SALOME version 7.4.0

Minor release announcement

May 2014

❖ **G**ENERAL **INFORMATION**

CEA/DEN, EDF R&D and OPEN CASCADE are pleased to announce SALOME version 7.4.0. It is a minor release that contains the results of planned major and minor improvements and bug fixes against SALOME version 7.3.0 released in December 2013.

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❖   MAJOR CHANGES IN VERSION 7.4.0

PORTING TO PARAVIEW 4.1

SALOME version 7.4.0 has been migrated to ParaView version 4.1.0. The architectural changes made in this ParaView version significantly affected the look-and-feel of SALOME platform.

The changes made in SALOME platform and the resulting side effects are described in the paragraphs below.

Note that the changes may require redesign or porting of third-party code that uses SALOME API (third-party modules, Python scripts, etc.).

Removal of multi-study support

SALOME is no more a multi-study application. There can be only one opened study document. The `NewStudy()` and `Open()` methods of `SALOMEDS::StudyManager` interface now raise an exception if there is an earlier opened study. In GUI, the user is able to open a new study only after the current one is closed.

Note that `StudyManager` interface and the business logic related to the study management became deprecated; it is kept in this version of SALOME for compatibility reasons. In the future versions of SALOME it is planned to correspondingly redesign the architecture and to remove the deprecated functionality (series 8x).

Single Python interpreter

Multiple Python interpreters have been replaced by a single one.

The previous approach used in SALOME GUI consisted in creating a separate Python (sub-) interpreter for each study, and even for each Python module within GUI framework. This allowed having a completely independent working environment in each study (and Python module).

Since version 7.4.0, there is a single Python interpreter shared between all studies and Python modules. In other words, all objects added to the interpreter context in the first study (for example, imported modules and created variables) stay "alive" in the second study, etc.

The side effect of this solution is that each Python module is imported only once into the interpreter context; this might have a negative effect if a business logic expects each study to have a separate copy of a Python module. The same concerns the usage of global variables.

An example of such negative side effect: `geompy.py` and `smesh.py` Python modules now work only when imported in the first study and do not work in the second, third, etc.:

```
import geompy # works only in the first study
import smesh # works only in the first study
```

However, these Python modules are considered deprecated since SALOME version 7.2.0; their usage is not recommended and they will be removed in future versions of SALOME.

PORT MANAGER

SALOME version 7.4.0 introduces a port manager feature to manage launching concurrent SALOME sessions and avoid conflicts coming from races for the TCP/IP port. Previously, when two SALOME sessions were started (almost) simultaneously, this could lead to the failure of one of these sessions since the port, to which the study tried to connect, was already occupied by another session.

The port manager guarantees that each SALOME session gets its own TCP/IP port.

Note:

- In SALOME 7.4.0 build procedure, the port manager option is switched OFF by default. To enable this feature, it is necessary to re-build SALOME using the following `cmake` option:

```
-DSALOME_USE_PORTMANAGER=ON
```

- SALOME version 7.4.0 binary distributions (both Linux and Windows) are built with the port manager feature switched OFF.

- The port manager feature is poorly tested on Windows.

- Since SALOME version 7.5.0, the port manager feature will be ON by default.

NEW SALOME LAUNCH PROCEDURE

SALOME version 7.4.0 introduces `salome` script, which is a new SALOME start-up procedure. This script replaces two existing launch procedures: `runSalome` (application-independent approach) and `runAppli` (SALOME application concept).

Note: in SALOME 7.4.0, `runSalome` and `runAppli` scripts are still available for compatibility reasons; they will be removed in SALOME series 8x.

SALOME users are encouraged to use the new SALOME start-up procedure. Note that this procedure is based on SALOME application concept: it is necessary to generate an "application" using `appli_gen.py` script. The `salome` script supports many parameters, type `salome help` to learn about the script usage.

Examples:

- Launch a new SALOME session:

  `salome start`

- Connect the Python console to the active session:

  `salome connect`

- Kill all running SALOME sessions:

  `salome killall`

NEW MEDREADER

SALOME version 7.4.0 introduces completely redesigned MedReader plug-in for ParaView. A part of PARAVIS module, new MedReader is implemented on the top of `MEDCoupling/MEDLoader` API available from SALOME MED module.

New implementation of MedReader has some major differences from the previous version that might require porting of related scripts.

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❖ NEW FEATURES AND IMPROVEMENTS

PREREQUISITES CHANGES

The table below lists pre-requisite products used with SALOME 7.4.0; the differences of 3rd-party product versions used for SALOME 7.4.0 and 7.3.0 are highlighted in bold.

Product	SALOME 7.3.0	SALOME 7.4.0
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	**3.16.0**
freetype	2.4.11	2.4.11
gl2ps	1.3.8	1.3.8
Graphviz	2.30.0	2.30.0
HDF5	1.8.10	1.8.10
Homard	10.7	**11.1**
Intel® Threading Building Blocks	3.0	3.0
Jinja2	2.6	2.6
LAPACK	3.4.2	3.4.2
libBatch	2.1.0	2.1.0
Libxml2	2.9.0	2.9.0
Med	3.0.7	3.0.7
METIS	4.0	4.0
NETGEN	4.9.13	4.9.13
NumPy	1.7.1	1.7.1
omniORB	4.1.6	4.1.6
omniORBpy	3.6	3.6
omniNotify	2.1	2.1
Open CASCADE Technology	6.7.0	**6.7.1**
ParaView	3.98.1	**4.1.0**
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	**6.1.0**

Product	SALOME 7.3.0	SALOME 7.4.0
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[1]	6.0	**6.1**
Xdata	0.9.9	0.9.9
Distene MeshGems suite[2]	1.1	1.1[3]
wso2-wsf-cpp	2.1.0	2.1.0
simanio	1.0	1.0

Note: the table above lists only main pre-requisite products (used with default configuration of SALOME); some optional products are not shown. 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:

    o http://www.riverbankcomputing.com/software/pyqt/license

    o 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.
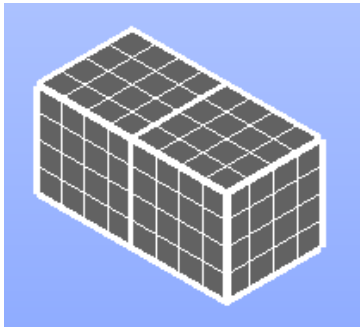
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[1] Version, included in ParaView distribution.

[2] Commercial product; requires license.

[3] Distene MeshGems v1.1 distributed with SALOME versions 7.3 and 7.4 also includes mg-hexa v1.2-1.
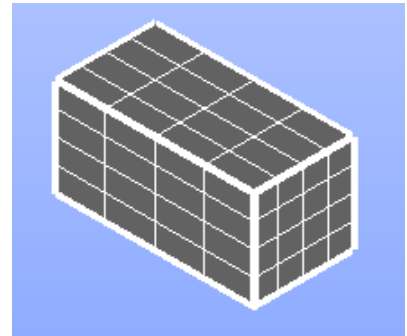
MAIN IMPROVEMENTS

Remove Extra Edges

New **Remove Extra Edges** option of **Fuse objects** operation allows automatically removing edges of argument objects from the operation result.

The fuse of two boxes created with this option is shown to the right and without it to the left.

Manage Dimensions

It has become possible to create interactive persistent dimensions of geometric objects.

This functionality can be accessed from the main menu via Measures → Dimension → **Manage Dimensions**.

Select the object, push **Add** button, and select the necessary type of dimension in the dialog and the corresponding elements of the object directly in the 3D viewer.

Created dimensions can be selected and manipulated by mouse to find the best position and fly-out distance.
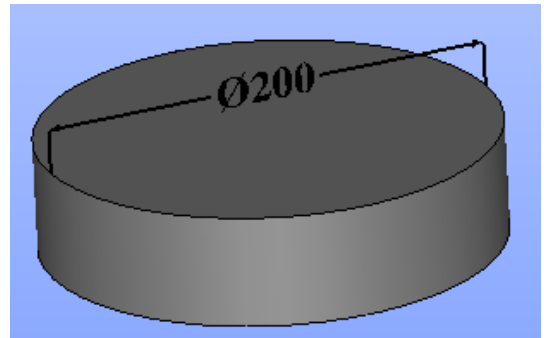
Diameter can be shown for circular faces.
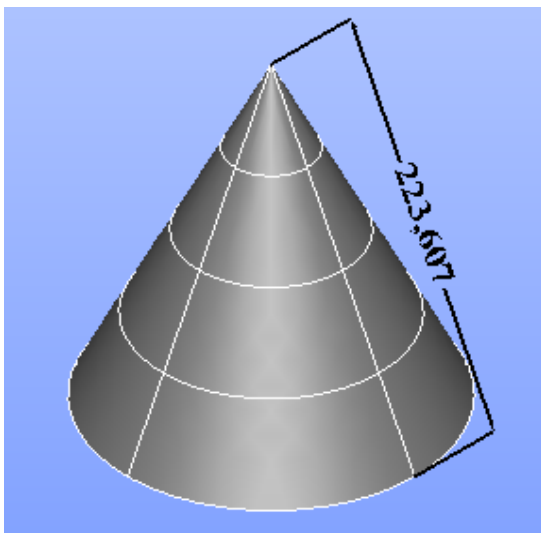
It is possible to display the **Length** of a single edge or **Distance** between two vertices or two parallel edges;

Angle can be shown for two intersecting edges or three points

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Geometric Progression Hypothesis

New **Geometric Progression** hypothesis allows splitting edges into segments with a length that changes in geometric progression:

$$L_k = L_{k-1} \times d$$

beginning from a given **Start Length** (L_0) and with **Common Ratio** (d).
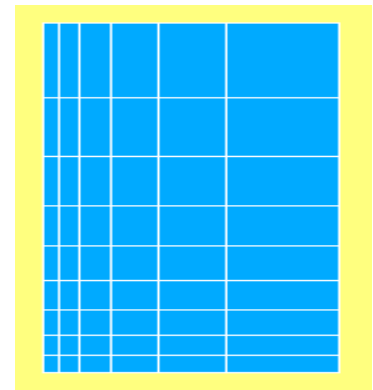
Move Nodes dialog redesign

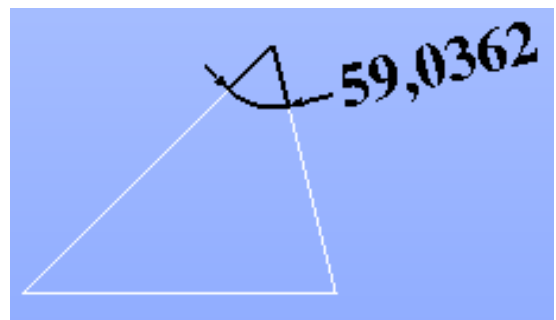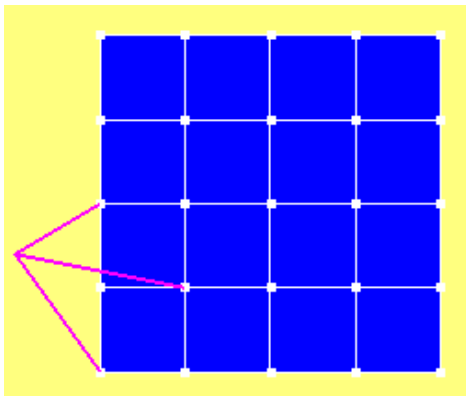**Move node** dialog of Mesh module has been split on two tabs to allow the user to choose the way the node being moved is specified:

- First tab allows the user to explicitly specify the node to be moved.

- Second tab allows automatically searching for a node closest to the given position and enforcing it at this position.

Enforced Nodes

The option to predefine positions of some nodes has been introduced in **Quadrangle Parameters** hypothesis as **Enforce Nodes** tab.

The positions of nodes can be defined by existing vertices or input as coordinates.

It is not possible to create enforced nodes on face boundary.
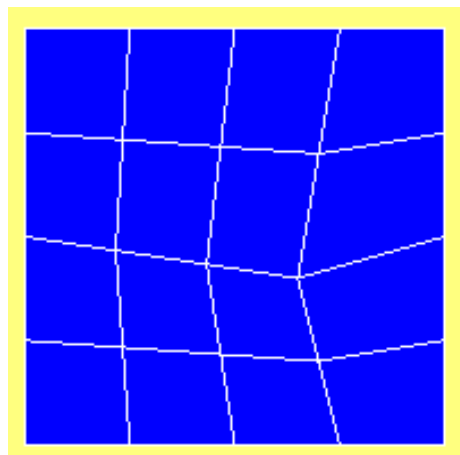
Create Mesh dialog improvements

Create Mesh dialog has been improved in many aspects.

A meshing algorithm or a hypothesis is available in the dialog only if the selected geometry includes the shapes that can be tessellated by the algorithm or if its usage is meaningful at the chosen level (mesh or sub-mesh). E.g. **Propagation** hypotheses are available only at the sub-mesh level, while **Quadratic Mesh** hypothesis and **Body Fitting** algorithm are available only at the mesh level.

New **Mesh type** parameter allows selecting from **Any, Hexahedral, Tetrahedral, Triangular** and **Quadrilateral** (there can be fewer items for lower dimensions). Selection of a mesh type hides any algorithms that are not able to create elements of this type.
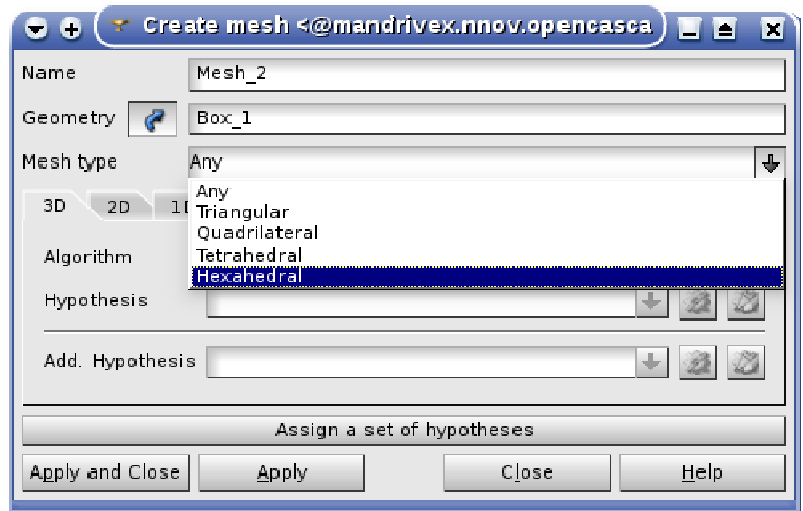
Default is shown instead of **None** if an algorithm can work without any hypothesis using default parameters.
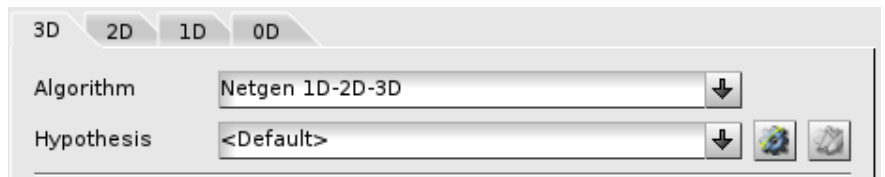
Propagation of Nodes Distribution on Opposite Edges

This new hypothesis allows propagating nodes distribution onto an opposite edge.

If a local hypothesis and propagation are defined on an edge of a quadrangular face, the opposite edge will have the same number of nodes and the same relations between segment lengths, unless another hypothesis has been locally defined on the opposite edge.
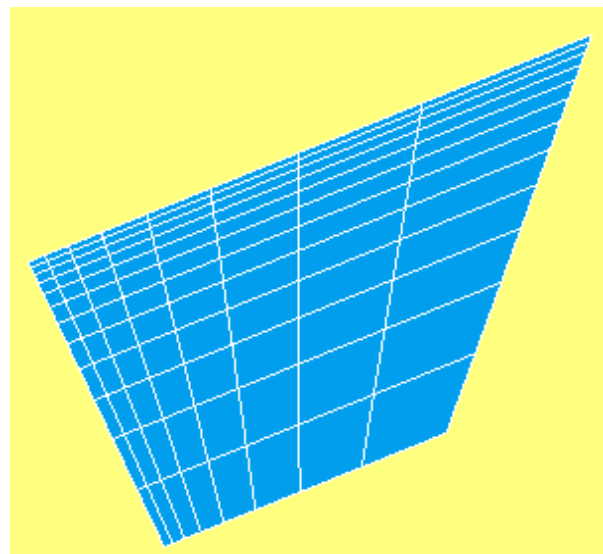
New features in Body Fitting meshing algorithm

Implement Edges check-box activates incorporation of geometrical edges in the mesh. See the mesh without this option to the left and with it to the right

Fixed Point option allows defining exact location of a grid node in the direction defined by spacing.
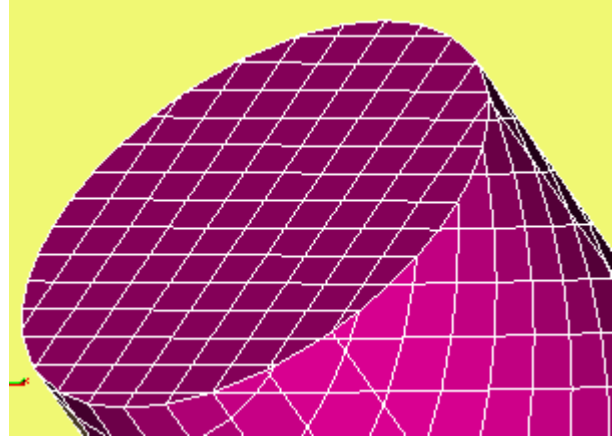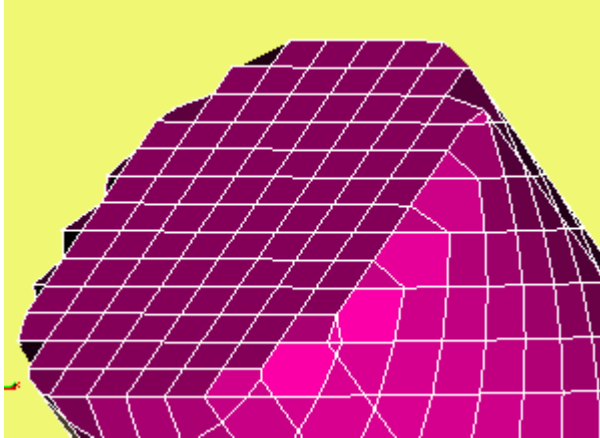
Directions of Axes menu group allows setting the directions of grid axes.

Orthogonal Axes option keeps edges orthogonal.

Optimal Axes button runs an algorithm that tries to set the axes to maximize the number of generated hexahedra.

See a box meshed with non-orthogonal axes in the image.

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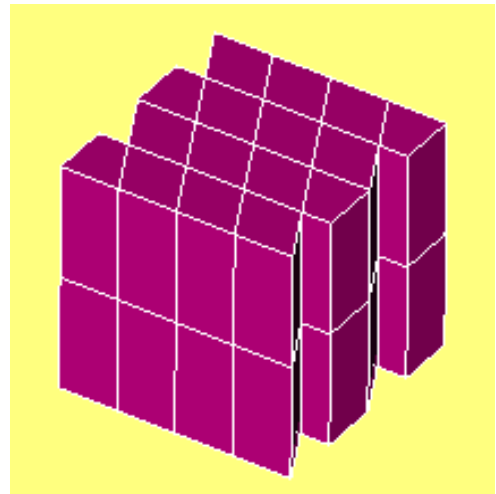
Viscous Layers on Shared Faces
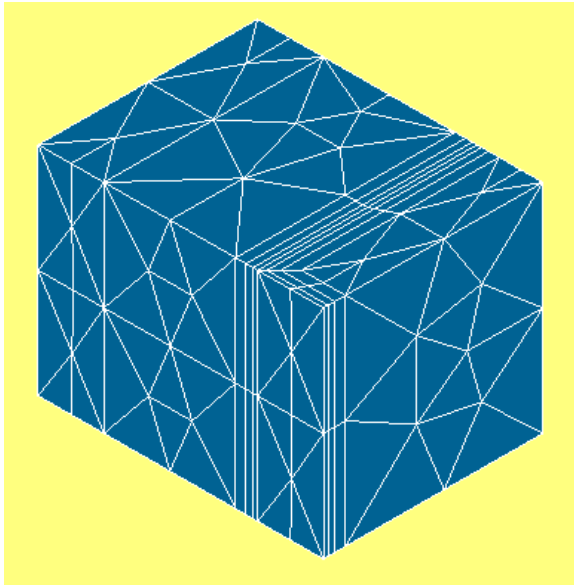
It has become possible to specify wall faces, which are not the inlets and outlets, and faces shared by solids as target faces for **Viscous Layers** hypothesis and create viscous layers on them.

Consequently, if **Viscous Layers** hypothesis is global, the viscous layers are constructed on both sides of the face shared by solids.

If the hypothesis is assigned to a sub-mesh, and the face shared by solids is an outer face of the sub-mesh shape, then viscous layers are constructed on one side of the face so that the viscous layers are inside the sub-mesh shape.

Split Volumes into Prisms
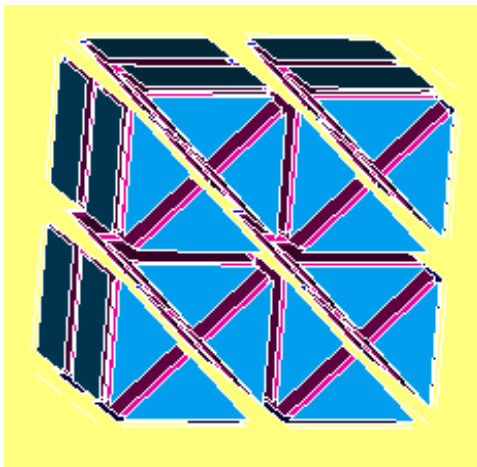
Split Volumes operation now allows splitting hexahedral meshes into **Prisms**.

There are two available modes: splitting into 2 prisms and splitting into 4 prisms.
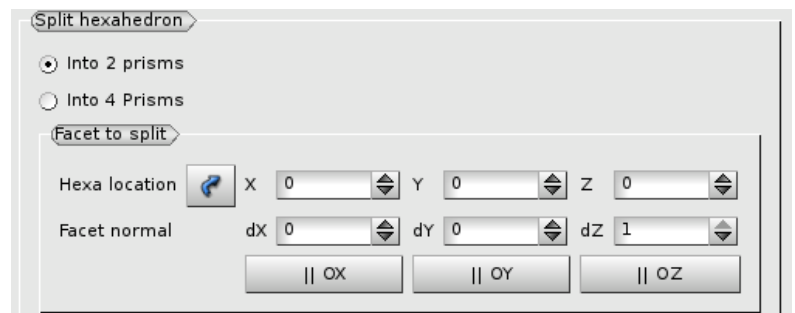
Then it is possible to choose the side of hexahedron that will be split into triangles by specifying a point and a direction close to normal of the side.

The algorithm finds the hexahedron closest to the point and selects the side with the normal closest to the specified direction. Then the splitting is propagated from that side to all adjacent hexahedrons.

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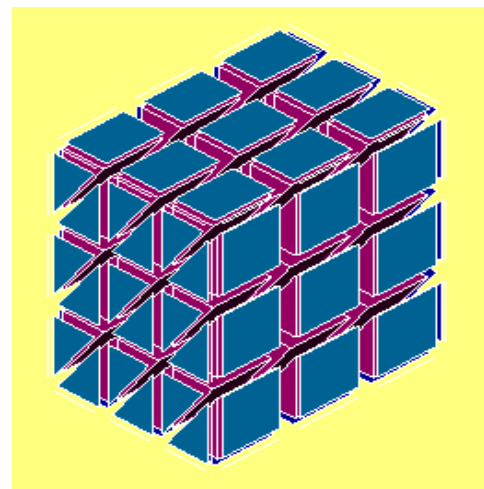
Definable parameters for Smoothing Surface

The following parameters of **Smoothing Surface** algorithm now can be defined at input (previously they were hardcoded):

- Maximum degree of the resulting BSpline surface

- Maximum number of Bezier curves in the resulting surface

- 3D tolerance of initial approximation (that represents a tolerance of initial plate surface approximation and by default computed as $max(0.0001,10*error)$, where *error* is 3D tolerance of the surface).

Additionally, **Smoothing Surface** now accepts not only a list of points, but also a compound of points (or a list of compounds) at input.
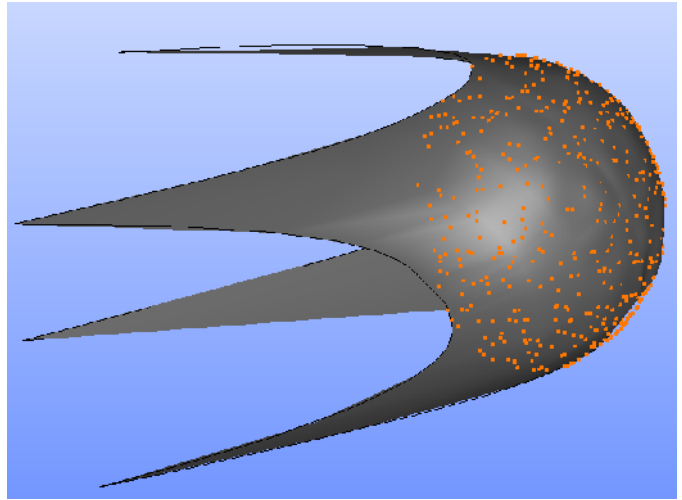
Clipping Improvements
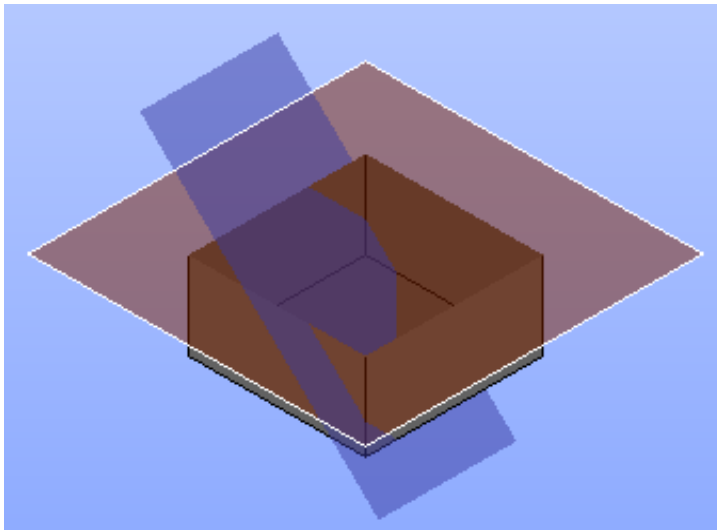
Clipping mechanism has been improved in many ways (especially for OCC viewer and Geometry module):

- The clipping plane can be defined:

  o Relatively to the center of the bounding box of the current scene. For this, press **New** button and select **Relative** in the list.

  o In absolute coordinates; for this mode the position of the clipping plane is specified via the base point and normal vector.

- It is possible to define several clipping planes.

- It is possible to select a clipping plane by mouse and move it with pressed left mouse button or rotate with pressed Ctrl key and left mouse button.

OTHER IMPROVEMENTS

- `DoubleNodesOnGroupBoundaries()` function has become available in GUI of Mesh module, in "Duplicate Nodes or/and Elements" dialog box. "On all boundaries" option duplicates nodes not only on the boundary between the selected groups of volumes, but also on the boundary between them and the remaining mesh.

- STEP import now creates groups corresponding to the materials, if there are any in the STEP file.

- New "Gravity Center of Selected Object" button implemented in OCC and VTK 3D viewers allows choosing an edge, face or solid to define a new rotation point as the center of gravity of the selected shape.

- New function `GetMinMax()` has been added to `Mesh` Python class to return minimal and maximal value of numerical parameter, such as mesh face area, 3D element volume, aspect ratio etc.

- New method `GetFaceNormal()`, which computes the normal of a mesh face, has been added to Mesh API.

- `MacMesh` plug-in, which provides a python library for quadrangle meshing, has been integrated into Mesh module.

- Pattern Mapping functionality now can be used for creation or refinement of a 2D mesh within a 3D meshing workflow.

- If "Check Shape" operation fails, its output now provides a list of sub-shapes that cause problems. It is possible to publish them in the study for further analysis.

- New "Scale Factor" coefficient allows scaling the representation of discrete (ball) elements displayed in VTK 3D viewer.

- It is possible to switch on and off automatic merge of edge nodes, which are coincident geometrically but different topologically, and automatic definition of 1D and 2D mesh density depending on the curvature of faces and edges in NETGEN mesher.

- The analysis of concurrent sub-meshes is now performed automatically at creation of any sub-mesh.

- In Mesh module, export to MED operation allows now converting geometrical fields to the MED fields and saving them into the file. This functionality is available via both GUI and Python API.

- The input panels of nodes `PyScript` and `PyFunction` have been modified in YACS module.

- Progress bar is now shown under the header item of YACS nodes `ForLoop` and `ForEachLoop` to show the current progress of theses nodes during schema execution.

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MED MODULE CHANGE LOG

New features

- o `MEDCouplingUMesh::conformize2D` (to convert non-conform 2D mesh to a conform one).
- o `MEDCouplingUMesh::colinearize2D` (to suppress points in 2D cells that do not change the shape of the 2D cell).
- o `MEDCouplingUMesh::split2DCells` (to add some points in a 2D cells without changing shape of 2D cell).
- o `getCellsBoundingBox` manages `SEG3`.
- o `MEDCouplingUMesh::computeNeighborsOfNodes`.
- o Open kriging API to project points on surfaces.
- o In `MEDLoader`, load/unload in `MEDFileField*` class (for `MEDReader`).
- o `MEDCouplingUMesh::buildSpreadZonesWithPoly` manages now quadratic polygons.
- o Addition of gauss points shape functions for `HEXA27` (for `MEDReader`).
- o Improve performance of `MEDCouplingUMesh::Intersect2DMeshes`.
- o Management of -1 level of structured meshes (using implicit convention) (for `MEDReader`).
- o `MEDLoader.WriteFieldUsingAlreadyWrittenMesh` now manages all mesh types (not only unstructured as in 7.3.0) .
- o `MEDCouplingIMesh` for image meshes.

API modification

- o Addition of `MinDotBtwPlane3DSurfIntersect` in `InterpolationOption` to control the angle.
- o Addition in `InterpolationOption` of `setArcDetectionPrecision` to control the threshold between a line and an arc.
- o Replace `const char*` by `const std::string&` in input arguments of the functions for string parameters in `MEDCoupling` and `MEDLoader`.
- o Addition of `MEDFileMesh::getAllGeoTypes`.
- o `BigMemoryObject::getAllTheProgeny` and `BigMemoryObject::isObjectInTheProgeny`.
- o `MEDFileFieldGlobs::getFileName2` is suppressed.

Bug corrections

- o Debug on gauss points shape functions for `PYRA13`.
- o For structured meshes `getMeshDimension` and `getSpaceDimension` can be different now.
- o Debug `Remapper` from `P1 meshdim=1 spacedim=3` to `P0 meshdim=3`.
- o Cell orientation for `QPOLYGON` with 2 `SEG3`.

Behavior modification

- o Python wrap behavior modif slices `start==stop==nbelem` is now supported in `__getitem__` and `__setitem__`.
- o Python wrap behavior negative single integer in `__getitem__` is supported.

❖ BUG CORRECTIONS

GUI MODULE

22450	*Summary:* [CEA] Provide "eye" icon for objects of Python module in Object Browser It has become possible to show and hide objects by clicking object browser «eye» icon of the corresponding object in SALOME module written in Python. The functions to control behavior of visibility icon for certain data object of Python module have been added to the Python API of SALOME GUI.
22451	*Summary:* [CEA] Move Up/Move Down of objects in Python module It has become possible to move objects created by Python module up and down in the Object Browser. The functions to change position of the data object in the data tree of Python module have been added to the Python API of SALOME GUI.
22565	*Summary:* [CEA 1145] Missing `WT_NoteBook` in python "NoteBook" window is enabled by default only in the GEOM and SMESH modules. It is possible to enable/disable in each SALOME module programmatically using the same approach as for other "standard" dockable windows (via `windows()` function).
22575	*Summary:* [CEA 1157] `SalomePyQt.WT_NoteBook` and `SalomePyQt.WT_User` have the same value `WT_User` enumerator value in Python API of GUI module has been corrected to avoid overlapping with `WT_NoteBook`.
22583	*Summary:* [CEA 1160] "Help" icon missing in the Preferences "Help" icon has been added to "Preferences" dialog.
22589	*Summary:* EDF 8048 - ergonomics of SMESH "Show/Hide trihedron" button in the OCC and VTK viewer toolbar is shown pressed if the trihedron is visible and raised otherwise.
22595	*Summary:* [CEA 1177] Misleading error message "Unknown problem during opening/creation of the document" warning message is displayed after an attempt to open bad HDF file.

KERNEL MODULE

22489	*Summary:* [CEA 1055] Regression: option `--shutdown-servers=1` does not work anymore Option `--shutdown-servers=1` has been restored to full functionality.
22585	*Summary:* [CEA 1167] option `--shutdown-servers` kills all Salome sessions instead of the current session The problem with incorrect work of option `--shutdown-servers=1` with new launcher has been fixed.

22587	*Summary:* [CEA 1166] Exception `KeyError` in module threading at Salome exit 'Exception KeyError' message at SALOME exit has been eliminated.

GEOM MODULE

21746	*Summary:* EDF 2135 GEOM: Unification of Python documentations Different parts of the user documentation in KERNEL, GEOM and SMESH modules has been unified to have the same look-n-feel (the part previously implemented via Sphinx has been converted to doxygen syntax).

21793	*Summary:* [CEA 625] Clipping: from coordinates or from bounding box
	
	The following features related to clipping implemented in the OCC viewer (Geometry module) and VTK viewer (Mesh module):
	
	• Definition of clipping plane parameters:
	  o Relatively to the center of the bounding box of the current scene or
	  o In absolute coordinates (base point + normal vector)
	• Possibility to define several clipping planes.
	• Persistence mechanism for the clipping planes, so their parameters could be stored and retrieved; this includes also dumping of parameters of clipping planes to the Python script.
	• Local (per-object) clipping for OCC viewer.
	• Possibility to directly interact with the clipping plane in 3D view using mouse.

21854	*Summary:* EDF 2320 GEOM: Add persistent dimensions It has become possible to create interactive persistent dimensions of the following types: • Length (Distance); • Diameter; • Angle. Created dimensions can be selected and manipulated by mouse to find the best position and fly-out distance.
21992	*Summary:* EDF 2482 GEOM : Generation of a face by filling 2 polylines The fix for this problem has been made in issue OCC23845.
22070	*Summary:* EDF GEOM 2214: Improvement of GEOM clipping Different improvements of clipping planes in OCC and VTK viewers; see issue 21793 for more details.
22213	*Summary:* EDF GEOM: Regression with boolean operation The circles produced by intersections of plane and sphere have been taken into account to make correct result. The fix for this problem has been made in issue OCC23991.

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22231	*Summary:* EDF 2664 GEOM: MakeCut takes a long time in a specific case In the pipe creation algorithm a construction of first and last V-iso-edges now is unified with other V-iso-edges. The fix for this problem has been made in issue OCC24204.
22373	*Summary:* EDF 2691 GEOM: Publish the shapes with error in Check Shape If "Check Shape" operation fails, its output now provides a list of sub-shapes that cause problems.It is possible to publish these shapes in the study for further analysis.
22378	*Summary:* EDF 2273 GEOM: Select a point/edge/face/solid in the "Set Rotation Point" window New "Gravity Center of Selected Object" button implemented in OCC and VTK 3D viewers allows choosing an edge, face or solid to define a new rotation point as the center of gravity of the selected shape.
22380	*Summary:* EDF 2746 GEOM: Accept compounds of points as an input for "Smoothing surface" "Smoothing Surface" functionality now accepts not only a list of points, but also a compound of points (or a list of compounds) at input.
22405	*Summary:* [CEA 995] Picture import The problem with specific BMP image importing has been resolved by migration to `FreeImage` version 3.16.0. Related OCCT issue: OCC24376.
22441	*Summary:* EDF GEOM Regression: Partition operation produces a self-intersected shape The fix for this problem has been made in issues OCC24481, OCC24492 and OCC24527.
22442	*Summary:* EDF GEOM: Self-intersected shape with `MakeRevolution` The intersection between a Cone and a Cylinder, Sphere, Cone or Torus surface is now processed as analytical when the surface axes are collinear. The fix for this problem has been made in issue OCC24505.
22448	*Summary:* [CEA 1031] Error when exporting XAO of a box with ellipsoids Function `GetInPlaceByHistory()` has been corrected to prevent creating a group containing items of different data types; `ExportXAO` functions works correctly in this case.
22453	*Summary:* [CEA 1030] GHS3D ends with "COMPERR_NO_MESH_ON_SHAPE" because a solid corresponds to multiple ellipsoids The fix for this problem has been made in issue OCC24527.
22454	*Summary:* [CEA 1028] `MinDistance` between an ellipsoid and a box does not give expected result (zero) Minimal distance computation algorithm has been fixed for singular cases.

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22456	*Summary:* [CEA 1034] Salome crashes at import of a step file The algorithm reading Cartesian points from a STEP file has been improved. The fix for this problem has been made in issue OCC24759.
22457	*Summary:* EDF 2817 GEOM : Subshape IDs change between two executions of a same script The fix for this problem has been made in issue OCC24733.
22459	*Summary:* [CEA 1040] Glue Edges produces an invalid shape The algorithm of curve on surface projection has been improved. The fix for this problem has been made in issue OCC24633.
22463	*Summary:* [CEA 1044] xao import fails if the path contains some accented characters Fixed problem with using files with accented characters in file names in the following operations: • Import/export XAO • Set texture to the shape The corresponding OCCT issues: OCC24622, OCC24725.
22467	*Summary:* EDF GEOM: Salome crashes at GEOM calling The check to unset threads GL context before its destruction has been added. The fix for this problem has been made in issue OCC24747.
22468	*Summary:* [CEA 1048] IMP GEOM: creating groups on materials at STEP import STEP import now creates groups corresponding to the materials, if there are any in the STEP file.
22469	*Summary:* EDF 2782 GEOM: Common fails and self-intersection detection is very quick The treatment p-curves convergent in node. The refining the angles of p-curves taking into account bounding curves if exist. The fix for this problem has been made in issue OCC24655.
22471	*Summary:* EDF 2604 GEOM: Suppress the boundary edges of the tools in the fuse operation "Remove Extra Edges" option has been implemented in "Fuse objects" operation to automatically remove edges of argument objects from the operation result.
22474	*Summary:* [CEA 1050] `UnionFaces` does not work on shells `UnionFaces` algorithm has been improved to correctly work on shells.
22475	*Summary:* EDF 2811 GEOM: Features for "Smoothing Surface" function The following parameters of Smoothing surface algorithm now can be defined at input (previously they were hardcoded): • Maximum degree of the resulting BSpline surface

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	• Maximum number of Bezier curves in the resulting surface • 3D tolerance of initial approximation (that represents a tolerance of initial plate surface approximation and by default computed as `max(0.0001,10*error)`, where `error` is 3D tolerance of the surface).
22476	*Summary:* EDF 2828 GEOM [XAO]: Crash when exporting to .xao (or operation does not terminate) The problem with export to `.xao` format has been fixed.
22477	*Summary:* EDF GEOM [XAO]: The `.xao` extension is not added automatically The extension `.xao` is now added automatically to the files exported into XAO format.
22478	*Summary:* EDF GEOM [XAO]: Bad display of integer fields The presentation of integer fields has been improved.
22490	*Summary:* [CEA 1057] Default tick of "Detect self-intersections" in Partition "Detect self-intersections" option in "Partition" operation is not only taken into account when "No sub-shape intersection (Compounds only)" option is set to ON (that corresponds to the `MakePartitionNonSelfIntersectedShape()` TUI function).
22494	*Summary:* EDF OCC: How to get a vertex index with `FindIndex`? OCCT method `BRepFill_Pipe::MakeShape` has been fixed to return correct shapes. The fix for this problem has been made in issue OCC24667.
22496	*Summary:* EDF 2841 GEOM: Partition fails with a large number of tools The fix for this problem has been made in issue OCC24650.
22497	*Summary:* EDF GEOM: Regression in 2D sketcher The problem that caused exception during edge creation in 2D sketcher has been fixed. Additionally, spin-box labels have been corrected: "DX" replaced by "X" and "DY" by "Y".
22503	*Summary:* [CEA 1072] "Get Non Blocks" does not work on a set of faces "Get Non Blocks" algorithm has been improved to return the second object (group of all non-quadrangular faces) even if the first one (a group of all non-block solids) is null.
22506	*Summary:* [CEA 1086] Import in GEOM returns "unknown exception" Exception at "Import" operation call has been fixed.
22508	*Summary:* EDF 2850: Group creation problem Multiple incorrect warnings about wrong selected object, which occurred during processing of complex shapes, have been eliminated.

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22512	*Summary:* [CEA 1073] `FuseCollinearEdgesWithinWire` makes the original shape invalid The geometry, which is used to create new topological elements, is now copied to avoid making the original shape invalid by `FuseCollinearEdgesWithinWire` operation.
22514	*Summary:* [CEA 1071] `FuseCollinearEdgesWithinWire` fails The algorithm selecting the first and the last vertices for a concatenated edge has been improved.
22519	*Summary:* [CEA 1083] Impossible to graphically select an edge for `MakeVertexOnCurve` The algorithm selecting edges for "Create a point" operation has been improved.
22531	*Summary:* [CEA 1112] the point markers o and x are inverted The "Point Marker" dialog has been fixed to insert markers properly.
22550	*Summary:* [CEA 1137] `FuseCollinearEdgesWithinWire` fails on some wires The algorithm `FuseCollinearEdgesWithinWire` has been improved to correctly process the case when closed concatenated curves are reordered.
22551	*Summary:* EDF 2857 – 7832 GEOM: problem with projection The problem with a vertex obtained instead of an edge after its projection on a face has been fixed. The fix for this problem has been made in issue OCC24827
22552	*Summary:* EDF 2857 – 7832 GEOM: strange behavior with partition The selection of candidate faces has been improved in the partition algorithm. The fix for this problem has been made in issue OCC24851.
22560	*Summary:* EDF GEOM: Regression with `MakeCut` The algorithm finding intersection between a Cone and a Torus with collinear axes has been fixed to provide correct work of "Cut" operation. The fix for this problem has been made in issue OCC24844
22561	*Summary:* EDF GEOM: Regression with `MakePartition` The operation that splits shells into blocks has been modified to process connected blocks of faces when the block begins with the face that is intended to be internal. The fix for this problem has been made in issue OCC24861.
22562	*Summary:* EDF GEOM: Regression, segmentation violation with `MakePipe` The algorithm of pipe creation has been improved to preserve the order of edges in the source shape. The fix for this problem has been made in issue OCC24849.

22567	*Summary:* EDF GEOM: Regression with shape selection
	The problem with selection of edges has been fixed.
	The fix for this problem has been made in issue OCC24867.
22586	*Summary:* EDF GEOM 8107: The Header files of `GEOMToolsGUI` are not installed
	The building procedure has been fixed to correctly install header files of `GEOMToolsGUI`.

SMESH MODULE

21793	*Summary:* [CEA 625] Clipping: from coordinates or from bounding box
	The following features related to clipping were implemented in SMESH module:
	• Possibility to define clipping planes in the global coordinates of the scene;
	• OpenGL clipping alternative to the data-set clipping.
22244	*Summary:* [CEA] Method to compute the normal to a mesh face
	New method `GetFaceNormal()`, which computes the normal of a mesh face, has been added to Mesh API.
22245	*Summary:* [CEA] Method to get the minimal link length
	New function `GetMinMax()` has been added to `Mesh` Python class to return minimal and maximal value of numerical parameter, such as mesh face area, 3D element volume, aspect ratio etc.
22313	*Summary:* EDF 2538 SMESH: Face with layers with `ViscousLayer3D` Hypothesis
	It has become possible to specify wall faces, which are not the inlets and outlets, and faces shared by solids as target faces for "Viscous Layers" hypothesis and create viscous layers on them.
22316	*Summary:* EDF 2719 SMESH: Split hexahedrons into prisms
	It has become possible to split hexahedral elements into pentahedra and choose in the "Splitting volumes" dialog a splitting pattern, i.e. into how many pentahedra to split a hexahedron, two or four.
22358	*Summary:* EDF SMESH: Body Fitting algorithm: origin point of grid defined by spacing
	"Body Fitting" meshing algorithm has been improved to allow the user to specify a point at which a mesh node will be created in a case of mesh definition by spacing.
22359	*Summary:* EDF SMESH: Body Fitting algorithm: mesh orientation
	The following new features have been introduced in the "Body Fitting" algorithm:
	• Possibility to specify the direction of grid axes;
	• Automatic changes of grid axes orientation to increase the number of hexahedral elements;
	• Possibility to create non orthogonal grid axes.

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22360	*Summary:* EDF SMESH: Body Fitting algorithm: Implement edges New "Implement Edges" option of "Body Fitting" meshing algorithm allows adding a geometrical edge into the mesh.
22362	*Summary:* EDF SMESH: Quadrangle (mapping) algorithm: enforced vertices "Quadrangle (mapping)" meshing algorithm has been improved to generate mesh with nodes located at the positions specified by the user.
22363	*Summary:* EDF SMESH: Create Mesh dialog box improvement: optional hypotheses "Create Mesh" dialog now informs if it is optional to assign a hypothesis together with the algorithm or not. For this, "Default" is shown instead of "None" if an algorithm can work without any hypothesis using default parameters.
22364	*Summary:* EDF SMESH: Create Mesh dialog box improvement: hide inapplicable algorithms/hypotheses A meshing algorithm is available in "Create Mesh" dialog only if the selected geometry includes the shapes that can be tessellated by the algorithm or if its usage is meaningful at the chosen level, e.g. "Propagation" hypotheses are available only at the sub-mesh level, while "Quadratic mesh" hypothesis only at the mesh level.
22365	*Summary:* EDF SMESH: Create Mesh dialog box improvement: hide algorithms depending on a mesh type "Mesh type" parameter has been added in "Create Mesh" dialog box to allow selecting from "Any", "Hexahedral", "Tetrahedral", "Triangular" and "Quadrilateral" (there can be fewer items for lower dimensions). Selection of a mesh type hides any algorithms that are not able to create elements of this type.
22367	*Summary:* EDF SMESH: Notification on concurrent algorithms/hypotheses The analysis of concurrent sub-meshes is now performed automatically at creation of any sub-mesh.
22368	*Summary:* EDF SMESH: Pattern mapping to assign new nodes to sub-shapes "Pattern Mapping" functionality now can be used for creation or refinement of a 2D mesh within a 3D meshing workflow.
22384	*Summary:* [CEA 831] New wire discretization hypothesis: geometric progression New "Geometric Progression" hypothesis allows meshing edges using geometric progression so that the length of each next segment differs from that of a previous one by a certain factor.
22394	*Summary:* [CEA 984] Propagation of the number of segments and propagation of the distribution Additional 1D hypothesis "Propagation of Node Distribution on Opposite Edges" has been created. This hypothesis propagates distribution of nodes from the edge to which it is assigned to opposite edges of quadrilateral faces to have the same number of segments and relations between segment lengths on opposite edges.

22458	*Summary:* [CEA 1039] Regressions on `NETGEN_1D2D3D` and `GetInPlaceByHistory` Regressions in NETGEN plug-in and Geometry module have been fixed.
22460	*Summary:* [CEA 1042] Copy Mesh: impossible mesh selection in the object browser if selection in 3D view is disabled The problem with mesh selection in "Copy Mesh" dialog has been fixed.
22462	*Summary:* EDF SMESH: many computation does not work anymore Solved by additional patch for Netgen.
22465	*Summary:* [CEA] sometimes `isinstance(m, Mesh)` returns `False` for `Mesh` objects A Python coding problem has been fixed.
22466	*Summary:* [CEA 1047] Mesh stays selected when selection is disabled in the 3D view The problem with "Display", "Display only" and "Erase" operations in case of disabled selection in OCC and VTK 3D Viewers has been fixed.
22473	*Summary:* EDF 2825 SMESH: Memory allocation problem with `ViscousLayer2D` A memory allocation problem arising with `ViscousLayer2D` hypothesis has been fixed.
22479	*Summary:* EDF 2823 SMESH: Add "multiplier" coefficient for balls Multiplier coefficient "Scale Factor" has been added to discrete (ball) elements displayed in VTK 3D viewer. It is applied to the diameter of each ball element to scale its representation in the viewer.
22480	*Summary:* EDF 2773 SMESH: Automatic update in SMESH "Automatic Update" option now updates not only meshes, but also sub-meshes, groups on geometry and groups on filter.
22482	*Summary:* EDF 2822 SMESH: Redesign of move node dialog box "Move Node" dialog has been split into two parts corresponding to two different tasks: • Move any mesh node to a given position. • Search for a node closest to the given position and enforce it at this position.
22487	*Summary:* EDF 2778 SMESH: Add a GUI for the flat elements generation "Duplicate nodes on group boundaries" operation has been added in "Duplicate Nodes and/or elements" dialog. It creates double nodes and, optionally, flat elements on common boundaries of the given groups of volumes or, optionally, on all boundaries between the given groups and the remaining mesh.
22488	*Summary:* EDF 2781 SMESH: Faces of an internal sub-mesh cannot be selected with the viscous layer The definition of "Viscous Layers" hypothesis on a sub-shape has been improved so that only the faces of that sub-shape were selectable.

22491	*Summary:* EDF 2249 SMESH: Integration of a small python library for quadrangle meshing `MacMesh` plug-in, which provides a python library for quadrangle meshing, has been integrated into SMESH module.
22500	*Summary:* [CEA 1077] `GetLibName` not found A regression in `smesh_algorithm.py` has been fixed.
22501	*Summary:* [CEA 1076] Impossible to mesh again a shape, which has been meshed and then translated without copy Change of position of a meshed shape is now properly taken into account.
22502	*Summary:* [CEA 1070] "Convert to quadratic" does not work if some edges are not set by some elements during meshing "Convert to quadratic" operation has been fixed to correctly take into account mesh edges ending at different geometrical edges.
22504	*Summary:* [CEA 1078] The creation of a sub-mesh `UseExistingFaces` suppresses the created elements The following algorithms have been renamed for clarity: • "Use existing faces" → "Use Faces to be Created Manually"; • "Use existing 2D elements" → "Import 1D-2D Elements from Another Mesh"; • "Use existing edges" → "Use Edges to be Created Manually"; • "Use existing 1D elements" → "Import 1D Elements from Another Mesh".
22507	*Summary:* EDF 2845 SMESH: regression with 3D extrusion algorithm Extrusion 3D mesher has been improved to avoid failure on a prism with a triangular base face meshed with a sole triangular element.
22511	*Summary:* EDF 2845 SMESH: error with `UseExistingFaces` The problem with "Use Existing 2D Elements" meshing algorithm has been fixed.
22513	*Summary:* [CEA 1084] `_objref_SMESH_Mesh` instance has no attribute `GetMEDMesh` Documentation on parameters of `smeshBuilder.Mesh()` has been updated.
22516	*Summary:* [CEA 1075] Quadrangle mapping produces a bad mesh without raising error Quadrangle (Mapping) algorithm has been improved to report an error if inverted elements are generated.
22517	*Summary:* [CEA 1079] Filter Multi-connections cannot be created with the graphical interface It is now possible to define an edge filter with "Borders at multi-connections"=1 via GUI. Previously it caused "Insufficient input value" error.

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22523	*Summary:* [CEA 1096] Add column "biquadratic" in "Mesh Information" "Bi-quadratic" column has been added in "Mesh Information" to differentiate between quadratic and biquadratic elements if a mesh contains both. Tri-quadratic elements are also countered in "Bi-quadratic" column.
22525	*Summary:* EDF 2863 SMESH: problem between BLSURF with viscous layer and projection The problem with invalid projection arising if some nodes have invalid positions on a face has been fixed.
22526	*Summary:* SMESH 2864 – Projection and Extrusion The problem with "Projection 2D" algorithm in case of faces with many holes has been fixed.
22536	*Summary:* EDF 2876 SMESH: Problem with `BodyFitting` Body Fitting meshing algorithm has been improved to correctly work on a mirrored shape.
22537	*Summary:* EDF 2877 SMESH: wrong information about the number of nodes with polyhedral In Mesh Information dialog, description of nodal connectivity of polyhedral elements has been improved by splitting an all-nodes list into groups relating to facets.
22539	*Summary:* [CEA 1126] Quadrangle mapping produces a non-conform mesh "Quadrangle (Mapping)" meshing algorithm now produces a better mesh in case of few segments on face sides and standard transition.
22541	*Summary:* [CEA 1127] Going quadratic with nodes on the geometry produces overlapping mesh The problem with overlapping links appearing at "Convert to quadratic" near concave boundaries in quad-dominant mesh has been eliminated.
22542	*Summary:* [CEA 1129] Convert to bi-quadratic creates a node outside an element if mesh has no CAD A bug of conversion from quadratic to bi-quadratic in a case w/o geometry has been fixed.
22549	*Summary:* [CEA 1138] The script `wrapperScript.py` gives back hand for no reason at the middle of a loop The problem with null file descriptor in Python scripts has been fixed.
22558	*Summary:* [CEA 1135] Mesh migration documentation link broken Broken links have been restored in Mesh documentation.
22563	*Summary:* EDF SMESH: Regression with `Projection_2D` Regression of "Projection 2D" algorithm caused by a modification of "Pattern Mapping" has been fixed.
22564	*Summary:* EDF SMESH: Regression, `FindNodeClosestTo` does not return the right node The problem with `Mesh.FindNodeClosestTo(x,y,z)` operation has been fixed.

22568	*Summary:* [CEA 1151] `ConvertToQuadratic` does not work if a face was not assigned with elements `ConvertToQuadratic()` has been improved to correctly work on a mesh built with `SetRemoveTinyEdges` parameter of BLSURF mesher.
22571	*Summary:* [CEA 1152] if selection disabled, impossible to select a mesh in "Merge nodes" in manual mode Selection of nodes to be merged has been restored in the object browser.
22572	*Summary:* [CEA 1148] Radial Quadrangle does not create quadratics cells "Quadratic mesh" hypothesis is properly taken into account by "Radial Quadrangle" mesher.
22576	*Summary:* EDF 8029 SMESH: Bug with 3D viscous layer The failure of Viscous Layers construction on certain geometry has been eliminated.
22578	*Summary:* EDF SMESH: Regression with `Prism()` A regression has been fixed in "Extrusion 3D" meshing algorithm.
22582	*Summary:* EDF 8036 SMESH: `ConvertToQuadratic` fails with `theForce3d` off Wrong conversion to quadratic in case of a face with a seam edge located not at zero of a periodic direction has been fixed.
22594	*Summary:* [CEA 1159] Salome crashes when loading a dumped meshing script SALOME crash at loading a script using `LayerDistribution2D` hypothesis has been fixed.

MED MODULE

22449	*Summary:* [CEA 1033] `SEGFAULT` when running `$MED_ROOT_DIR/bin/salome/TestMEDCouplingCorbaServ` The name of the current user has been added in the filename of the temporary directory for test results to address the case when several users execute the same test on the same machine.
22464	*Summary:* [CEA 1046] `SEGFAULT` when reading a SAUV file in V7.3.0 and V7_main A `SEGFAULT` in `SauvReader` has been fixed.
22534	*Summary:* [CEA 1121] failing `sauv2med` The problem with `sauv2med` when reading a partial nodal field has been eliminated.

PARAVIS MODULE

21714	*Summary:* [CEA 582] Wrong component shown in the legend Fixed by migration on ParaView 4.1.

21722	*Summary:* [CEA 591] Problem with field on nodes with profile Fixed with new MedReader.
21729	*Summary:* [CEA 595] Slow polyhedrons rendering in ParaViS The rendering of polygons and polyhedrons has been accelerated.
21943	*Summary:* [CEA 701] Visualization problem with paravis Fixed with new MedReader.
22128	*Summary:* [CEA 766] Crash dans Paravis when loading a med file from FLICA4 Fixed with new MedReader.
22230	*Summary:* [CEA 833] Information on data arrays not update when changing time steps Fixed by migration on ParaView 4.1.
22240	*Summary:* [CEA 876] Visualisation of fields with profiles in ParaVis Fixed with new MedReader.
22242	*Summary:* [CEA 832] Wrong values in the scalar bar: min max are 0 1 Fixed by migration on ParaView 4.1.
22286	*Summary:* [CEA 911] The launch of a "Show Trace" ends with a segmentation error Fixed with new MedReader.
22387	*Summary:* [CEA 937] Wrong display Fixed with new MedReader.
22486	*Summary :* [CEA 1056] `import paraview.salome` crashes SALOME Fixed by migration on ParaView 4.1.
22529	*Summary:* EDF 2866 Paravis: activation of the Edit Color Map windows The functionality of "Edit Color Map" and "Edit Color Range" dialogs has been restored on Fedora platform.
22530	*Summary:* [CEA 1108] New macros are deleted at Paravis launch The added macros are now correctly saved at the end of session.
22533	*Summary:* [CEA 1120] Edit Color Range does not open Solved by fix for issue 22529.
22546	*Summary:* [CEA 1136] Loading state raises fatal error Fixed pb in MedReader.

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22590	*Summary:* [CEA 1172] Regression on `import salome_test` Fixed regression of `salome_test.py` script.
22593	*Summary:* [CEA 1175] PARAVIS segmentation fault Fixed by additional patch for ParaView 4.1.

YACS MODULE

22326	*Summary:* [CEA 930] YACS: progression of a loop `ForEach`
	
	Progress bar is now shown under the header item of YACS nodes `ForLoop` and `ForEachLoop` to show the current progress of theses nodes during schema execution.
	
	The progress bar is hidden during schema edition. It is possible to customize look-n-feel of the progress bar via Preferences:
	
	   o Change the color of progress bar
	
	   o Choose how the progress value is expressed: as a percentage as the number of finished steps, or as both.

22415	*Summary:* [CEA 1007] Harmonization of Python nodes with the nodes from catalog
	
	The input panels of nodes `PyScript` and `PyFunction` have been modified as follows:
	
	   • Local /Remote option has been removed;
	
	   • "Container" combo-box is now always available;
	
	   • It is now possible to change the selected contained directly from the input panel.

JOBMANAGER MODULE

N/A	*Summary:* EDF 7925: Fix bug preventing jobs with the parameter "memory per core" to be loaded properly.

BLSURFPLUGIN MODULE

22455	*Summary:* [CEA 1032] Error "No mesh elements assigned to a face" is raised instead of a simple warning `BLSURFPlugin` has been protected from reporting an error for a shape that is properly meshed.
22547	Summary: [CEA 1128] Problem with use of `isRelative` after a dump "Relative size" parameter of "BLSURF Parameters" hypothesis is now dumped into Python correctly.

HEXOTICPLUGIN MODULE

22470	*Summary:* EDF 2824 HEXOTICPLUGIN: Working directory is not taking into account with an imported mesh HEXOTIC algorithm has been improved to use "Working Directory" parameter when working on a 2D mesh without geometry.
22515	*Summary:* [CEA 1074] HEXOTIC does not work under Windows 7 64 bits The problem with HEXOTIC plug-in on Windows platform has been fixed.

NETGENPLUGIN MODULE

22357	*Summary:* EDF NETGENPLUGIN: NETGEN options It has become possible to switch on and off two features of NETGEN mesher: • Automatic merge of edge nodes, which are coincident geometrically but different topologically. • Automatic definition of 1D and 2D mesh density depending on the curvature of faces and edges.

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❖   PROCESSED AND ANSWERED QUERIES

22452	*Summary:* [CEA 1036] command `./runInstall` of Install Wizard MD10_64 does not work
22481	*Summary:* EDF 2559 SMESH: Is `GetGroups` list sorted?
22492	*Summary:* EDF GEOM: Orientation of faces after a cut
22493	*Summary:* EDF 2735 SMESH: How to forbid deletion of objects from the modules
22509	*Summary:* EDF 2845 SMESH: problem with `UseExistingFaces` and Hexahedron
22518	*Summary:* [CEA 1090] Is there in OCC a function that check if 2 objects are intersecting or not?
22520	*Summary:* [CEA 1097] GHS3D regression
22521	*Summary:* [CEA 1093] 2D Behavior of Fuse
22535	*Summary:* [CEA 1122] How to insert an additional entry in the help menu?
22538	*Summary:* EDF SMESH: Compilation of SMESH on master fails
22554	*Summary:* [CEA 1134] Behavior of the Edit Color Map button
22559	*Summary:* [CEA 1143] The icons of the Color Map Editor require a click in the 3D View
22584	*Summary:* [CEA 1164] `MEDCouplingFieldDouble.applyLin` does not affect the first value
22591	*Summary:* EDF 8100 - Intersecting triangles with viscous layers
22596	*Summary:* EDF SMESH: Renumbering nodes on a line
22597	*Summary:* EDF 2782 SMESH: NgException with Netgen_2D

❖ **OCCT 6.7.1 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 6.7.1.

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

OCC23391	*Summary:* Missing section edge between two faces Referenced by 0022213: EDF GEOM: Regression with boolean operation
OCC23884	*Summary:* Boolean Fuse between two faces fails Referenced by 0022184: [CEA 802] Partition fails with message "Courbes non jointives" on a set of curved cylinders
OCC23892	*Summary:* Missing intersection edge between two faces. Referenced by 0022184: [CEA 802] Partition fails with message "Courbes non jointives" on a set of curved cylinders
OCC24204	*Summary:* The algorithm `BRepOffsetAPI_MakePipeShell` produces resulting shape with unwarrantably big tolerance Referenced by 0022231: EDF 2664 GEOM: `MakeCut` takes a long time in a specific case
OCC24376	*Summary:* Some BMP image files cannot be read Referenced by 0022405: [CEA 995] picture import.
OCC24427	*Summary:* Wrong section curves Fixes problem with self-intersected shape resulted from Partition algorithm.
OCC24454	*Summary:* `fixshape` produces a shell from a solid. Referenced by: • 0022388: [CEA 977] Invalid shape after "UnionFaces" • 0022495: [CEA 1058] Shape invalid after UnionFaces • INTPAL 0052244: Improvement of UnionFaces functionality.
OCCC24470	*Summary:* Wrong result done by General Fuse algorithm Fix pb with non-regression test smesh/imps_07/H6.
OCC24472	*Summary:* Wrong section curves Fix pb with non-regression test smesh/bugs_16/S0.
OCC24481	*Summary:* Test "Perform Infinite Point" provides wrong result for a solid Referenced by 0022441: EDF GEOM Regression: Partition operation produces a self-intersected shape

OCC24484	*Summary:* `sprops` gives incorrect matrix of inertia and moments Fix pb with non-regression test geom/measures_00/A6.
OCC24492	*Summary:* The command `bopargcheck` produces wrong results for cases. Referenced by 0022441: EDF GEOM Regression: Partition operation produces a self-intersected shape
OCC24499	*Summary:* `fixshape` produces inverted solid Fix pb with non-regression test smesh/bugs_12/M2.
OCC24505	*Summary:* Wrong section curves between Cone and Cylinder with collinear axes Referenced by 0022442 EDF GEOM: Self-intersected shape with `MakeRevolution`. Fixes pb with non-regression test script smesh/bugs_11/L9
OCC24527	*Summary:* Wrong result is obtained by Solid Classifier. Referenced by • 0022441: EDF GEOM Regression: Partition operation produces a self-intersected shape • 0022453: [CEA 1030] GHS3D ends with "COMPERR_NO_MESH_ON_SHAPE" because a solid corresponds to multiple ellipsoids
OCC24564	*Summary:* `Select3D_SensitiveFace` gives inaccurate picking depth for `AIS_Plane` (interior selection) Referenced by 0021793: [CEA 625] Clipping: from coordinates or from bounding box
OCC24569	*Summary:* `AIS_InteractiveContext::Update(...)` does not updates selection when changing `AIS_Plane` Referenced by 0021793: [CEA 625] Clipping: from coordinates or from bounding box
OCC24586	*Summary:* Pipe construction is failed Fixes problem with `SMESH_SRC/doc/salome/examples/prism_3d_algo.py`
OCC24620	*Summary:* `BOPAlgo_CheckerSI` returns interferences that are not sub-shapes of the source shape Referenced by 0021835: EDF 2070 GEOM : Problem with detecting Self-intersections
OCC24622	*Summary:* Add method to `AIS_TexturedShape` class to assign texture data directly from byte stream 0022463: [CEA 1044] xao import fails if the path contains some accented characters
OCC24633	*Summary:* Incorrect projection of a curve on a surface Referenced by 0022459 [CEA 1040] Glue Edges produces an invalid shape.

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OCC24650	*Summary:* Wrong intersection curves obtained for a surface of revolution and a plane. Referenced by 0022496: EDF 2841 GEOM: Partition fails with a large number of tools
OCC24655	*Summary:* Boolean common produces incorrect result Referenced by 0022469: EDF 2782 GEOM: Common fails and self-intersection detection is very quick
OCC24667	*Summary:* `BRepOffsetAPI_MakePipe::FirstShape()` and `LastShape()` return shapes not from result Referenced by 0022494 EDF OCC: How to get a vertex index in a wire with `FindIndex`?
OCC24725	*Summary:* `AIS_TexturedShape` - flag switching texture modulation mode does not work 0022463: [CEA 1044] xao import fails if the path contains some accented characters
OCC24733	*Summary:* Sub-shape IDs change between two executions of a same script Referenced by 0022457: EDF 2817 GEOM : Sub-shape IDs change between two executions of a same script
OCC24747	*Summary:* `TKOpenGl` - Mesa fails to destroy context if it set to current thread Referenced by 0022467 EDF GEOM: Salome crashes at GEOM calling.
OCC24759	*Summary:* Crash on STEP import, when reading a file exported in non-"C" locale Referenced by 0022456 [CEA 1034] Salome crashes at import of a step file.
OCC24764	*Summary:* Alien sub-shapes occurred in result of `'bopcheck'` operation Referenced by 0021835: EDF 2070 GEOM : Problem with detecting Self-intersections
OCC24825	*Summary:* Fit Boolean Operation Algorithm to treat multiple arguments.
OCC24827	*Summary:* Incorrect result of projection of an edge on a face Referenced by 0022551 EDF 2857 – 7832 GEOM: problem with projection.
OCC24840	*Summary:* Exception in `BRepOffsetAPI_MakePipe` Referenced by 0022557: EDF GEOM: Regression with `MakePipe` on Salome_master/OCCT_6_7_1_beta
OCC24844	*Summary:* Wrong result of Boolean Cut operation Referenced by 0022560 EDF GEOM: Regression with `MakeCut`.
OCC24849	*Summary:* Crash on Pipe creation Referenced by 0022562 EDF GEOM: Regression, segmentation violation with `MakePipe`.

OCC24851	*Summary:* Extra vertex is in the result of Boolean Fuse Operation Referenced by 0022552 EDF 2857 – 7832 GEOM: strange behavior with partition.
OCC24861	*Summary:* Extra solid is in the result of General Fuse Operation Referenced by 0022561 EDF GEOM: Regression with `MakePartition`.
OCC24867	*Summary:* [Regression] Visualization - polygon offsets look broken Referenced by 0022567 EDF GEOM: Regression with shape selection.

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❖ SUPPORTED LINUX DISTRIBUTIONS AND PRE-REQUISITES

SALOME 7.4.0 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 13.10 64bits, Windows XP 32bits and 64bits. SALOME 7.4.0 has been tested with the pre-requisites listed in the table below.

SALOME 7.4.0 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	GHS3DPRLPLUGIN	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++**	2010	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	6.7.1	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Qwt	6.1.0	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	6.1.0	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	4.1.0							X								
Homard	11.1								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++**	2010	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	6.7.1		X		X	X	X	X		X		X			
Qwt	6.1.0				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	6.1.0		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	3.16.0	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 3rd- 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 7.4.0 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, GHS3DPRLPLUGIN, 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 7.4.0 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 13.10 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 7.4.0 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 cannot 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;
    - BLSUFR + 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:

    o 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.

    o 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 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.

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