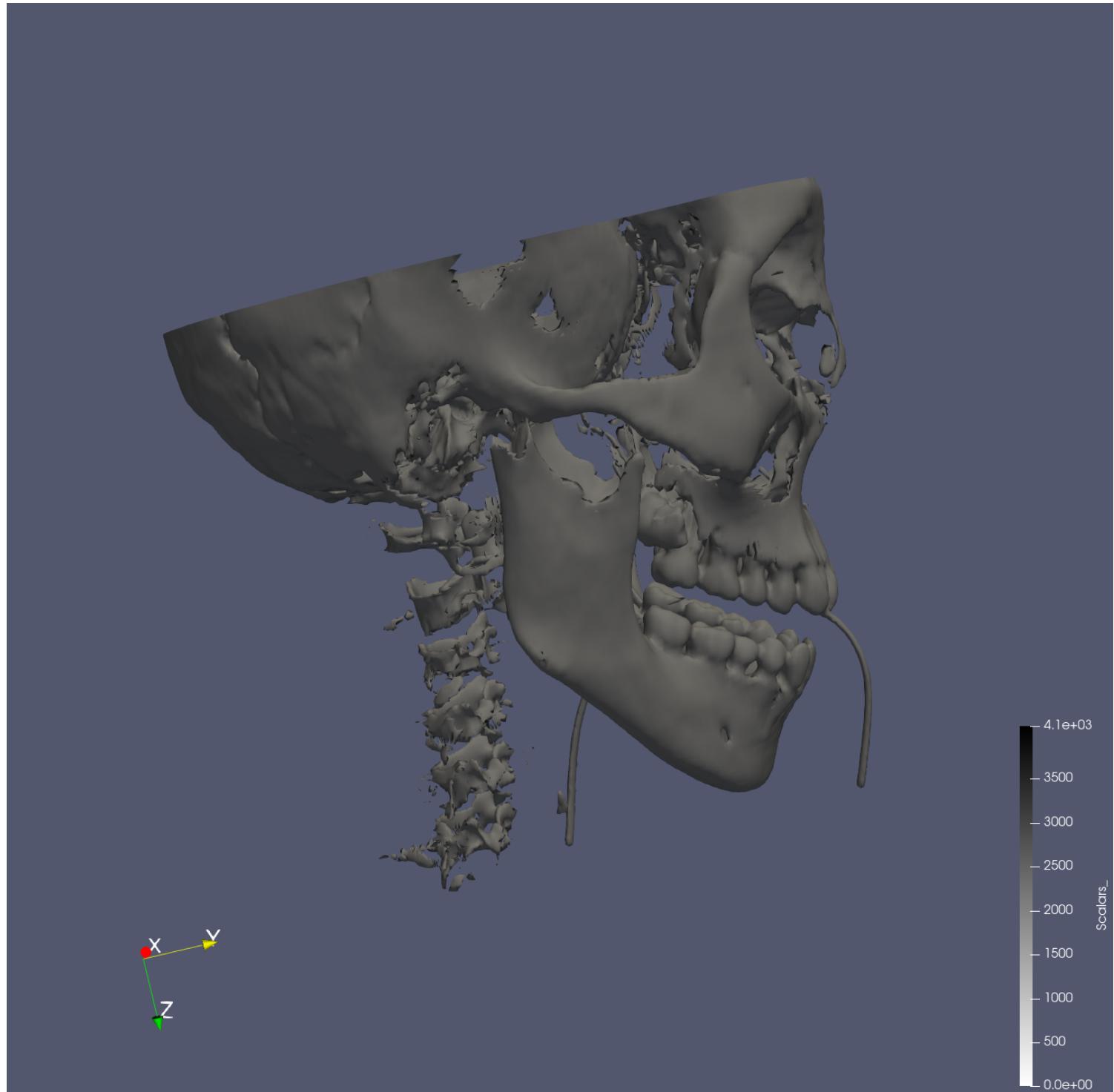
slice



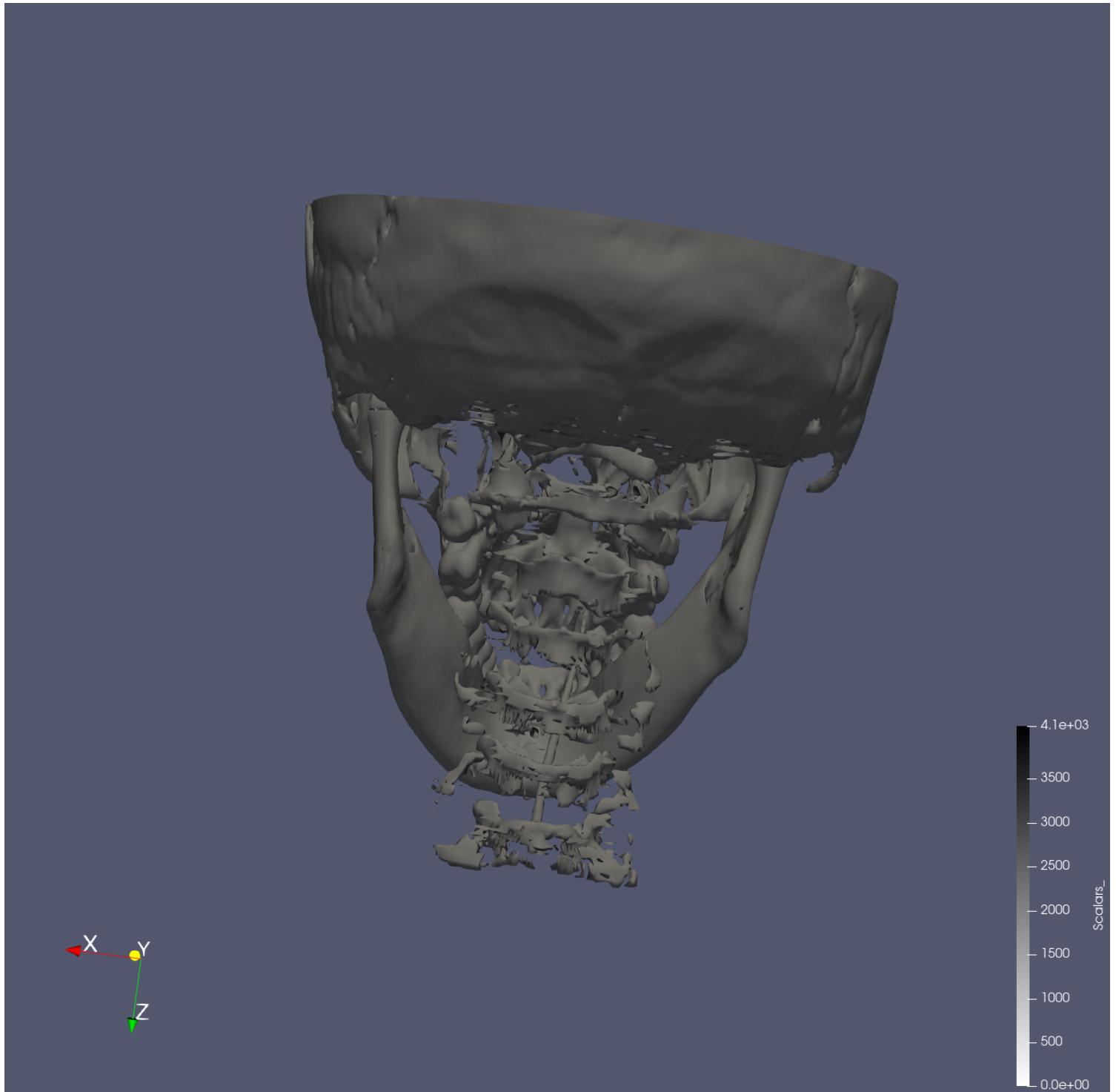
front view skeleton



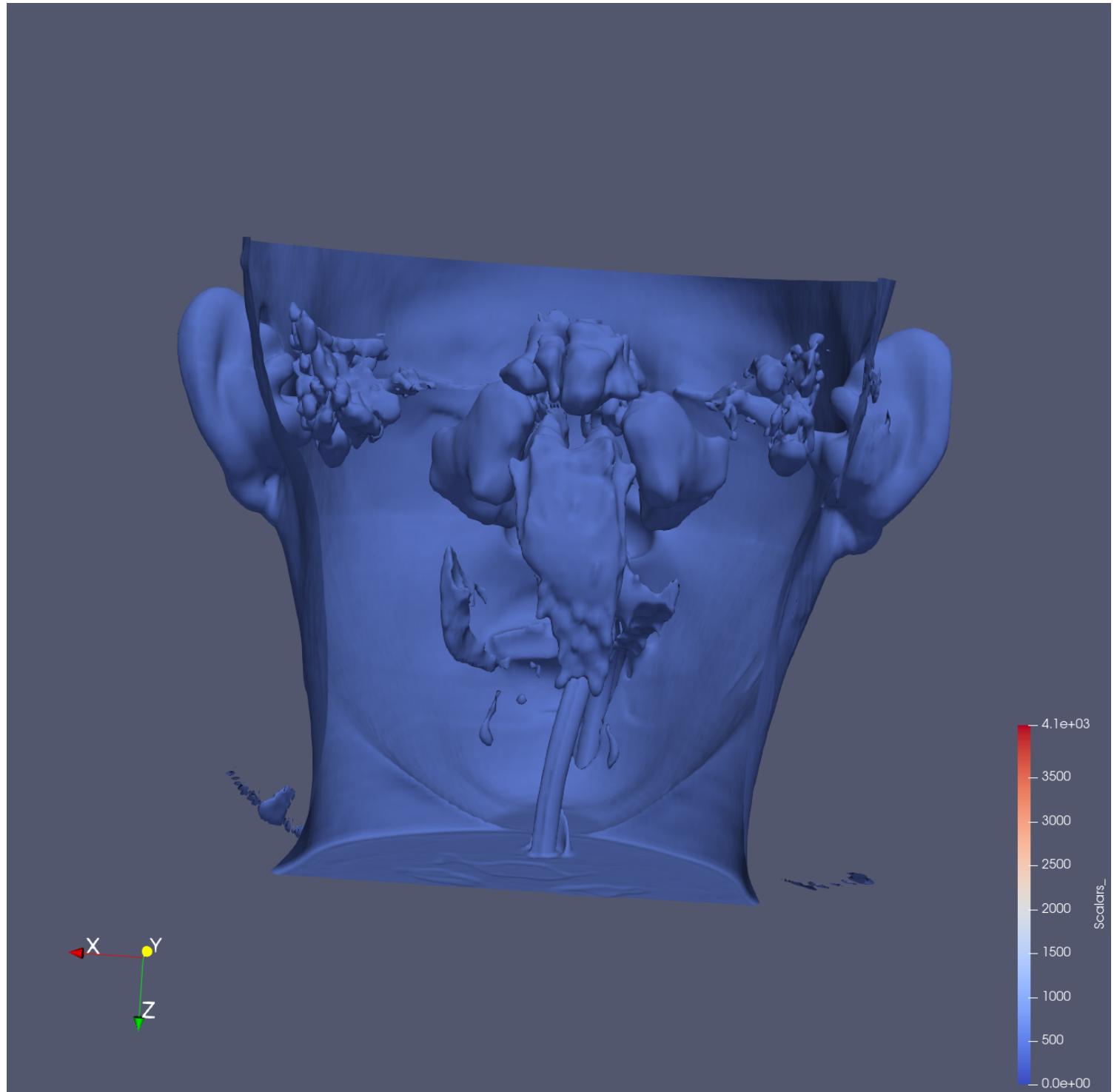
side view skeleton



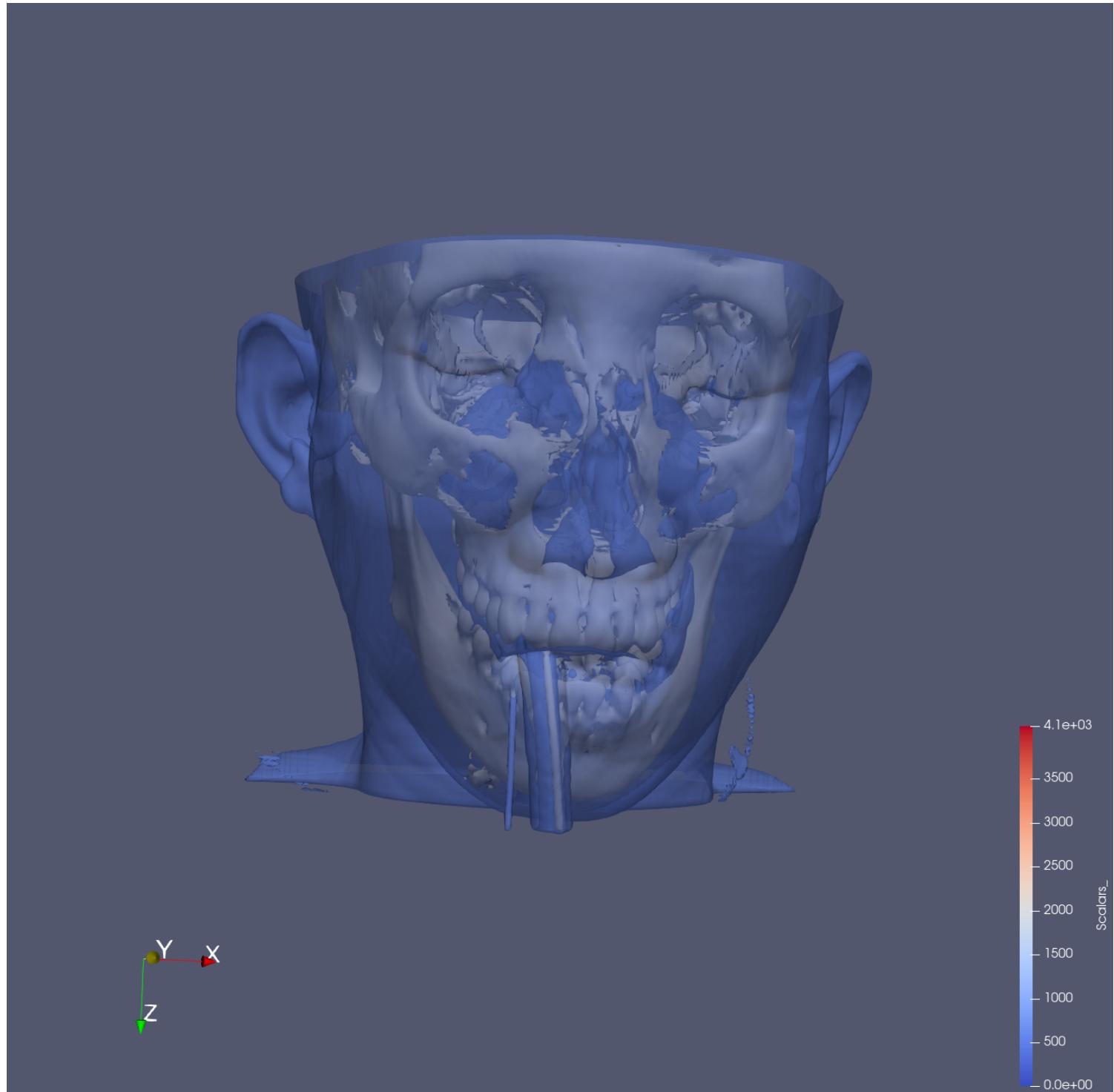
back view skeleton

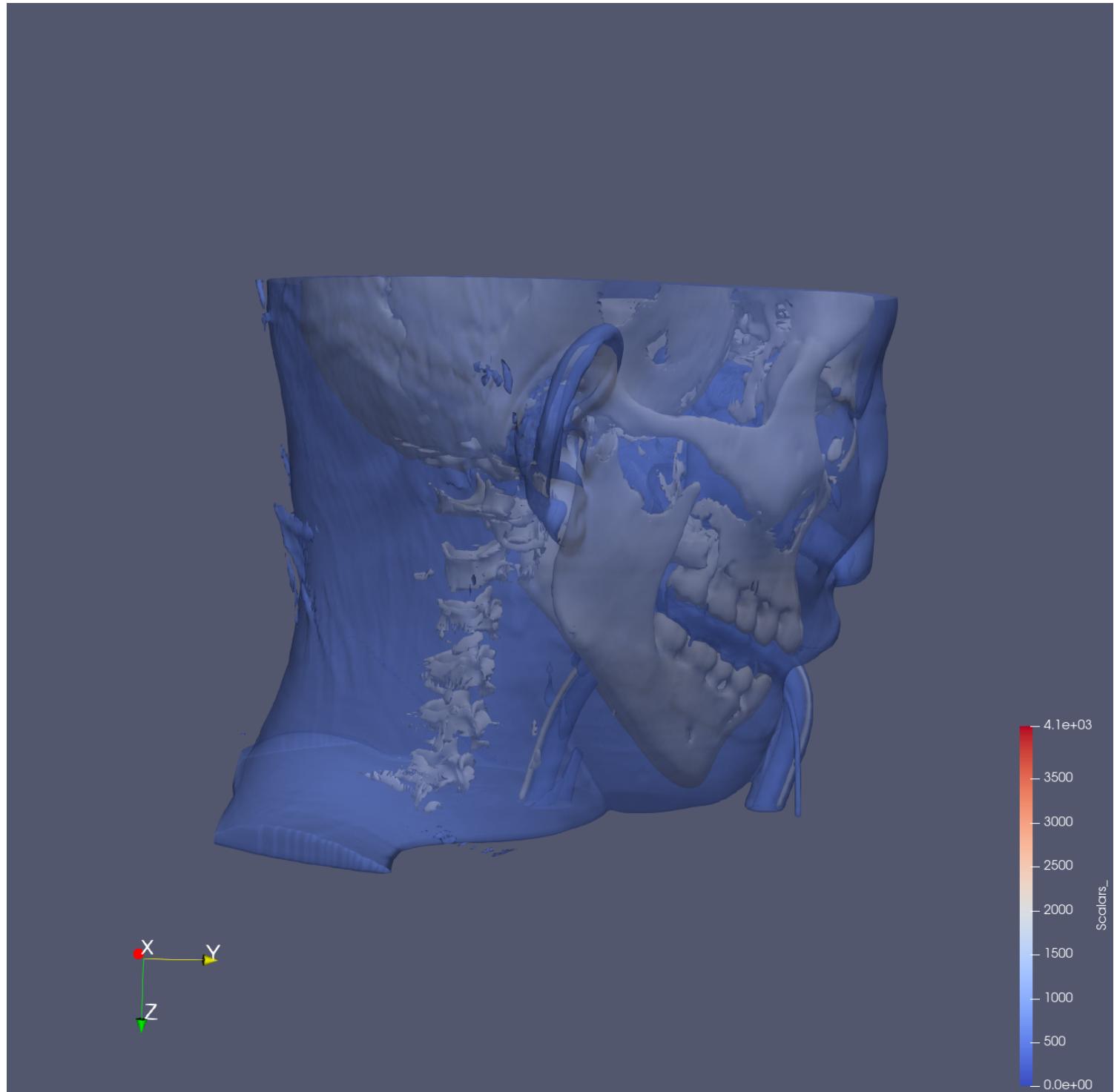


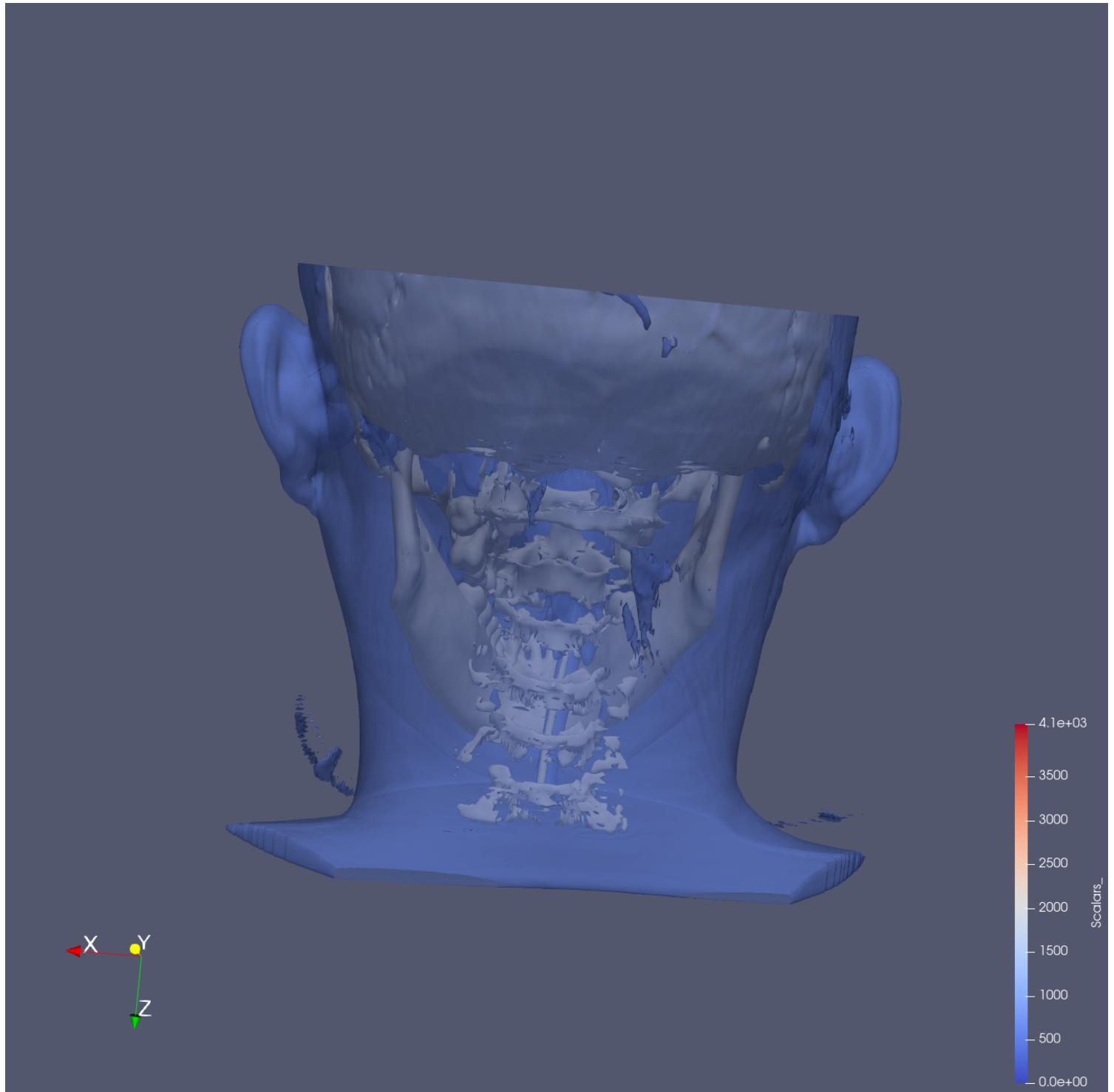
organs in the head



final combination







What are all visual mappings used?

Representation: Volume

Backface Representation: Follow frontface

Backface Opacity: 0.41

Contour: (isosurface(500))

Slice: (Y-Normal(129.547, 127.5, 93))

Was there any special data preparation done?

- 1- Threshold
- 2- Coutour
- 3- Slice
- 4- Clip

What are the limitations of your design?

Limitation1 - Some of the organs were not clear, meaning it was very hard to see.

Improvement1 - Try and give the organs a high quality visualization representation.

Limitation2 - The threshold filter for the data was very slow and always showed black screen unless you move it.

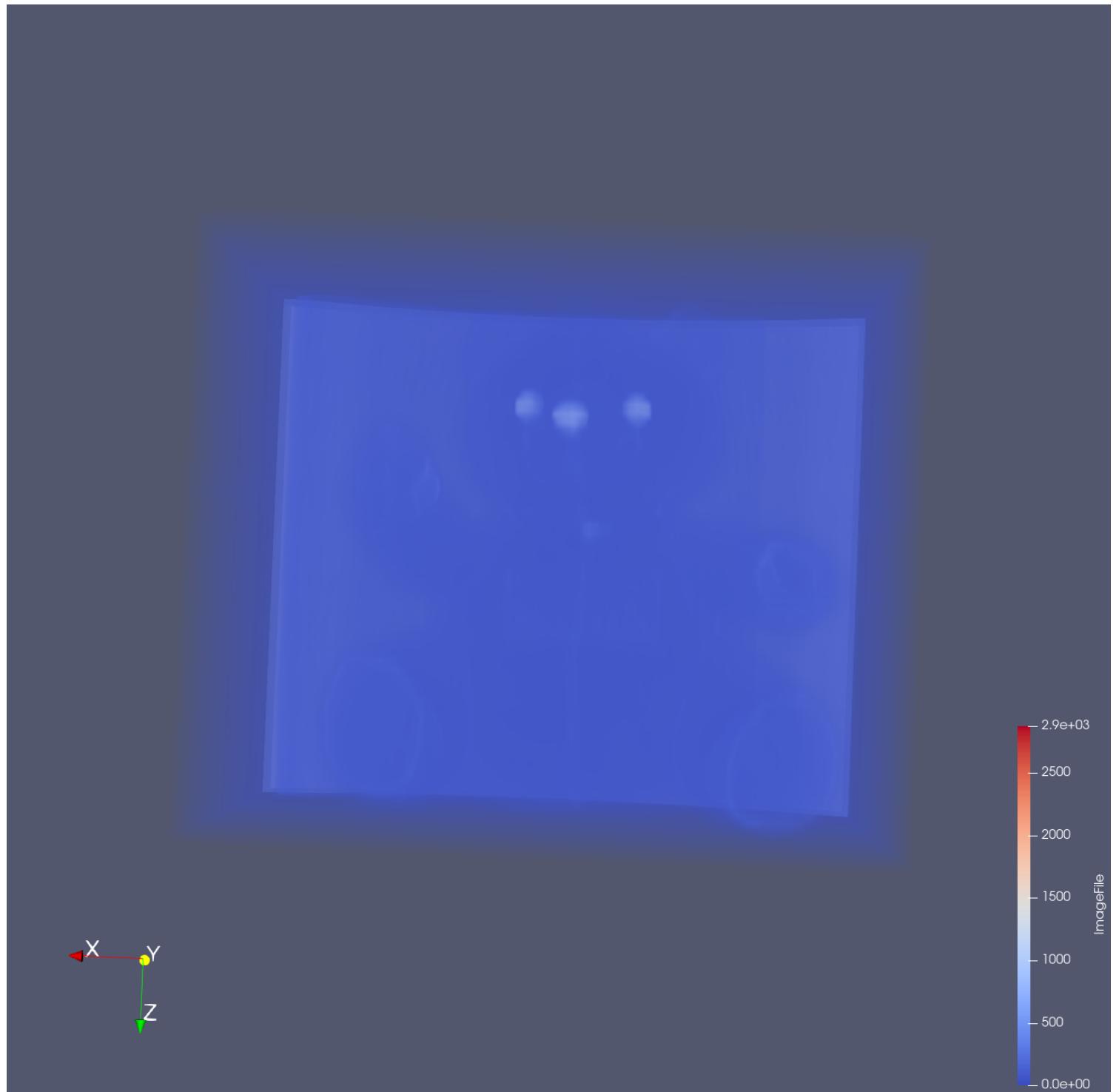
improvement2 - Use a lower version of Paraview instead of 5.8.1.

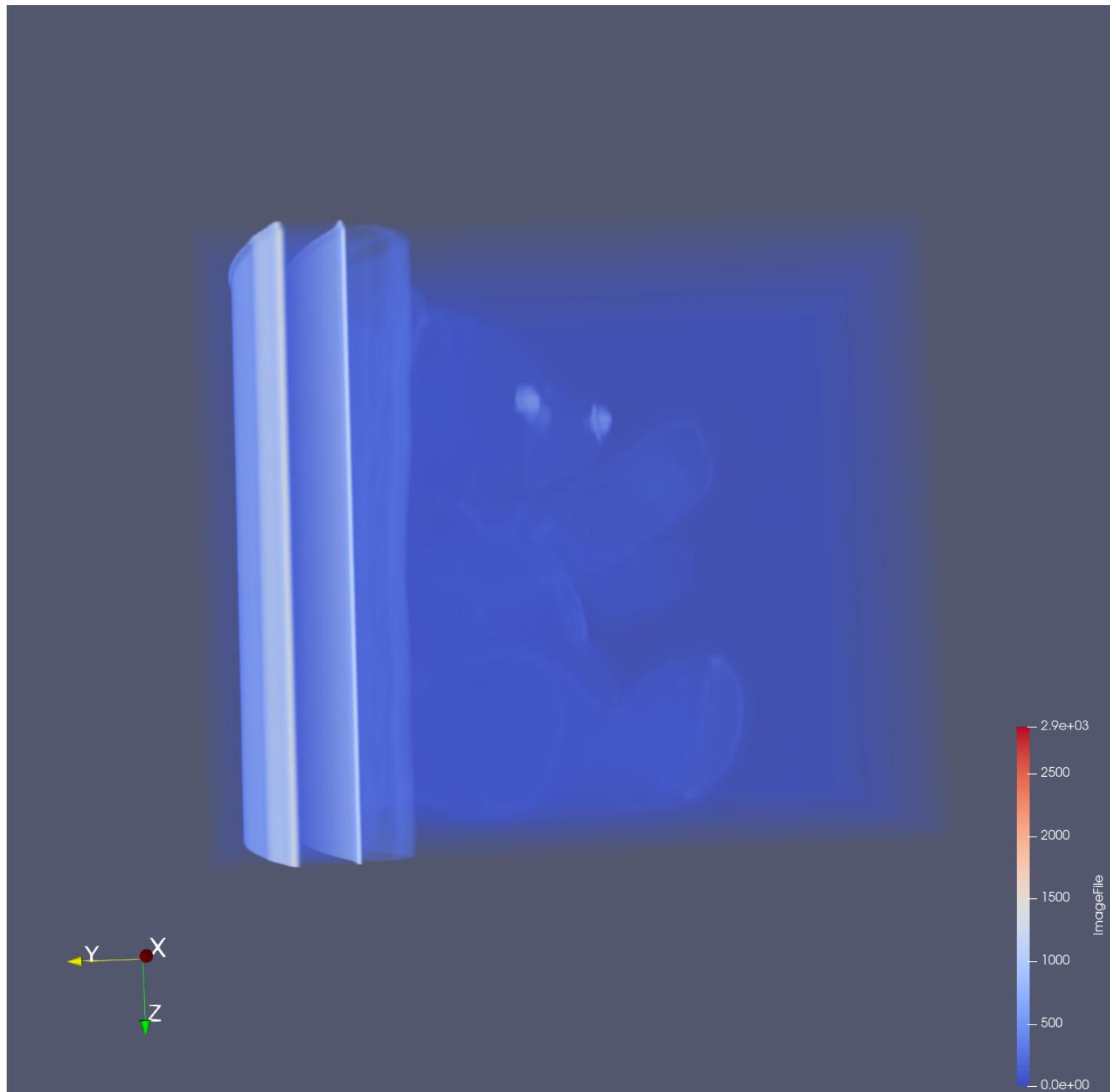
Put your 1st data1 design concept here

What can we learn from the visualization?

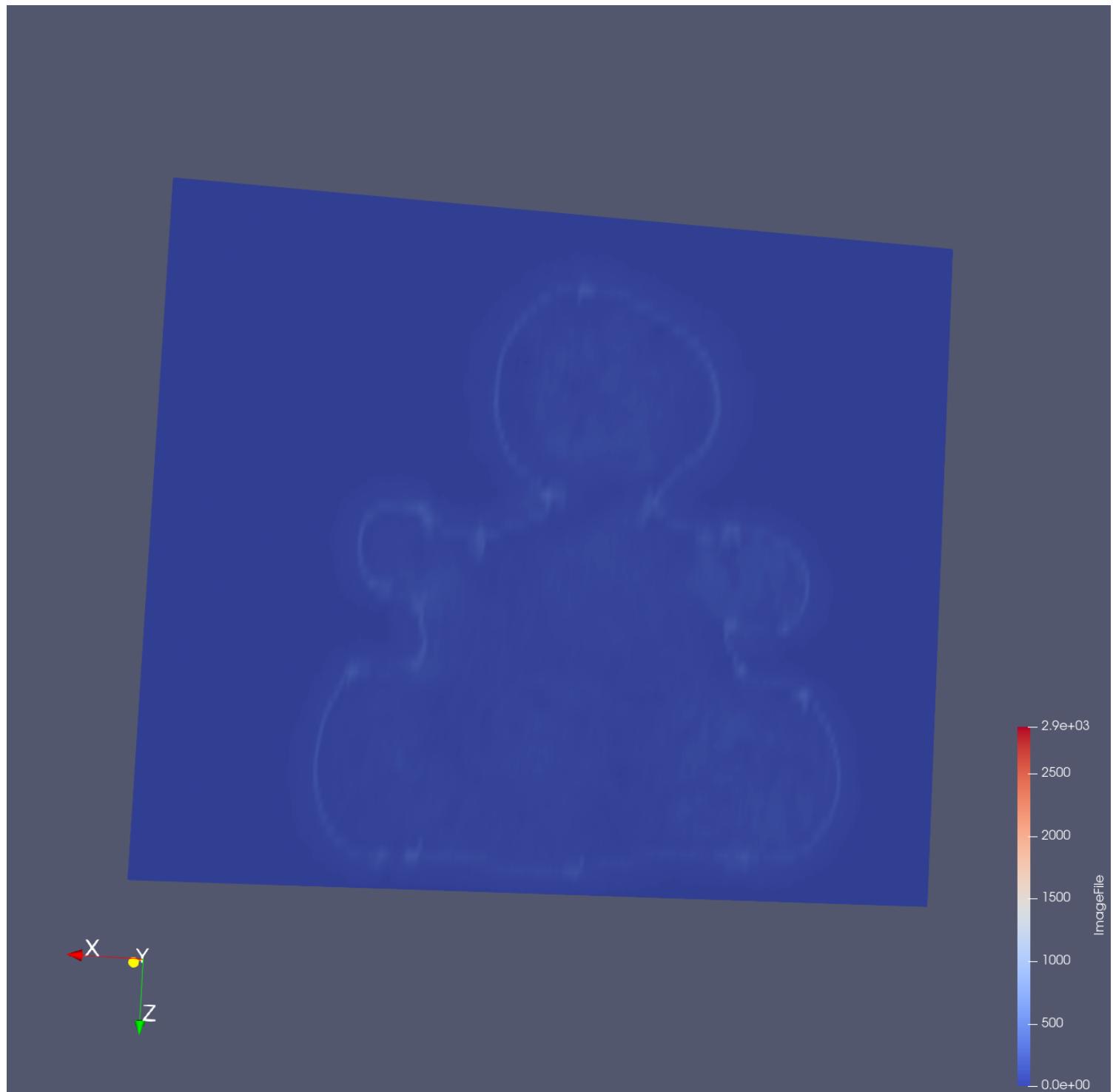
After visualizing, a user can be able to see that the object that was presented is a teddy bear. The user can view the which has a bow and a label around his tummy.

To show that the teddy bear in the object.

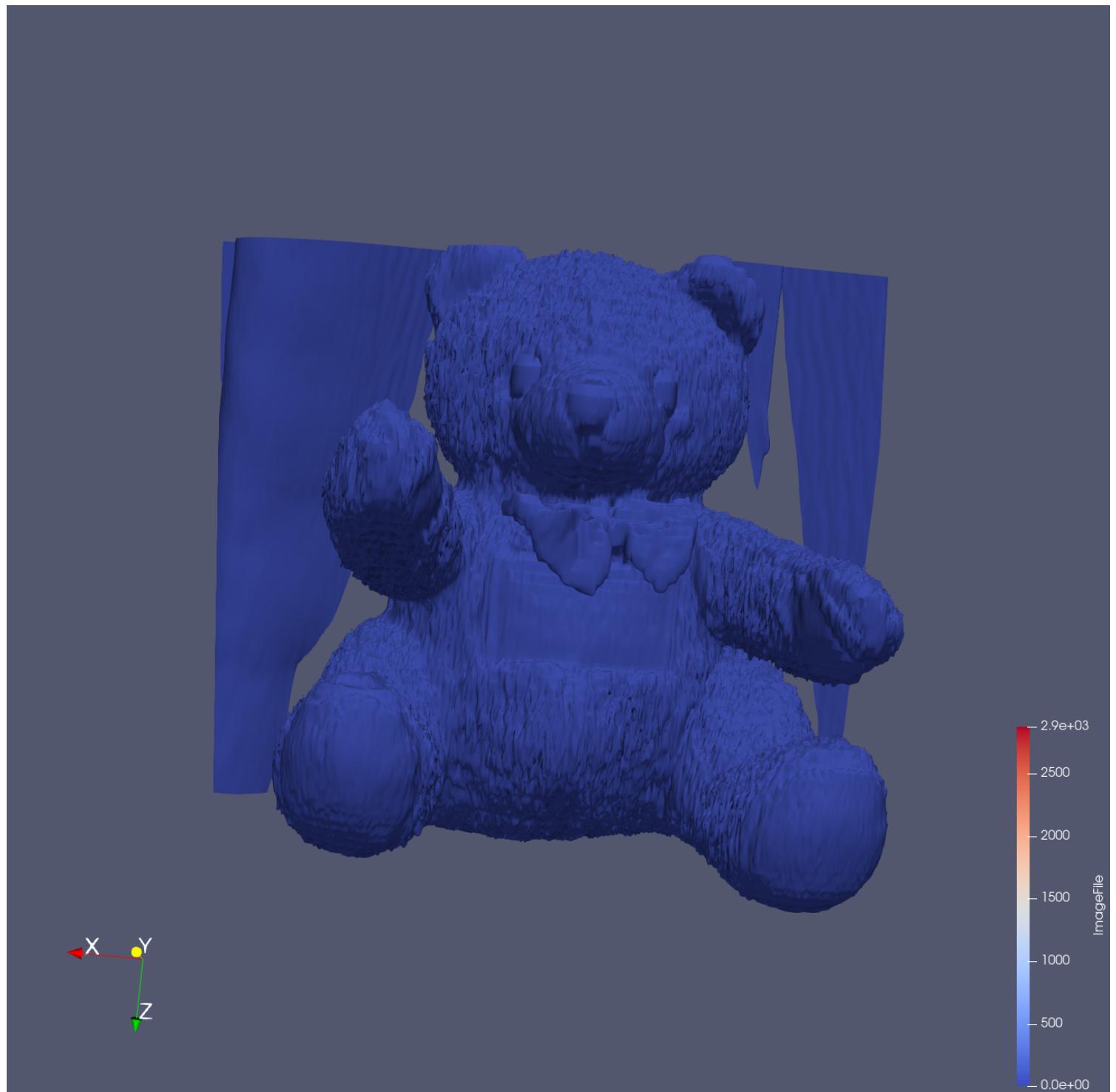


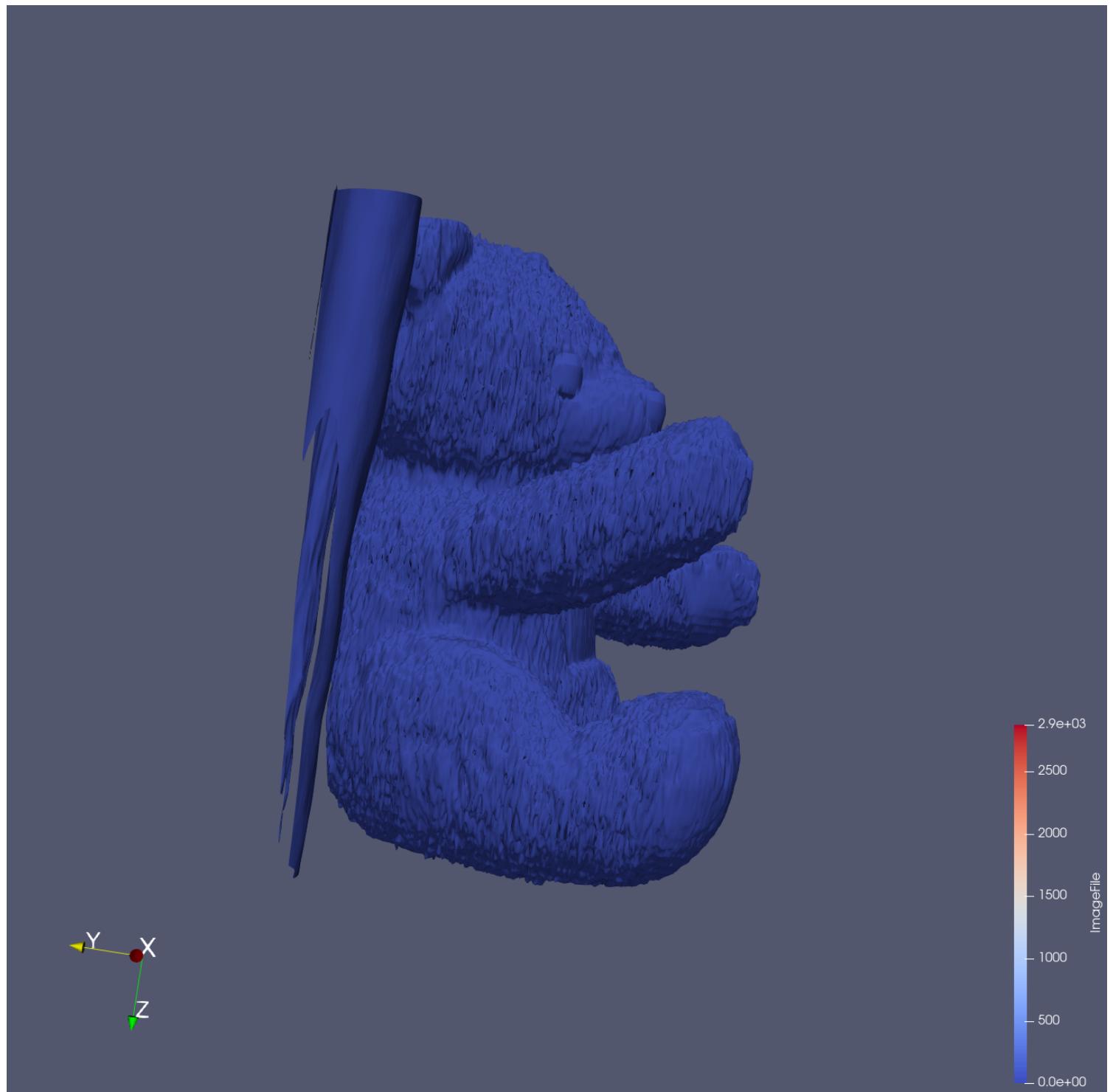


The slice to show the teddy bear



The teddy bear





What are all visual mappings used?

Properties: 1- (Data extent -> (0 - 511),(0 - 511),(0 - 62)) and (2- Data spacing -> (1 - 1 - 7))

Contour: Isosurface -> 50

Backface Representation: follow frontface

Representation: Surface

Clip type: Box (length (500 - 280 - 530))

Slice type: Plane (Y-Normal (Origin(255.5 - 291.047 - 217)))

Was there any special data preparation done?

- 1- ExtractSubset
- 2- Contour
- 3- Clip
- 4- Slice

What are the limitations of your design?

limitation- User cannot view bow and the content written on the label.

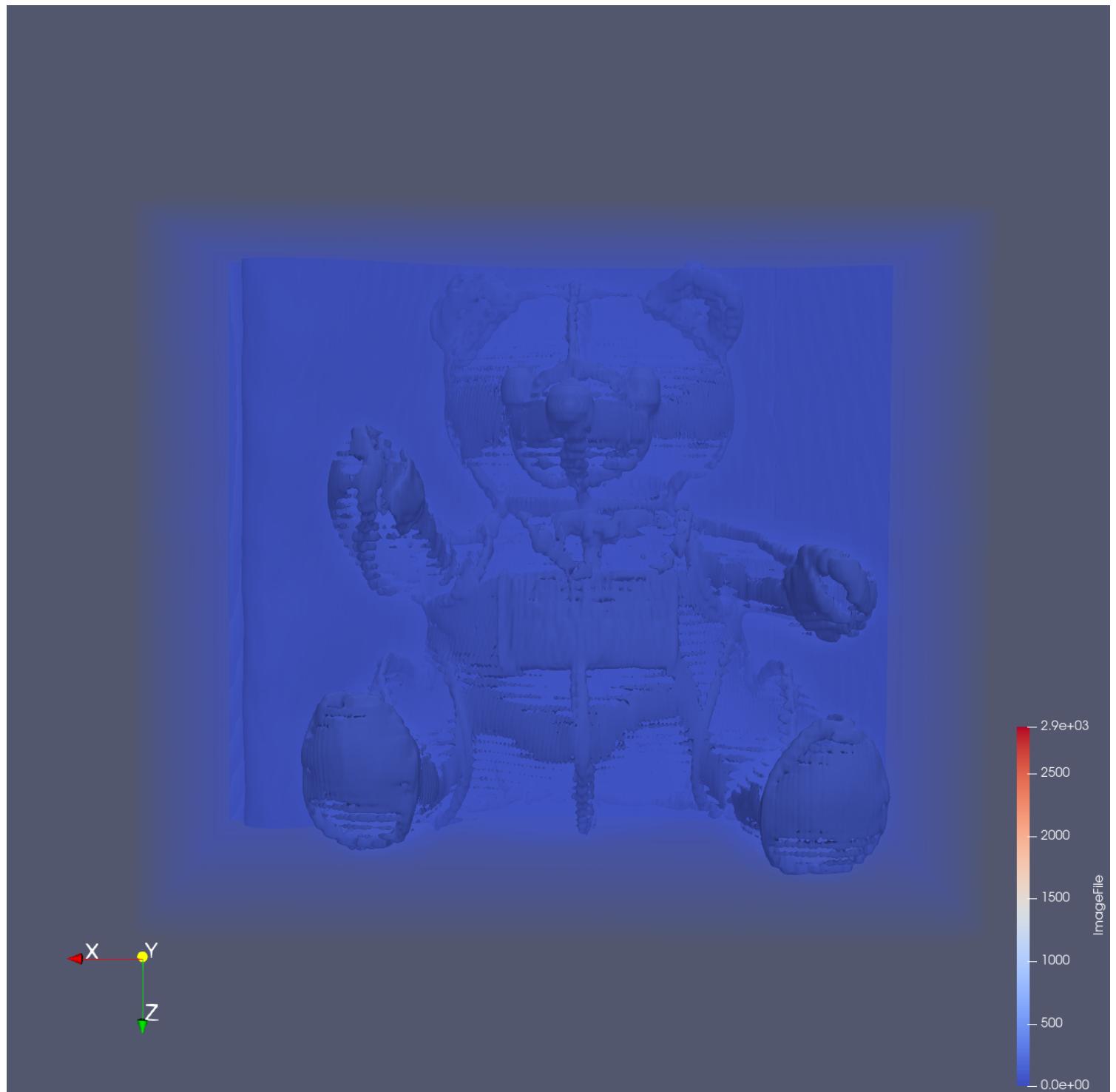
improvement- High quality visualization (learn more about how to visualize and give it more quality.)

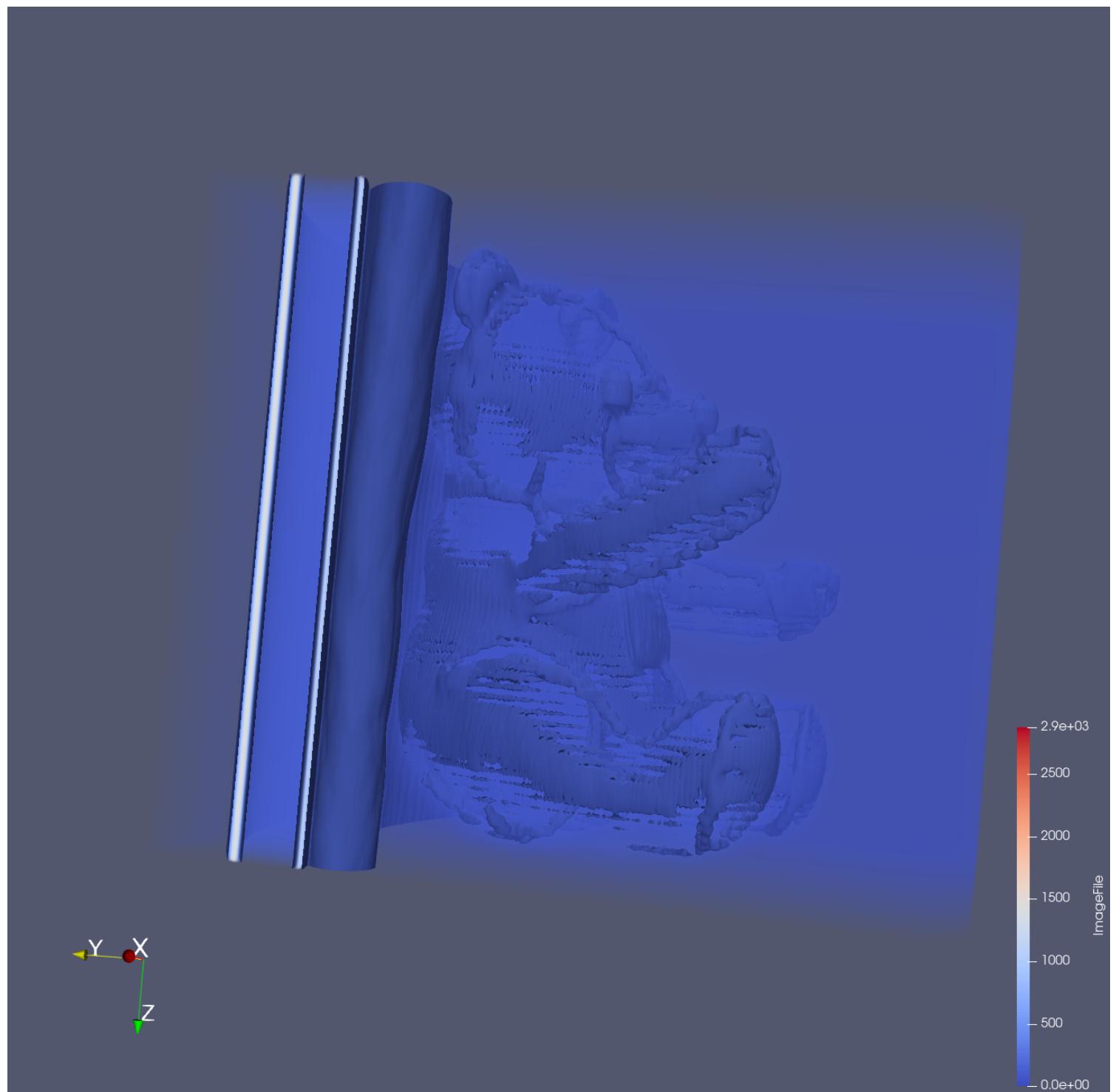
Put your 2nd data1 design concept here

What can we learn from the visualization?

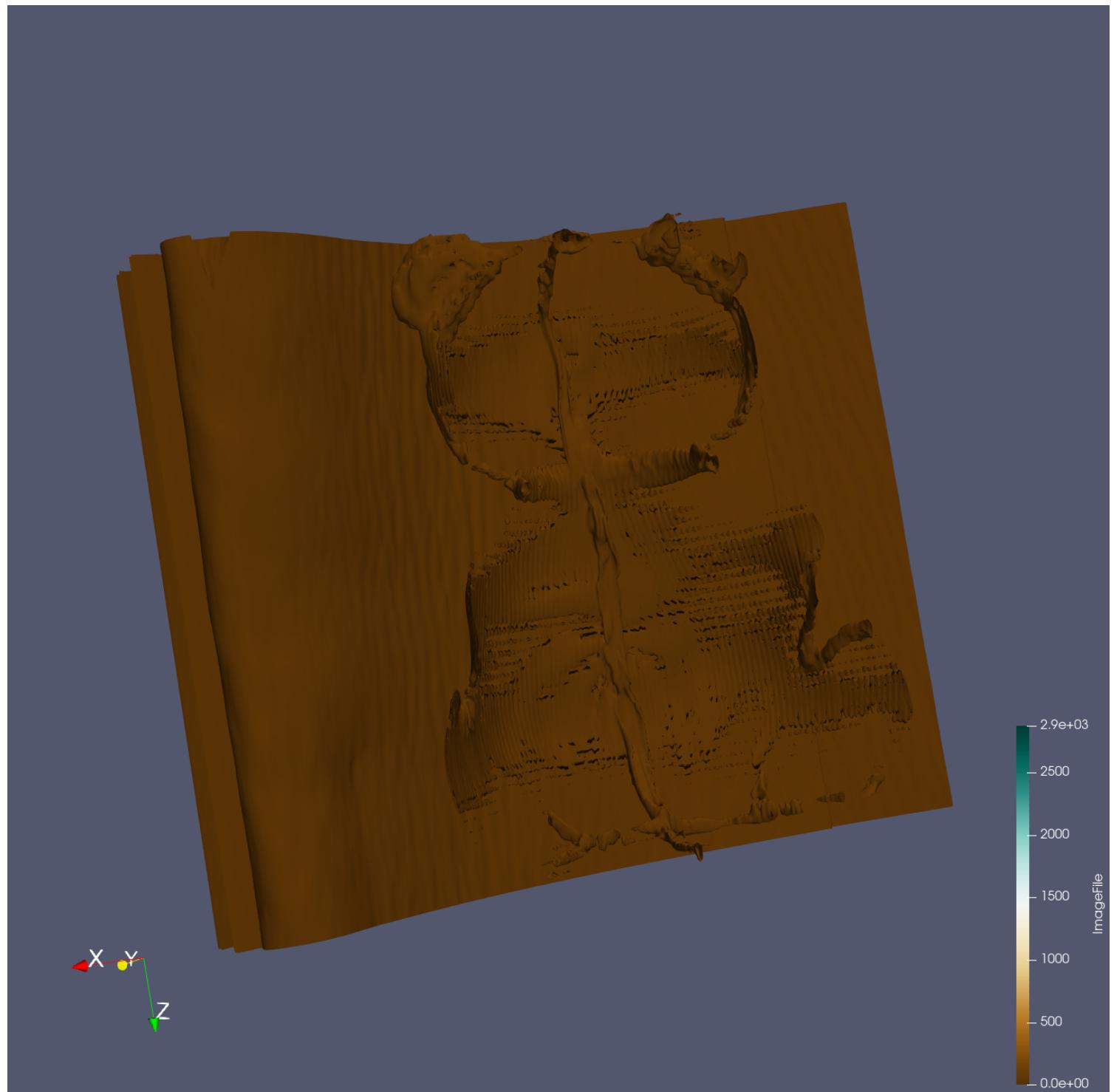
- 1- To show what the item at the back of the teddy bear represents, the user will be able to see that the item looks like a flat wood.
- 2- To show if there are any items inside the teddy bear. After visualization, the user will see that there are no items inside the bear.

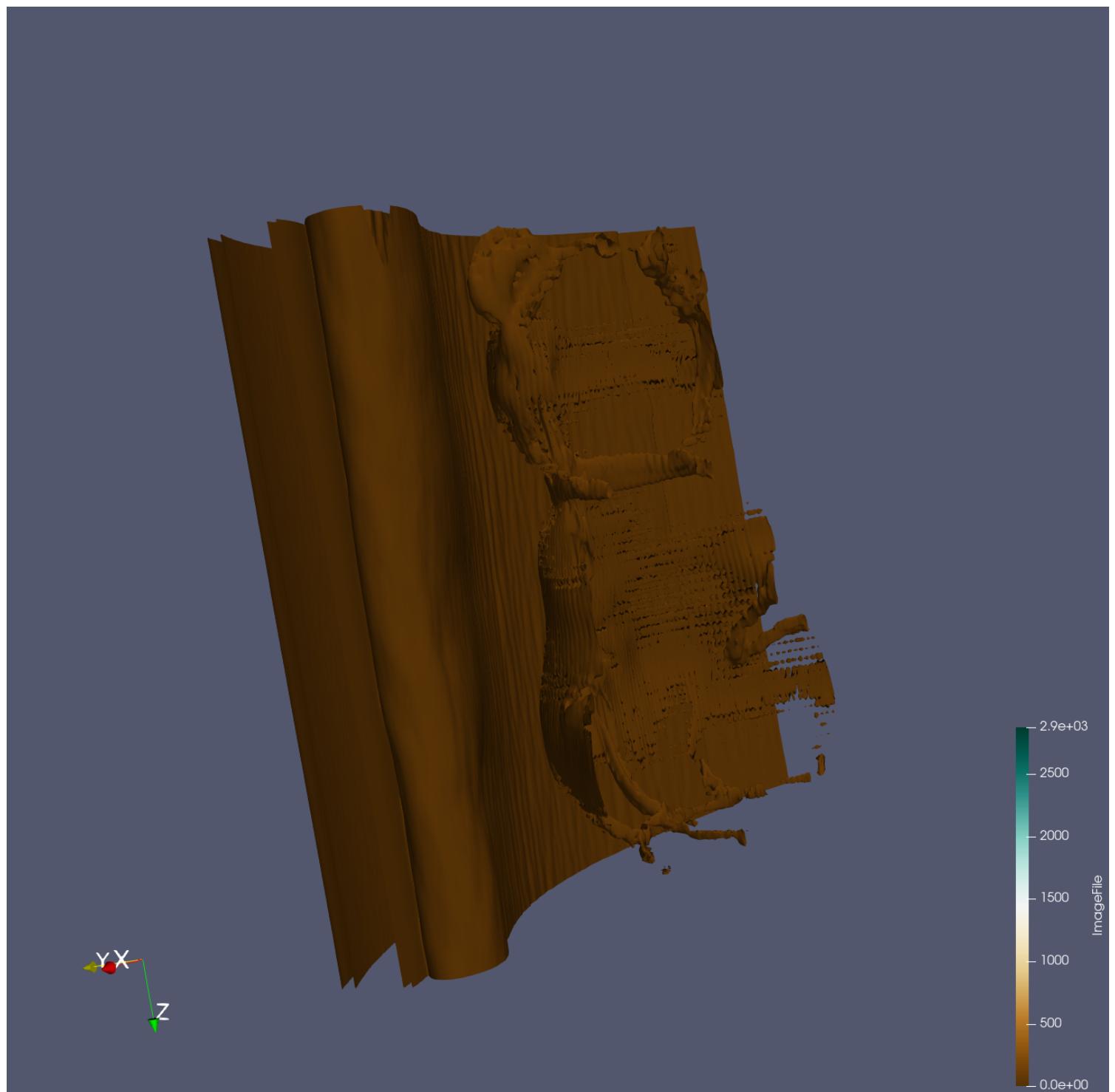
Threshold

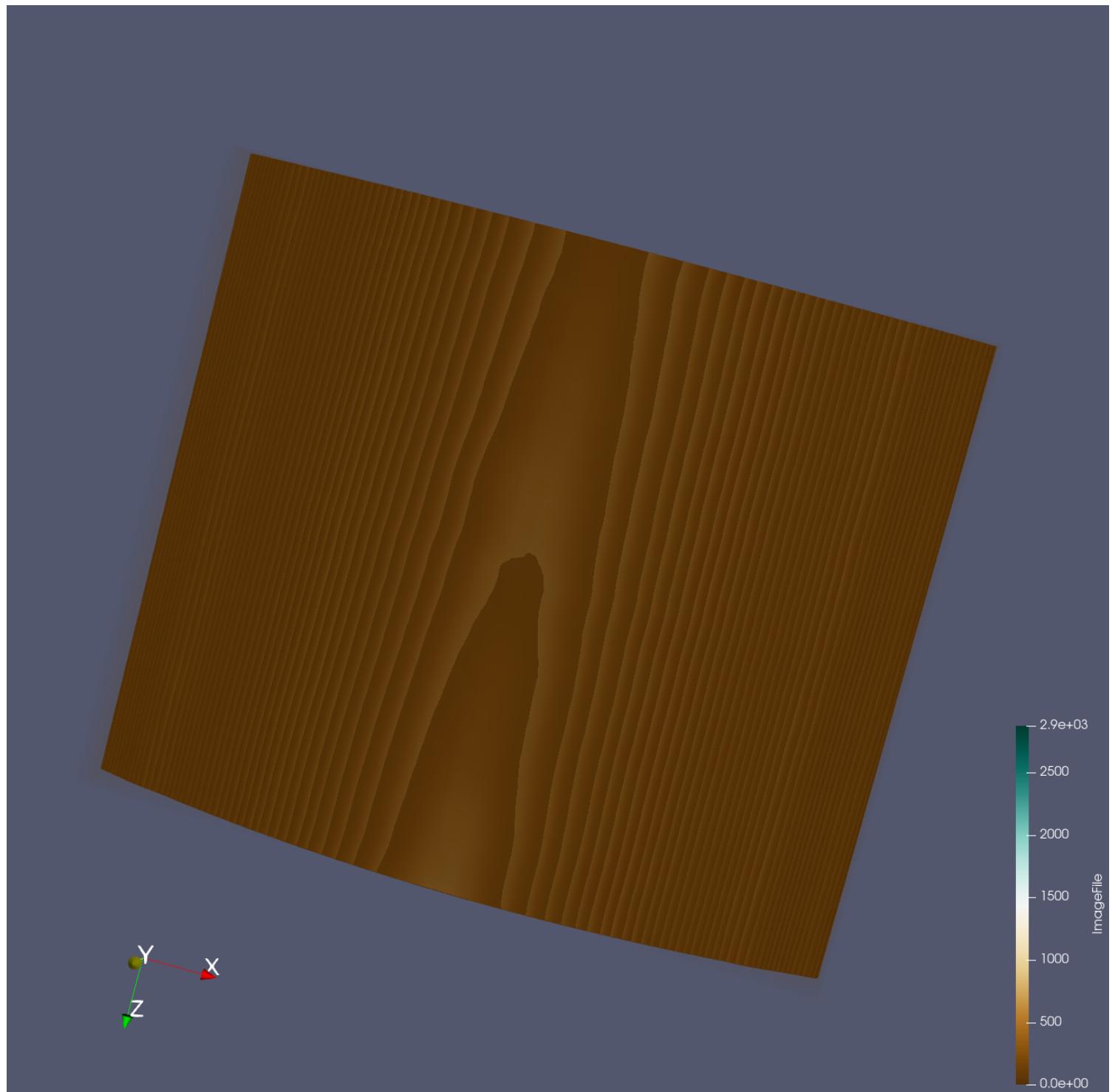




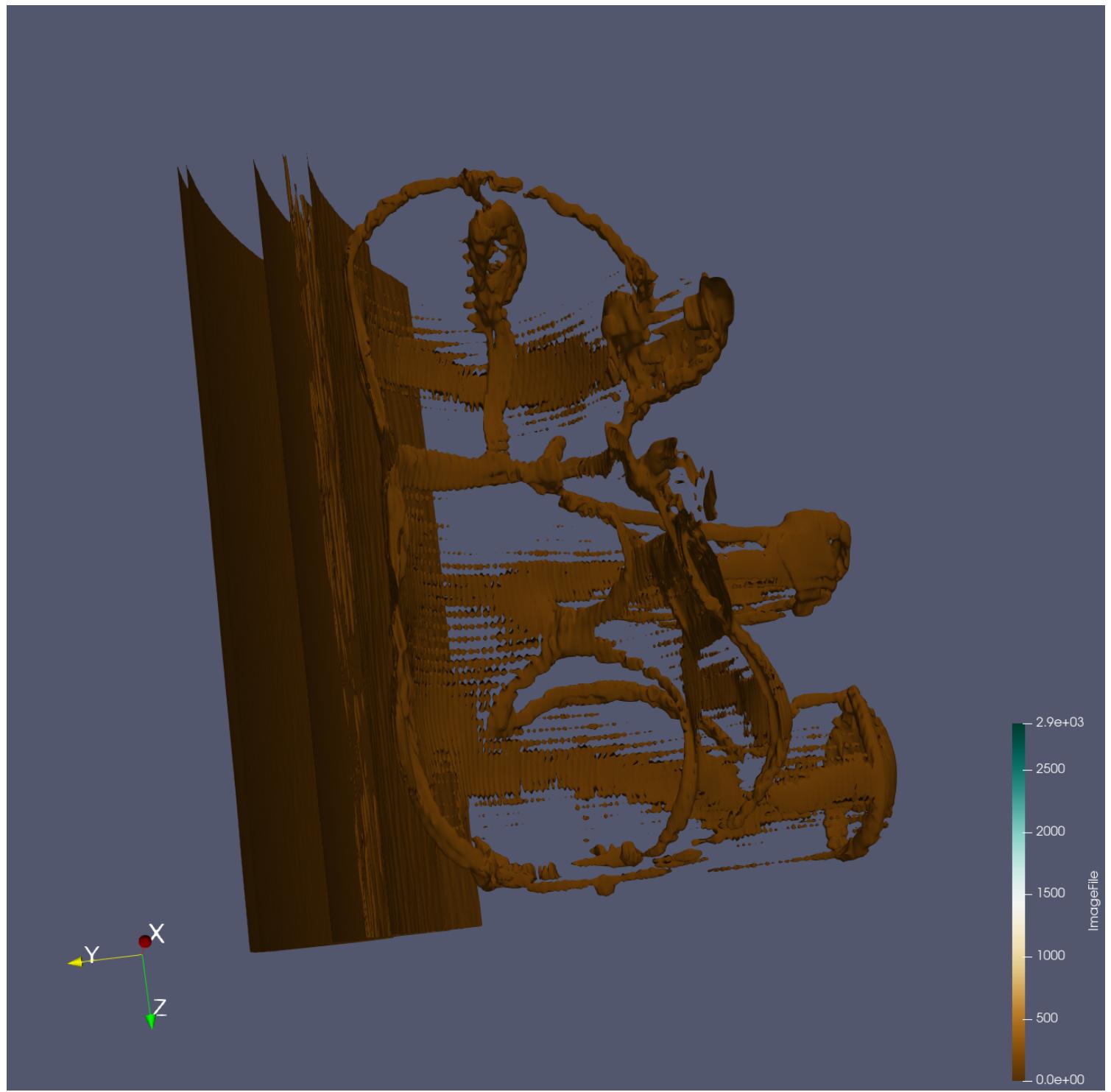
Flat wood







Empty bear



What are all visual mappings used?

Properties: 1- (Data extent -> (0 - 511),(0 - 511),(0 - 62)) and (2- Data spacing -> (1 - 1 - 7))

Contour: Isosurface -> 150

Backface Representation: follow frontface

Representation: Surface

Threshold: (min - 150, max - 150)

Clip type: plane (Y- Normal, Origin(254.728, 330.989, 261.037), Normal(0.0915914, -0.994543,

-0.0499584))

Was there any special data preparation done?

- 1- Threshold
- 2- Contour
- 3- Clip

What are the limitations of your design?

limitation- The item behind the bear could be any item however i am concluding it as a wood becayse it kind of looks like one.

Improvement- Discover more filters that can help visualize the item better.

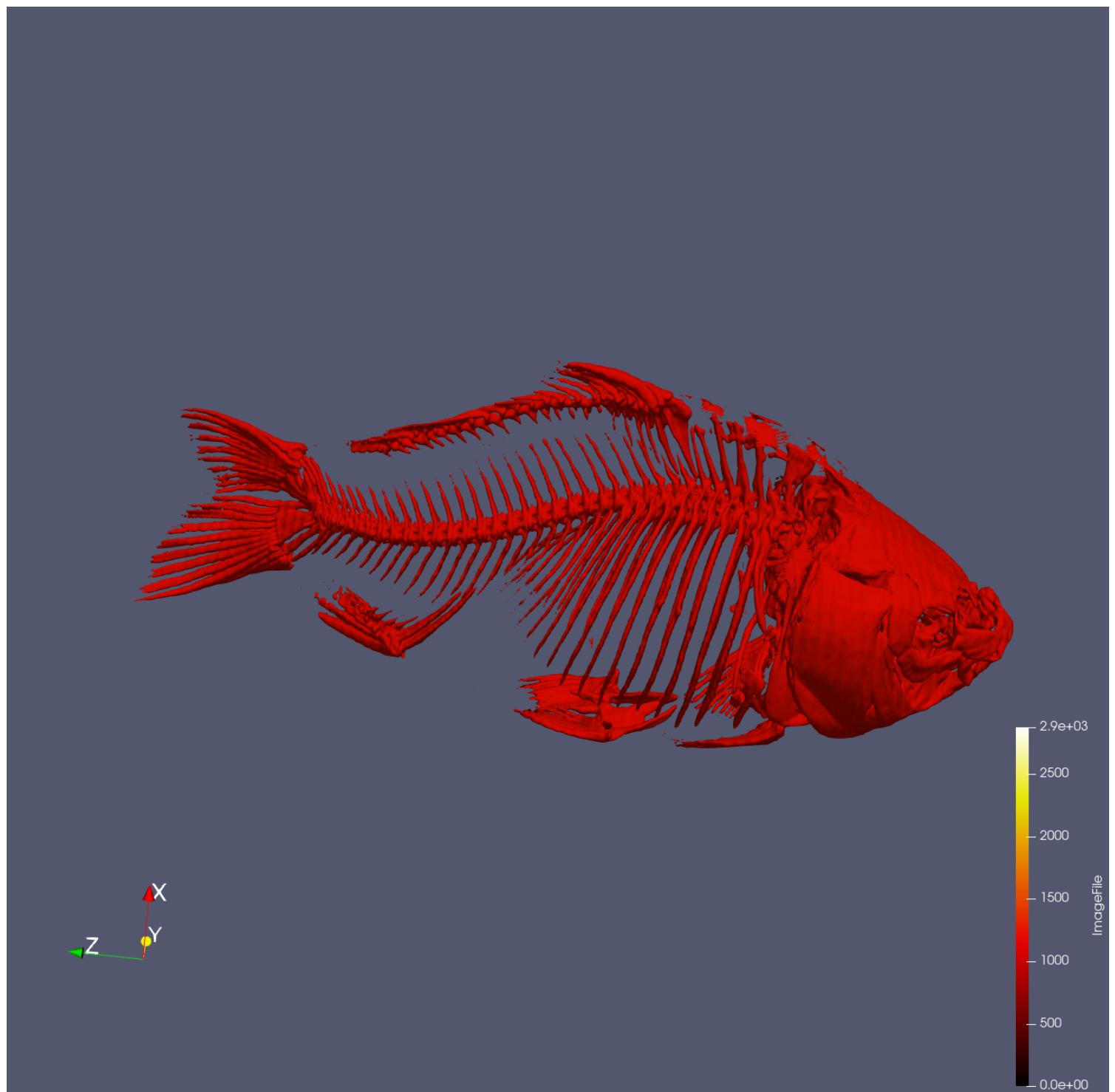
Put your 1st data2 design concept here

What can we learn from the visualization?

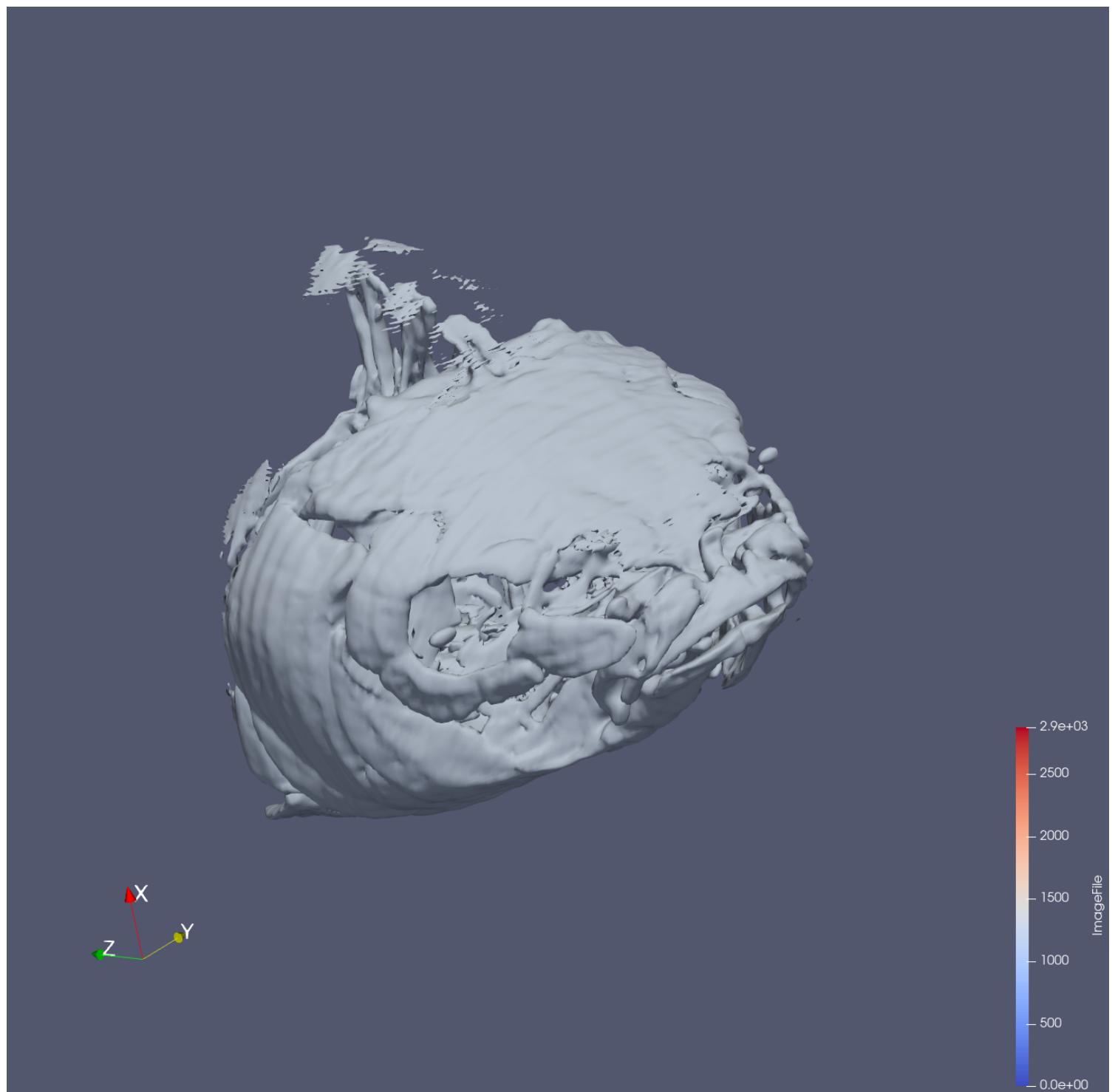
To visualize the loaded data and discover what items is presented within the data. After visualizing, the user will be able to view a fish figure, the following visualization of the fish include:

- 1- The skeleton of the fish and the different sections such as the head, body and the tail.
- 2- The full visualization of the fish and the x-ray view of the fish at the middle.

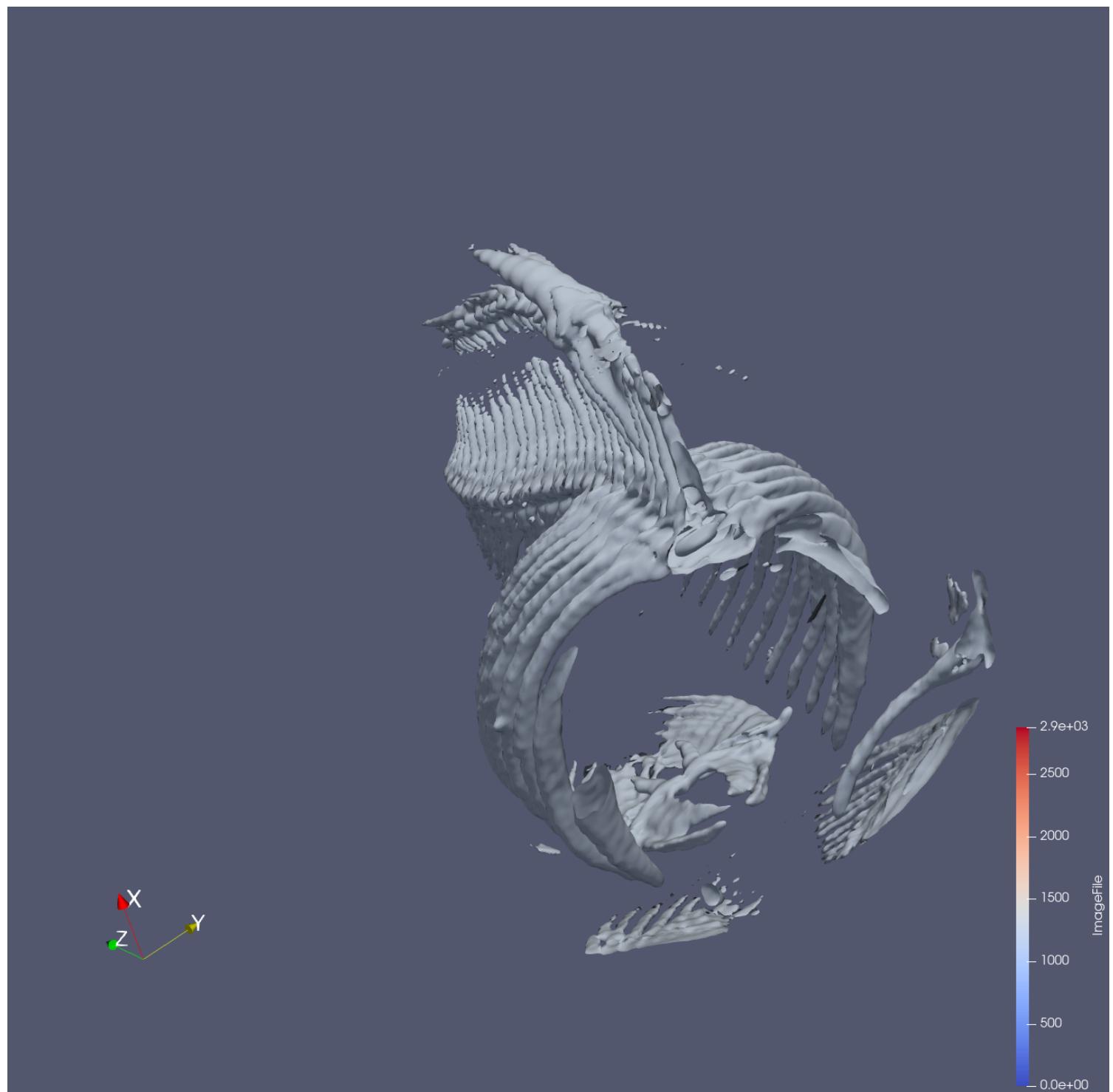
Skeleton full view



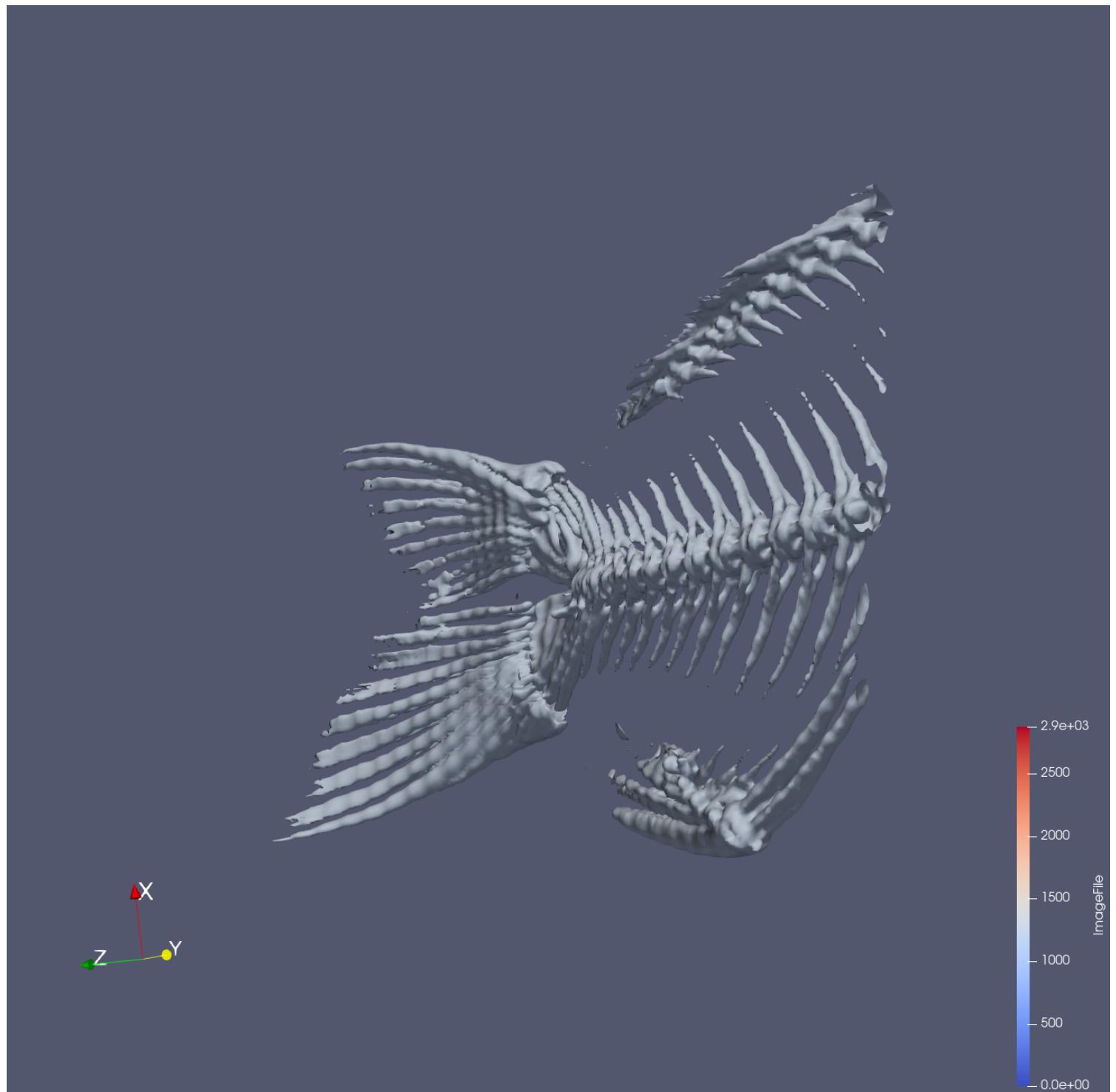
Skeleton head view



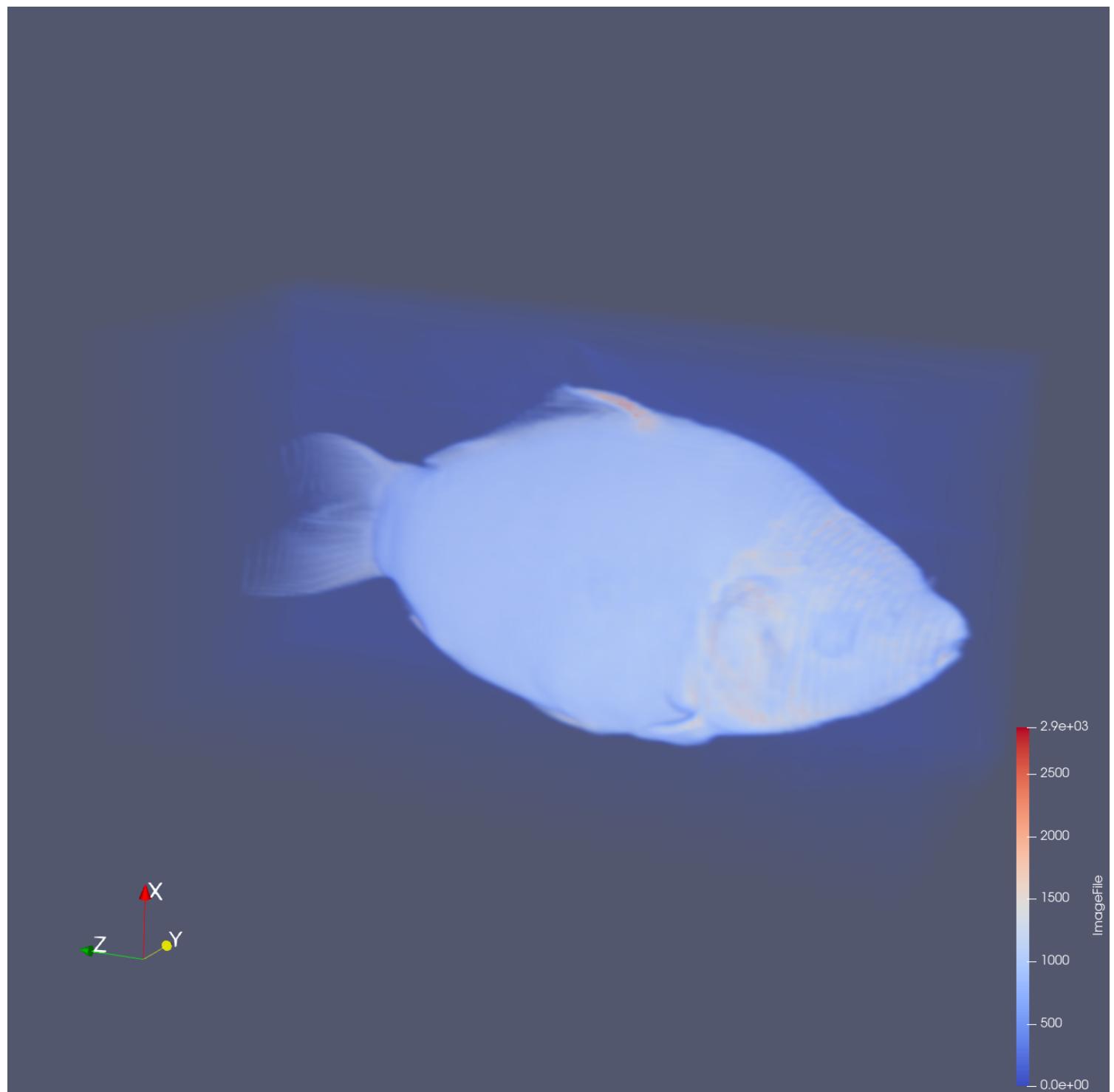
Skeleton body view



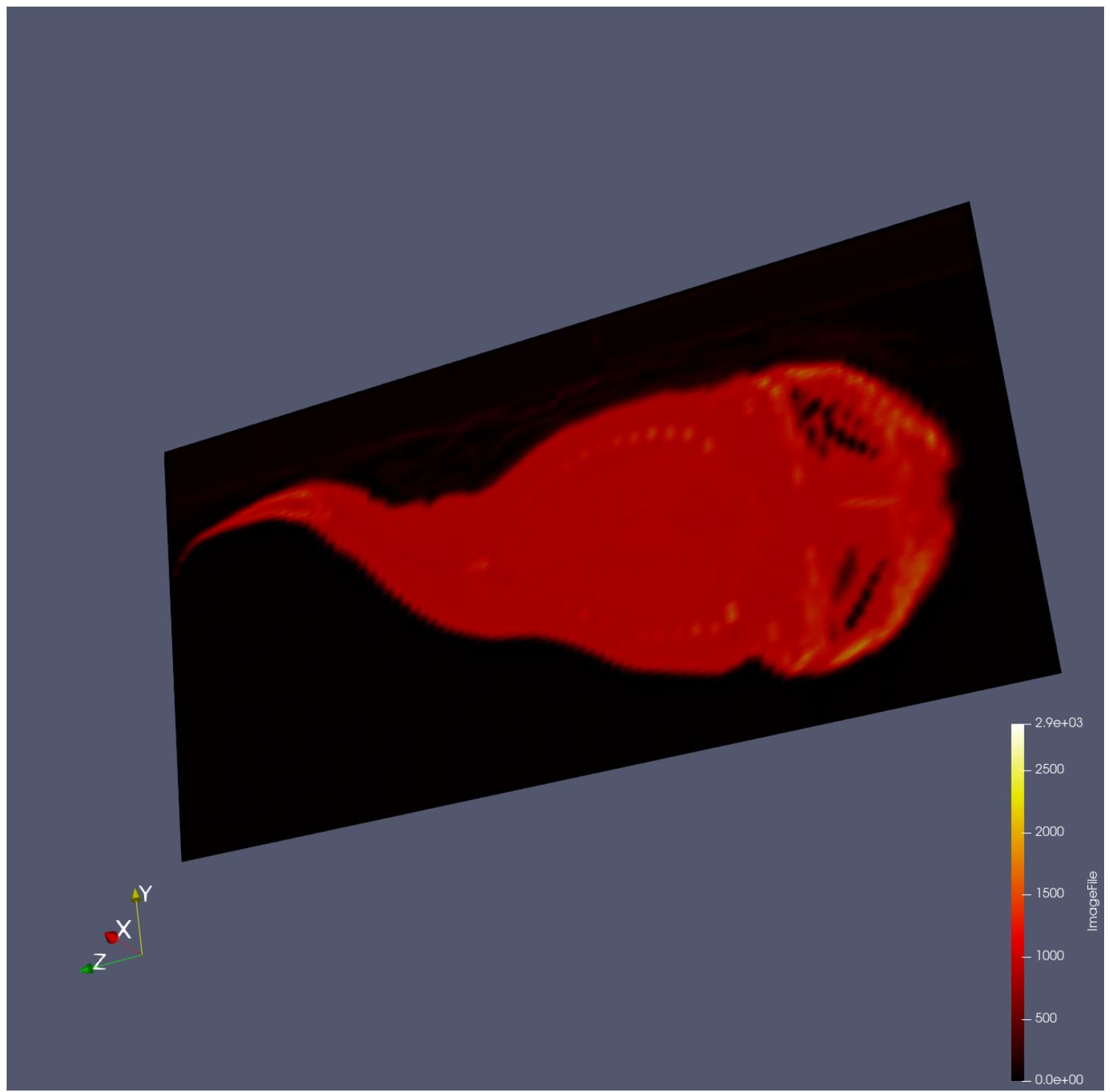
Skeleton tail view



The full fish



The X-ray of the middle



What are all visual mappings used?

Properties: (Data Extent(255,255,511))

Contour: (Isosurface(1200))

Clip-head: (Type-plane, Origin(127.236,119.91,159.934))

Clip-body: (Type-box, Position(-76.352,235.706,94.6423), Rotation(75.8435,-2.10466,37.8009), Length(197.88,198.259,489.175))

Clip-tail: (Type-box, Position(208.99,279.978,468.569), Rotation(6.23125,-172.357,106.357),

Length(197.88,198.259,200)

ResamplingtolImage: (sampling dimension(100,100,100, Representation-Volume))

Slice-middle-x-ray: (Type-plane, X-Normal, Origin(83.5527, 127.5,255.5), Normal(1,0,0))

Was there any special data preparation done?

1- Contour

2- Clip

3- ResamplingtolImage

4- Slice

What are the limitations of your design?

Limitation- Not able to show the actual colour of the fish and its scales.

Improvement- Learn and Research on more techniques and filter to achieve that

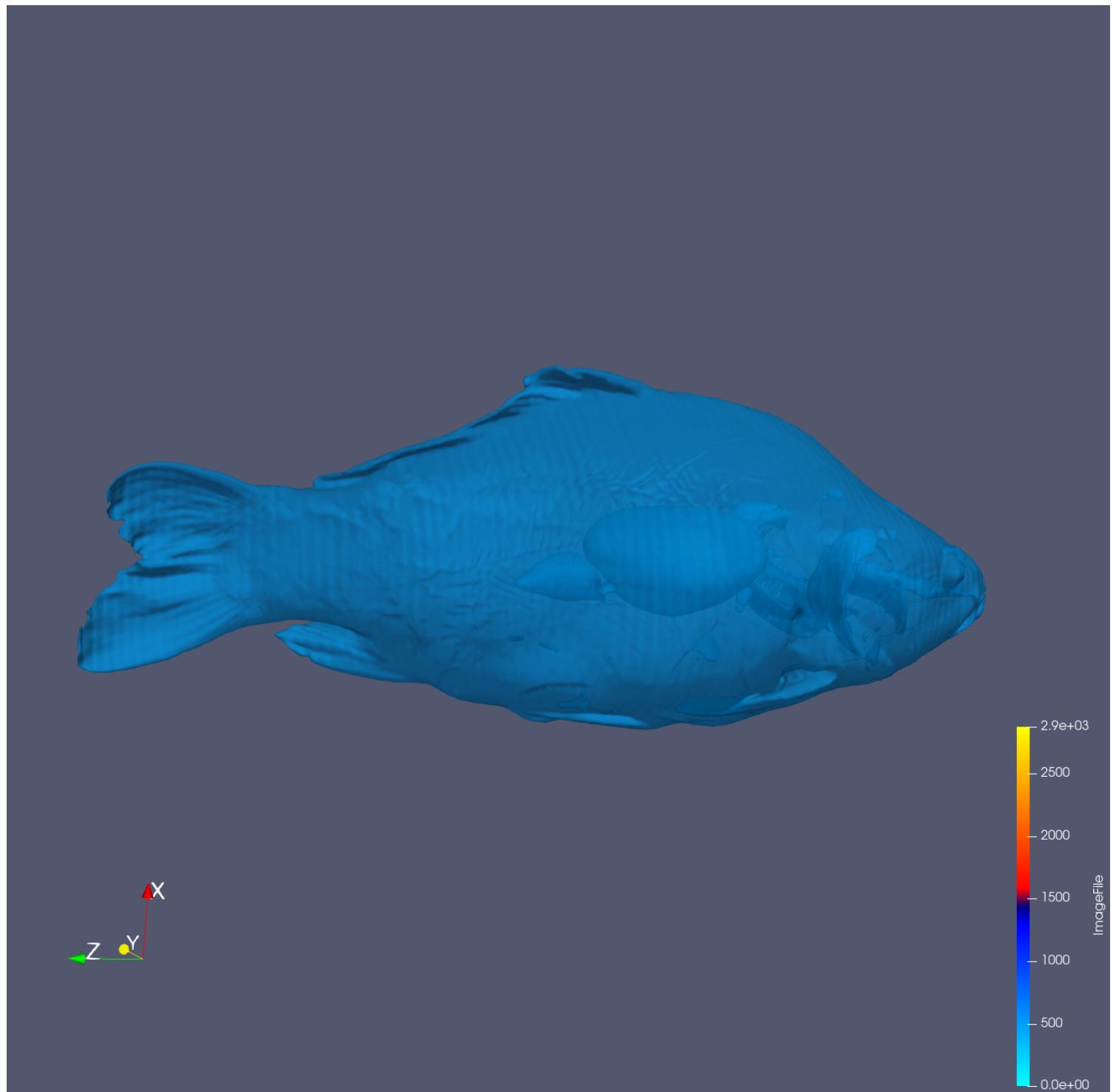
Put your 2nd data2 design concept here

What can we learn from the visualization?

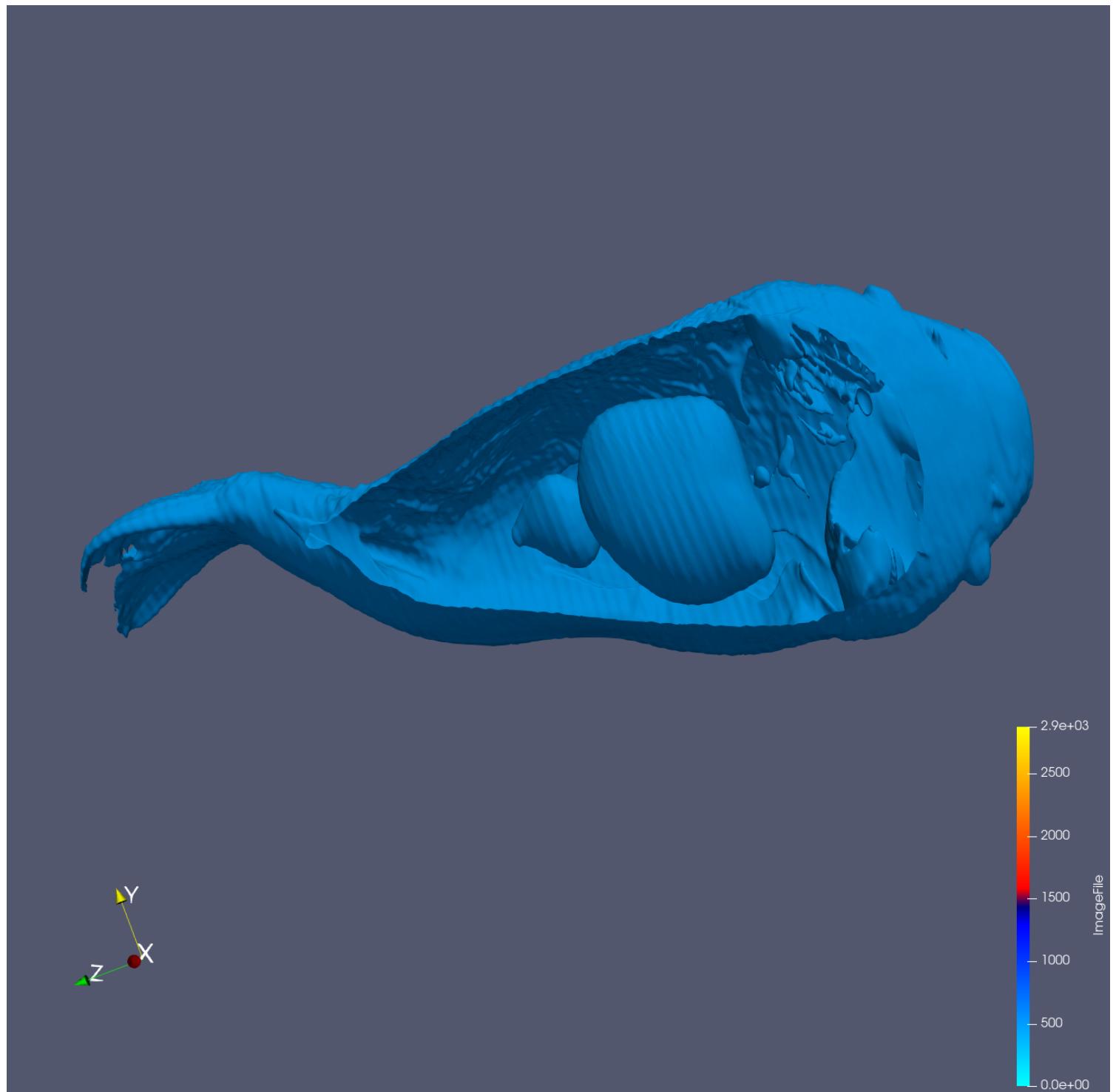
After visualizing, the user will see the full fish with its skin. This is because of the opacity that was applied. The user will be able to see the organs of the fish and the object that is below the fish. This visualization includes:

- 1- The full fish showing the organs.
- 1- A top view of the organs in the fish
- 3- The object below the fish is discovered after contouring the data. The object looks like a surface at the same time sometimes it looks like water particles. The lower the Isosurface in contour the object changes.

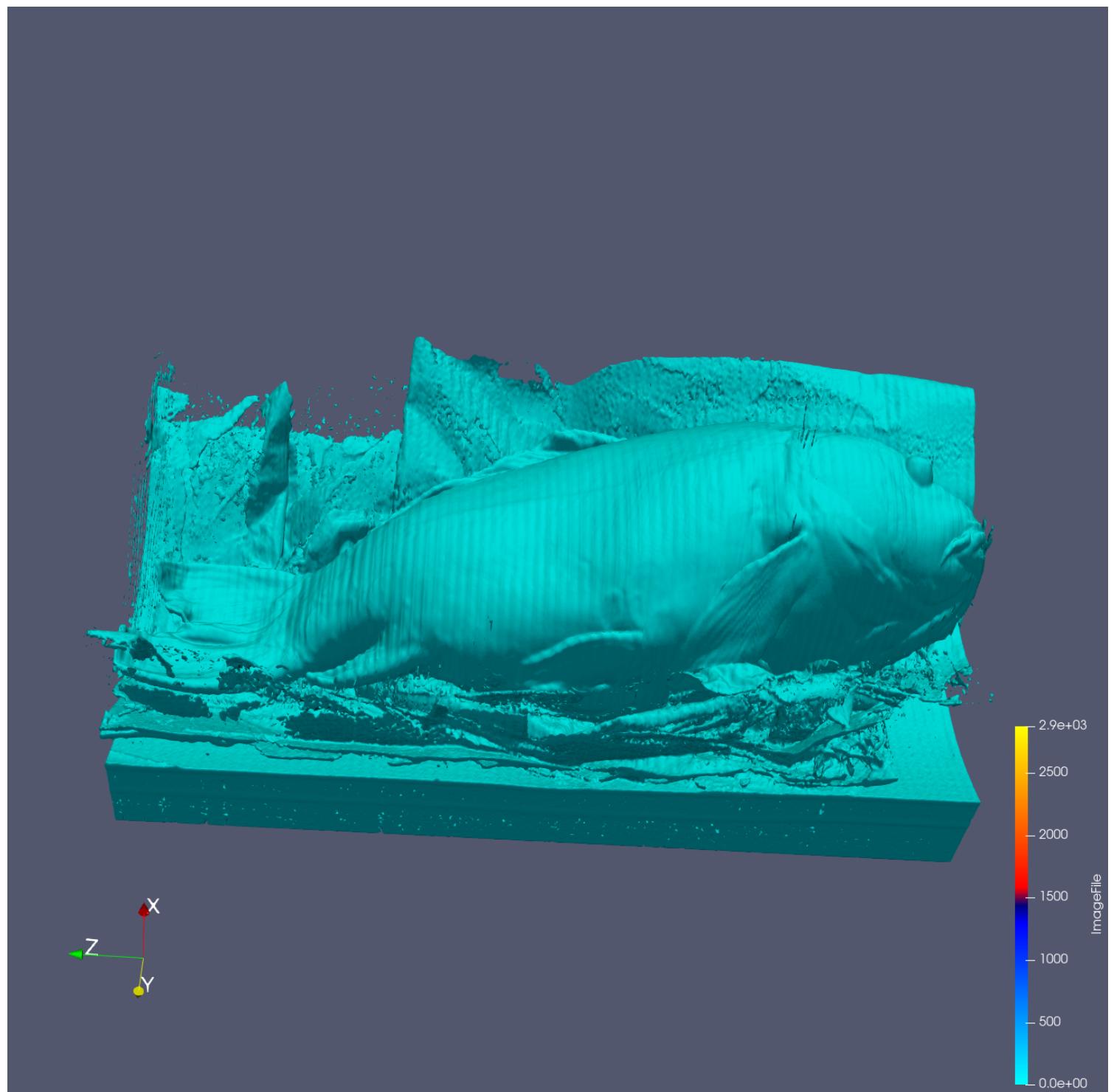
The full fish showing the organs



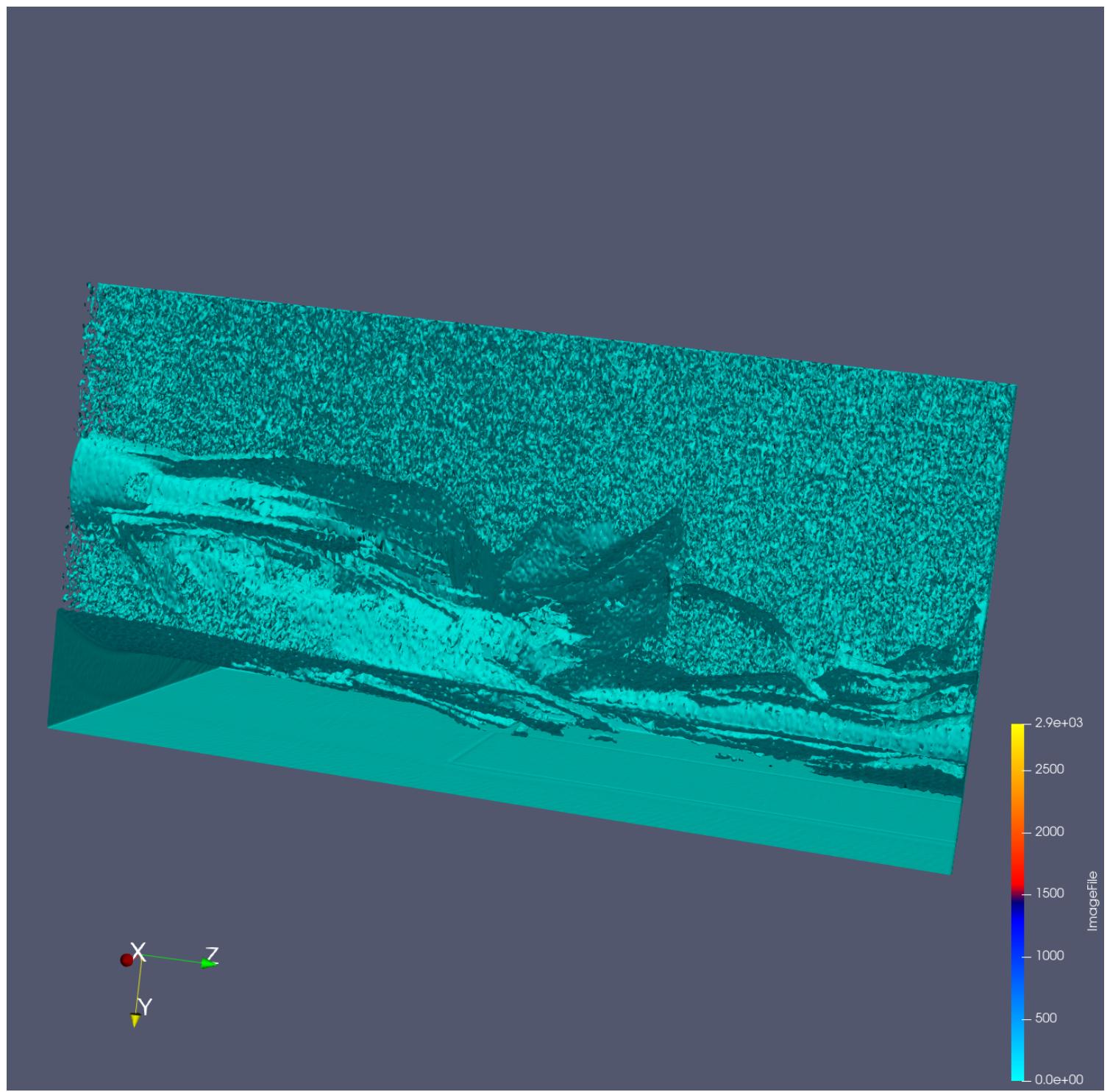
The organs of the fish from a top and clearer view



The object that looks like a surface



The object that looks like a water particles



What are all visual mappings used?

Contour: (Isosurface(500), Opacity(0.61))

Clip: (Type-plane, X-Normal, Origin(160.715,121.094,257.901), Normal(1,0,0))

Contour-surface: (Isosurface- 60)

Contour-water: (Isosurface- 25)

Was there any special data preparation done?

1- Contour

2- Clip

What are the limitations of your design?

Limitation1- Only can view two organs, so the user do not know if there are any more organs

Limitation2- The item below or around the fish is not very clear and cannot be identified easily.

Improvement- Research and discover more techniques that can be used to help identify the item below the fish and if there are any more organs in the fish.