

# SALOME version 7.3.0

## Minor release announcement

December 2013

### ❖ GENERAL INFORMATION

CEA/DEN, EDF R&D and OPEN CASCADE are pleased to announce [SALOME](#) version [7.3.0](#). It is a minor release that contains the results of planned major and minor improvements and bug fixes against SALOME version 7.2.0 released in May 2013.

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## ❖ NEW FEATURES AND IMPROVEMENTS

### PREREQUISITES CHANGES

**Important:** SALOME 7.3.0 is based on the Open CASCADE Technology version 6.7.0. The table below provides the full list of pre-requisite products used with SALOME 7.3.0. The table shows the differences of 3<sup>rd</sup>-party product versions used for SALOME 7.3.0 and 7.2.0; the changes are highlighted in bold.

Product	SALOME 7.2.0	SALOME 7.3.0
Boost	1.52.0	1.52.0
Cgns	3.1.3-4	3.1.3-4
CMake	2.8.10.2	2.8.10.2
Docutils	0.10	0.10
Doxygen	1.8.3.1	1.8.3.1
Expat	2.0.1	2.0.1
Freeimage	3.15.4	3.15.4
freetype	2.4.11	2.4.11
Ftgl	2.1.3-rc5	<b>removed</b>
gl2ps	1.3.8	1.3.8
Graphviz	2.30.0	2.30.0
HDF5	1.8.10	1.8.10
Homard	10.6	<b>10.7</b>
Intel® Threading Building Blocks	3.0	3.0
Jinja2	2.6	2.6
LAPACK	3.4.2	3.4.2
libBatch	2.0.0	<b>2.1.0</b>
Libxml2	2.9.0	2.9.0 <sup>1</sup>
Med	3.0.6	<b>3.0.7</b>
METIS	4.0	4.0
NETGEN	4.9.13	4.9.13 <sup>2</sup>
NumPy	1.6.2	<b>1.7.1</b>
omniORB	4.1.6	4.1.6
omniORBpy	3.6	3.6
omniNotify	2.1	2.1
Open CASCADE Technology	6.5.5	<b>6.7.0</b>
ParaView	3.98.1	3.98.1 <sup>3</sup>

1 Patched for SALOME (bug for 64bit platforms)

2 Patched for SALOME

3 Patched for SALOME (numerous patches of build procedure)

Product	SALOME 7.2.0	SALOME 7.3.0
Pygments	1.5	1.5
PyQt	4.9.6	4.9.6
Python	2.7.3	2.7.3
QScintilla	2.7	2.7
Qt	4.8.4	4.8.4
Qwt	5.2.1	5.2.1
Scotch	5.1.11	5.1.11
Setuptools	0.6c11	0.6c11
SIP	4.14.2	4.14.2
Sphinx	1.1.3	1.1.3
SWIG	2.0.8	2.0.8
Tcl	8.6.0	8.6.0
Tk	8.6.0	8.6.0
TclX	8.4.1	8.4.1
VTK <sup>4</sup>	6.0	6.0
Xdata	0.9.9	0.9.9 <sup>5</sup>
Distene MeshGems suite <sup>6</sup>	1.0.1	1.1 <sup>7</sup>
Distene Hexotic <sup>8</sup>	1.0	included to MeshGems v1.1
wso2-wsf-cpp	-	2.1.0
simanio	-	1.0

For additional information about pre-requisite products and SALOME modules dependencies refer to the paragraph “Supported Linux distributions and pre-requisites” below.

**License restrictions**

- Hereby we explicitly declare that PyQt and QScintilla (by Riverbank Computing Ltd) used by SALOME are distributed under the terms of GPL license, for more details please refer to:
  - <http://www.riverbankcomputing.com/software/pyqt/license>
  - <http://www.riverbankcomputing.com/software/qscintilla/license>

If you plan using SALOME for commercial usage please consider obtaining a commercial license for PyQt and/or QScintilla.

<sup>4</sup> Version, included in ParaView distribution.

<sup>5</sup> Patched for SALOME.

<sup>6</sup> Commercial product; requires license.

<sup>7</sup> Distene MeshGems v1.1 distributed with SALOME 7.3.0 also includes mg-hexa v1.2-1.

<sup>8</sup> Commercial product; requires license.

## MAJOR CHANGES

Major changes introduced by SALOME version 7.3.0 are briefly described in this chapter.

### Porting of build procedure to CMake

The build procedure is fully re-designed in SALOME v7.3.0, now it is based on CMake.

CMake-based build procedure provides fully cross-platform solution that works on both Linux and Windows.

Thanks to these redesign, now all SALOME modules are available on Windows (except HOMARD module that requires **homard** program unavailable on Windows).

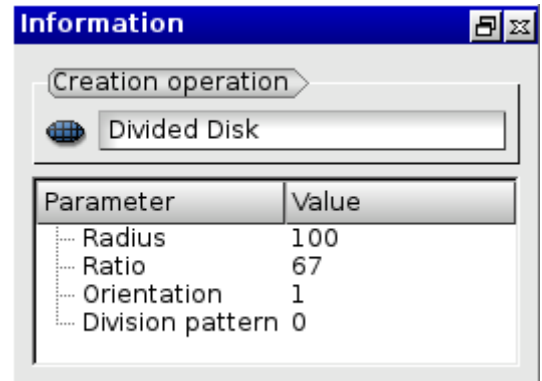
**MAIN IMPROVEMENTS**

**Information window**

**Information** window is now available at the bottom of the Object Browser in Geometry module.

It provides information on the selected geometric object:

- **Creation operation** field shows the name of the operation used to create the selected object.
- The table below lists used **Parameters** and their **Values**.



**Overall Mesh Quality**

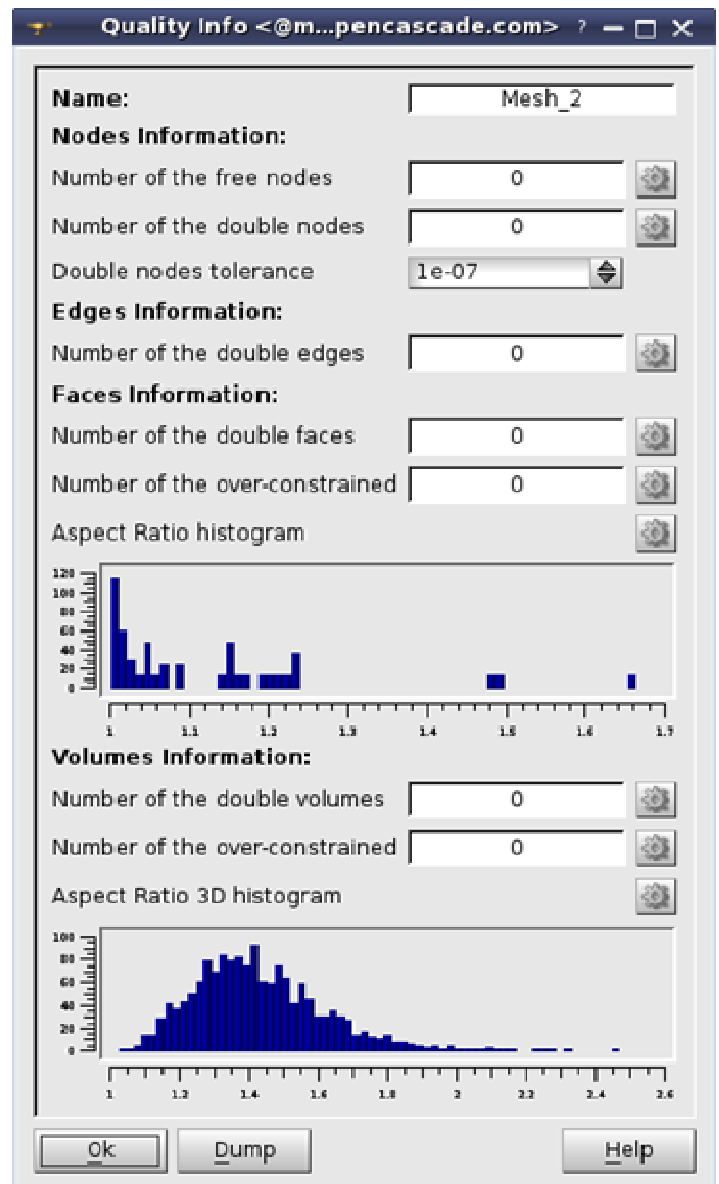
A report about overall quality of a mesh is now available using **Controls** → **Overall Mesh Quality** menu item or the corresponding context menu item.

It provides the following information:

- Number of free nodes;
- Number of double nodes;
- Number of double edges;
- Number of double faces;
- Number of over-constrained faces;
- Aspect ratio histogram;
- Number of double volumes;
- Number of over-constrained volumes;
- Aspect ratio 3D histogram.

Note that for big meshes the computation time for the report can be very long, so it is done automatically only if number of mesh elements does not exceed predefined limit value (the limit for the number of mesh elements can be specified via **Size limit** preference item, available in **Preferences** → **Mesh** → **General**).

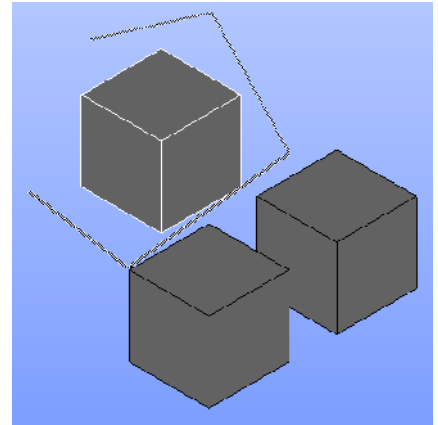
If the number of mesh elements exceeds predefined limit value, it is required to press **Compute** button explicitly to start computation of the corresponding quality information.



### Polyline selection

It has become possible to select an arbitrary part of the graphic area using a polygon frame (rubber band), in addition to the usual selection with a rectangular frame, in VTK viewer. Previously this functionality was available in OCC viewer only.

To produce a **Polyline Selection**, press and hold the right mouse button and draw the first side of the selection polygon, then change the direction by clicking the left mouse button (while keeping right mouse button pressed) and draw another side, etc.

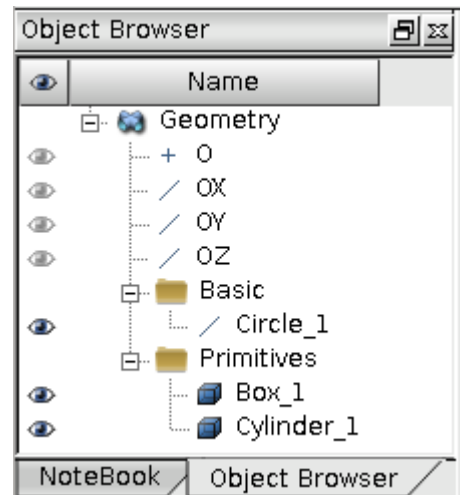


### Folders in the Object Browser

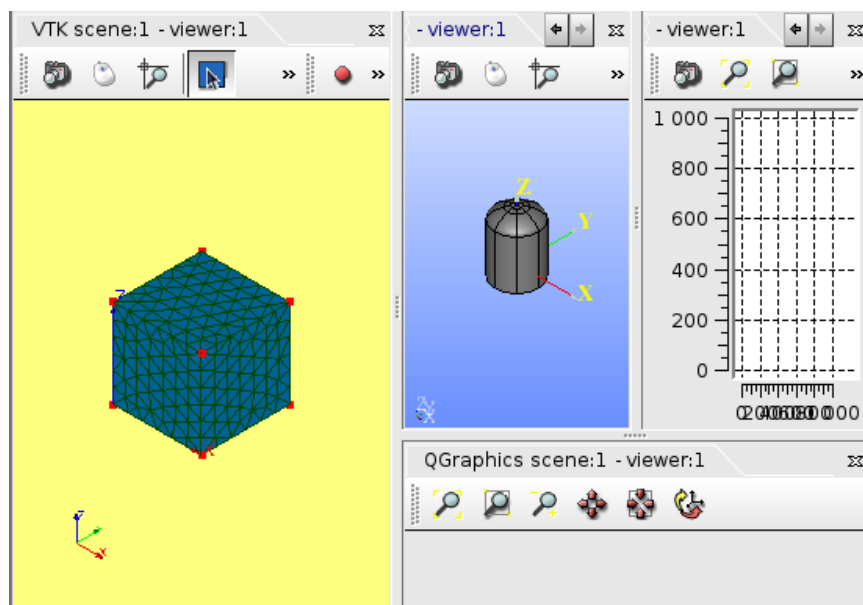
The possibility to classify geometrical objects by moving them into folders has been implemented in Geometry module.

To create a folder, right-click on the root Geometry Object Browser item or on another folder and select **Create folder** in the context menu.

It is possible to drag and drop into the folders other folders or geometrical objects.



### Arrange Views



**Arrange Views** command is now available in **Window** menu to choose the layout of several (from 2 to 4) open views.

Various layouts are possible depending on the number of views opened simultaneously.

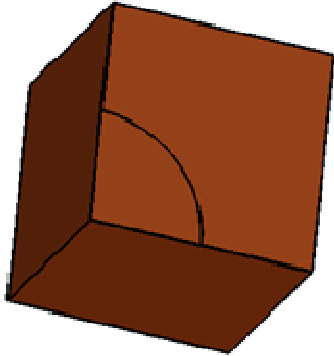
The excess views can be closed or stacked in the last tab area.



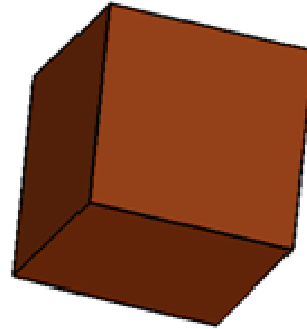
### Union Faces

**Union faces** operation that unites all faces sharing one surface on a given shape is now available using **Repair** → **Union Faces** menu item.

It provides a simplified behavior that unites faces without applying extra options provided by **Remove Extra Edges** algorithm, which sometimes gives unwanted results.



*This is a box with two faces lying on the same surface from one side*

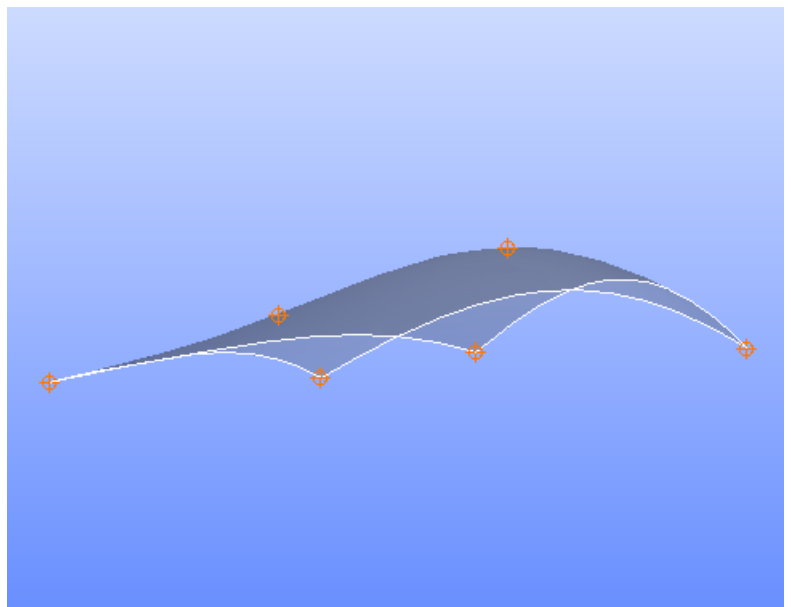


*The faces have been united after the operation*

This operation is also available from TUI using the command `geomBuilder.UnionFaces(shape)`

### Surface from a cloud of points

To create a surface from a cloud of points, select in the main menu **New Entity** → **Advanced** → **Smoothing Surface** and select the points in the viewer or input their IDs in the corresponding field.



This function is also available using a TUI command: `geomBuilder.MakesmoothingSurface(Points)`

### List of objects in Boolean Operations

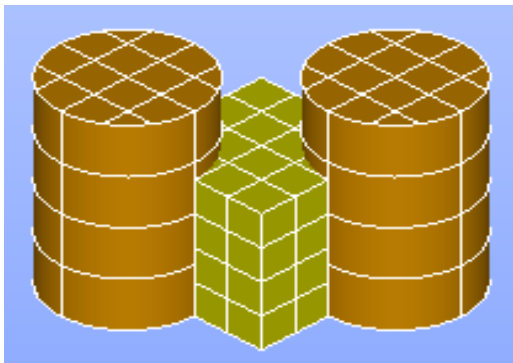
Fuse, Common and Cut Boolean operations now can accept a list of arguments at input instead of only two arguments as previously.

- **Fuse and Common:** All selected objects will be fused in a single resulting shape.
- **Cut:** it is possible to define the main shape and the list of shapes that are cut from it.

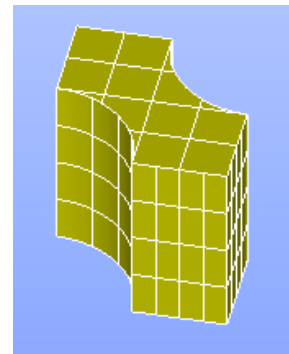
The corresponding Python methods are also provided

- `geomBuilder.MakeFuseList(shapesList)`
- `geomBuilder.MakeCommonList(shapesList)`
- `geomBuilder.MakeCutList(mainShape, shapesList)`

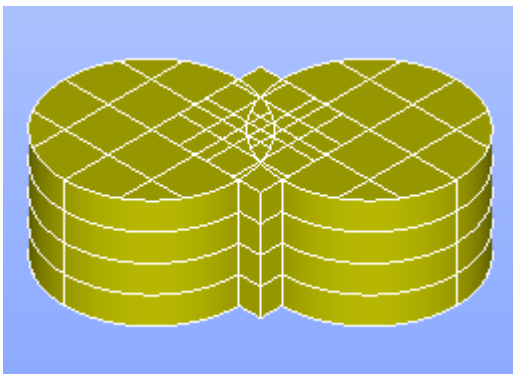
See the examples:



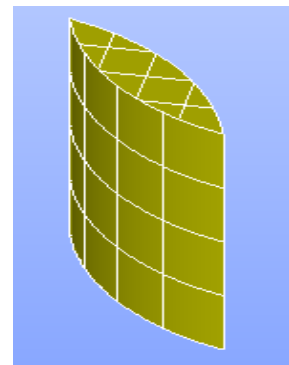
*Cut of a box with two cylinders*



*Resulting shape*



*Common of a box and two cylinders*



*Resulting shape*

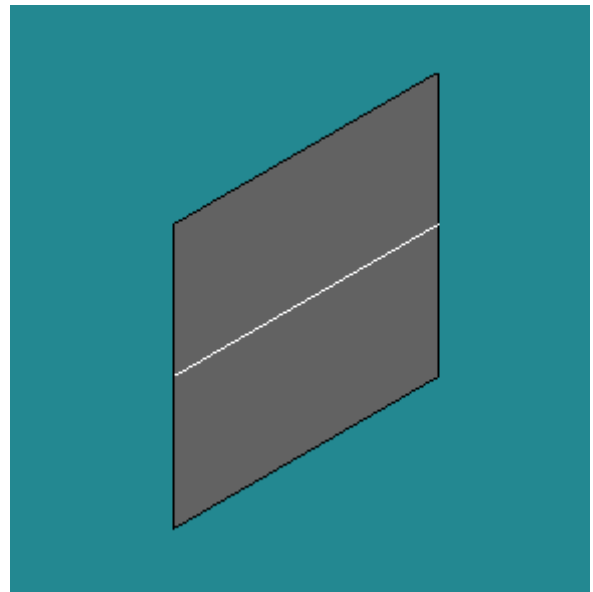
### Isoline curve

New type of basic object - an **Isoline** has been implemented in the Geometry module.

Isoline is a 3D curve built on a bounded face limited by values of U [ $U_{min}$ ,  $U_{max}$ ] and V [ $V_{min}$ ,  $V_{max}$ ] parameters. For all its points U or V parameter value is constant.

To create an Isoline of a face select in the main menu **New Entity** → **Basic** → **Isoline**.

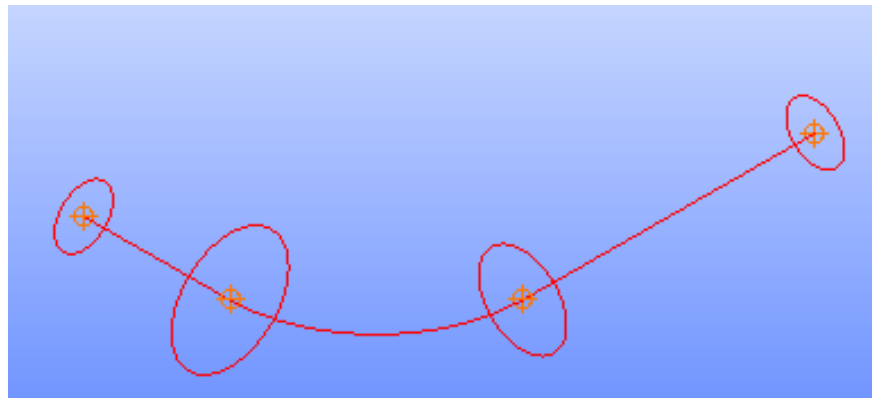
An Isoline can be defined by the face, on which it is built, the parametric direction (U or V) and the Parameter (ranging from 0 to 1), which defines the proportion, at which a face is divided by the isoline. If Parameter=0.5, the isoline is a median.



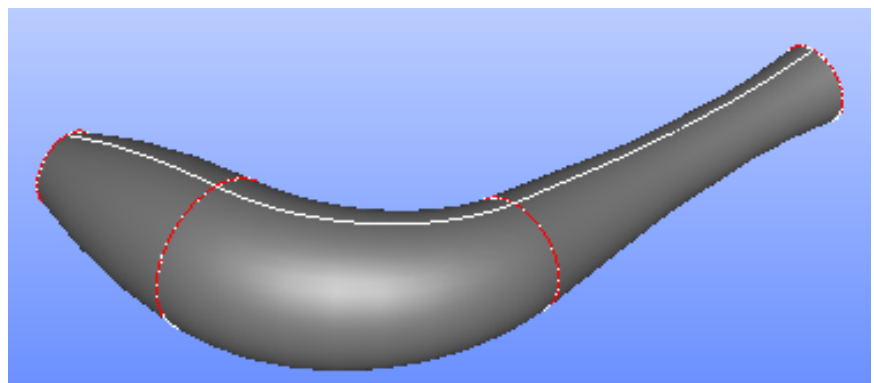
*Isoline on a rectangular face*

### Pipe construction from a list of profiles

**Extrusion along path** object now can be constructed in GUI from a list of **Objects** (edges, planar wires, faces or shells), which will be extruded and a list of vertices that specify the **Locations** of extruded Base Objects on the **Path Object**.



*Base objects and location vertices*



*Extrusion of the profile shapes along the path shape*

Previously this function was only available as a TUI Python command:

```
geomBuilder.MakePipeWithDifferentSections()
```

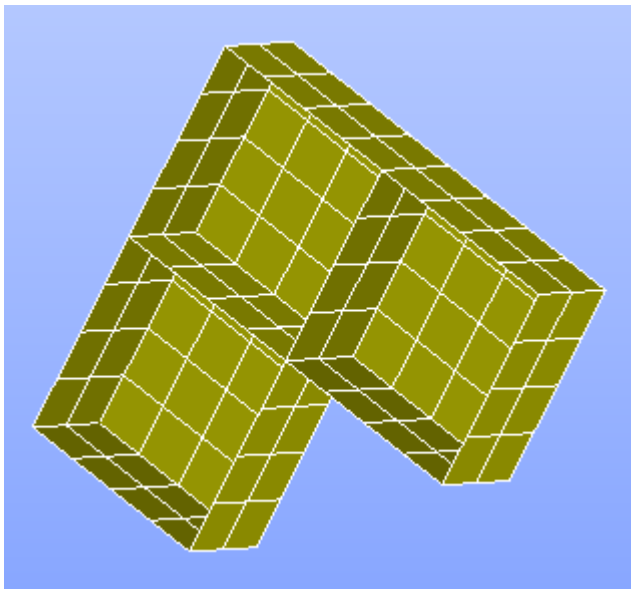
### Remove Internal Faces

**Remove internal faces** is a new geometry **Repair** operation, which removes all shared faces from a compound to obtain one or more bigger solids from a set of smaller solids.

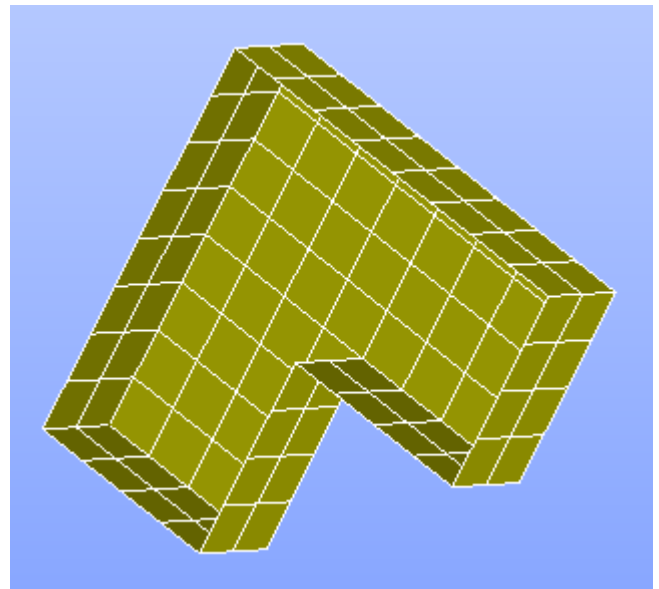
Note that only shared faces will be removed, while coincident but not shared faces will remain. Use **Glue Faces** or **Partition** before **Remove Internal Faces** if you need to remove them.

This operation is also available via TUI command  
`geomBuilder.RemoveInternalFaces(compound)`

where `compound` is a compound of solids.



*Compound created from three adjacent boxes before the operation.*



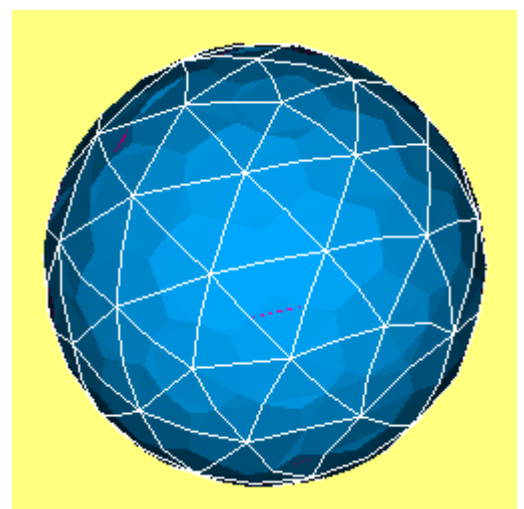
*Internal faces have been removed.*

### Bi-Quadratic Triangles

Bi-Quadratic triangular elements (TRIA7) are now supported in Mesh module. These are quadratic triangles with an additional node in the center.

There are several ways to add them:

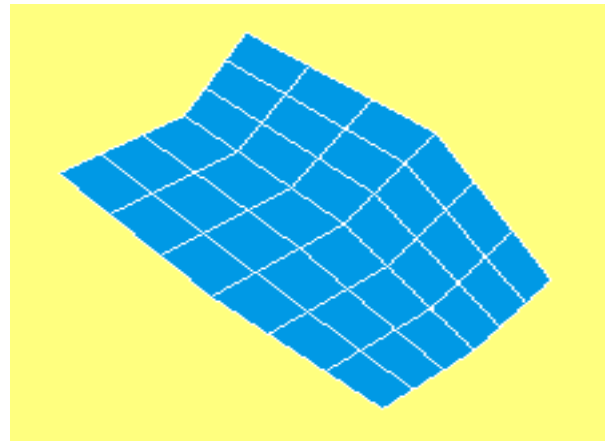
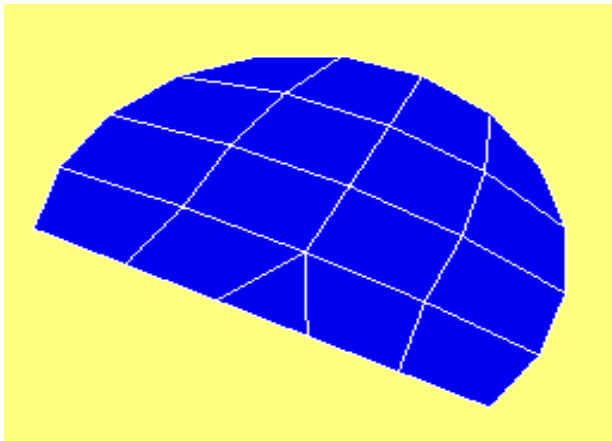
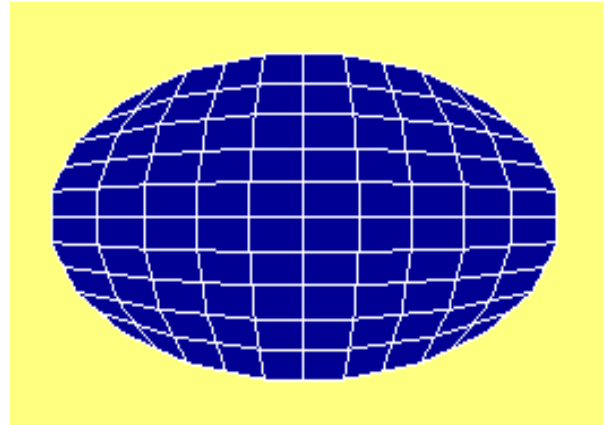
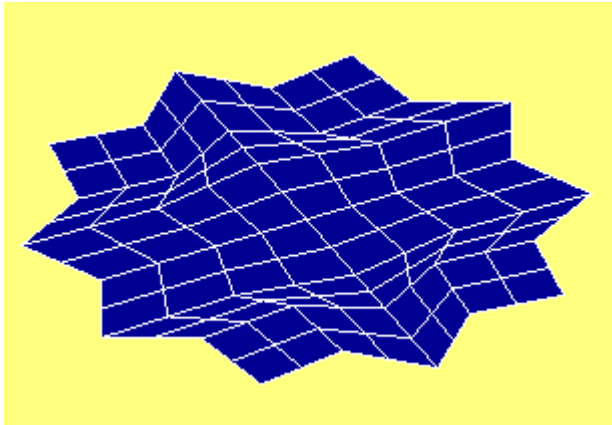
- Manually via **Modification** → **Add** → **BiQuadratic Triangles**;
- By conversion from linear or quadratic triangles via **Modification** → **Convert to/from quadratic**;
- By **Import** from file of MED or GMF format;
- By splitting bi-quadratic quadrilateral faces via **Modification** → **Split into Tetrahedra**.



*Sphere meshed with bi-quadratic triangles*

### Quadrangle mesh on faces with more than 4 edges

Quadrangle (Mapping) algorithm now can mesh faces with any ( $> 4$ ) number of edges. In this case 4 vertices with the sharpest convex angle are considered as the corners of a quadrangle and all edges between these vertices are processed as composite sides of the quadrangle.

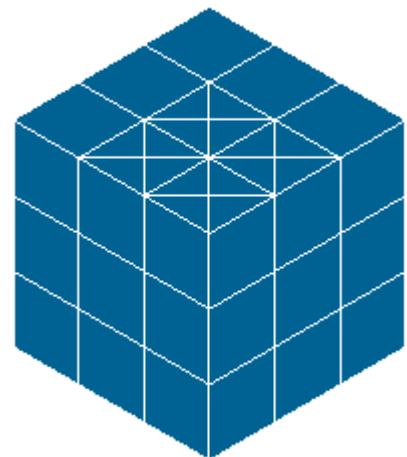


### Split quadrangle into four triangles

It has become possible to cut a quadrilateral element into 4 triangles by adding a new node at its center and forming four triangles based on the new central node and corner nodes of quadrilateral.

This feature is available in GUI as **Cut into 4 triangles** option in **Cutting of Quadrangles** dialog or in Python API via `QuadTo4Tri()` function.

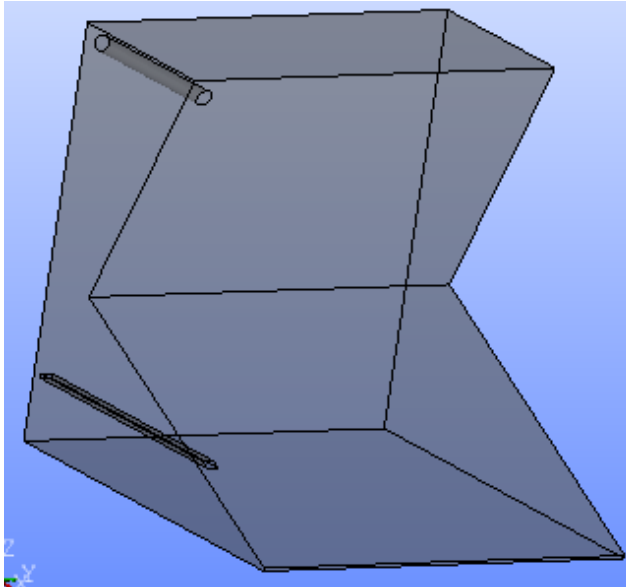
In the image, four mesh cells of a box have been cut into quadrangles.



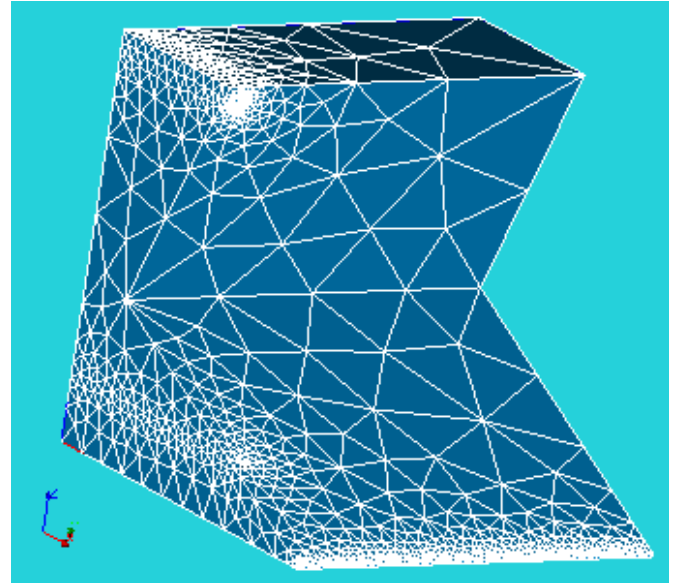
### Adaptive hypothesis

**Adaptive** hypothesis is now available as a 1D Mesh hypothesis to define the appropriate 1D mesh for the entire model, without the need to define multiple 1D sub-meshes.

It allows splitting edges into segments with a length that depends on the curvature of edges and faces and is limited by **Min Size** and **Max Size** (defines segment length on straight edges). The length of a segment also depends on the lengths of adjacent segments (that cannot differ more than twice) and on the distance to close geometrical entities (edges and faces) to avoid creation of narrow 2D and 3D elements.



*Geometrical object with two holes*



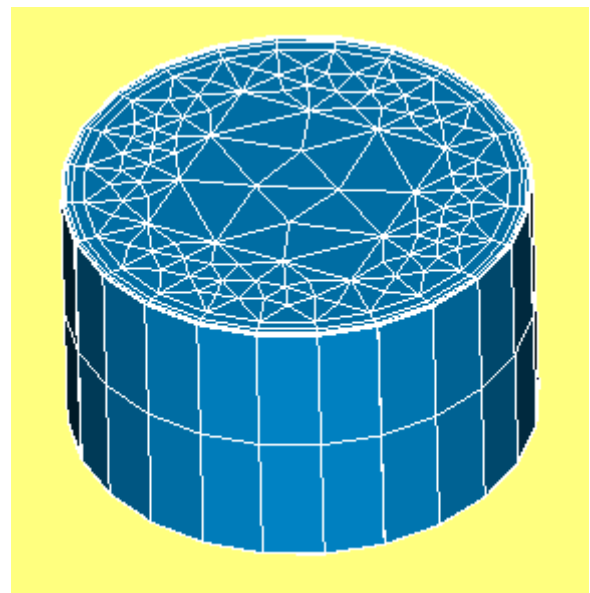
*Resulting mesh object with finer mesh around holes*

### Viscous layers on shared edges

It has become possible to create mesh using **Viscous Layers 2D** hypothesis not only on “free edges”, but also on the outer edges of the sub-shape to which the hypothesis is assigned, even if they are shared with faces of another sub-shape. However, the edges shared by faces of the sub-shape will be ignored.

If **Viscous Layers 2D** hypothesis is assigned to a group of faces, all faces of group are considered together, and the viscous layers are not constructed on all edges of each face of the group.

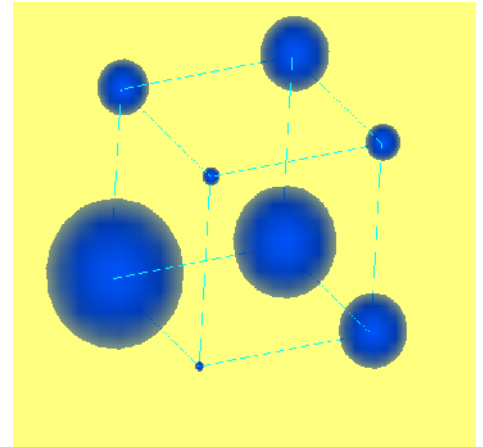
See in the image 2D viscous layers constructed on boundary edges of a sub-mesh on a disk face.



### Improved visualization of discrete elements

Discrete mesh elements (balls) are displayed now as spheres; radius of each sphere corresponds to the value specified for the ball element (see image at the right).

Note: this feature is implemented by means of OpenGL point sprites, so it works properly only if point sprites extension is supported by the graphic card driver. Otherwise, ball elements are drawn as OpenGL points.



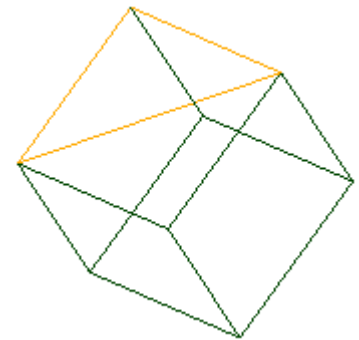
### Bad Mesh to Group

**Bad Mesh to Group** button is now available in Compute Mesh dialog if the meshing algorithm reports mesh entities preventing mesh generation.

When clicked, the button creates a group (or several groups, if there are "bad elements" of different types) containing "bad elements".

This provides a more comfortable analysis of "bad elements".

In the image, bad edges preventing mesh computation are shown in orange.

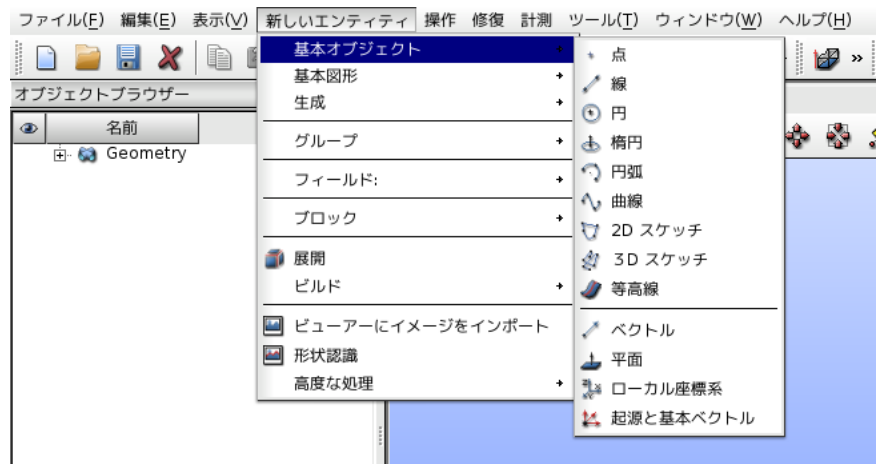


### Japanese Localization

SALOME has been translated into Japanese entirely thanks to the effort of the community.

We would like to thank the people who took care of the translations and spent much time on this (in the alphabetical order):

- Shoichi ENOKIDO
- Masanori KOMURA
- Kengo MAEDA
- Takeshi SUGIMOTO
- Akihiko TOKUDA
- Luca DALL'OLIO who has set up the collaborative website on Crowdin and initiated this work.



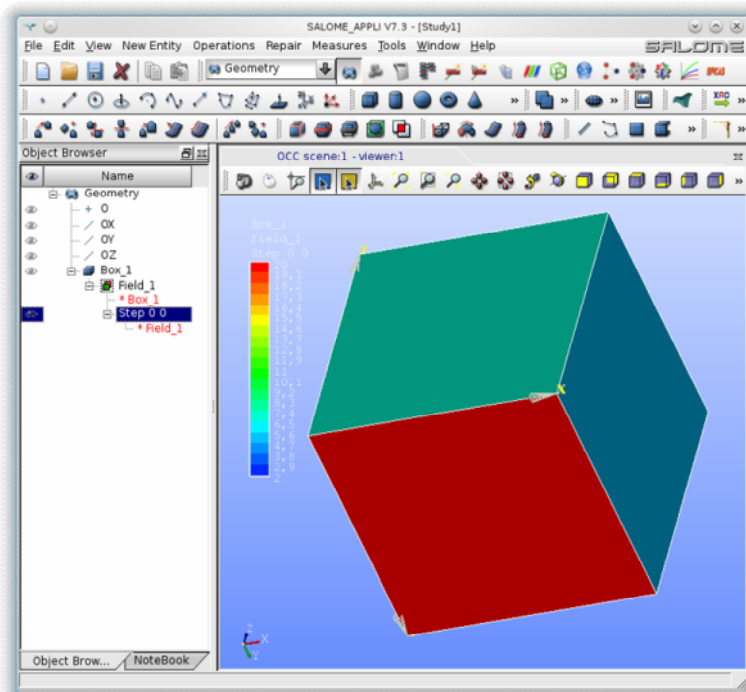
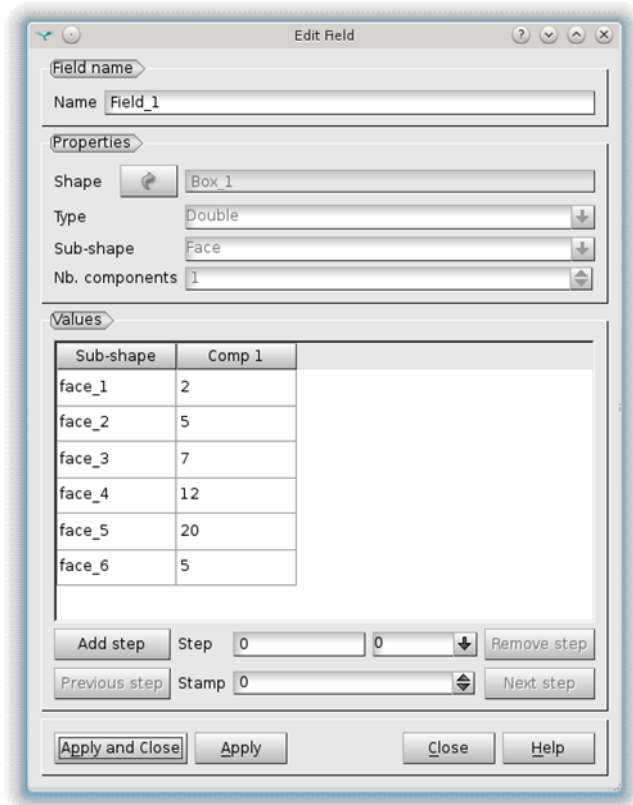
### Fields on geometry

It is possible now to create fields on geometry.

To create new field, select a shape in the Object browser and invoke **New Entity** → **Field** → **Create field** menu.

To specify the field it is necessary to:

- Choose the type of data: Integer, Double, Boolean or String;
- Choose the sub-shape type: Vertex, Edge, Face, Solid or Whole Shape;
- Enter number of field component s (1 by default);
- Create 1 or more time stamps.



Resulting field can be display in color scale mode in the 3D viewer (currently only OCC viewer is supported).



### Keyboard free navigation mode

Keyboard free navigation mode for OCC and VTK viewers has been revised. The following behavior has been implemented:

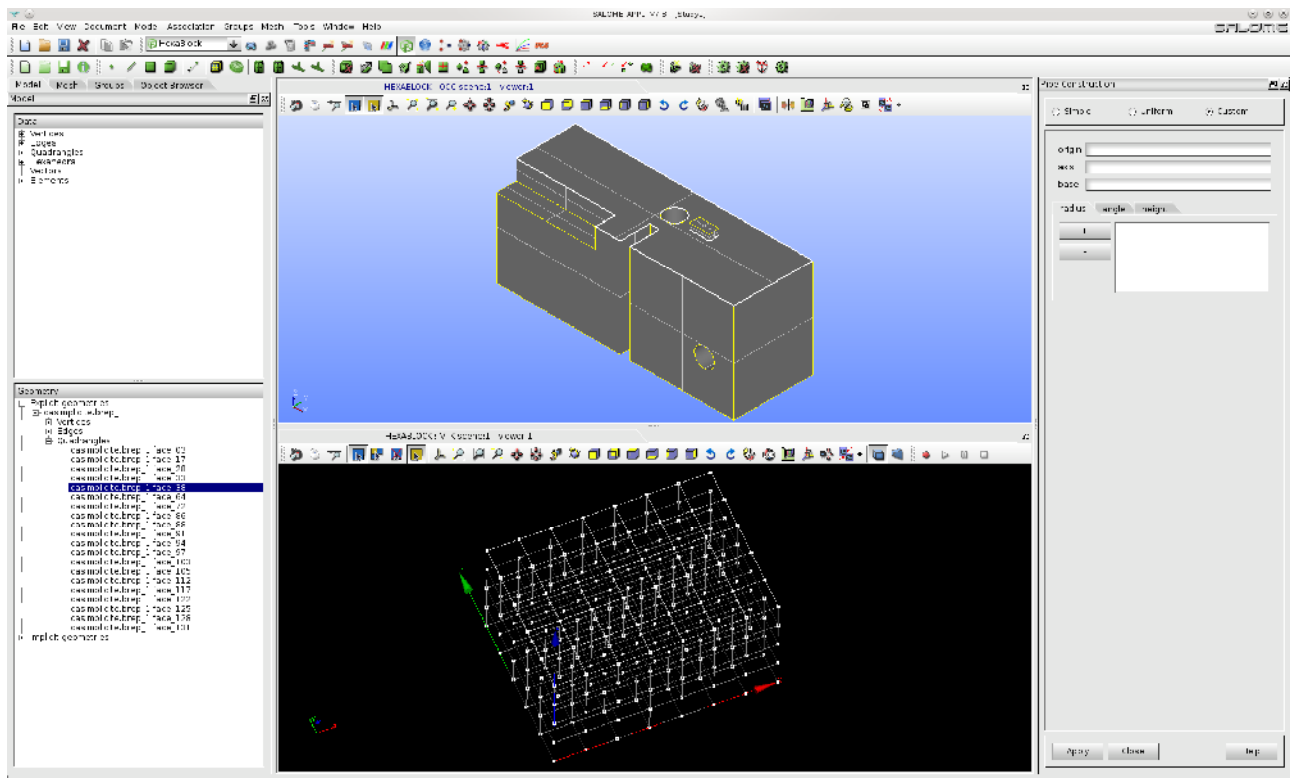
- Left mouse button (LMB) starts ROTATE operation;
- Middle mouse button (MMB) starts PANNING operation;
- Right mouse button (RMB) starts ZOOMING operation;
- Ctrl + LMB performs selection;
- Shift + LMB performs multiple selection (adds picked objects to the current selection);
- Ctrl + LMB starts rectangle selection.
- Ctrl + LMB + RMB starts rectangle polygonal selection.

Additionally the preferences of the OCC and VTK 3D viewers have been redesigned as follows:

- “3D viewer” tab from “SALOME preferences” contains common preferences for OCC and VTK 3D viewers, such as Navigation style, Zooming style and Trihedron preferences;
- “OCC 3D viewer” tab now contains only “background” preferences.
- “VTK viewer” contains “background” and other VTK-specific preferences.

### HEXABLOCK IMPROVEMENTS

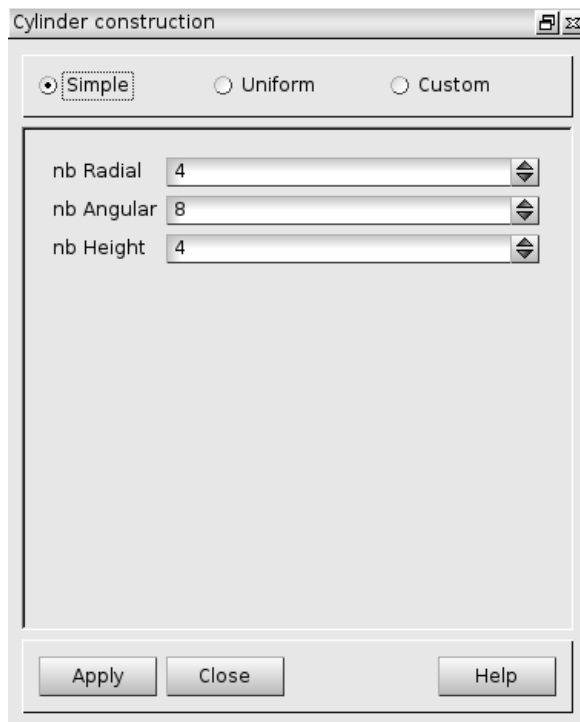
Ergonomics of HexaBlock module has been revised in SALOME version 7.3.0; see figure below.



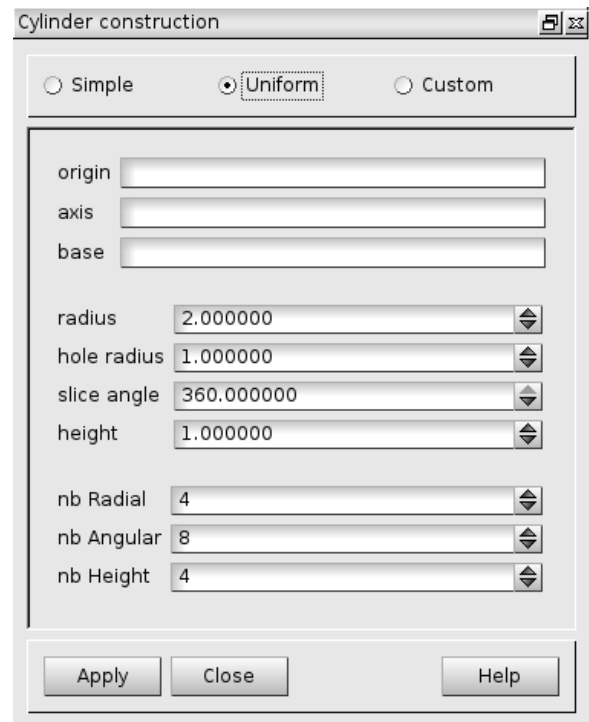
The management of shapes and sub-shapes is now done directly by HexaBlock and Geometry module is only needed to import or build geometry model.

When a height, a length or a radius is needed to be entered in a dialog box, it is possible to select respectively an edge or an arc of circle in the Geometry module.

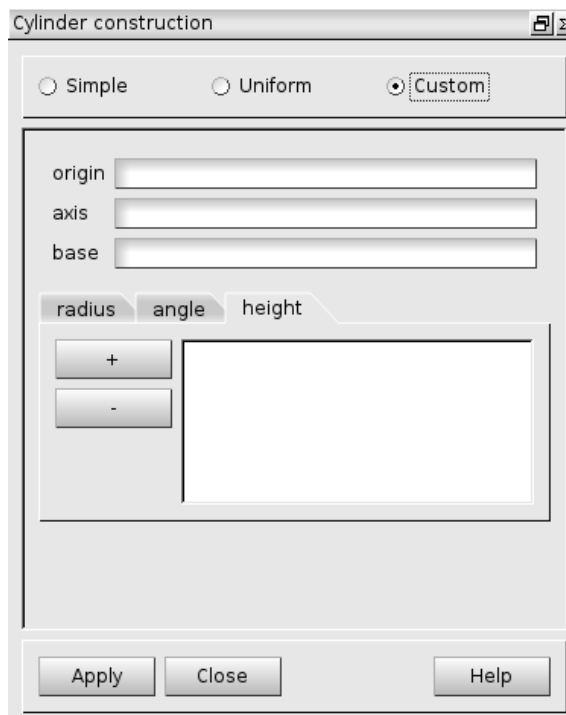
The API to build a model of blocks has been generalized and the corresponding dialog boxes have been revised. The functions that build specific model of blocks have all 3 syntaxes or dialog box, like for of example:



*Build a pure topological model of blocks*



*Build a topological model of blocks*



*Build a model of blocks with values taken from the geometry, and benefit directly of the implicit association*

### JOBMANAGER IMPROVEMENTS

- "Exclusive" option has been added to specify if a job can share nodes with other jobs or if it uses the nodes exclusively.
- Memory requirements for a job can be specified "per core" if the batch manager supports it (currently, this feature is only available with SLURM).

### OTHER IMPROVEMENTS

- In Geometry module it is possible to sort child sub-objects of some "main" object via the corresponding context menu item.
- Bounding Box operation in Geometry module now returns more precise coordinates of the bounding box (however, in complex cases this might result in some loss of performance).
- In Geometry module a simplified API for creating 2D sketch has been added. This new Python API allows simplified usage of the sketcher for creation of 2d wires; this is done by means of Sketcher2d class in gsketcher.py Python module. The API of 2D Sketcher has been implemented as much closer to the API of 3D Sketcher as possible, in order to have unified behaviour for both sketchers. The improvement also includes modification of the way the 2D Sketch command is dumped to the Python script - it is done now using new Python API.
- Geometry module introduces notion of XAO document format; this is an extension to OCCT BREP file that, in addition to the model itself, includes description of groups, fields, sub-shapes and auxiliary information, in terms of XML-like syntax. Import/export operations of files in XAO format have been added to Geometry module.
- The PipeTShape function in Geometry module now also automatically creates a group of internal surfaces (faces inside a pipe) in addition to other groups; this can be useful for applying of pressure limit conditions at the computation step.
- Import data from STL files has been added to the Geometry module. Result of this operation is a shell of triangular faces.
- In Geometry module, new function has been added to create a point as a projection to an edge or wire. Resulting point on an edge corresponds to a minimal distance to the original point; both points are in the normal plane to the edge.
- In Mesh module, an algorithm to pick-up colors automatically assigned to the groups with "Auto-Color" feature has been redesigned to provide more distinct colors.
- In Mesh module new dialog box displaying summary information on selected mesh objects has been added; it provides information about total length of all 1d elements, total area of all 2d elements and total volume of all 3d elements.
- In Mesh module, transformation operations (Translation, Rotation, etc.) can be now applied to several mesh objects (meshes, sub-meshes, groups).
- "Viscous Layers 2D" hypothesis in Mesh module now allows specifying edges on which the viscous layers should be created.
- Clipping in the OCC 3d viewer is now not reset after closing "Clipping" dialog box. It is also possible now to set-up several clipping planes simultaneously. Each clipping plane can be specified either in global coordinates or relatively to the bounding box of the current graphical scene.
- To improve performance of the view operations (rotation, panning, zooming) on large scenes with a lot of complex objects it is now possible to switch off pre-selection and/or selection of the objects in OCC and VTK 3d viewers.
- In YACS module it has become possible to put all content of the graph into ForEachLoop or OptimizerLoop node using new submenu "Put Graph Content in Node" in the "Proc menu" context menu. The submenu contains "OptimizerLoop" item and "ForEachLoop" list with possible types of node.

- In YACS module, commands “Shrink/UnShrink nodes” nodes have been added to the graph; when invoked, these commands are applied to all the nodes of the scheme.
- And other improvements, see “Bug corrections” chapter for more details.

## MED MODULE CHANGE LOG

### New features

- Field of int32 in MEDLoader advanced API
- MEDLoader advanced API manages partial loading/unloading
- MEDLoader advanced API gives basic data for VTK dataset by minimizing at most the copies
- med2case
- Renumberer is available from a python module directly
- MEDCouplingUMesh::distanceToPoints
- MEDCouplingMesh::computeNbOfFacesPerCell
- Split of components in MEDFileField
- MEDCoupling objects can write into VTK file with binary mode (the default mode of writeVTK)
- DataArray\*::accumulatePerChunk
- DataArray::GetSlice,DataArray::getSlice for multiprocessing
- Memory footprint of all MEDCoupling/MEDLoader objects with getHeapMemorySize and getHeapMemorySizeStr
- RefCount::getRCValue()
- MEDCouplingStructuredMesh.IsPartStructured
- New unstructured meshes: MEDCoupling1SGTUMesh + MEDCoupling1DGTUMesh for users having single geo type meshes
- DualMesh
- Tetrahedrize
- MEDCouplingFieldDouble::nodeToCellDiscretization
- Kriging in spacedimension 2
- 3D P1P1 barycentric intersector
- Externalization of Kriging matrices for interpolation
- CSR output matrix (scipy) MEDCouplingRemapper::getCrudeCSRMatrix
- DataArrayInt::getIdsEqualTuple
- MEDCouplingUMesh::computePlaneEquationOf3DFaces to detect warped faces
- DataArrayInt.FindPermutationFromFirstToSecond

### Bug corrections

- toNumPyArray(): no more copy needed
- MEDFileMesh::normalizeFamIdsMEDFile (follow MED file rules)
- MEDFileMesh::changeGroupName
- toNumPyArray when number of components > 2
- MEDFileFields::changeMeshNames
- MEDCouplingUMesh::Intersect2DMeshes

- o MEDCouplingPointSet::rotate in Python

#### Behavior modification

- o C++ compiler has to manage the covariance feature of C++
- o scipy can be optionally a dependency of MEDCouplingRemapper
- o MEDCouplingMesh::getBarycenterAndOwner: computation of SEG3 lgth&bary 2D, QUAD8 bary2D, TRI6 bary2D, QPOLYG bary2D (takes into account the true shape of quadratic cells)
- o MEDCouplingUMesh::getCell(s)ContainingPoint(s) management of non-convex for cell types POLYGON and QPOLYGON
- o DataArrayInt.BuildUnion, DataArrayInt.buildUnion no more throw when value is negative
- o DataArrayInt.BuildIntersection, DataArrayInt.buildIntersection: no more throw when value is negative
- o Behavior modification in MEDCouplingMesh::getDistributionOfTypes: -1 in values  $3*i+2$
- o MEDCouplingUMesh::getBoundingBoxForBBTree (addition of facultative input parameter for 2D quadratic cell case)
- o DataArrayDouble::findCommonTuples works with number of components 4
- o MEDCouplingMesh::buildPartRange returns this if the input range points to all cell of this

#### API modification

- o Suppression of P1P0Bary policy in InterpolationOption → setInterpolationOptions method last input argument has been removed. To replace it, InterpolationOptions::get(set)IntersectionType: addition of Barycentric enumeration in addition of Triangulation, PointLocator, ...
- o HasNumpyBindings → HasNumPyBindings (Python)
- o C++/Python API modification: MEDLoader::setEpsilonForNodeComp → MEDLoader::SetEpsilonForNodeComp
- o C++/Python API modification: MEDLoader::setCompPolicyForCell → MEDLoader::SetCompPolicyForCell
- o C++/Python API modification: MEDLoader::setTooLongStrPolicy → MEDLoader::SetTooLongStrPolicy
- o Suppression of unused class MEDCouplingUMeshDesc

## ❖ BUG CORRECTIONS

### GUI MODULE

21708	<p>Summary: [CEA 586] Object browser sort only children</p> <p>“Sort children” context menu item has been added in Geometry and Mesh modules.</p> <ul style="list-style-type: none"> <li>In Geometry module this operation is available for any object that has more than one child sub-object.</li> <li>In Mesh module it is available for sub-meshes and groups containing items.</li> </ul>
21709	<p>Summary: [CEA 583] Toolbar preferences</p> <p>Default settings for toolbars and dockable windows have been introduced for the GEOM, SMESH and ParaVis modules.</p> <p>“Save positions of tool bars” control has been added into SALOME General preferences.</p>
21883	<p>Summary: [CEA 674] Deactivate pre-selection in OCC and VTK viewer</p> <p>It has become possible to deactivate pre-selection of elements in OCC and VTK viewers to improve viewer performance.</p>
22077	<p>Summary: EDF 2272 : Selection with ParaView interaction mode in GEOM/SMESH</p> <p>Keyboard-free navigation mode has been implemented for both OCC and VTK 3D viewers. The preferences of both viewers have been redesigned.</p>
22171	<p>Summary: EDF 2477 GUI: Redesign of the “split” action and addition of a “tile” action</p> <p>Arrange Views functionality has been added. To customize the layout of several opened viewers.</p>
22174	<p>Summary: [CEA 793] De-activate entirely selection in order to have a fast view usage</p> <p>It has become possible to deactivate selection of elements in OCC and VTK viewers to improve viewer performance.</p>
22196	<p>Summary: [CEA 808] On windows version, impossible to rename objects in object browser</p> <p>“Rename” context menu item has been restored in SALOME version on Windows.</p>
22241	<p>Summary: [CEA 877] Study tree folds back when click on Apply</p> <p>Fixed regression with study tree update.</p>
22259	<p>Summary: EDF 2683 SMESH: Allow to disable the pre-selection highlighting</p> <p>Duplication of issue 21883.</p>
22260	<p>Summary: EDF 2675 GEOM, SMESH: Add a shortcut for the FitAll action</p> <p>“Space” key has been assigned as a shortcut for “Fit all” viewer action.</p>
22287	<p>Summary: [CEA 912] Notebook: clicking on “update study” returns an error message</p> <p>Now the study can be correctly updated after some notebook variables have been changed.</p>
22317	<p>Summary: [CEA 925] GUI: An object creation by clicking “apply” refolds the study tree</p> <p>Duplication of issue 22241.</p>
22389	<p>Summary: [CEA 980] Use the “.” as a decimal separator and not use the “,” as a thousand separator</p> <p>The use of thousands separator has been explicitly disabled for “C” locale.</p>

22390	Summary: [CEA 967] Latency enhancement after a selection of a displayed object Synchronization of selection between Object Browser and 3D Viewers is now switched off if the selection in 3D Viewer is disabled.
22429	Summary: [CEA 1018] The study tree folds when executing a script Duplication of issue 22241.
22439	Summary: The YACS panels are persistent when changing module YACS panels are now properly closed when another module is activated.
22440	Summary: The panels position of "Model", "Groups" and "Mesh" of module HEXABLOCK is not stored The position of panels of HEXABLOCK and JOBMANAGER modules are now properly stored.

**GEOM MODULE**

21563	Summary: EDF GEOM: Extrusion with scale factor sometimes gives wrong shapes OCCT algorithm creating a prism by scaling its base faces has been improved to provide correct orientation of wires. Now wire origins are superposed before checking the distance between vertices. The fix for this problem has been made in issue OCC23162.
21684	Summary: Display the arguments and the name of the operations New dockable window "Information" has been implemented to provide information about the selected object.
21757	Summary: Activate bring to front action on simple selection of an object Now the selected objects are automatically brought to the top of view without any additional menu actions. This behavior can be switched on/off in the preferences.
21792	Summary: [CEA 624] Keep the clipping The clipping in OCC viewer is not reset after dialog box closing.
21835	Summary: EDF 2070 GEOM : Problem with detecting Self-intersections Two problems arising at the attempt to detect self-intersections on a shape imported from IGES file have been fixed: <ul style="list-style-type: none"> <li>• Critical error if the model is imported in ignore units mode.</li> <li>• Problem with duplicated poles of b-spline curves.</li> </ul>
21855	Summary: EDF 2321 GEOM : Add folders to group objects in the object browser "Drag&Drop" mechanism and the possibility to create special containers (folders) for objects have been integrated to Geometry module.
21866	Summary: [CEA 670] Returning exact coordinates of the bounding box It has become possible to get the exact coordinates of a bounding box (usually they are calculated approximately for performance reasons). <ul style="list-style-type: none"> <li>• Via TUI using Boolean parameter precise, e.g. <code>def BoundingBox(self, shape, precise=True);</code></li> <li>• Via GUI using Precise checkbox in the bounding box construction dialog.</li> </ul>
21934	Summary: [CEA 694] Delete the internal faces of an object. "Remove Internal Faces" functionality, which allows rebuilding the topology of a compound of solids by removing the faces shared by several solids, has been implemented.

21935	<p>Summary: [CEA 696] Possibility to delete an object even if it was used before to create another one</p> <p>It has become possible to remove geometrical objects referenced by other objects (including SMESH module entities) from GUI. The user is warned that Python dump will probably be incorrect in that case.</p>
21939	<p>Summary: EDF 2462 GEOM : Issue when trying to create a shell and a solid from a filling</p> <p>A warning has been implemented to inform the user in case if MakeShell cannot produce a shell and produces a compound of faces instead.</p>
21976	<p>Summary: [CEA 712] Regression in the MakeCut method in V6_6_BR version</p> <p>Fixed regression in Boolean operations.</p>
21987	<p>Summary: Vertices are not displayed in GEOM if we have closed a study</p> <p>Logics of OCCT Erase and EraseAll methods have been changed. Now they methods do not remove resources from Grapic3d_Structure, but change the visibility flag in it. This allows properly computing the erased objects again after the view is closed.</p> <p>The fix for this problem has been made in issue OCC23654.</p>
22081	<p>Summary: EDF 2386 GEOM: Union of a list of objects</p> <p>Fuse, Common and Cut Boolean operations now can accept a list of arguments at input instead of only two arguments as previously.</p>
22088	<p>Summary: EDF 1631 GEOM : 2D sketcher interface</p> <p>The Python API of 2D Sketcher has been redesigned and implemented in gsketcher.py Python module. It is now as close as possible to the API of 3D Sketcher to provide a unified behavior where it is possible.</p>
22094	<p>Summary: EDF GEOM 2438 : Pipe T-Shape publish the group of internal surfaces</p> <p>The group of internal surfaces (i.e the faces which are inside the pipe) is now automatically published at Pipe T-Shape creation, which allows applying to it pressure limit conditions at the computation step.</p>
22133	<p>Summary: EDF 2581 GEOM: Crash when building a face from a wire</p> <p>The algorithm finding surface BRepLib_FindSurface has been modified to avoid problems with a temporary face created by BrepLib_MakeFace algorithm.</p> <p>The fix for this problem has been made in issue OCC23785.</p>
22146	<p>Summary: [CEA 784] [OCC_bop2] common fails between a box and cylinders with rounded ends</p> <p>The OCCT algorithm for splitting into intervals has been corrected in method IntTools_FaceFace::SetList.</p> <p>The fix for this problem has been made in issue OCC24053.</p>
22147	<p>Summary: [CEA 785] OCC_bop2: export BREP makes a wrong common after importing in 6.6.0 version</p> <p>The fix for this problem has been made in issue OCC24053.</p>
22148	<p>Summary: [CEA 786] OCC_bop2: Incorrect partition operation</p> <p>The fix for this problem has been made in issue OCC24053.</p>
22178	<p>Summary: [CEA 798] Sewing: Make option NonManifoldMode available in GEOM</p> <p>It has become possible to activate Non-manifold mode using "Allow Non-Manifold" check-box in the "Sewing" dialog box.</p> <p>This can be useful, for example, to repair a CAD model imported with multiple faces that come</p>



	<p>together on a single edge.</p> <p>The corresponding Boolean parameter <code>theAllowNonManifold</code> (False by default) can also be used with Python commands <code>MakeSewing</code> and <code>Sew</code>.</p>
22179	<p>Summary: [CEA 800] Suppress common edges on two continuous faces without using "RemoveExtraEdges"</p> <p>"Union faces" operation has been implemented to unite all faces sharing one surface on a given shape.</p>
22209	<p>Summary: EDF 2162 GEOM: Warn the user when he does a bad selection in the create group dialog</p> <p>"Create a group" dialog now provides a warning if the user selects an object which is not a sub-shape of the main shape. The warning advises hiding extra shapes from the viewer</p>
22220	<p>Summary: EDF 2656 GEOM: Wireframe display mode when selecting sub-shapes with Explode</p> <p>The dialog box "Sub-Shapes selection" for Explode functionality has been improved: when "Select Sub-shapes" check box is switched on, the sub-shapes are displayed in the same display mode as the main shape. If the main shape was not yet displayed, a default display mode from preferences is used.</p>
22227	<p>Summary: [CEA 827] Building a surface from a cloud of points</p> <p>It has become possible to build a surface from a cloud of points.</p>
22232	<p>Summary: [CEA 837] Memory corruption in GEOM/SMESH that leads to <code>segfault</code> on debian64</p> <p>The OCCT classes implementing Strings (ASCII, HASCII and extended) have been updated to avoid use of obsolete macros.</p> <p>The fix for this problem has been made in issue OCC11758.</p>
22251	<p>Summary: EDF 2679 GEOM: GetShapesOnBoxIDs with a box created through a mirror</p> <p>Get Shapes on Box IDs operation has been fixed to get proper orientation of objects resulting from Mirror operation.</p>
22254	<p>Summary: [CEA 885] Partition and cut fail</p> <p>OCCT algorithm for a fuse of two faces has been fixed.</p> <p>The fix for this problem has been made in issue OCC24092.</p>
22257	<p>Summary: [CEA 900] Regression in test <code>glue_performance.py</code></p> <p>A regression in test <code>glue_performance.py</code> has been eliminated.</p>
22258	<p>Summary: [CEA 897] Bug in Boolean operations on sphere's external layer</p> <p>Improvements have been introduced in OCCT Boolean operations.</p> <p>The fix for this problem has been made in issues OCC24122 and OCC24190.</p>
22262	<p>Summary: EDF 2704 GEOM/OCC: Common between a rectangular face and a Bezier</p> <p>Improvements have been introduced in OCCT Boolean operations.</p> <p>The fix for this problem has been made in issues OCC24200 and OCC24327.</p>
22288	<p>Summary: [CEA 913] The eye that gives access to "Show" is missing</p> <p>The "eye" control has been restored in Object Browser.</p>
22289	<p>Summary: EDF 2623 GEOM: Make "MakePipeWithDifferentSections" available from GUI</p> <p>It has become possible to create extrusion along a path using a list of profiles.</p>

22293	<p>Summary: EDF GEOM: BR_new_bop3/Occdev_3f4689a163 =&gt; PipeTShape doesn't work anymore</p> <p>The algorithm building a partitioned T-pipe has been redesigned to better process the case when indices of sub-shapes change.</p>
22294	<p>Summary: EDF GEOM: BR_new_bop3/Occdev_3f4689a163 =&gt; Partition fails between two compounds</p> <p>The OCCT algorithm checking distance between a vertex and an edge has been corrected.</p> <p>The fix for this problem has been made in issue OCC24108.</p>
22296	<p>Summary: EDF GEOM: BR_new_bop3/Occdev_3f4689a163 =&gt; Self intersections after a MakePipe</p> <p>The OCCT algorithm checking self-interference has been improved to take tangency of surfaces into account.</p> <p>The fix for this problem has been made in issue OCC24101.</p>
22298	<p>Summary: EDF 2716 GEOM: Partition fails</p> <p>The algorithm of intersection of planar surfaces has been improved to provide correct result in complex cases.</p> <p>The fix for this problem has been made in issue OCC23958.</p>
22307	<p>Summary: EDF GEOM: BR_new_bop3/Occdev_3f4689a163 =&gt; MakePartition creates two more vertices</p> <p>OCCT method <code>TNaming_CopyShape::CopyTool</code> now can be used directly (without <code>TNaming_Translator</code>).</p> <p>The fix for this problem has been made in issue OCC24263.</p>
22310	<p>Summary: EDF 2512 GEOM: Get tool groups trace with <code>RestoreGivenSubShapes</code></p> <p>New Python command <code>RestoreGivenSubShapes</code> allows getting the trace of tool groups on the resulting partition.</p>
22311	<p>Summary: EDF 2687 GEOM: Management of Publish Objects</p> <p>"Publish Objects" dialog has been redesigned as follows:</p> <ul style="list-style-type: none"> <li>• The "eye" icon allows showing/hiding the corresponding object by clicking on the icon;</li> <li>• All items are automatically sorted in the alphabetical order. It is possible to switch between ascending and descending order.</li> </ul>
22312	<p>Summary: EDF 2689 GEOM: Save view parameters in the Study</p> <p>"Store/restore last GUI state" functionality has been corrected to restore the state of transparency of objects.</p>
22315	<p>Summary: EDF 2722 GEOM: Import STL in GEOM</p> <p>It has become possible to import in Geometry module the data from STL files, which results in a shell of triangular faces.</p>
22333	<p>Summary: [CEA 951] Regression on a partition</p> <p>The OCCT algorithm that checks planes has been modified to update the filter contents by all vertices of the image faces.</p> <p>The fix for this problem has been made in issue OCC24247.</p>
22337	<p>Summary: EDF GEOM: Issue with <code>GetInPlace</code> after a partition</p> <p>The fix for this problem has been made in issue OCC24247.</p>

22338	<p>Summary: EDF GEOM: Regression when partitioning a compound by a plane</p> <p>The check for self-intersection has been implemented for Boolean operations and Partition algorithms.</p>
22351	<p>Summary: EDF 2750 GEOM: Fillet 1D does not work on a corner</p> <p>Fillet 1D algorithm has been corrected to properly create fillet on corners.</p>
22353	<p>Summary: EDF GEOM: Projection on an edge or a wire</p> <p>The newly implemented function <code>geompy.MakeProjectionOnWire(aPoint, aWire)</code> returns the U (parametric) value on the edge of a wire as a result of projection of a point to this wire.</p> <p>A valid result is obtained if there is only one solution, if there are 0, 2 or more solutions, an exception is raised.</p>
22354	<p>Summary: EDF GEOM: Create edge by getting iso-line of surface</p> <p>It has become possible to build an iso-line on surface.</p>
22356	<p>Summary: [CEA 968] Regression on the test script 01_geom.py</p> <p>The algorithm of translation of Geometry objects using a YACS graph has been corrected.</p>
22369	<p>Summary: EDF GEOM: Crack modelling tool / Regression in a partition operation</p> <p>OCCT Fuse algorithm has been improved to avoid regression in partition.</p> <p>The fix for this problem has been made in issue OCC24286.</p>
22371	<p>Summary: [CEA 971] Regression <code>GetInPlaceByHistory</code></p> <p>A copy of the argument shape is now used to fill the history of GLUE operation.</p>
22375	<p>Summary: [CEA 973] <code>UnionFaces</code> shall not suppress an edge between 2 continuous faces if this edge is shared with a 3rd incident face</p> <p>Union Faces algorithm has been corrected to preserve the edges that bound incident faces.</p>
22382	<p>Summary: EDF 2747 GEOM: Revolution of a face generates a self-intersected shape</p> <p>Processing of cones with collinear axes has been improved in OCCT.</p> <p>The fix for this problem has been made in issue OCC24328.</p>
22385	<p>Summary: [CEA 975] The icon "Clipping" is missing in OCC view</p> <p>The "Clipping" icon has been restored in the OCC viewer toolbar.</p>
22388	<p>Summary: [CEA 977] Invalid shape after "<code>UnionFaces</code>"</p> <p>It has been forbidden to produce a union of two faces via a seam edge. This is a geometrical limitation: it is not possible to construct a closed 2d contour on the basis surface in this case.</p>
22397	<p>Summary: EDF 2786 GEOM: Regression in a common operation</p> <p>The OCCT wire splitting algorithm has been corrected to improve the results of Boolean operations.</p> <p>The fix for this problem has been made in issue OCC24384.</p>
22402	<p>Summary: EDF GEOM: Regression with <code>MakeShell</code></p> <p>The OCCT sewing algorithm has been corrected to avoid too big values for maximal edge tolerance.</p> <p>The fix for this problem has been made in issue OCC24390</p>
22403	<p>Summary: EDF GEOM: Regression when creating plane by another plane or face</p> <p>Selection of faces has been restored in "Create a plane" dialog.</p>

22416	Summary: GEOM Regression: Names in STEP files are not imported anymore The problem with reading names from a STEP file has been fixed.
22421	Summary: EDF 2805 GEOM: Save in a repertory with an accent fails It has become possible to save a study or export/import shapes to/from a file if the path to the file contains specific French characters.
22427	Summary: EDF GEOM Regression: Issue with geomBuilder It is prohibited to use the old and new style of Python API together. The resulting problem has been fixed in <code>smesh.py</code> .
22436	Summary: EDF 2438 GEOM: "Internal faces" group is not created or faces are missing with Pipe T-Shape Pipe T-Shape operation has been corrected to properly create "Internal faces" group if "Prepare for hex mesh" box is unchecked.
22437	Summary: EDF GEOM: Texture is lost when hiding and showing again a shape Persistence (in the study, HDF saves and Dump python) has been implemented for texture display mode.

**SMESH MODULE**

20976	Summary: EDF 1471 SMESH: New ergonomics to display quality controls "Overall mesh quality" report has been implemented.
21859	Summary: EDF 2191 SMESH : Add conversion from QUAD8 to QUAD9 and from HEXA20 to HEXA27 The test for conversion from QUAD8 to QUAD9 and from HEXA20 to HEXA27 has been corrected.
21920	Summary: [CEA 689] Get some measure functions on groups available in GUI and TUI It has become possible to know the Length, Area and Volume not only for a single mesh element: edge, face or volume, but also for a mesh, sub-mesh or a group via the corresponding items of the Measurements menu. However it should be noted that the numerical parameters do not present the actual length, area or volume of the mesh object. They are computed using numerical functors applied to separate 1d, 2d or 3d elements. Thus, the resulting values represent only a summary of the parameters for the set of elements. For example: <ul style="list-style-type: none"> <li>• If the mesh consists of 3d elements only, its "length" and "area" will be 0.</li> <li>• The volume of two duplicate 3d elements (built on the same set of nodes) will be equal to the double volume of one such 3d element (same for length and area for 1d and 2d elements correspondingly).</li> <li>• The intersection of elements will be not taken into account (due to same reason as for duplicate elements).</li> </ul>
21941	Summary: [CEA 699] Use for Auto Color method on mesh group the same algorithm that this one in GEOM which define colors. The algorithm that automatically assigns colors to mesh groups has been improved to provide visibly different colors.
21950	Summary: EDF 2311 SMESH : Polyline selection in SMESH Polygonal selection has been implemented in the VTK 3D viewer in the same way as it is done currently in the OCC 3D viewer.

	<p>It is possible to start polygonal selection operation with the right mouse button click in the viewer, with following mouse moving; left mouse clicking (while keeping right mouse button pressed) will add new point to the polygon.</p> <p>The left mouse button double-click closes the polygon and selects all the objects fully inscribed into this polygon. If Shift button is pressed during the selection operation, selected objects are added to the current selection; otherwise previously selected objects will be deselected.</p>
21952	<p>Summary: EDF 2383 SMESH : Add an option to write planar meshes as 3D meshes in MED files</p> <p>Previously mesh conversion between dimensions during mesh export to MED was performed automatically and unconditionally. For example, a mesh lying on XOY plane was exported to a MED file as a 2D mesh in 2D space and a mesh on OX axis as a 1D mesh in 1D space.</p> <p>Now such behavior corresponds to the default activated state of "Automatically define space dimension" check-box in "Mesh Export" dialog. If it is unchecked, the mesh is always written as a 3D mesh in 3D space.</p> <p>In TUI the choice of export mode is implemented as <code>autoDimension</code> option of <code>ExportMED()</code> command.</p>
22097	<p>Summary: EDF 2408 SMESH: Hide ID of double node in the function "Merge nodes"</p> <p>"Show double nodes (elements) IDs" check box has been added to the "Merge Nodes" and "Merge Elements" dialogs.</p> <p>When it is switched on, the identifiers of double nodes are shown in the viewer; otherwise the identifiers are not shown.</p>
22098	<p>Summary: EDF 2036 SMESH: Create groups from none connected parts of a mesh</p> <p>It has become possible to create a mesh group from all elements of a certain mesh domain, i.e. from all elements connected each to other.</p> <p>The corresponding criterion "Elements of a domain" has been implemented in the Selection Filter library. The domain can be defined by its node, by a vertex lying in the domain, or by coordinates of a point lying in the domain.</p>
22099	<p>Summary: EDF 2307 SMESH: Apply a transformation to several meshes, sub-meshes or groups</p> <p>It has become possible to apply transformation operations, such as "Translation", "Rotation", etc. to several objects (meshes, sub-meshes or groups) at once.</p> <p>Selection of multiple items is only allowed for the mode when "Whole mesh, sub-mesh or group" check box is switched on in the transformation dialog.</p>
22100	<p>Summary: EDF 2413 SMESH: Take into account TRIA7</p> <p>Support of bi-quadratic triangular elements (TRIA7) has been implemented.</p>
22101	<p>Summary: EDF 2492 SMESH: Update Destination field when "Find closest to destination" is unchecked in "Move node"</p> <p>Button "Update destination coordinates" has been added to the "Move Node" dialog to update the destination point coordinates when a node is selected manually or its ID is input in the dialog.</p>
22102	<p>Summary: EDF 1496 SMESH : Displaying of discrete elements in SMESH relating to their attribute (diameter)</p> <p>Discrete MED_BALL elements now can be displayed according to their real diameter.</p>
22103	<p>Summary: EDF 2550 SMESH : Allow viscous layer with 3D extrusion</p> <p>"Viscous Layers 2D" hypothesis has been improved to allow constructing viscous layers on boundary edges of the 2D sub-mesh to which the hypothesis is assigned.</p>

22104	<p>Summary: EDF 2550 SMESH: 2D viscous layer, allow specifying edges with viscous layer</p> <p>"Viscous Layers 2D" hypothesis now allows specifying edges to create the viscous layers on.</p>
22106	<p>Summary: EDF 2464 SMESH : Split quadrangles in 4 triangles</p> <p>It has become possible to cut a quadrilateral element into 4 triangles by adding a new node at its center and forming four triangles based on the new central node and corner nodes of quadrilateral.</p>
22107	<p>Summary: EDF 2502 SMESH: Publish the result of show bad mesh in a group</p> <p>"Bad Mesh to Group" button has been added to Compute Mesh dialog. It is shown only if the mesher reported mesh entities preventing mesh generation.</p> <p>When clicked, the button creates a group (or groups, if there are "bad elements" of different types) containing "bad elements".</p> <p>This provides a more comfortable analysis of "bad elements".</p>
22108	<p>Summary: EDF 2547 SMESH: Duplicate elements only</p> <p>"Duplicate elements only" mode has been added to "Duplicate Nodes" dialog that has been renamed to "Duplicate Nodes or/and Elements". The new mode enables duplication of elements without duplicating nodes.</p> <p>In TUI this new feature is available as <code>Mesh.DoubleElements(theElements, theGroupName)</code> function, where <code>theElements</code> can be either a Mesh, or a sub-mesh, or a group, or a list of element IDs, or a filter.</p>
22136	<p>Summary: EDF 2345 SMESH: Improving documentation of Quadrangle mapping with the type "Reduced"</p> <p>A warning is now issued if "Reduced" transition cannot be used during meshing.</p>
22169	<p>Summary: [CEA 750] Chose before visualization mesh element type to display</p> <p>New option "Incremental limit check" has been introduced in preferences.</p> <p>When switched on, the mesh size limit check is not applied to the total number of elements in the resulting mesh; it is applied iteratively to each entity type in the following order: 0D elements, edges, faces, volumes, balls. At each step the number of entities of a certain type is added to the total number of elements computed at the previous step - if the resulting number of elements does not exceed the size limit, the entities of this type are shown, otherwise the user is warned that some entities are not shown.</p>
22195	<p>Summary: EDF SMESH: Mesh using existing elements.</p> <p>The problem with an all-dimensional algorithm assigned to a group overrun by an all-dimensional global algorithm has been fixed.</p>
22216	<p>Summary: EDF 2613 SMESH: Projection 1D with multi-dimensional algo (Netgen 1D-2D or BLSurf...)</p> <p>Projection meshing algorithms have been improved to enable projection of mesh computed by an all-dimensional algorithm of dimension greater than that of a Projection algorithm.</p> <p>For example, now "Projection 1D" algorithm can project 1D mesh computed by "NETGEN 1D-2D" (provided that NETGEN does not generate 1D mesh on the edge where Projection algorithm is assigned to).</p>
22218	<p>Summary: EDF 2638 SMESH: Issue when importing UNV file</p> <p>The number of symbols to read coordinate system data from UNV file has been corrected.</p>
22236	<p>Summary: EDF SMESH: Issue when dumping CreateFilterManager</p> <p>The bug with dumping Filter Manager has been fixed.</p>

22252	Summary: EDF 2684 SMESH: Extrusion along a path with a curvilinear edge It has become possible to select a node of any mesh as the Base Point for Extrusion along Path.
22261	Summary: EDF 2698 SMESH: Memory leak when displaying 2D quadratic elements as arcs Memory leak in "show quadratic as arc" mode has been fixed.
22291	Summary: EDF 2712 SMESH: Bad dump of QuadrangleParameters The problem with Python dump arising if enumerations defined in plugins are used has been fixed.
22297	Summary: EDF SMESH: Faces are missing after an extrusion The problem with faces missing after Extrusion and ConvertToQuadratic has been fixed.
22301	Summary: [CEA] Problems with study dump in SMESH Python Dump problem caused by the dump of commands of not created in the dump mesh editors has been fixed.
22308	Summary: EDF 2572 SMESH: Can't import a file with a non ascii character in the path It has become possible to save a study or export/import mesh to/from a file if the path to the file contains specific French characters.
22314	Summary: EDF 2594 SMESH: Preview "Union of triangles" result Preview of "Union of triangles" operation has been implemented.
22318	Summary: [CEA] Problems with study dump in SMESH Memory size required for Dump Study in Mesh module has been decreased.
22339	Summary: [CEA 956] In V7_main, GHS3DPLUGIN gives no explicit error message and does not indicate bad mesh New error codes introduced in MeshGems 1.1-3 have been taken into account and the textual error description now can be shown to the user.
22345	Summary: EDF 2754 SMESH: Select pyramids in Mesh Information The problem with selection of a quadratic pyramid has been fixed.
22355	Summary: EDF SMESH: New 1D hypothesis "Adaptive" Adaptive 1D mesh hypothesis has been implemented.
22361	Summary: EDF SMESH: Quadrangle (mapping) algorithm: faces with more than 4 edges Quadrangle (Mapping) algorithm has been improved to enable meshing faces with any (> 4) number of edges. In case of such a face, 4 vertices with most sharp convex angle are considered as corners of a quadrangle and all edges between these vertices are processed as its composite sides.
22366	Summary: Create Mesh dialog box improvement: create empty mesh without geometry in GUI It is now possible to create an empty mesh when no geometry and no algorithms are selected.
22372	Summary: EDF 2758 SMESH: Create/Manage groups on a mesh composed of nodes and balls Performance of groups on filters has been optimized.
22398	Summary: EDF 2783 SMESH: No end with viscous layer computation An infinite loop at Viscous Layers construction has been fixed.
22400	Summary: EDF SMESH: ExportCGNS is not available anymore in V7_main A preprocessor macro has been added to allow CGNS import/export functionality.

22406	Summary: EDF SMESH Regression : Items are missing in group context menu The problem with missing items in group pop-up menu has been fixed.
22408	Summary: [CEA 996] Impossibility to filter Face with an Area criterion A regression in the Filter dialog has been fixed.
22412	Summary: [CEA 1005] Impossible to have a logarithmic scalar bar when values <1e-07 Logarithmic scalar bar has been enabled for small values of mesh quality controls.
22414	Summary: [CEA 1010] Regression on tests bug_763_netgen_1d_2d.py and 01_composite.py Quadrangle (Mapping) algorithm has been fixed to avoid failure of tests.
22419	Summary: EDF SMESH Regression: 3D Extrusion fails Quadrangle (Mapping) algorithm has been fixed to work correctly with 3D Extrusion algorithm.
22422	Summary: EDF SMESH Regression: Quadrangle/Hypothesis Quadrangle preference fails Quadrangle (Mapping) algorithm has been fixed to work correctly with Quadrangle preference hypothesis.
22423	Summary: EDF SMESH Regression: Quadrangle algorithm fails Quadrangle (Mapping) algorithm has been fixed to work correctly on a cylinder.
22433	Summary: [CEA 1020] A correct mesh ends with error The warning instead of the error is now provided if a face meshed by CADSurf has no assigned mesh elements.
22434	Summary: [CEA 1022] If selection is disabled, the contextual menu of VTK view does not update on selected object The problem with incorrectly filled VTK pop-up menu in case of disabled selection has been fixed.

**MED MODULE**

22321	Summary: [CEA 933] Bug when reading a SAUV file containing field on Gauss Point The problem with reading a SAUV file with fields on gauss points has been fixed.
22336	Summary: [CEA 955] Impossible conversion of a surface field with sauv2med The problem with reading a partial SAUV field with 5 gauss points on a QUAD element has been fixed.
22341	Summary: [CEA 958] sauv2med: different nb of gauss points in components Sauv2med convertor has been improved to process SAUV fields with components that have a different number of gauss points.
22370	Summary: [CEA 970] Bug reading XDR sauv file under Windows 32 bits Reading of SAUV files has been corrected on Windows platform.
22381	Summary: [CEA 978] Bug reading XDR sauv file under Windows 64 bits Macro definitions have been added to disable iterator debugging in Release mode.
22386	Summary: EDF 2714 MED: MEDPARTITIONER usage with <code>-creates-boundary-faces</code> gives a wrong partition MEDPARTITIONER tool has been improved to provide correct partitioning of groups if several types of faces are present in the mesh.



22430	Summary: [CEA 1017] Memory corruption on SAUV to MED operation The problem with reading SAUV field has been fixed.
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**PARAVIS MODULE**

22071	Summary: Porting of VISU tests to PARAVIS Porting of VISU tests to PARAVIS has been finalized.
22075	Summary: [CEA 753] make test de PARAVIS echoue The function <code>get_picture_dir</code> has been added in <code>paravistest.py</code> to find the path to the temporary directory used for test output pictures. This function automatically defines the path using <code>PARAVIS_TEST_PICS</code> environment variable. If it is not defined, the path that will be used is constructed by pattern <code>&lt;TMP_DIR&gt;/pic_&lt;USERNAME&gt;/test_&lt;YYYYmmdd&gt;</code> . Then the current test subdirectory name is added to the defined path to avoid conflict of different tests.
22155	Summary: EDF 1977 PARAVIS: Add a button "Re-initialize Trace" in the menu "Tools" "Re-initialize Trace" menu item has been added in the "Tools" menu of ParaVis module to restart the ParaView python trace.
22210	Summary: [CEA 816] The keyboard shortcut "ctrl + space" to get a filter does not work in Paravis The shortcut "ctrl + space" now allows finding a filter via menu "Filters > Search".
22335	Summary: [CEA 954] Paravis 7.2.0 doesn't read ELNO fields The problem with reading ELNO fields has been fixed in <code>vtkMedReader</code> Paravis plugin.
22376	Summary: [CEA 974] Regression: no <code>GetClassesList</code> The problem with test scripts caused by a redesign of PARAVIS module build procedure has been eliminated.
22438	Summary: EDF PARAVIS Regression: Macro "Modes" is missing. Macro "Modes" has been restored.

**YACS MODULE**

21666	Summary: [CEA 562] Put the content of a graph in <code>ForEachLoop</code> or <code>OptimizerLoop</code> <ul style="list-style-type: none"> <li>New nodes are now created with default ports (<code>nbBranches</code>, <code>evalSample</code>).</li> <li>It is possible to put the graph in for loop, while loop and bloc nodes.</li> </ul>
22324	Summary: [CEA 931] YACS: "ShrinkNodes" and "UnShrinkNodes" "Shrink Nodes" and "Unshrink nodes" buttons have been added to shrink and un-shrink the node on a graph.
22325	Summary: [CEA 932] YACS: python console Python console now can be displayed in YACS module.
22328	Summary: [CEA 942] Worrying traces at YACS launch and SALOME closure PYCALCULATOR module catalog description has been corrected. Python warning has been removed from YACS on SALOME exit.

22413	<p>Summary: [CEA 1006] Crash after “Put Graph content in node”</p> <p>Graphviz library cgraph has been excluded to avoid critical error. Nodes position is now restored after putting graph in a node.</p>
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**BLSURFPLUGIN MODULE**

22207	<p>Summary: EDF 2182 BLSURFPLUGIN: The user is allowed to enter 0 as a global or local size. The error message is now shown if “User Size”, “Max Size”, “Mesh angle” or “Mesh distance” contains a zero value and the user clicks ‘OK’ in the dialog.</p> <p>The same message is generated at the attempt to add or modify items of table in “Local size” tab by “Add/Modify” buttons.</p>
22266	<p>Summary: EDF 2703 SMESH: Gradation priority with BLSurf</p> <p>BLSURF failure due to an extremely high number of nodes per patch has been fixed.</p>
22340	<p>Summary: EDF 2748 SMESH : 2D viscous layer crash with BLSURF</p> <p>BLSURF mesher has been improved to correctly process faces with holes if Viscous Layers hypothesis is used.</p>
22350	<p>Summary: EDF 2747 SMESH: Coincident nodes with BLSURF</p> <p>BLSURF mesher plug-in has been fixed to avoid creating free nodes in case of sub-mesh presence.</p>
22431	<p>Summary: EDF SMESH Regression: segmentation violation with BLSURF</p> <p>The problem with segmentation violation error has been fixed.</p>

**GHS3DPLUGIN MODULE**

22172	<p>Summary: [CEA 790] create the groups corresponding to domains</p> <p>The option “To make groups of domains” (SetToMakeGroupsOfDomains() in python) has been added to “GHS3D Parameters” hypothesis. If this option is activated, “Tetrahedron (GHS3D)” algorithm creates groups of newly generated elements corresponding to each mesh domain.</p>
22201	<p>Summary: EDF 2630 SMESH: Pyramids are built on the wrong side if GHS3D is applied to a copy of a 2D mesh</p> <p>GHS3D plug-in has been improved to avoid generating pyramids on the external side of a concave wall of a quadrilateral shell.</p>
22222	<p>Summary: [CEA 820] GHS3D in Salome 7.2.0 ten times slower than in Salome 6.6.0</p> <p>A regression introduced by an improvement in Projection 1D-2D algorithm has been fixed.</p>
22346	<p>Summary: [CEA 963] Use GMF format instead of the old format with 2 files (.points and .faces)</p> <p>New features of GHS3D mesher “Enforced vertices” and “Enforced meshes” have been enabled for mesh on geometry.</p>
22404	<p>Summary: EDF SMESH Regression : GHS3D quadratic mesh fails with Netgen 1D2D (second order option)</p> <p>The problem with impossibility to use "GHS3D" algorithm together with Netgen 1D2D has been fixed.</p>
22418	<p>Summary: [CEA 1012] Mesh with intersecting cells</p> <p>The problem with inactive "Show bad mesh" button has been fixed</p>

**HEXOTICPLUGIN MODULE**

22223	<p>Summary: [CEA 821] Management of temporary files created by HEXOTIC.</p> <p>The suffix <code>&lt;username&gt;_&lt;hostname&gt;_&lt;pid&gt;</code> has been added to the names of temporary Hexotic files to avoid collisions. These files are removed if Compute was finished successfully and the files are stored permanently.</p>
22304	<p>Summary: EDF HEXOTICPLUGIN: Problem on windows, trying to execute chmod</p> <p>The problem with executing chmod on Windows has been fixed.</p>
22332	<p>Summary: EDF 2725 SMESH: Convert to bi-quadratic failure after HEXOTIC meshing</p> <p>Conversion to bi-quadratic has been fixed for the case of invalid positions of nodes on surfaces.</p>

**NETGENPLUGIN MODULE**

22170	<p>Summary: [CEA 704] Redirect NETGEN output in a log file</p> <p>NETGEN output is now redirected to temporary file <code>NETGEN_&lt;pid&gt;_XXXXXXXXXX.out</code> located in a temporary directory <code>SALOME_TMP_DIR</code> or <code>/tmp</code> directory, for example, <code>/tmp/71644/NETGEN_30526_1963298688.out</code>.</p> <p>In case of successful computation the subdirectory and output file will be removed. Otherwise, it will be kept to be analyzed by the user.</p>
22229	<p>Summary: [CEA 829] Error "Edge multiple times in surface mesh"</p> <p>"Tetrahedron (NETGEN)" meshing algorithm has been improved to avoid fail caused by a wrong detection of an incorrect faces orientation in the input 2D mesh.</p>
22401	<p>Summary: [CEA 992] Regression on SMESH using NETGEN 2D</p> <p>The work of "Netgen 2D" algorithm on spheres has been corrected.</p>

**OTHER MODULES**

22347	<p>Summary: [CEA 965] PYHELLO module does not appear in modules in YACS</p> <p>The services of PYHELLO module have been added to the module resources and are now accessible from other modules.</p>
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**INSTALLATION PROCEDURE**

22225	<p>Summary: [CEA 828] Missing Libraries in Install Wizard</p> <p>SALOME installation wizard now bases on 64-bits platforms; 32-bits platforms are no more supported.</p>
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**DOCUMENTATION**

22256	<p>Summary: [CEA 866] Add item "Developers" in menu "Help"</p> <p>Top-level build procedure has been implemented for the DOCUMENTATION module, similarly to other modules. DOCUMENTATION module has been added to the build procedure. Corresponding changes has been made in the installation procedure.</p>
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## ❖ PROCESSED AND ANSWERED QUERIES

21544	Summary: EDF 1842 SMESH: Pattern mapping on quadratic meshes
21792	Summary: [CEA 624] Keep the clipping
21866	Summary: [CEA 677] Netgen 3D error on an overlapping box
22076	Summary: [CEA 754] Geometry and mesh do not work
22096	Summary: EDF 2378 SMESH: Customize the display color of GEOM objects in SMESH
22137	Summary: [CEA 776] On BOP version, regression on some SMESH test scripts
22138	Summary: [CEA 777] On OCC_bop1 version, wrong MakePartition result with points on boxes faces
22142	Summary: [CEA 780] Salome Crashes when using Partition with two ellipsoids
22190	Summary: EDF GEOM: Bug with MakeRevolution
22195	Summary: EDF 2644 SMESH: Quadratic mesh with BLSURF (with Allow Quadrangles)
22214	Summary: EDF 2644 SMESH: Quadratic mesh with BLSURF (with Allow Quadrangles)
22217	Summary: EDF 2546 SMESH: Minimum Distance between two imported meshes
22219	Summary: [CEA 783] FTGLTextureFont checking in CAS compilation
22221	Summary: [CEA 819] Error "'NoneType' object is not callable" at Salome closure
22228	Summary: [CEA 801] Create bounding box
22233	Summary: EDF 2670 SMESH: Issue with Viscous layer 2D on a ring
22246	Summary: [CEA 880] Bug using Partition and Boolean operations with a Tank and a long box
22255	Summary: [CEA 886] Box and curved cylinder: common and partition fail
22265	Summary: [CEA 904] "Transfer function" definition is an array instead of a push button
22290	Summary: [CEA 917] Regression on test script <code>imp_790_ghs3d_domainGroups.py</code> on V7_main branch
22292	Summary: [CEA 918] Regression on test <code>exSMESH.py</code>
22295	Summary: EDF GEOM: BR_new_bop3/Occdev_3f4689a163 => Section between a planar face and a curve face fails
22299	Summary: [CEA 919] MEDMEM 6 : <code>getGroups(MED_FACE)</code> does not work
22300	Summary: [CEA 920] regression: the script <code>bug_714_ghs3d_enforced_mesh.py</code> fails

22302	Summary: [CEA 921] Invalid face after a "GlueEdges" between a box and an ellipsoid
22303	Summary: EDF GEOM: BR_new_bop3/Occdev_3f4689a163 => Bad tolerance after MakePartition
22322	Summary: [CEA 934] CRASH when save/restore GUI state is activated
22330	Summary: EDF 2695 PARAVIS: Regression, a user script fails in V7_2_0
22331	Summary: [CEA 948] Regression on test script GEOM_usinggeom.py
22334	Summary: [CEA 952] "Sort children" sorts references as "real" children
22344	Summary: EDF GEOM: MakeFuse produces a self-intersected shape
22348	Summary: EDF GEOM: Partition operation regression
22352	Summary: EDF GEOM: Texture display mode seems to be broken
22374	Summary: [CEA 972] GetInPlace with new implementation gives a wrong result on a shape repaired using UnionFaces
22396	Summary: EDF GEOM: Common operation does not detect self-intersections
22399	Summary: [CEA 990] -t option does not kill all Salome processes
22407	Summary: [CEA 997] Regression on test script "test_regression_ComputeShapeCollection.py"
22409	Summary: EDF SMESH: Export to UNV
22410	Summary: libmesaglut
22411	Summary: [CEA 1002] Memory leaks after sourcing Salome environment
22417	Summary: [CEA 1013] Regression on test script bug_977_union_faces_four_spheres.py
22424	Summary: [CEA 1015] Missing Yacs.dll on Win64
22426	Summary: [CEA 939] OCC view: Analysis of display performance problems
22428	Summary: EDF SMESH: Removal of GetMEDMesh
22432	Summary: EDF GEOM: Revolution produces self-intersections
22435	Summary: [CEA 1024] Scalar map failing on CentOS 5.5

## ❖ OCCT 6.7.0 BUG CORRECTIONS

This chapter lists bug corrections and improvements made for SALOME project in Open CASCADE Technology. These bug corrections and improvements are included into OCCT version 6.7.0 and earlier.

Note that only the issues related to SALOME platform are listed below.

OCC11758	Summary: TCollection strings are not memory safe as reported by Purify Referenced by 0022232: [CEA 837] Memory corruption in GEOM/SMESH that leads to segfault on debian64
OCC23471	Summary: Intersection algorithm produces overlapping intersection curves Referenced by Intersection algorithm produces overlapping intersection curves
OCC23558	Summary: Projection algorithm failed for trimmed surface. Fix regression in test case CEA/A7
OCC23653	Summary: Migrate on latest versions of 3rd-party products
OCC23654	Summary: Problem with displaying vertices in OCC view after closing all OCC views and opening new one Referenced by 0021987: EDF 2483 GEOM : Vertices are not displayed in GEOM if we have closed a study
OCC23765	Summary: The result of section operation contains redundant vertex. Fix regression in test cases imps2/C2 and bugs10/K8
OCC23775	Summary: Compatibility with Tcl/Tk 8.6
OCC23777	Summary: 2D-Classifer algorithm produces wrong results for a point and face. Fix regression in test case partition_EDF1/B8
OCC23778	Summary: New Boolean Operation algorithm does not work with same arguments Fix regression in test case bugs14/P6
OCC23779	Summary: New Boolean Operation algorithm produces incorrect result of CUT operation with the attached shapes Fix regression in test case partition_EDF2/C3
OCC23782	Summary: Intersection algorithm produces wrong section curves for the attached faces Fix regression in test case bugs11/L2
OCC23783	Summary: New Boolean Operation algorithm produces incorrect result of SECTION operation for the attached shapes Fix regression in test cases boolean_operations3/D2,D7and boolean_operations/E2
OCC23785	Summary: Crash on make face from wire Referenced by 0022133: EDF 2581 GEOM: Crash when building a face from a wire
OCC23789	Summary: Missing EOL in header files Fixed problem when compiling SALOME with -Werror option

OCC23824	Summary: Bad results of sweep operation when a path curve has unpredictable torsion along its way. Referenced by 0022057: EDF 2510 GEOM: Bug with extrusion along a path.
OCC23839	Summary: Projection algorithm produces wrong results for set of data Referenced by 0022149: [CEA 788] "GlueEdges" produces incorrect faces on ellipsoids => mesh computing fails
OCC23845	Summary: New auxiliary method concatenating a wire into an edge based on C0-continuous curve. Referenced by 0021992: EDF 2482 GEOM : Generation of a face by filling 2 polylines
OCC23858	Summary: Remove obsolete AM_C_PROTOTYPES macro
OCC23870	Summary: Integration of new options of sweeping into BRepOffsetAPI_MakePipe algorithm. Improve Pipe algorithm for SALOME
OCC23891	Summary: Function fsameparameter throws an exception. Referenced by 0022184: [CEA 802] Partition fails with message "Courbes non jointives" on a set of curved cylinders
OCC23903	Summary: Invalid result of pipe operation on closed path Referenced by 0022187: EDF GEOM: Regression with MakePipe
OCC23906	Summary: Performance of the projection algorithm in some cases became lower after integration of the fix for the bug 0022610
OCC24032	Summary: An exception raised during projection of the curve on the surface Fix regression in test case partiion_CEA1/B4
OCC24036	Summary: Regression: sewing is not correct Fix regression in test case dump_study3/D3
OCC24037	Summary: Wrong result done by General Fuse algorithm Fix regression in test case partition_EDF2/C2
OCC24040	Summary: The result of CUT operation is not correct Fix regression in test case bugs17/T0
OCC24053	Summary: Section between plane and sphere is not correct Referenced by 0022146: [CEA 784] [OCC_bop2] common fails between a box and cylinders with rounded ends
OCC24060	Summary: Wrong result done by general fuse algorithm Fix regression in test case mesh_BLSURF/A4
OCC24075	Summary: Boolean Section between two faces fails Referenced by 0022246: [CEA 880] Bug using Partition and boolean operations with a Tank and a long box

OCC24089	Summary: Missing section edge Fix regression in test case EDF1/B8
OCC24092	Summary: Boolean fuse fails Referenced by 0022254: [CEA 885] Partition and cut fail
OCC24098	Summary: Exception Standard_OutOfMemory raised during topological operation. Referenced by 0021934: [CEA 694] Delete the internal faces of a object.
OCC24101	Summary: Self-Interference Checker provides results that are inconsistent with the Project requirements. Referenced by 0022296 EDF GEOM: BR_new_bop3/Occdev_3f4689a163 => Self intersections after MakePipe
OCC24105	Summary: ShapeFix algorithm produces not correct result Fix regression in test cases imps7/H6 and SWIG_scripts/C9
OCC24106	Summary: Project non-regression test: geom/boolean_operations6/G3 provides incorrect result. Fix regression in test case boolean_operations6/G3
OCC24107	Summary: BRepAlgo::ConcatenateWireC0 method doesn't work on a translated wire Fix regression in test case imps4/E3
OCC24108	Summary: Boolean fuse fails Referenced by 0022294 EDF GEOM: BR_new_bop3/Occdev_3f4689a163 => Partition fails between two compounds
OCC24122	Summary: Hang-up during a topological operation. Referenced by 0022258 [CEA 897] Bug in Boolean operations on spheres external layer
OCC24126	Summary: Crash on fixing the attached shape
OCC24133	Summary: Development of improvement of dimensions implementation Referenced by 0021854: EDF 2320 GEOM: Add persistent dimensions
OCC24154	Summary: Wrong result of CUT operation Fix regression in test case partition_EDF_03/D1
OCC24190	Summary: Exception raised during topological operation. Referenced by 0022258 [CEA 897] Bug in Boolean operations on spheres external layer
OCC24200	Summary: Wrong result obtained by Extrema Curve/Curve Referenced by 0022262: EDF 2704 GEOM/OCC: Common between a rectangular face and a Bezier
OCC24247	Summary: Wrong result obtained by General Fuse algorithm Referenced by 0022333: [CEA 951] Regression on a partition



OCC24263	Summary: Tnaming_CopyShape::CopyTool failure Referenced by 0022307: EDF GEOM: BR_new_bop3/Occdev_3f4689a163 => MakePartition creates two more vertices
OCC24266	Summary: Wrong result obtained by 'bopargcheck' Referenced by 0022344: EDF GEOM: MakeFuse produces a self-intersected shape
OCC24267	Summary: Exception in Visual3d_ViewManager::Redraw() when color scale is displayed
OCCC24286	Summary: Wrong result done by General Fuse algorithm Referenced by 0022369: EDF GEOM: Crack modelling tool / Regression in a partition operation
OCC24288	Summary: Provide flipping text for AIS_Dimensions Referenced by 0021854: EDF 2320 GEOM: Add persistent dimensions
OCC24326	Summary: Get rid of confusing extension line Referenced by 0021854: EDF 2320 GEOM: Add persistent dimensions
OCC24327	Summary: Wrong result obtained by Extrema Curve/Curve Referenced by: 0022262: EDF 2704 GEOM/OCC: Common between a rectangular face and a Bezier
OCC24328	Summary: Revolution of a wire generates two interfered faces Referenced by 0022382: EDF 2747 GEOM: Revolution of a face generates a self-intersected shape.
OCC24351	Summary: Test cases for AIS dimension presentations to check arrow orientation, text position Referenced by 0021854: EDF 2320 GEOM: Add persistent dimensions
OCC24360	Summary: Hang up trying to intersect two faces Fix a bug that come from SALOME forum
OCC24374	Summary: Flipping affects hilight presentation of dimension Referenced by 0021854: EDF 2320 GEOM: Add persistent dimensions
OCC24384	Summary: Wrong result obtained by Fuse Referenced by 0022397: EDF 2786 GEOM: Regression in a common operation.
OCC24389	Summary: Wrong result obtained by Fuse Referenced by 0021854: EDF 2320 GEOM: Add persistent dimensions
OCC24390	Summary: Sewing produces the result with huge tolerance Referenced by 0022402: EDF GEOM: Regression with MakeShell.
OCC24391	Summary: Erased AIS object cannot be displayed in AIS_InteractiveContext after AIS_InteractiveContext::Remove
OCC24396	Summary: "vselmode" - disable auto loading of objects into Local Context

OCC24400	Summary: Wrong result obtained by Section Referenced by 0022246: [CEA 880] Bug using Partition and boolean operations with a Tank and a long box
OCC24420	Summary: Add methods to switch the type of sensitivity in AIS_Circle and AIS_Plane
OCC24422	Summary: Wrong result done by FaceClassifier algorithm
OCC24425	Summary: Improve usage ergonomics of new dimension presentations
OCC24434	Summary: The result of Boolean FUSE operation is not correct

## ❖ SUPPORTED LINUX DISTRIBUTIONS AND PRE-REQUISITES

**SALOME 7.3.0** supports Linux Debian 6.0 64bits, Linux Debian 7.1 64bits, Mandriva 2010 64bits, CentOS 5.5 64bits, CentOS 6.3 64bits, Fedora 18 64bits, Ubuntu 13.04 64bits, Windows XP 32bits and 64bits. **SALOME 7.3.0** has been tested with the pre-requisites listed in the table below.

**SALOME 7.3.0** comes with the same prerequisites versions on all supported platforms (with some exceptions). The table below lists the versions of the products used by SALOME platform. Other versions of the products can also work but it is not guaranteed.

Product	Version	GUI (IAPP)	KERNEL	GEOM	SMESH	MED	YACS	PARAVIS	HOMARD	HEXABLOCK	NETGENPLUGIN	GHS3DPLUGIN	GHS3DPRPLUGIN	BLSURFPLUGIN	HexoticPLUGIN	HEXABLOCKPLUGIN
gcc*	4.1***	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GNU make*	3.80***	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Microsoft Visual C++**	2008sp1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
cmake	2.8.10.2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Python	2.7.3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Qt	4.8.4	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Sip	4.14.2	X			X											
PyQt	4.9.6	X			X											
Boost	1.52.0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Swig	2.0.8	X	X	X	X	X	X		X		X	X	X	X	X	X
OCCT	6.7.0	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Qwt	5.2.1	X			X											
QScintilla	2.7						X									
OmniORB	4.1.6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OmniORBpy	3.6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
omniNotify	2.1		X													
Hdf5	1.8.10	X	X	X	X	X		X	X		X	X	X	X	X	X
Med	3.0.7				X	X		X	X		X		X			
Vtk	6.0.0	X		X	X	X		X		X	X	X	X	X	X	X
numpy	1.7.1		X													
lapack	3.4.2		X													
graphviz	2.30.0	X	X	X	X	X	X				X	X	X	X	X	
Doxygen	1.8.3.1	X	X	X	X	X	X				X	X	X	X	X	X
NETGEN	4.9.13										X					
Metis	4.0					X										
Scotch	5.1.11					X										
libxml2	2.9.0	X	X			X	X									
Distene MeshGems	1.1											X	X	X	X	
sphinx	1.1.3		X	X	X		X		X	X						
expat	2.0.1						X									
libBatch	2.1.0		X													
cgns	3.1.3				X											
ParaView	3.98.1							X								
Homard	10.7								X							
simanio	1.0		X													

\*) Not included into SALOME Installation procedure, Linux only  
 \*\*) Not included into SALOME Installation procedure, Windows only  
 \*\*\*) Minimal required version

Product	Version	RANDOMIZER	SIERPINSKY	PYCALCULATOR	COMPONENT	CALCULATOR	HELLO	LIGHT	PYLIGHT	ATOMIC	ATOMGEN	ATOMSOLV	HXX2SALOME	YACSGEN	JOBMANAGER
gcc*	4.1**	X	X	X	X	X	X	X	X	X	X	X	X		X
GNU make*	3.80***	X	X	X	X	X	X	X	X	X	X	X	X		X
Microsoft Visual C++**	2008sp1	X	X	X	X	X	X	X	X	X	X	X	X		X
Python	2.7.3	X	X	X	X	X	X	X	X	X	X	X		X	X
Qt	4.8.4		X		X	X	X	X		X	X	X	X		X
Sip	4.14.2				X						X				
PyQt	4.9.6				X				X		X				
Boost	1.52.0		X			X	X					X			X
Swig	2.0.8		X		X	X									
OCCT	6.7.0		X		X	X	X	X		X		X			
Qwt	5.2.1				X										
OmniORB	4.1.6	X	X	X	X	X	X				X	X			X
OmniORBpy	3.6	X	X	X	X	X	X				X	X			X
Hdf5	1.8.10		X		X	X		X		X					
Med	3.0.7		X	X	X	X									
Vtk	6.0.0		X		X			X	X	X		X			
graphviz	2.30.0	X	X	X	X		X			X					
Doxygen	1.8.3.1	X	X	X	X		X			X					
sphinx	1.1.3														X

\*) Not included into SALOME Installation procedure, Linux only  
 \*\*) Not included into SALOME Installation procedure, Windows only  
 \*\*\*) Minimal required version

The following products are not used in SALOME directly; they are only required to build other pre-requisite products.

Product	Version	Required by	Comment
tcl	8.6.0	Open CASCADE Technology	Optional
tk	8.6.0	Open CASCADE Technology	Optional
tclX	8.4.1	Open CASCADE Technology	Optional
jinja	2.6	Sphinx	
pygments	1.5	Sphinx	
setuptools	0.6c11	Sphinx	
docutils	0.10	Sphinx	
freetype	2.4.11	Open CASCADE Technology	
freeimage	3.15.4	Open CASCADE Technology	Optional
gl2ps	1.3.8	Open CASCADE Technology, VTK	Optional
Intel TBB	3.0	Open CASCADE Technology	Optional
xdata	0.9.9		Can be used to create 3 <sup>rd</sup> - party SALOME modules
wso2-wsf-cpp	2.1.0	SIMANIO	Optional

**NOTE:** For some platforms SALOME uses prerequisites with patches (to fix different problems, like it is done in RPM) and defines specific configuration/compilation options. If you compile products without the Install Wizard we strongly recommend you to check configuration/compilation options using shell scripts located in config\_files folder of the SALOME Installation Wizard.

SALOME 7.3.0 depends on a number of products for run time execution, others are necessary only for compilation or generation of development documentation (like doxygen for example). Below there is a list of mandatory and optional products.

**Software Requirements**

Product	Compilation and Development		Execution		Remarks
	Mandatory	Optional	Mandatory	Optional	
gcc	X		X		
GNU make	X				
Microsoft Visual C++	X		X		For execution, runtime libraries are only required
cmake	X				
Python	X		X		
Qt	X		X		
sip	X				
PyQt	X		X		
Boost	X		X		
Swig	X				
OCCT	X		X		
Qwt	X		X		
QScintilla		X		X	For YACS only Required only if used at compilation step
omniORB	X		X		
omniORBpy	X				
omniNotify	X		X		
Hdf	X		X		
Med	X		X		
Vtk	X		X		
numpy + lapack		X			
graphviz	X		X		In run-time required for YACS only
Doxygen	X				
NETGEN	X		X		For NETGENPLUGIN only
cppunit		X			Used for unitary testing
mpi		X		X	Required only if used at compilation step
openpbs		X		X	Required only if used at compilation step
Lsf		X		X	Required only if used at compilation step
metis		X		X	Required only if used at compilation step
scotch		X		X	Required only if used at compilation step
libxml2	X		X		
MeshGems	X	X	X		Compilation: mandatory for BLSURFPLUGIN only, optional for HEXOTIC plugin Runtime: mandatory for BLSURFPLUGIN, GHS3DPLUGIN, GHS3DPRPLPLUGIN, HexoticPLUGIN
sphinx		X			
expat	X		X		For YACS only
libBatch		X		X	Required only if used at compilation step
ParaView	X		X		For PARAVIS module only
Homard			X		For HOMARD module only
cgns		X		X	For SMESH only Required only if used at compilation step
freetype		X		X	Required only if used when building OCCT
freeimage		X		X	Required only if used when building OCCT
gl2ps		X		X	Required only if used when building OCCT
Intel TBB		X		X	Required only if used when building OCCT
simanio		X		X	Required only if used at compilation step
wso2-wsf-cpp		X		X	Required only if KERNEL is built with SIMAN support

## ❖ HOW TO INSTALL AND BUILD SALOME

Please follow README file from Installation Wizard for correct installation of SALOME and all prerequisites on Linux.

If you would like to compile SALOME from scratch, please use `build.sh` script delivered with the Installation Wizard. Type "`build.sh -h`" to see available options of this script.

## ❖ SALOME SYSTEM REQUIREMENTS

### Minimal Configuration:

- Processor: Pentium IV
- 512 MB RAM
- Hard Drive Space: 3 GB
- Video card 64 MB

### Optimal Configuration:

- Processor: Dual Core
- 2 GB RAM + 2 GB Swap
- Hard Drive Space: 5 GB
- Video card 128 MB

## ❖ HOW TO GET THE VERSION AND PRE-REQUISITES

SALOME 7.3.0 pre-compiled binaries for Linux Mandriva 2010 64bits, Debian 6.0 64bits, Debian 7.1 64bits CentOS 5.5 64bits, CentOS 6.3 64bits, Fedora 18 64bits, Ubuntu 13.04 64bits, Windows XP 32bits and 64bits can be retrieved from the SALOME web site <http://www.salome-platform.org> or from ftp repository <ftp://ftp.opencascade.com>.

The SALOME Installation procedure includes SALOME modules sources, and it is possible to build sources from scratch using `build.sh` script coming with installation procedure.

SALOME Installation procedure for Linux includes a patch for NETGEN which is placed inside NETGENPLUGIN module sources. This patch is used for all platforms to fix several bugs of NETGEN. During the compilation on NETGEN from sources by the SALOME Installation Wizard, the patch is applied automatically to the standard NETGEN distribution. You can download NETGEN 4.9.13 from its official site using the following link: <http://www.hpfem.jku.at/netgen>.

All other pre-requisites can be obtained either from your Linux distribution (please be sure to use a compatible version) or from the distributors of these pre-requisites (for example, <http://qt.nokia.com> for Qt). Note that for some of pre-requisite products SALOME Installation procedure also includes patches that fix the problems detected by SALOME.

## ❖ KNOWN PROBLEMS AND LIMITATIONS

- The following modules are obsolete and not included into SALOME 7.3.0 release: FILTER, SUPERV, MULTIPR, VISU (Post-Pro). These modules are considered obsolete and not supported anymore.
- Application crash might occur on the data publication in the study if both data server and CPP container are running in the standalone mode.
- On some platforms the default font settings used in SALOME might cause bad application look-n-feel. This problem can be solved by changing the font settings with `qtconfig` utility included into the distribution of Qt 4.
- The following limitations refer to BLSURF plug-in:
  - Mesh contains inverted elements, if it is based on a shape, consisting of more than one face (box, cone, torus...) and if the option "Allow Quadrangles (Test)" has been checked before computation.
  - SIGFPE exception is raised after trying to compute a mesh based on a box with "Patch independent" option checked.
  - It has been found out that BLSURF algorithm can't be used as a local algorithm (on sub-meshes) and as a provider of low-level mesh for some 3D algorithms because BLSURF mesher (and, consequently, the plug-in) does not provide information on node parameters on edges (U) and faces (U, V). For example, the following combinations are impossible:
    - global MEFISTO or Quadrangle(mapping) + local BLSURF;
    - BLSURF + Projection 2D from faces meshed by BLSURF;
    - local BLSURF + Extrusion 3D.
- Sometimes regression test bases give unstable results; in this case the testing should be restarted.
- A native VTK can be used only after manual recompilation with the GL2PS component.
- NETGEN 1D-2D and 1D-2D-3D algorithm do not require definition of 2D and 1D algorithms and hypotheses for both mesh and sub-mesh. 2D and 1D algorithms and hypotheses defined with NETGEN 1D-2D or 1D-2D-3D algorithm will be ignored during calculation.
- SALOME in general supports reading of documents from earlier versions but the documents created in the new version may not open in earlier ones. However, some studies may work incorrectly in SALOME 7x; mainly it concerns studies with Post-Pro data in which med v2.1 files have been imported. Due to removal of med v2.1 support and deprecation of Post-Pro module in SALOME series 7x, there can be problems with opening of such studies in SALOME.
- If SALOME modules are not installed in a single folder, SALOME may not work in the CSH shell since the environment variables are too long by default. In this case, it is suggested to use SH or to install all modules in the same folder.
- During the compilation of OCCT 6.x by Makefiles on a station with NVIDIA video card you can experience problems because the installation procedure of NVIDIA video driver removes library `libGL.so` included in package `libMesaGL` from directory `/usr/X11R6/lib` and places this library `libGL.so` in directory `/usr/lib`. However, `libtool` expects to find the library in directory `/usr/X11R6/lib`, which causes compilation failure (See `/usr/X11R6/lib/libGLU.la`). We suggest making symbolic links in that case using the following commands:
 

```
ln -s /usr/lib/libGL.so /usr/X11R6/lib/libGL.so
ln -s /usr/lib/libGL.la /usr/X11R6/lib/libGL.la
```
- Stream lines presentation cannot be built on some MED fields due to limitations in VTK.
- MEFISTO algorithm sometimes produces different results on different platforms.

- In some cases the number of triangles generated by MEFISTO may be different at each attempt of building the mesh.
- When generating a 2D mesh with “Maximum Area” hypothesis used, MEFISTO algorithm can produce cells with maximum area larger than specified by the hypothesis.
- For the current moment, because of the ParaView application architecture limitations, PARAVIS module has the following known limitations:
  - PARAVIS is a “singleton” module: that means that it can be used within one study only. As soon as the user activates the PARAVIS in a study, this module becomes unavailable in other studies.
  - PARAVIS module works unstably using a remote connection; when SALOME is running on a remote computer, activation of PARAVIS module can sometimes lead to the application hang-up.
  - PARAVIS module compilation can fail on 64-bit platforms when building ParaMEDCorba plugin (due to crash of kwProcessXML tool during generation of the plugin documentation). In such case it is necessary to unset VTK\_AUTOLOAD\_PATH environment variable and restart the compilation, for example:

```
[bash%] unset VTK_AUTOLOAD_PATH
```
- There can be problems when installing SALOME with Installation Wizard in “build from sources” mode caused by numerous bugs in ParaView 3.98 build procedure: on some platforms the compilation of ParaView can take more than 24 hours. Moreover, compilation of ParaView on some platforms can even fail.