

SALOME version 8.3.0

Release Notes

May 2017

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❖ GENERAL INFORMATION

CEA/DEN, EDF R&D and OPEN CASCADE are pleased to announce [SALOME](#) version [8.3.0](#). It is a public minor release that contains the results of planned major and minor improvements and bug fixes against SALOME version 8.2.0 released in February 2017.

❖ PREREQUISITES

The table below lists pre-requisite products used with SALOME 8.3.0. The differences of 3rd-party product versions used for SALOME 8.2.0 and 8.3.0 are highlighted in bold.

Product	SALOME 8.2.0	SALOME 8.3.0
Babel	2.0	2.0
Boost	1.52.0	1.52.0
Cgns	3.1.3-4	3.1.3-4
Cmake	3.3.0	3.3.0
Cppunit	1.12.1	1.12.1
Cython	0.23.2	0.23.2
Distene MeshGems suite ¹	2.3-8	2.4-5
Distribute	0.7.3	0.7.3
Docutils	0.12	0.12
Doxygen	1.8.3.1	1.8.3.1
Freeimage	3.16.0	3.16.0
Freetype	2.4.11	2.4.11
Gl2ps	1.3.9 ²	1.3.9 ²
Graphviz	2.38.0	2.38.0
Hdf5	1.8.14	1.8.14
H5py	2.5.0	2.5.0
Homard	11.7	11.8
Intel® Threading Building Blocks	4.2.4	4.2.4
Jinja2	2.7.3	2.7.3
Lapack	3.5.0	3.5.0
Libbatch	2.3.0	2.3.1
Libxml2	2.9.0	2.9.0
Markupsafe	0.23	0.23
Matplotlib	1.4.3	1.4.3
Med	3.2.1	3.2.1
METIS	5.1.0	5.1.0
Mpi4py	1.3.1	1.3.1
Netgen	5.3.1	5.3.1
Nose	1.3.7	1.3.7
Numpy	1.9.2	1.9.2

¹ Commercial product; requires license.

² Development version, downloaded from svn repository on June 20, 2016.

Product	SALOME 8.2.0	SALOME 8.3.0
OmniORB	4.1.6	4.1.6
OmniORBpy	3.6	3.6
Open CASCADE Technology	7.0.0	7.1.0p1 ³
OpenCV	2.4.6.1	2.4.6.1
OpenMPI	1.8.5	1.8.5
Paco++	0.5.5	0.5.5
Paraview	5.1.2	5.1.2 ⁴
Pkgconfig	1.1.0	1.1.0
Pygments	2.0.2	2.0.2
Pyparsing	2.0.3	2.0.3
Pyqt	5.6.0	5.6.0
Python	2.7.10	2.7.10
Python-dateutil	2.4.2	2.4.2
Pytz	2015.4	2015.4
Qt	5.6.1	5.6.1
Qwt	6.1.2	6.1.2
Scipy	0.15.1	0.15.1
Scotch	5.1.11	5.1.11
Setuptools	0.6c11	0.6c11
Sip	4.18	4.18
Six	1.9.0	1.9.0
Sphinx	1.2.3	1.2.3
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 ⁵	7.1.0	7.1.0

Note: the table above lists only most important pre-requisite products; some optional products are not shown. For additional information about pre-requisite products and SALOME modules dependencies refer to the paragraph "Supported distributions and pre-requisites" below.

³ Open CASCADE Technology version 7.1.0 has been patched for SALOME.

⁴ SALOME uses patched version of ParaView.

⁵ SALOME uses VTK included into ParaView distribution.

License restrictions

Hereby we explicitly declare that PyQt (by Riverbank Computing Ltd) used by SALOME is distributed under the terms of GNU GPL license; for more details please refer to the PyQt site:

<http://www.riverbankcomputing.com/software/pyqt/license>

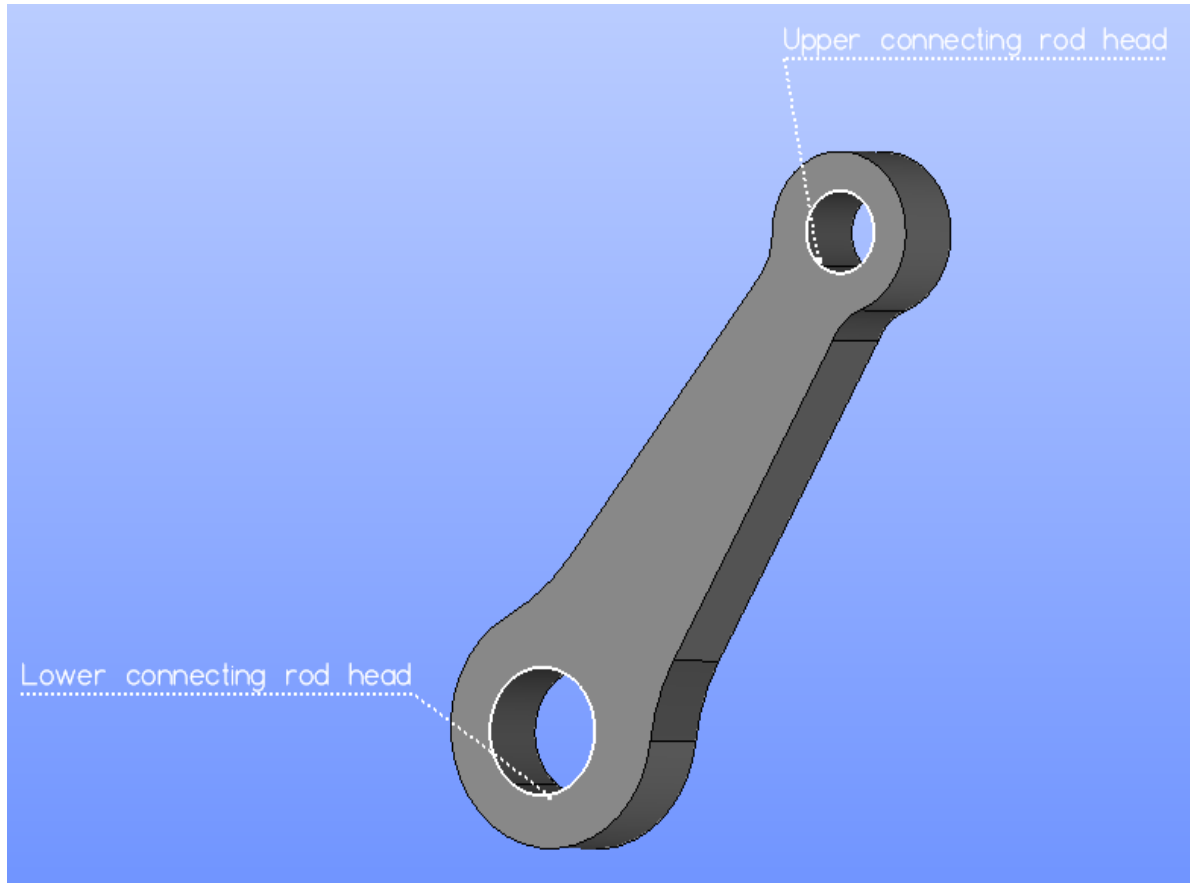
If you plan using SALOME for commercial purposes please consider obtaining a commercial license for PyQt from Riverbank Computing Ltd.

❖ NEW FEATURES AND IMPROVEMENTS

Geometry module

- **Annotate shapes into the OCC viewer**

This functionality allows attaching text labels to the selected shapes or sub-shapes in the OCC 3D Viewer as shown in the figure below.



Mesh module

- **Changed order and naming of meshing algorithms**

Behaviour of the *Create Mesh* dialog box has been changed in the following way:

1. Some algorithms have been renamed:
 - Arithmetic 1D → Arithmetic Progression
 - Nb. Segments → Number of Segments
 - Fixed Points 1D → Fixed Points
 - Deflection 1D → Deflection
 - Triangle (Mefisto) → Triangle: Mefisto
 - Quadrangle (mapping) → Quadrangle: Mapping
 - Quadrangle (Medial Axis Projection) → Quadrangle: Medial Axis Projection
 - Radial Quadrangle 1D2D → Radial Quadrangle 1D-2D
 - Netgen 2D → NETGEN 2D
 - Netgen 1D-2D → NETGEN 1D-2D

- 3D Extrusion → Extrusion 3D
 - Tetrahedron (Netgen) → NETGEN 3D
 - MG-Tetra Parallel → MG-Tetra_HPC
 - Tetrahedron etc... (HYBRID) → MG-Hybrid
2. All algorithms and hypotheses on each dialog's page (1D, 2D, 3D) have been arranged into several groups, as follows:

1D Algorithms:

- *Basic*
 - Wire Discretisation
 - Composite Side Discretisation
- *Advanced*
 - Projection 1D
 - Import 1D Elements from Another Mesh
 - Use Edges to be Created manually

1D Hypotheses:

- *Basic*
 - Number of Segments
 - Local Length
- *Progression*
 - Arithmetic Progression
 - Geometric Progression
 - Start and End Length
- *Advanced*
 - Fixed Points Deflection
 - Adaptive
 - Automatic Length
 - Max Size

2D Algorithms:

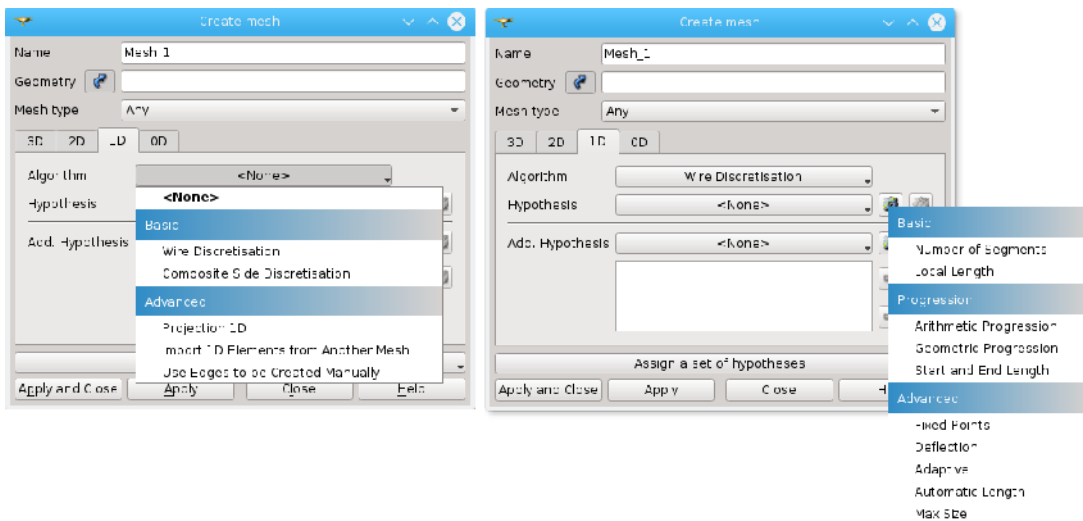
- *Regular faces*
 - Quadrangle: Mapping
 - Quadrangle: Medial Axis Projection
- *Free faces*
 - NETGEN 1D-2D
 - NETGEN 2D
 - MG-CADSurf
 - Triangle: Mefisto
- *Advanced*
 - Radial Quadrangle 1D-2D
 - Projection 1D-2D

- Projection 2D
- Polygon per Face
- Import 1D-2D Elements from Another Mesh
- Use Faces to be Created Manually

3D algorithms

- *Regular volumes*
 - Hexahedron (i,j,k)
 - Body-fitting
- *Free volumes*
 - NETGEN 1D-2D-3D
 - NETGEN 3D
 - MG-Tetra
 - MG-Tetra_HPC
 - MG-Hexa
- *Advanced*
 - Extrusion 3D
 - Projection 3D
 - Radial Prism
 - MG-Hybrid

Create Mesh dialog now looks as shown in the figure below:



MG-CADSurf plugin module

- **Compute a mesh using an already existing mesh with MG-CADSurf**

An algorithm now can be used to re-mesh a 2D mesh not based on the geometry (i.e. for instance, 2D mesh imported from a file).

- **MG-CADSurf is now multithread**

Four cores are used by default. It can be changed with the advanced parameter "Maximal number of threads" or in python with MG_CADSurf_Parameters.SetMaxNumberOfThreads(16) method.

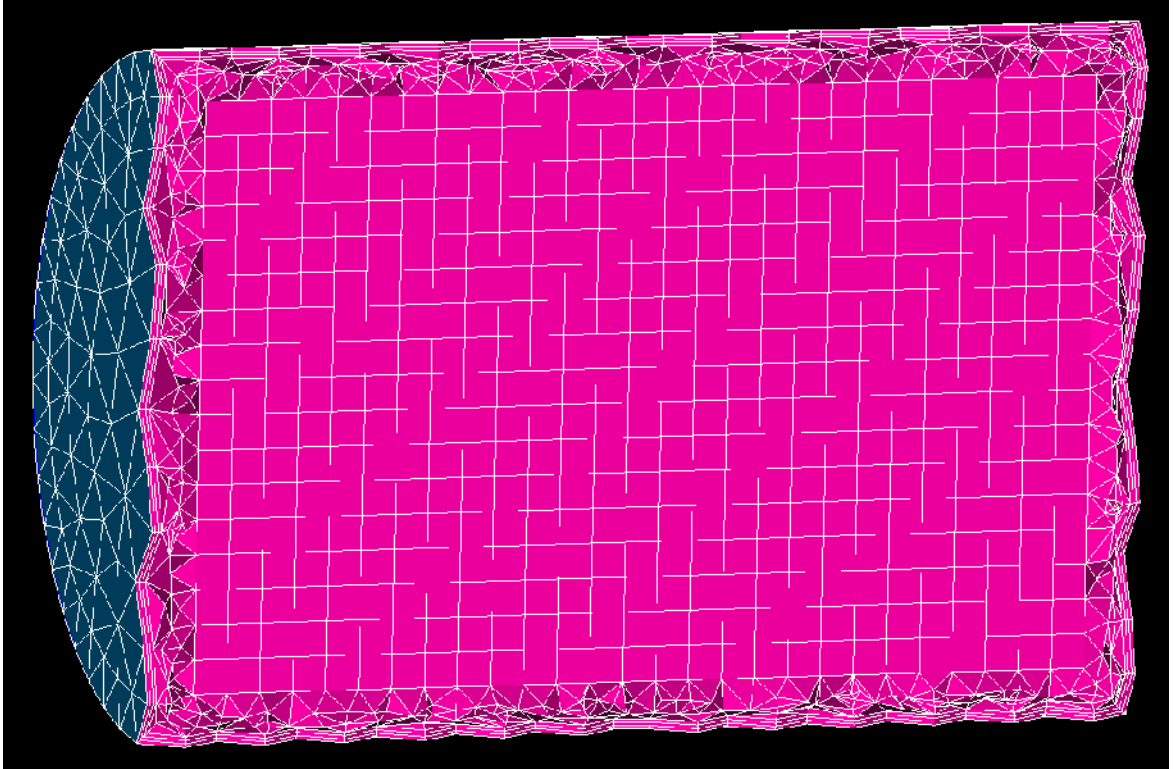
MG- Hybrid plugin module

- **Define the faces to impose the boundary layer from the dialog box of MG-Hybrid**

MG-Hybrid plug-in has been improved to allow specifying geometrical faces to construct boundary layers on.

- **The option "Cartesian core" is now available**

This option allows filling the inside of a mesh with hexahedral defined by "Core elements size":



ParaVis module

- **ELNO filters renaming**

ELNO filters have been renamed in the following way:

- ELNO Mesh → ELNO field To Surface
- ELNO Points → ELNO field To Point Sprite
- ELNO Surface → ELNO field To Surface (skin only)
- Gauss Points → ELGA field To Point Sprite;

- **Normal modes animation filter**

New filter for modal animation "*Normal modes animation (real)*" has been implemented.

❖ CHANGE LOG

This chapter does not provide the complete set of changes included into this version of SALOME; only the most important changes are listed.

KERNEL MODULE

23421	<p><i>Summary:</i> [CEA 2052] Put the m4 procedures in the CONFIGURATION module</p> <p>Backward compatibility m4 autoconf scripts have been moved from KERNEL SALOME module to CONFIGURATION repository.</p>
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GEOMETRY MODULE

21966	<p><i>Summary:</i> [CEA 796] Restore path: SALOME crashes</p> <p>The problem with Restore path functionality has been fixed with migration on Open CASCADE Technology version 7.1.0.</p>
22184	<p><i>Summary:</i> [CEA 802] Partition fails with message "Courbes non jointives" on a set of curved cylinders</p> <p>Problem with Partition algorithm on a set of curved cylinders has been solved.</p>
22873	<p><i>Summary:</i> EDF 8651 GEOM: Annotate shapes into the OCC viewer</p> <p>The functionality that allows attaching text labels to the selected shapes or sub-shapes in the OCC 3D Viewer has been introduced.</p>
23230	<p><i>Summary:</i> [CEA 1721] Failure of a partition of a cylinder by spheres</p> <p>Fixed by migration on Open CASCADE Technology version 7.1.0.</p>
23259	<p><i>Summary:</i> [CEA 1802] error when writing a STEP file</p> <p>Problem with exporting "non-manifold" shapes into STEP format has been corrected.</p>
23331	<p><i>Summary:</i> EDF 13477 - Problem with Fuse</p> <p>Problem with fuse operation, performed on two not fully tangent shapes, has been fixed.</p>
23383	<p><i>Summary:</i> MakePipe, Bad number of groups</p> <p>Make pipe algorithm in SALOME Geometry module has been updated in accordance with changes in Open CASCADE Technology version 7.1.0.</p>
23411	<p><i>Summary:</i> [CEA 2023] Bug MakeFillet1D SALOME master</p> <p>The problem concerns certain cases, when small gaps appear in the new wire. In Open CASCADE Technology version 7.0.0 such gaps were covered by Makewire algorithm by increasing the tolerance, but in version 7.1.0 they aren't.</p> <p>Workaround has been implemented to keep old behaviour: edges and vertices tolerance is increased before Makewire operation for the case of small gaps.</p>

23419	<p><i>Summary:</i> EDF 14260 - Problem of fusion</p> <p>Fixed incorrect behaviour of Boolean operations.</p>
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MESH MODULE

22189	<p><i>Summary:</i> [CEA 807] Regression: mesh compute on two concentric spheres fails</p> <p>Fixed by patching Netgen 5.</p>
23258	<p><i>Summary:</i> [CEA 1804] Do not merge the middle nodes of quadratic elements</p> <p>"Avoid making holes" option has been added to Merge Nodes operation. If activated it prevents merging nodes that make elements invalid (but not degenerated) and hence removed. Thus, no holes in place of removed elements appear.</p>
23352	<p><i>Summary:</i> [CEA] Order and naming of meshing algorithms</p> <p>Behaviour of the <i>Create Mesh</i> dialog box has been changed:</p> <ul style="list-style-type: none"> • Some algorithms and hypotheses have been renamed; • All hypotheses and algorithms have been arranged into several groups.
23404	<p><i>Summary:</i> EDF 14011 - Problem with Quadrangle (Medial Axis projection) algorithm</p> <p>Quadrangle: Medial Axis Projection algorithm has been fixed to work with the faces who's Medial Axis includes several branches due to radius of local curvature of one of sinuous edges less than face local half-width.</p>
23413	<p><i>Summary:</i> [CEA 2025] bug SMESH orientation</p> <p>A bug that SAUV export → SAUV import loses elements not belonging to any group has been fixed.</p>
23414	<p><i>Summary:</i> EDF 14228 - Viscous Layer crashes SALOME</p> <p>A crash at edition of Viscous Layers hypothesis has been fixed.</p>
23415	<p><i>Summary:</i> EDF 14243 - Wrong translation</p> <p>French translations have been updated.</p>
23416	<p><i>Summary:</i> [CEA 2033] Impossible to re-compute a mesh from an hdf</p> <p>MG-CADSurf failure because of invalid definition of periodicity has been fixed.</p>
23437	<p><i>Summary:</i> EDF 14551 - mesh groups missing</p> <p>A problem of persistence of multiple mesh groups has been fixed.</p>

PARAVIS MODULE

23398	<i>Summary:</i> EDF 13832 PARAVIS: Paraview windows cannot be docked as a tab A bug of Qt 5 related to improper handling <i>animated</i> property of <i>QMainWindow</i> class has been fixed by implementing of a workaround.
23429	<i>Summary:</i> [CEA 2074] Impossible to modify the position of Color map editor panel Resolved with the workaround for issue 23398.

YACS MODULE

N/A	<i>Summary:</i> EDF 12518: The execution state of the foreachLoop nodes is now saved by the function <code>schemaSaveState</code> .
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NETGEN PLUGIN MODULE

23427	<i>Summary:</i> [CEA 2073] No hypothesis "Viscous Layers" with Netgen 1D-2D-3D Usage of Viscous Layers hypothesis with NETGEN 1D-2D-3D algorithm has been enabled.
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MG-CADSURF PLUGIN MODULE

23339	<i>Summary:</i> [CEA 1944] PreCAD is not called when an advanced PreCAD option is activated Problem with PreCAD advanced options has been eliminated.
23342	<i>Summary:</i> [CEA 1947] When we add a text option, the tab key doesn't allow to write the value Problems with the editing of the advanced MG-CADSurf parameters have been corrected.
23369	<i>Summary:</i> [CEA 1513] compute a mesh using an already existing mesh with MG-CADSurf MG_CADSurf algorithm now can be used to remesh an 2D mesh not based on geometry.

MG-HYBRID PLUGIN MODULE

23371	<i>Summary:</i> [CEA 1441] Define the faces where we impose the boundary layer from the dialog box of MG-Hybrid MG-HYBRID plug-in has been improved to allow specifying geometrical faces to construct boundary layers on.
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MEDCOUPLING MODULE

23217	<i>Summary:</i> [CEA 1699] The med file doesn't open correctly in SMESH Fixed wrong numbering of mesh elements by MEDLoader.
23403	<i>Summary:</i> [CEA 1993] test <code>MEDCouplingBasicsTest4.py</code> : call with bad type argument

	Calls of <code>MEDCouplingMesh.getMeasureField(ON_CELLS)</code> were replaced by calls of <code>MEDCouplingMesh.getMeasureField(False)</code> in test scripts.
N/A	<i>Summary:</i> New functionality on <code>MEDCouplingUMesh</code> : <code>conformize3D</code> . Face and edge conformisation of a 3D polyhedral mesh. Only simple non-conformities are handled, i.e. cases where a big face exactly encompasses several smaller faces on the adjacent cell.
N/A	<i>Summary:</i> Enhance services provided by the <code>MEDCouplingSkyLineArray</code> structure, holding the indirect index format.
N/A	<i>Summary:</i> <code>OverlapDEC</code> now provides an interface using <code>ICoCo::MEDField</code> objects
N/A	<i>Summary:</i> Porting of the code to <i>clang</i> compiler.
N/A	<i>Summary:</i> Bug fix for <code>SplitterTetra</code> (P0P0 interpolation on 3D meshes).
N/A	<i>Summary:</i> Simplification of API to read fields from standard MED files with <code>ReadField</code> overloading
N/A	<i>Summary:</i> <code>MEDCouplingFieldDouble::convertQuadraticToLinear</code> now deals with fields on Gauss Points.
N/A	<i>Summary:</i> Voronoi 1D, 2D and 3D (not optimized yet in 3D) algorithm has been added to convert Gauss fields to Cell Fields.
N/A	<i>Summary:</i> <code>MEDFileFields</code> now deals with structure elements on read.
N/A	<i>Summary:</i> API in <code>MEDFileField</code> has been improved to read faster MED files with more than 10000 time steps.
N/A	<i>Summary:</i> New features in <code>DataArrayDouble</code> class: <code>fromCartToPolar</code> , <code>fromCartToCyl</code> , <code>fromCartToCyl</code> .

OTHER ISSUES

23402	<i>Summary:</i> EDF 13741 - screenshots not up to date Deprecated splash images in the documentation (KERNEL, GUI modules) have been updated.
23407	<i>Summary:</i> EDF 13976 - external browser Default external web browser has been changed.

❖ OCCT 7.1.0 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 the patched version of OCCT 7.1.0 used by SALOME 8.3.0.

OCC26786	<p><i>Summary:</i> Segmentation violation exception raised if a shape to be fixed is null Check for the null shape has been added.</p>
OCC26938	<p><i>Summary:</i> Boolean operations fail between two ellipsoids Treatment for single singular point is added.</p>
OCC27129	<p><i>Summary:</i> BRepLib_CheckCurveOnSurface does not find the maximal distance Bug with the detection the maximal distance has been corrected.</p>
OCC27169	<p><i>Summary:</i> Suspicious behavior of importing names during STEP import In order to avoid using empty strings in the names of the assemblies in the XCAF document after reading step file for cases when description or name is defined by only 1 space character method TCollection_AsciiString::Length()</p>
OCC27182	<p><i>Summary:</i> Wrong result of General Fuse operation for two spheres</p> <ol style="list-style-type: none"> 1. The static method Standard_Real MinStep3D(...) in the class BOPTools_AlgoTools is now checks if the computed 3D step is too big (relatively UV range of the faces) for any of the faces. 2. The method PointInFace(...) of the class BOPTools_AlgoTools3D has been redesigned. The new PointInFace(...) methods have been implemented to add possibility for looking the point inside the face in necessary direction and distance from the edge of the face. Note: old implementation is also functional. 3. Make methods for finding points near edges and computing normal directions on faces return error status (0 in case of success).
OCC27184	<p><i>Summary:</i> BRepExtrema_DistShapeShape returns wrong result Local optimization default algorithm is changed to "distance" based.</p>
OCCT27300	<p><i>Summary:</i> Boolean operation produces invalid shape in terms of "bopargcheck" command</p> <ol style="list-style-type: none"> 1. Check, if value found by math_PSO algorithm cannot be precised by math_NewtonMinimum algorithm. In this case, we call math_PSO algorithm repeatedly, however, with other parameters. 2. Some margin of edge tolerance value has been provided in IntTools_Tools class. 3. Interface of math_NewtonMinimum class has been changed (method GetStatus() has been added).
OCCT27302	<p><i>Summary:</i> Invalid curves number in intersection result E1CLib::InPeriod(...) method has been improved. Now it has become faster (in general cases) and more reliable (in frame of FLT_OVERFLOW and DIVISION_BY_ZERO cases processing).</p>

OCC27322	<p><i>Summary:</i> geom/revolution_00/A1: Incorrect pcurve creation</p> <p>ProjLib_Cone.cxx - correction wrong calculation of projection line on cone GeomInt_IntSS_1.cxx - modification of method BuildPCurves(...) - adjusting first or last knots of 2d Curve ProjLib_ComputeApprox.cxx - modification of method Function_SetUVBounds(...) for case projecting line on cone.</p>
OCC27329	<p><i>Summary:</i> Export to STEP failure</p> <p>Do ProcessShape for non-manifold too. Add binding of already written shared faces to STEP entity for non-manifold.</p>
OCC27386	<p><i>Summary:</i> BRepOffsetAPI_MakePipeShell does not provide history of generations.</p> <p>The method BRepFill_PipeShell::BuildHistory has been redesigned: now it builds generated shapes for sub-edges and sub-vertices of sections.</p>
OCC27555	<p><i>Summary:</i> Visualization, AIS_Shape - own deviation coefficient change is not considered by Wireframe presentation mode</p> <p>Problem with deviation coefficient in Wireframe presentation mode has been fixed.</p>
OCC27726	<p><i>Summary:</i> List of formats supported by TDocStd_Application</p> <p>Two new methods TDocStd_Application::WritingFormats and TDocStd_Application::ReadingFormats have been implemented.</p>
OCC27739	<p><i>Summary:</i> Visualization, TKV3d - implement individual acceleration data structure for selection of 2D persistent objects</p> <p>Low-level selection algorithms have been improved to explicitly support 2D transformation persistent objects.</p>
OCC27762	<p><i>Summary:</i> Incorrect result of General Fuse operation</p> <p>The algorithm of finding of extrema solutions of a point and a torus in Extrema_ExtPE1S has been corrected for the case of torus having major radius equal to zero.</p>
OCC27769	<p><i>Summary:</i> BRepOffsetAPI_MakePipeShell produces a face based on degenerated toroidal surface</p> <p>Method BuildKPart was modified in order to create sphere instead of torus in case of major radius <= tolerance</p>
OCC27822	<p><i>Summary:</i> Exception access violation is raised in BRepOffsetAPI_MakePipeShell during of build</p> <p>New public method IsDone() is added to abstract class BRepFill_SectionLaw.</p>
OCC27873	<p><i>Summary:</i> Exception is raised in BRepFill_Filling::FindExtremitiesOfHoles()</p> <p>The reason of exception has been eliminated. Creation of the test case for this issue. Correction of unstable test case.</p> <p>Some test cases have been adjusted according to their new behavior.</p>

<p>OCC27875</p>	<p><i>Summary:</i> <code>GeomFill_NSections</code> constructor crash on sequence of curve containing only one curve</p> <p>The <code>GeomFill_NSections</code> algorithm cannot create any surface from sequence with single curve only. Therefore, return is provided in corresponding place of the code. Additionally, some public methods of <code>GeomFill_NSections</code> class checks if the surface has been created earlier.</p>
<p>OCC27998</p>	<p><i>Summary:</i> Self-intersection is not detected</p> <p>New method <code>CheckFaceSelfIntersection</code> has been added to <code>BOPAlgo_CheckerSI</code>: now self-intersection of each face is found as well as pairs of intersecting faces;</p> <p>Method <code>IntPatch_Intersection::Perform(S1,D1,To1Arc,To1Tang)</code> is modified for more effective search of self-intersections in case of Surface Of Extrusion;</p> <p>Method <code>IntCurve_IntPolyPolyGen::Perform(C1,D1,To1Conf,To1,NbIter)</code> is modified to detect segments of intersections.</p>
<p>OCC28009</p>	<p><i>Summary:</i> [Regression vs OCCT7.0.0] Cut produces not valid shape</p> <p>The algorithm in <code>workwithBoundaries::BoundaryEstimation(...)</code> did not take into account opposite directions of cylindrical axes (when the angle between them is obtuse). After the fix it does it.</p>
<p>OCC28017</p>	<p><i>Summary:</i> Unexpected result of General Fuse operation</p> <p>Several improvements have been made in BO code to fix the bug:</p> <ul style="list-style-type: none"> • Create empty edge-edge interference if intersection is close to an end vertex. This will help to avoid creation of unnecessary edge-face intersections. • Improve <code>PutPaveOnCurve()</code> method to join nearly located vertices when they are put on the same section curve. • Add processing of same-domain vertices for section edges in <code>updatePaveBlocks()</code> method. • Improve the method <code>CorrectWires()</code> in order to not increase vertex tolerance if it will cover the major part of an edge. • Replace vertices of section edges by same-domain equivalents. • In the algorithm <code>BOPAlgo_wireSplitter</code>, correct angles computation and evaluation, taking into account periodicity. • Modify <code>PostTreatFF</code> to properly take into account the orientations of coinciding section edges. • In <code>IntTools_Context::ComputePE</code>, check distance from the point to vertices of the edge if the projection to the curve is failure.
<p>OCC28189</p>	<p><i>Summary:</i> Result of Boolean operation is non-manifold wire</p> <p>1. The result of Boolean operation on the arguments of collection type, containers <code>WIRE/SHELL/COMPSOLID</code>, is also a collection. The containers of type <code>WIRE</code> included into result should now also (as the <code>SHELLs</code>) have coherent orientation of its sub-shapes. For that the new method has been implemented (<code>BOPTools_AlgoTools::OrientEdgesOnWire(TopoDS_Shape&)</code>) which reorients edges for correct ordering. The duplicating containers, i.e. containers with the</p>

	<p>contents completely included in other containers, are now avoided in the result of BOP.</p> <ol style="list-style-type: none"> 2. The result of Fuse operation on Compsolids is now also will be Compsolid. 3. Documentation has been updated.
OCC28221	<p><i>Summary:</i> General Fuse operation error</p> <p>The method <code>BOPTools_AlgoTools2D::AttachExistingPCurve</code> has been corrected so that to call <code>BRepLib::SameParameter</code> not on the target edge with the whole set of pcurves, but rather on a temporary edge with 3D curve and copied pcurve only. After that the updated pcurve is transferred to the target edge.</p>
OCC28361	<p><i>Summary:</i> Visualization, TKV3d - buggy behavior of Transformation Persistence compiled on several Linux platforms in optimized mode</p> <p>The patch fixes transformation persistence for various set of GCC compilers.</p> <ol style="list-style-type: none"> 1. Optimized template-specialized operator <code>/=</code> for division (causes bugs) of <code>NCollection_vec4</code> was replaced with non-specialized version. 2. <code>NCollection_vec4::xyz()</code> is not used since compiler uses modifiable-reference returning version, which invokes warning of possible strict-aliasing rules violation and leads to incorrect behavior of the reference.

❖ SUPPORTED DISTRIBUTIONS AND PRE-REQUISITES

SALOME is a cross-platform solution that supports Linux and Windows. It is distributed as open-source software under the terms of the GNU LGPL license.

[SALOME 8.3.0](#) comes with the same versions of pre-requisites on all supported platforms (with some minor exceptions). The table below lists the versions of the pre-requisite products used by SALOME platform. Other versions of the products can also work but it is not guaranteed.

Product	Version	GUI (APP)	KERNEL	GEOM	SMESH	MED	YACS	PARAVIS	HOMARD	HEXABLOCK	NETGENPLUGIN	GHS3DPLUGIN	GHS3DPRPLUGIN	BLSURFPPLUGIN	HexoticPLUGIN	HEXABLOCKPLUGIN	HYBRIDPLUGIN
gcc*	4.4***	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GNU make*	3.81***	X	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	X
cmake	3.3.0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Python	2.7.10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Qt	5.6.1	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sip	4.18	X			X												
PyQt	5.6.0	X			X												
Boost	1.52.0	X	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	X
OCCT	7.1.0p1	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Qwt	6.1.2	X			X												
OmniORB	4.1.6	X	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	X
Hdf5	1.8.14	X	X	X	X	X		X	X		X	X	X	X	X	X	X
Med	3.2.1				X	X		X	X		X		X				
Vtk	7.1.0	X		X	X	X		X		X	X	X	X	X	X	X	X
numpy	1.9.2		X														
lapack	3.5.0		X														
graphviz	2.38.0	X	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	X
NETGEN	5.3.1										X						
Metis	5.1.0					X											
Scotch	5.1.11					X											
libxml2	2.9.0	X	X			X	X										
Distene MeshGems	2.4-5											X	X	X	X		X
Sphinx	1.2.3		X	X	X		X		X	X							
libBatch	2.3.1		X														
Cgns	3.1.3				X												
ParaView	5.1.2	X						X									
Homard	11.8								X								

*) Linux only
 **) Windows only
 ***) Minimal required version

Product	Version	RANDOMIZER	SIERPINSKY	PYCALCULATOR	COMPONENT	CALCULATOR	HELLO	LIGHT	PYLIGHT	ATOMIC	ATOMGEN	ATOMSOLV	HXX2SALOME	YACSGEN	JOBMANAGER
gcc*	4.4**	X	X	X	X	X	X	X	X	X	X	X	X		X
GNU make*	3.81***	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	2.7.10	X	X	X	X	X	X	X	X	X	X	X		X	X
Qt	5.6.1		X		X	X	X	X		X	X	X	X		X
Sip	4.18				X						X				
PyQt	5.6.0				X				X		X				
Boost	1.52.0		X			X	X					X			X
Swig	2.0.8		X		X	X									
OCCT	7.1.0p1		X		X	X	X	X		X		X			
Qwt	6.1.2				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	1.8.14		X		X	X		X		X					
Med	3.2.1		X	X	X	X									
Vtk	7.1.0		X		X			X	X	X		X			
graphviz	2.38.0	X	X	X	X		X			X					
Doxygen	1.8.3.1	X	X	X	X		X			X					
Sphinx	1.2.3														X

- *) Linux only
- **) Windows only
- ***) Minimal required version

The following products are not mandatory for SALOME directly; these products are either optional for SALOME or only required to build other pre-requisite products.

Product	Version	Required by	Comment
Babel	2.0	Sphinx	
Cppunit	1.12.1	KERNEL, MED, GEOM, YACS, HEXABLOCK	Optional
Cython	0.23.2	H5py, Mpi4py, Scipy	Not used directly by SALOME
Distribute	0.7.3	Matplotlib	
Docutils	0.12	Sphinx	
Freeimage	3.16.0	Open CASCADE Technology	Optional
Freetype	2.4.11	Open CASCADE Technology, ParaView	
Gl2ps	1.3.9	Open CASCADE Technology, VTK, ParaView	Optional
H5py	2.5.0		Not used directly by SALOME
Intel TBB	4.2.4	Open CASCADE Technology, SMESH	Optional
Jinja2	2.7.3	Sphinx	
Markupsafe	0.23	Shinx	
Matplotlib	1.4.3	ParaView	Optional
Mpi4py	1.3.1		Not used directly by SALOME
Nose	1.3.7	H5py	
Opencv	2.4.6.1	GEOM	Optional

Openmpi	1.8.5	ParaView, Hdf5, Med, KERNEL, MED	Optional
Paco++	0.5.5	KERNEL	Optional
Pkgconfig	1.1.0	H5py	
Pygments	2.0.2	Sphinx	
Pyparsing	2.0.3	Matplotlib	
Python-dateutil	2.4.2	Matplotlib	
Pytz	2015.4	Matplotlib	
Scipy	0.15.1	Matplotlib	
Setuptools	0.6c11	Sphinx	
Six	1.9.0	Matplotlib	
Tcl	8.6.0	Open CASCADE Technology, Python	Optional
Tk	8.6.0	Open CASCADE Technology, Python	Optional
Tclx	8.4.1	Open CASCADE Technology, Python	Optional

SALOME 8.3.0 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
Boost	X		X		
Cgns		X		X	For SMESH only Required only if used at compilation step
Cmake	X				
Cppunit		X			Used for unitary testing
Distene MeshGems suite	X	X	X		Compilation: mandatory for BLSURFPLUGIN only, optional for HEXOTICPLUGIN Runtime: mandatory for BLSURFPLUGIN, GHS3DPLUGIN, GHS3DPRLPLUGIN, HexoticPLUGIN, HYBRIDPLUGIN
Doxygen		X			Needed only for documentation generation
Freetype	X		X		
Freeimage		X		X	Required only if used when building OCCT
GI2ps		X		X	Required only if used when building OCCT and/or Paraview
Graphviz	X		X		In run-time required for YACS only
Hdf5	X		X		
Homard			X		For HOMARD module only
Intel TBB		X		X	Required if used when building OCCT and/or if used to build SMESH
Libbatch		X		X	Required only if used at compilation step for KERNEL
Libxml2	X		X		
Matplotib				X	Required only if used when building ParaView
Med	X		X		
Metis		X		X	Required only if used at compilation step for MED
Netgen	X		X		For NETGENPLUGIN only
Numpy (+ Lapack)		X		X	Required by MED
Omniorb	X		X		
Omniorbpy	X				
OCCT	X		X		
Opencv		X		X	Required only if used at compilation step for GEOM
Openmpi		X		X	Required only if used when building SALOME and/or pre-requisites
Paco++		X		X	Required only if used at compilation step for KERNEL
ParaView	X		X		Mandatory for PARAVIS module; optional for GUI module
Pyqt	X		X		
Python	X		X		
Qt	X		X		
Qwt	X		X		
Scotch		X		X	Required only if used at compilation step for MED
Sip	X				
Sphinx		X			Needed only for documentation generation
Swig	X				
Vtk	X		X		

❖ SYSTEM REQUIREMENTS

Minimal Configuration:

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

Optimal Configuration:

- Processor: Dual or Quad Core
- RAM: 4 GB
- Hard Drive Space: 5 GB
- Video card: 512 MB

❖ HOW TO GET THE VERSION AND PRE-REQUISITES

Sources of SALOME 8.3.0 can be retrieved from the Git repositories using V8_3_0 tag; the complete list of repositories can be found at <https://git.salome-platform.org/gitweb/>.

All pre-requisites can be obtained either from the Linux distribution (please be sure to use a compatible version) in form of native package or from the distributors of these pre-requisites.

Note: SALOME version 8.3.0 uses patches for some third-party pre-requisite products, such as ParaView, Netgen, Open Cascade and other. These patches solve different problems detected within SAOME project.

❖ LICENSE

SALOME platform is distributed under terms of the GNU Lesser General Public License (LGPL) license version 2.1. All used pre-requisites use similar or compatible licenses (with minor exceptions). Detail information about licenses used by SALOME and its pre-requisites can be found on the following page: <http://www.salome-platform.org/downloads/license/>.

❖ KNOWN PROBLEMS AND LIMITATIONS

- The following modules are obsolete and not included into SALOME 8.3.0 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.
- 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.
- 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.
- Compilation of OCCT by Makefiles on a station with NVIDIA video card can cause 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 (note: you need root permission to do this):


```
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 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
```
 - Loading big files in ParaVis might render SALOME instable. This problem is expected to be fixed in one of the next releases; it can be temporarily avoided in the current version by applying one of the two solutions below:

- In ParaVis settings (ParaVis tab), disable the use of the external pvserver. This approach has the limitation that it is not possible to execute ParaVis' Python scripts outside the SALOME graphical interface (for instance, from an external terminal).
- In ParaVis settings (ParaView tab → RenderView tab), increase the amount of memory under "Remote/Parallel rendering options" to something bigger than the default 20 MB (for example 200 MB).
- ParaVis module executes ParaView-related code in the standalone pvserver process that is launched with `--offscreen-rendering` option; this can cause problems with displaying data in ParaVis module if graphic card driver does not support off-screen rendering feature.
- Med library (`medfichier`) can read only MED files of version 2.2 and newer.