2.2.2 User specifications – format

**1) All results must be described and how these results should be presented. = OUTPUT data from new operations.**

One of the tasks of 2.2 is also to define what other formats and geometries should be available in lhpFusionBox. The RBINs museum and many other museums scan objects with a surface scanner. These objects are then in the textured format of PLY and OBJ. Display colour (one colour one triangle or projected texture (OBJ) extra feature of ply.

One of the limitations of the actual version of lhpFusionBox is that the software is not able to display 3D models with a colour texture in the same way as other software viewers. It is a high priority of the RBINs museum and other museums that you can import and visualise textured objects into lhpFusionBox. The museum has also started working with multispectral imaging and it should be investigated if this texture can also be displayed. The geometries that lhpFusionBox is currently able to read and display are VRML, STL, INP, MTR.

lhpFusionBox should be able to import, read and display PLY and OBJ objects. This is task 3.3.

It would be also useful to have a checkbox to show different textures (PLY, OBJ, Multispectral etc) and an option to switch between different textures. This could be in ‘View’ – The checkbox is not a priority and other tasks should be completed first.

The second format that is required in lhpFusionBox is to have motion capture files that are compatible with the open source software used by the museum (these are Blender and Meshlab and Sketchfab). C3D BTK files are not compatible with these types of software.

A useful format is a .bvh file (These are motion capture files and this would also enable data to be imported from many different sources and motion data to be analysed). This would enable animation to work in blender and meshlab.

 A second useful format would would either .fbx or .blend files. This would enable animation to be directly uploaded onto Sketchfab (which is a 3D platform which will be extensively used in the project and is used by RBINS to show 3D models.)

**2) Methods and algorithms (with bibliographic references) to produce these results must be detailed.**

Possible solutions for the OBJ and PLY models: currently, the FusionBox is able to assign finite element value to a grid of mesh vertices (imported in one of the above-mentioned formats). A quick and easy solution could be to extend this to PLY and OBJ models.

**3) User interface and user actions required to inject INPUT data into the algorithms**

This should be in File-Import-Geometries-OBJ and File-Import-Geometries-PLY. This should also be in This should be in File-Export-Geometries-OBJ and File-Export-Geometries-PLY.

This motion data option should be added in Import – motion analysis - .bvh and Export – motion analysis – .bvh, Import – motion analysis - .blend and Export – motion analysis – blend, Import – motion analysis - .fbx and Export – motion analysis – fbx.