

# VIS - Second Lab Exercise

## Vis Tools

Carlos García

May 2017

## Contents

1	Introduction	3
2	Selecting the best tool	3
3	Installing and executing ParaView	4
4	Viewing Engine.raw	6
5	Viewing Tomato.raw	11
6	Viewing Present.dat	16

## 1 Introduction

The idea of this exercise is to have first contact and get familiar with a real tool used to visualize volumes and data. This tool can be ParaView or VolView depending on our choice, and the data to visualize can be one from the models used in the previous laboratory sessions, this can be: Engine, Tomato, or Present.

## 2 Selecting the best tool

The first decision we must make is what tool to use, the choices are ParaView and VolView, after reading some posts and checking some websites I made my decision using this criteria:

- Comments from other users: Maybe the most outstanding comments I found about this comparison were [1]:
  - "One thing I noticed is that ParaView has seen several recent updates. Whereas, VolView seems to not have been updated in a while. Also, ParaView is running on VTK 6.0. Looks like VolView is still on VTK 5.0. And of course, the UI looks much better on ParaView than on VolView. Looks like both use the same renderers for volume rendering."
  - "If you want to do 3D volume rendering, especially with medical images, then VolView might be a good start. If you want to do scientific visualization using a variety of data representations, then Paraview is the one. Also, Paraview is under active development. I'm not sure about the status of VolView."
- Information on Wikipedia:
  - ParaView: The information is very complete [2].
  - Volview: There is no page on Wikipedia or I couldn't find it.
- Official website:
  - ParaView: Seems nice and complete [3].
  - VolView: Seems good enough [4].
- Guides and tutorials:
  - ParaView: Seems good enough, at least for beginners [5].
  - VolView: Not enough information [6].

Finally, I think that ParaView has a better review in several places, so I will go with this option.

### 3 Installing and executing ParaView

To download ParaView we only need to go to the official website and click on download and then select the version, type of download, operating system and file to download, depending on your needs:

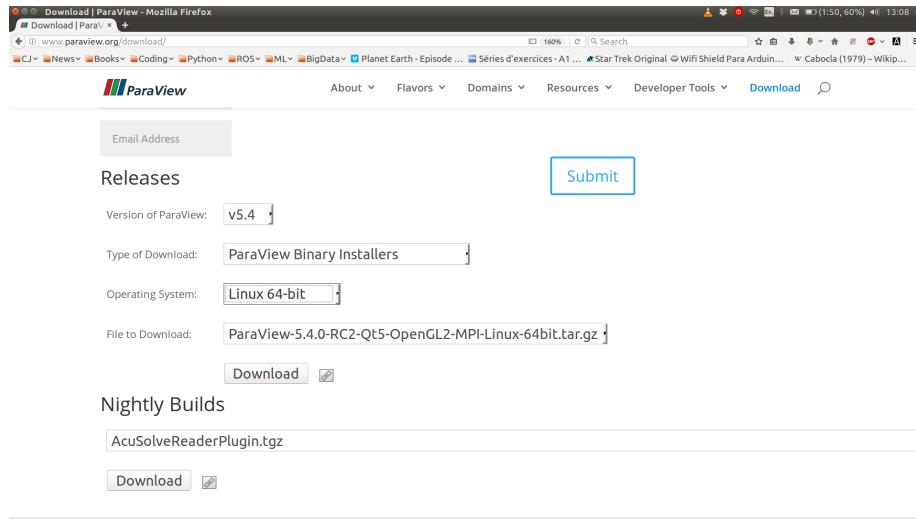


Figure 1: ParaView download

Once downloaded, we only need to extract the files, go to the new bin directory and execute the "paraview" script:

A screenshot of a terminal window on a Linux system. The title bar says 'Terminal /File/Edit/Search/Terminal Help Qt5-OpenGL2-MPI-Linux-64bit/bin'. The command entered is 'cd bin/' followed by './paraview'. The terminal then displays an error message: 'ERROR: In /home/buildslave/dashboards/buildbot/paraview-pvbinsdash-linux-shared-release\_superbuild/source-paraview/ParaViewCore/ServerImplementation/Core/vtkSIProxyDefinitionManager.cxx, line 526 vtkSIProxyDefinitionManager (0x2748810): No proxy that matches: group= and proxy= were found.' The terminal window has a dark background and light-colored text.

Figure 2: Executing ParaView from terminal

Then, this is how ParaView looks right after opening the software:

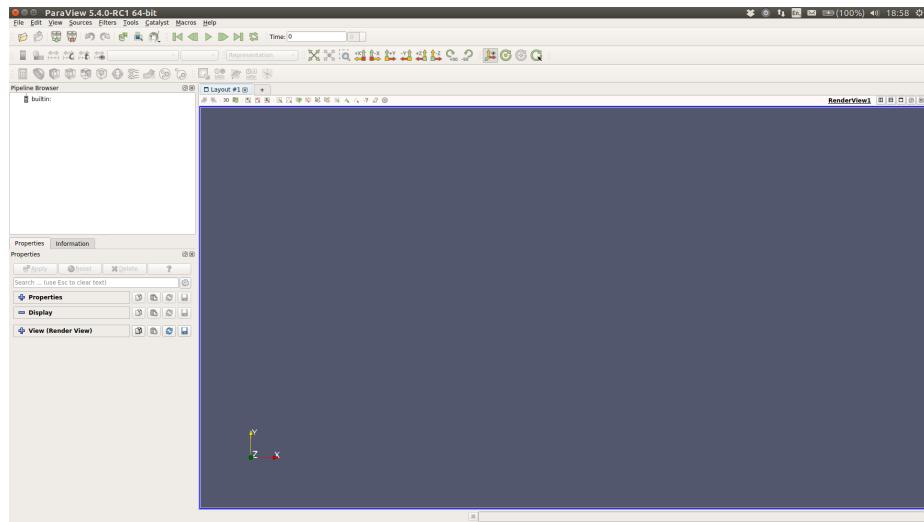


Figure 3: ParaView right after opening

Now, let us try to check out the raw data files.

## 4 Viewing Engine.raw

Engine, open raw file

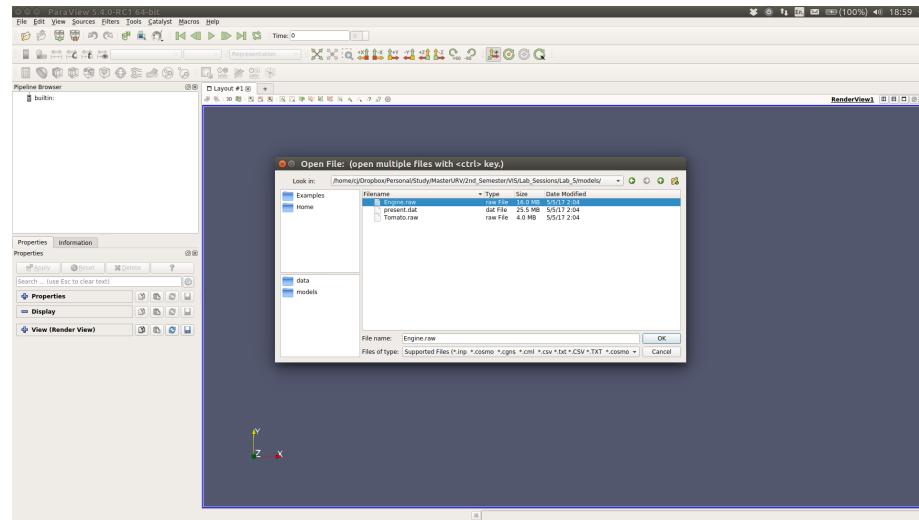


Figure 4: Engine, open raw file

Engine, Open Data With

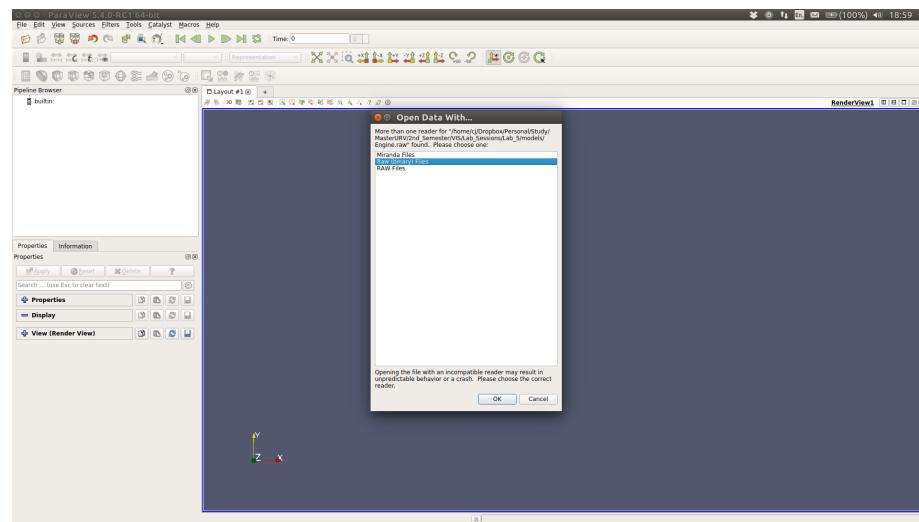


Figure 5: Engine, Open Data With

Engine, detailed values from slides, this values will be set in ParaView so it can understand the data inside the raw file.

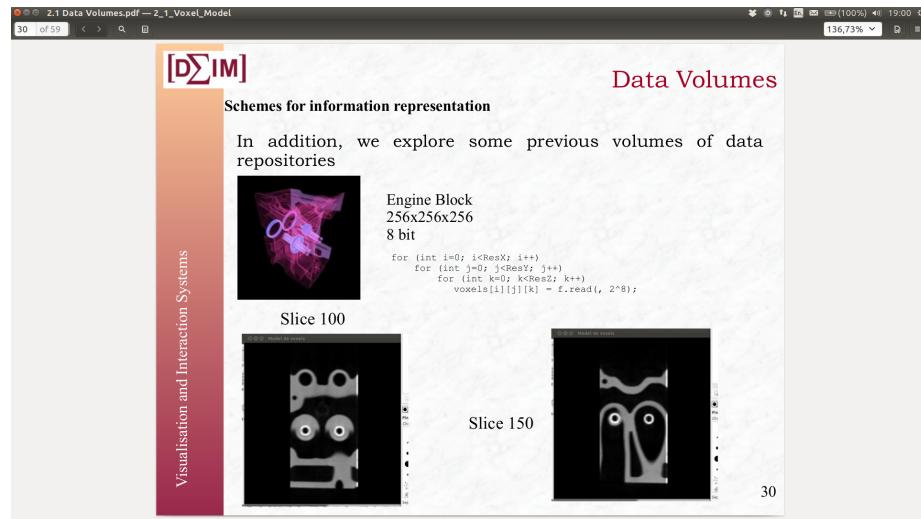


Figure 6: Engine, detailed values from slides

### Engine, 3D view settings

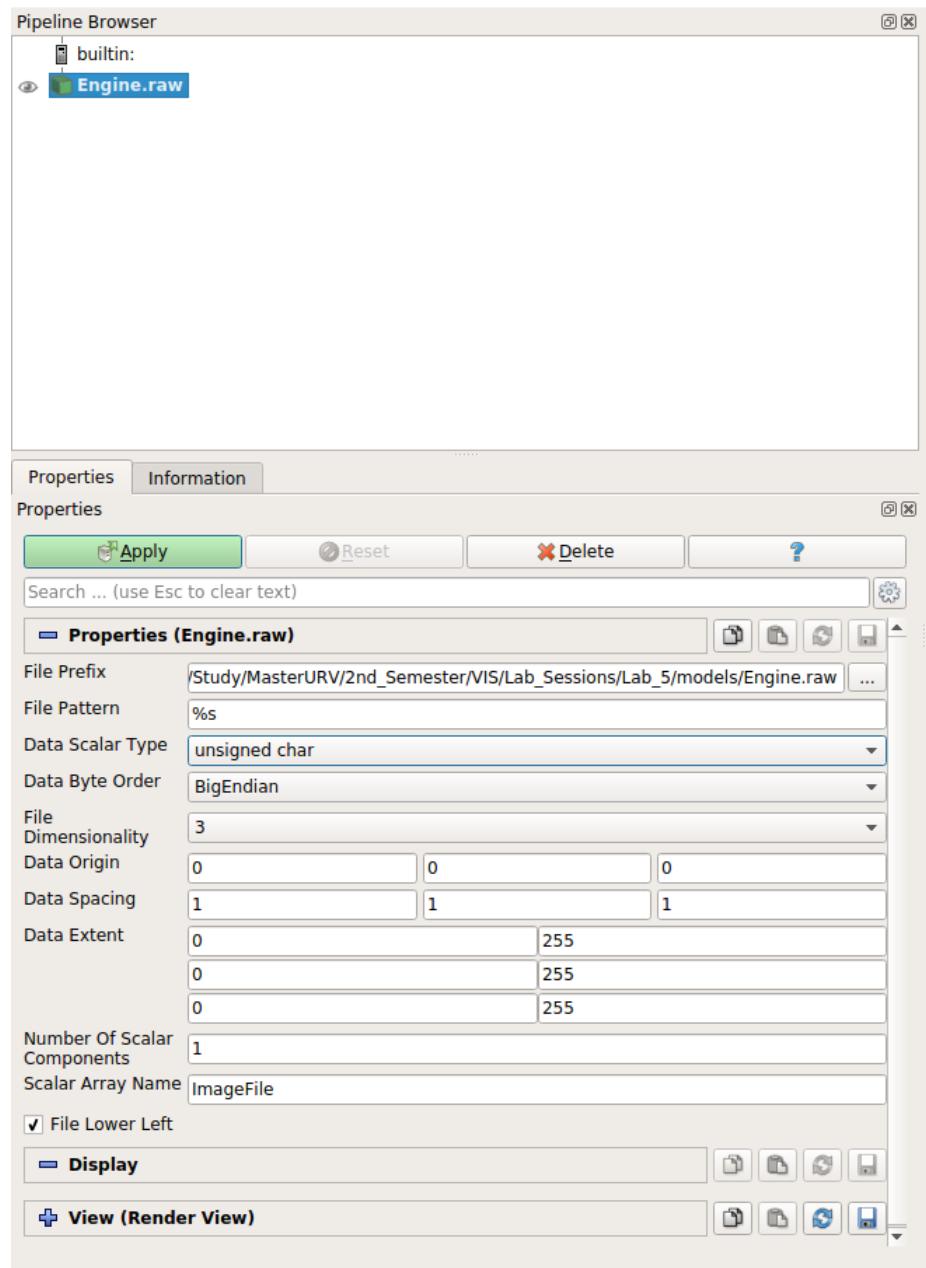


Figure 7: Engine, 3D view settings

Engine, 3D view when only "Outline" is configured in the "Representation type", then we must go there and change it to "Volume"

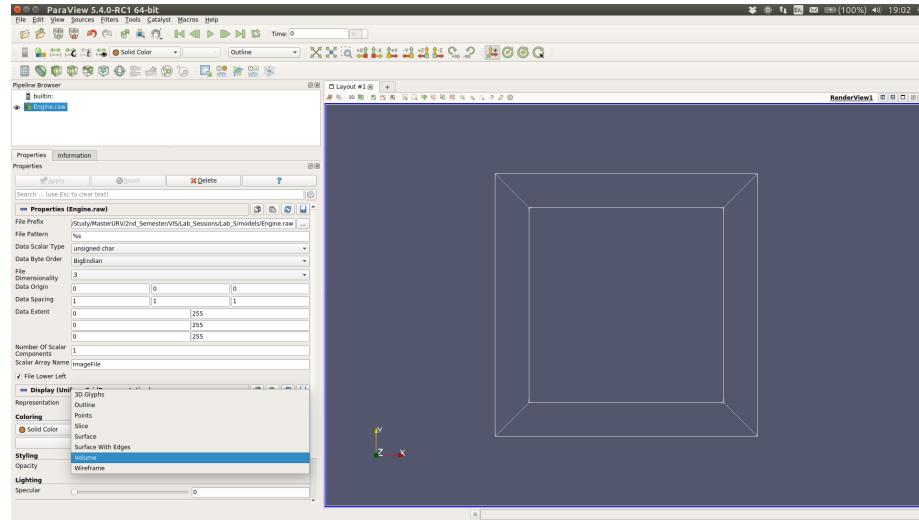


Figure 8: Engine, 3D view (0)

Engine, 3D view (1)

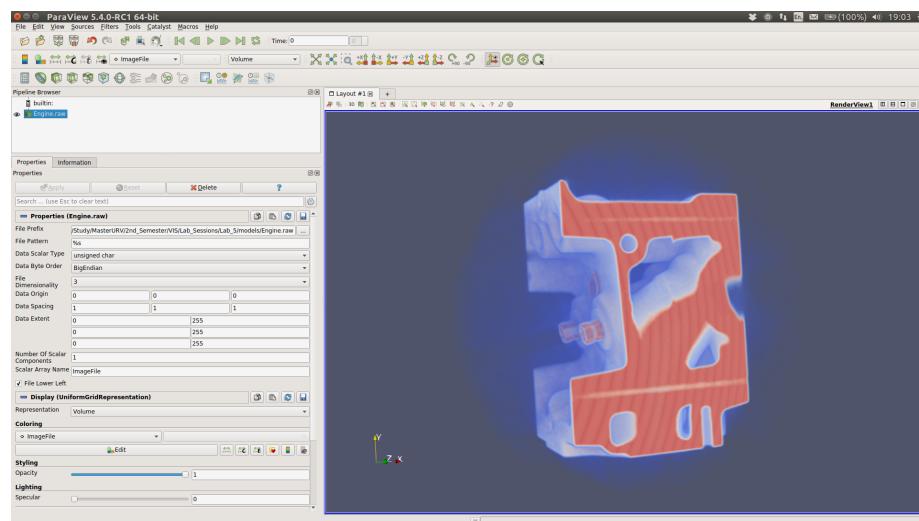


Figure 9: Engine, 3D view (1)

Engine, 3D view (2)

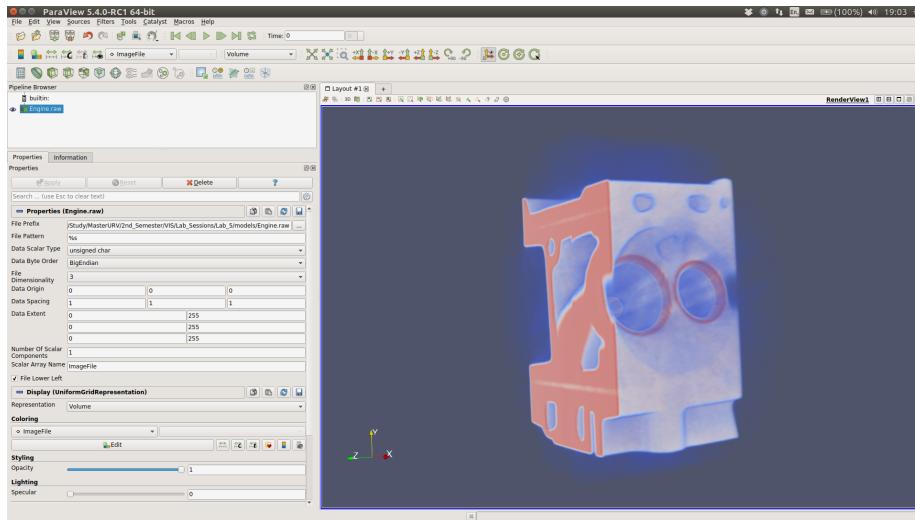


Figure 10: Engine, 3D view (2)

Engine, 3D view (3)

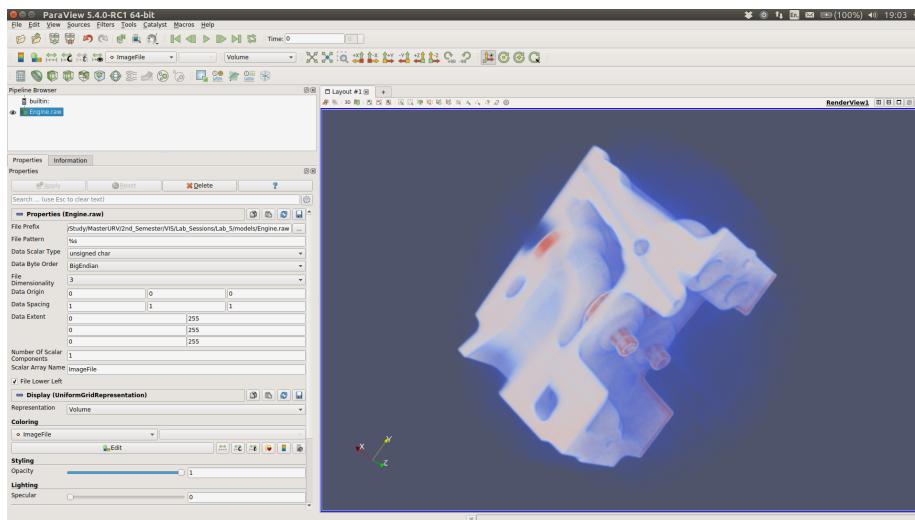


Figure 11: Engine, 3D view (3)

## 5 Viewing Tomato.raw

Tomato, open raw file

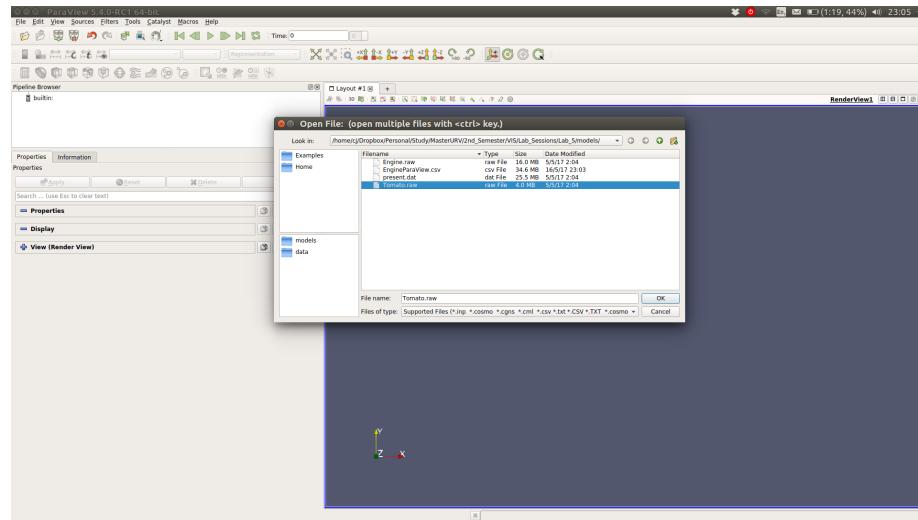


Figure 12: Tomato, open raw file

Tomato, Open Data With

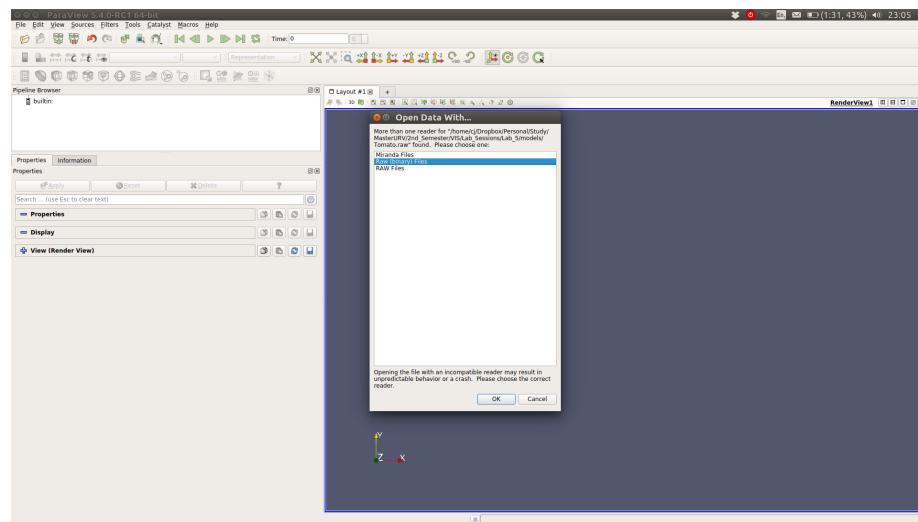


Figure 13: Tomato, Open Data With

Tomato, detailed values from slides

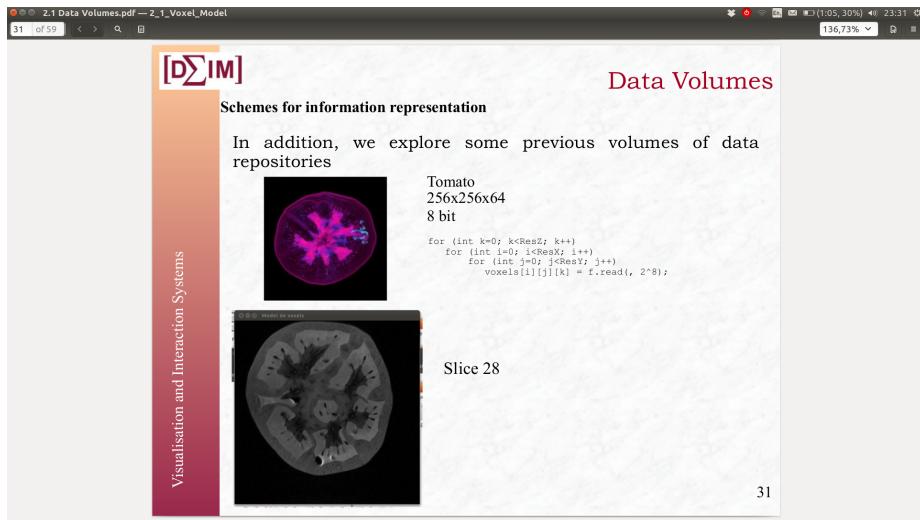


Figure 14: Tomato, detailed values from slides

### Tomato, 3D view settings

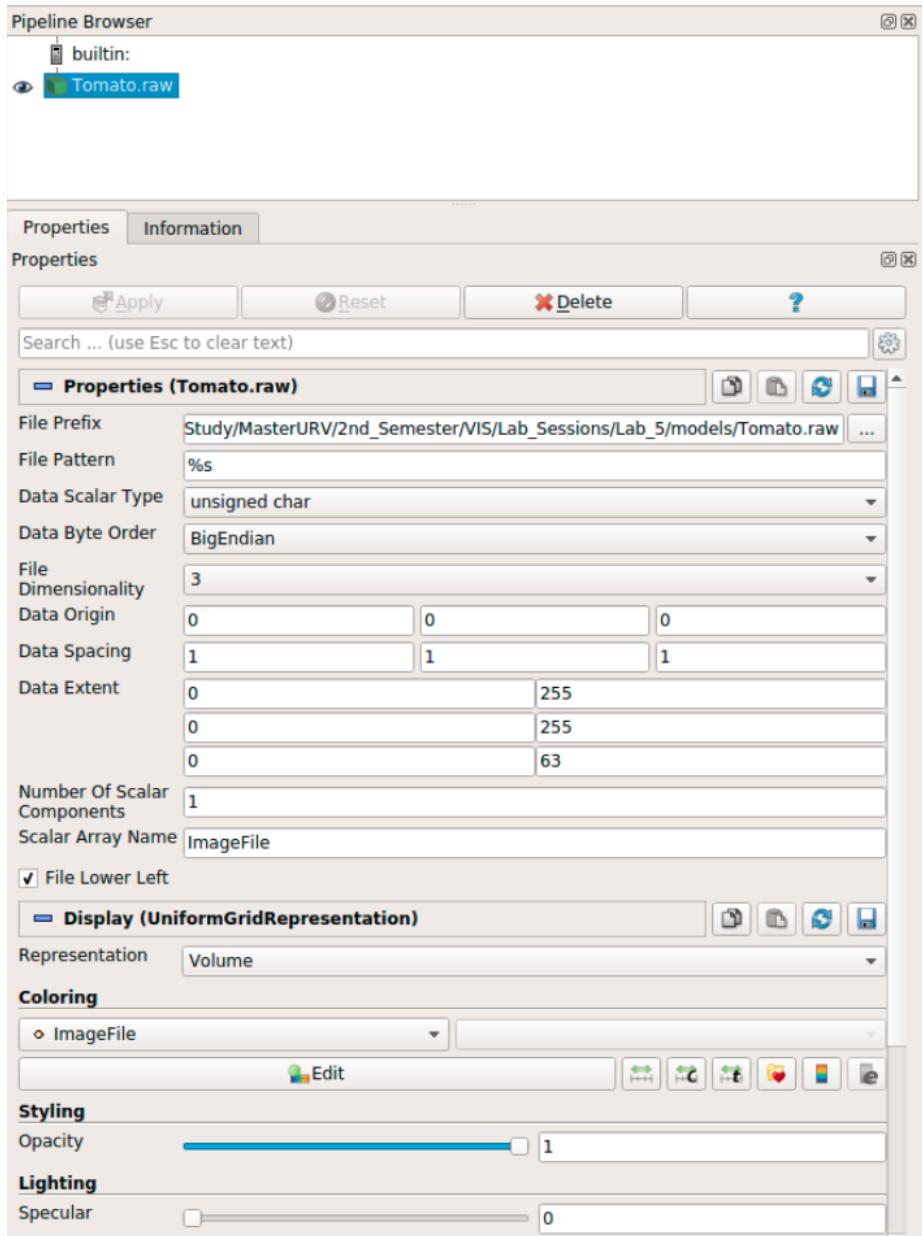


Figure 15: Tomato, 3D view settings

Tomato, 3D view (1)

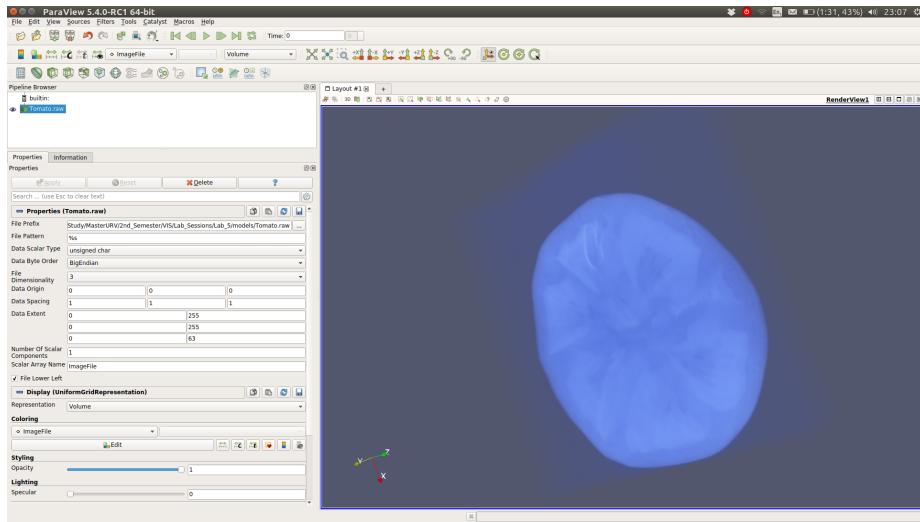


Figure 16: Tomato, 3D view (1)

Tomato, 3D view (2)

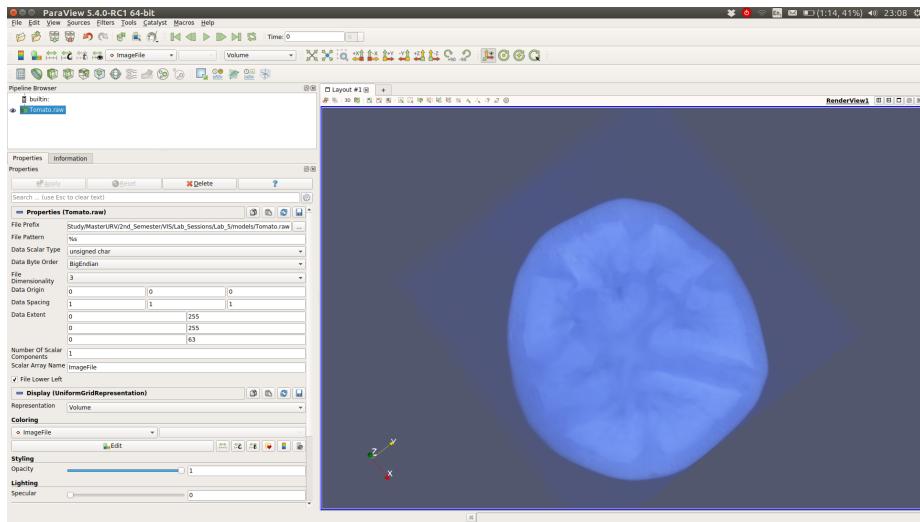


Figure 17: Tomato, 3D view (2)

### Tomato, 3D view (3)

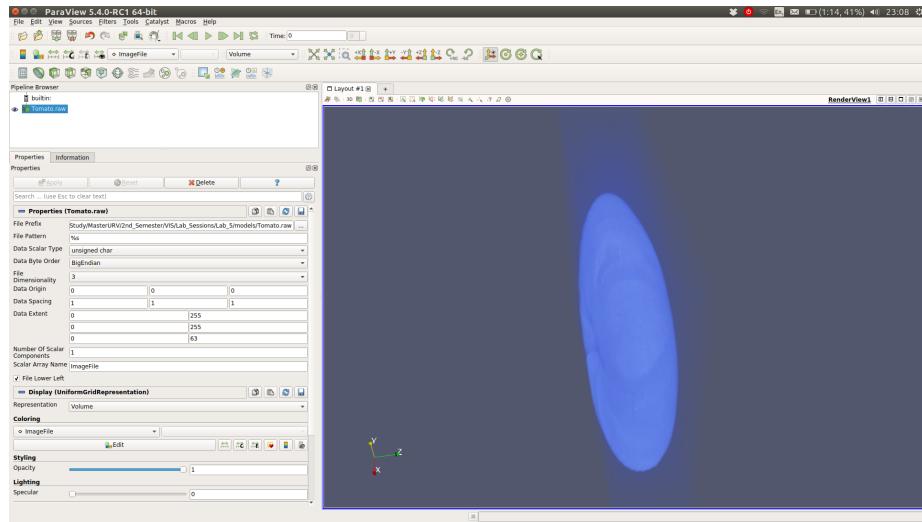


Figure 18: Tomato, 3D view (3)

## 6 Viewing Present.dat

Finally, I tried to open the file Present.dat as well, but I found some problems, maybe related to this information found in a post [7]

"ParaView has not full support for Fluent files (cas + dat). It doesn't see all the variables (at least in versions up to 5.0.1 RC2 that I use, although I know that I should update to 5.2 or 5.3)."

I'm using the last version, but, I'm also having similar problems:

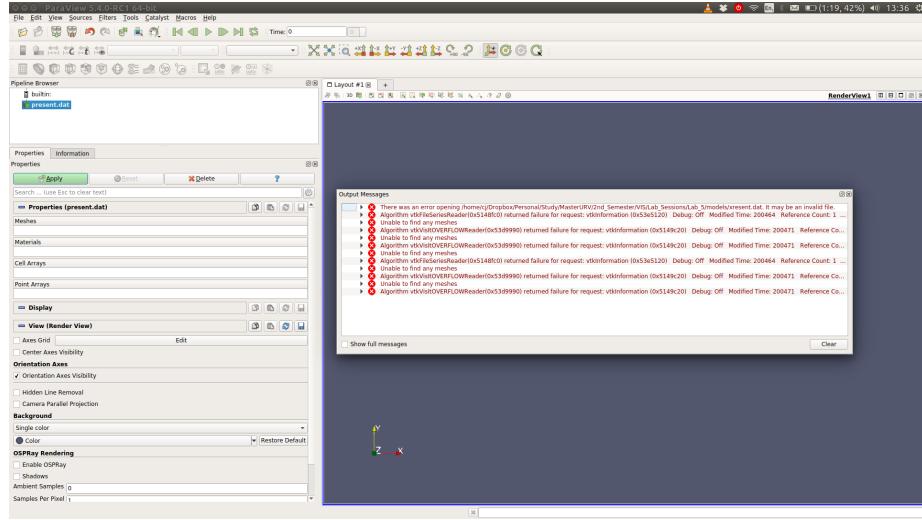


Figure 19: Some of the problems found while opening a dat file

## References

- [1] ParaView vs VolView. <http://vtk.1045678.n5.nabble.com/ParaView-vs-VolView-td5723772.html>. [Online; accessed 16-May-2017].
- [2] Wikipedia. Paraview — wikipedia, the free encyclopedia, 2017. [Online; accessed 17-May-2017].
- [3] ParaView website. <http://www.paraview.org/>. [Online; accessed 16-May-2017].
- [4] VolView website. <https://www.kitware.com/volview/>. [Online; accessed 16-May-2017].
- [5] ParaView Tutorials. <http://www.paraview.org/tutorials/>. [Online; accessed 16-May-2017].
- [6] VolView Tutorials. <https://www.kitware.com/what-we-offer/#training>. [Online; accessed 16-May-2017].
- [7] ParaView problem working with dat files. <http://www.paraview.org/pipermail/paraview/2017-March/039664.html>. [Online; accessed 16-May-2017].