SALOME version 9.11.0

Release Notes

June 2023

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❖ GENERAL INFORMATION

CEA, EDF and OPEN CASCADE are pleased to announce SALOME version 9.11.0. It is a public minor release that contains the results of planned minor improvements and bug fixes against SALOME version 9.10.0 released in December 2022.

❖ PREREQUISITES

The table below lists pre-requisite products used with SALOME 9.11.0. The differences of 3rd-party product versions used for SALOME 9.10.0 and 9.11.0 are highlighted in bold.

Product	Linux		Windows	
	SALOME 9.10.0	SALOME 9.11.0	SALOME 9.10.0	SALOME 9.11.0
Alabaster	0.7.6	0.7.6	0.7.6	0.7.6
Babel	2.7.0	2.7.0	2.7.0	2.7.0
Boost	1.71.0	1.71.0	1.67.0	1.67.0
catalyst	2.0	2.0	-	-
C3po	2.0	2.0	-	-
Certifi	2018.8.24	2018.8.24	2019.6.16	2019.6.16
Cgns	4.2.0	4.2.0	4.2.0	4.2.0
Chardet	3.0.4	3.0.4	3.0.4	3.0.4
Click	6.7	6.7	7.0	7.0
Cmake	3.24.2	**3.25.2**	3.24.2	3.24.2
Cminpack	1.3.6	1.3.6	-	1.3.6
Colorama	-	-	0.4.1	0.4.1
Cppunit	1.13.2	1.13.2	1.13.2	1.13.2
Cycler	0.10.0	0.10.0	0.10.0	0.10.0
Cython	0.29.12	0.29.12	0.29.12	0.29.12
Dill	-	-	0.3.4	0.3.4
Docutils	0.12	0.12	0.14	0.14
Doxygen	1.8.14	1.8.14	1.8.3.1	1.8.3.1
Eigen	3.3.4	3.3.4	3.3.4	3.3.4
Embree	3.12.2	3.12.2	3.12.2	3.12.2
Expat	-	-	2.0.1	2.0.1
F2C	-	-	1.0.0	1.0.0
fftw	-	-	-	3.3.9
FMILibrary	2.0.3	2.0.3	-	2.0.3
Freeimage	3.16.0	3.16.0	3.18.0	3.18.0
Freetype	2.9.1	2.9.1	2.9.1	2.9.1
gcc	8.5.0	8.5.0	-	-
Gdal	2.4.0	2.4.0	-	-
Gmsh	4.10.3	4.10.3	4.10.3	4.10.3
Graphviz	2.38.0	2.38.0	2.44.1	2.44.1
Hdf5	1.10.3	1.10.3	1.10.3	1.10.3
Idna	2.7	2.7	2.8	2.8

Product	Linux		Windows	
	SALOME 9.10.0	SALOME 9.11.0	SALOME 9.10.0	SALOME 9.11.0
Imagesize	1.0.0	1.0.0	1.1.0	1.1.0
Intel® Threading Building Blocks	2019 U8	2019 U8	2019 U8	2019 U8
Ispc	1.15.0	1.15.0	1.15.0	1.15.0
Jinja2	2.7.3	2.7.3	2.10.1	2.10.1
Kiwisolver	1.0.1	1.0.1	1.1.0	1.1.0
Lapack	3.8.0	3.8.0	3.8.0	3.8.0
Libbatch	2.4.6	2.4.6	2.4.6	2.4.6
Libjpeg	-	-	9c	9c
Libpng	-	-	1.5.10	1.5.10
Libxml2	2.9.1	2.9.1	2.9.1	2.9.1
Llvm	8.0.1	8.0.1	8.0.1	8.0.1
Markupsafe	0.23	0.23	1.1.1	1.1.1
Matplotlib	3.3.4	3.3.4	3.1.0	3.1.0
Med	4.1.1	4.1.1	4.1.1	4.1.1
Mesa	19.0.8	19.0.8	19.2.3	19.2.3
MeshGems suite[1]	2.14-4	**2.15-1**	2.14-4	**2.15-1**
Metis	5.1.0	5.1.0	5.1.0	5.1.0
Mpi4py	3.0.3	3.0.3	-	-
Netcdf	4.6.2	4.6.2	-	-
Netgen	5.3.1	5.3.1	5.3.1	5.3.1
Nlopt	2.5.0	2.5.0	2.5.0	2.5.0
Nose	1.3.7	1.3.7	-	-
Numpy	1.16.4	1.16.4	1.16.4	1.16.4
Numpydoc	0.9.0	0.9.0	-	-
Omniorb	4.2.5	4.2.5	4.2.3	4.2.3
Omniorbpy	4.2.5	4.2.5	4.2.3	4.2.3
Openblas	-	-	-	**0.3.23**
Open CASCADE Technology	7.5.3p4[2]	7.5.3p5[3]	7.5.3p4	7.5.3p5

[1] Commercial product by Dassault Systemes SE; requires license.

Product	Linux		Windows	
	SALOME 9.10.0	SALOME 9.11.0	SALOME 9.10.0	SALOME 9.11.0
Opencv	3.2.0	3.2.0	3.2.0	3.2.0
Openmpi	3.1.6	**4.0.3**	**-**	**-**
Openturns	1.19	**1.20.1**	1.19	**1.20.1**
OpenVKL	0.11.0	0.11.0	0.11.0	0.11.0
Ospray	2.4.0	2.4.0	2.4.0	2.4.0
Packaging	17.1	17.1	19.0	19.0
Pandas	0.25.2	0.25.2	-	**0.25.2**
Patsy	0.5.2	0.5.2	-	**0.5.2**
Paraview	5.11.0	5.11.0	5.11.0	5.11.0
perl	-	-	5.28.1.1	5.28.1.1
Persalys	13.0	**14.0.1**	-	**14.0.1**
Petsc	3.16.0	3.16.0	-	-
Pip	19.1.1	19.1.1	19.1.1	19.1.1
Pillow	8.4.0	8.4.0	7.1.1	7.1.1
Planegcs	0.18	0.18	0.18	0.18
Psutil	5.7.2	5.7.2	5.7.2	5.7.2
PyFMI	2.6	2.6	-	**2.6**
Pthreads	-	-	2.9.1	2.9.1
Pygments	2.0.2	2.0.2	2.4.2	2.4.2
Pyparsing	2.0.3	2.0.3	2.4.0	2.4.0
Pyqt	5.15.3	5.15.3	5.15.3	5.15.3
Pyreadline	2.0	2.0	2.1	2.1
Python	3.6.5	3.6.5	3.6.5	3.6.5
Python-dateutil	2.6.1	2.6.1	2.8.0	2.8.0
Pytz	2017.2	2017.2	2019.1	2019.1
Qt	5.12.10	5.12.10	5.12.10	5.12.10
Qwt	6.1.2	6.1.2	6.1.2	6.1.2
Requests	2.19.1	2.19.1	2.22.0	2.22.0
RkCommon	1.5.1	1.5.1	1.5.1	1.5.1
Root	6.22.02	6.22.02	6.24.0	6.24.0
Scipy	1.4.1	1.4.1	1.4.1	1.4.1
Scotch	6.1.2	6.1.2	-	-
Setuptools	38.4.0	38.4.0	41.0.1	41.0.1
Sip	5.5.0	5.5.0	5.5.0	5.5.0
Six	1.10.0	1.10.0	1.12.0	1.12.0

Product	Linux		Windows	
	SALOME 9.10.0	SALOME 9.11.0	SALOME 9.10.0	SALOME 9.11.0
Snowballstemmer	1.2.1	1.2.1	1.9.0	1.9.0
Sphinx	1.7.6	1.7.6	2.1.2	2.1.2
Sphinxcontrib-applehelp	-	-	1.0.1	1.0.1
Sphinxcontrib-devhelp	-	-	1.0.1	1.0.1
Sphinxcontrib-htmlhelp	-	-	1.0.2	1.0.2
Sphinxcontrib-jsmath	-	-	1.0.1	1.0.1
Sphinxcontrib-qthelp	-	-	1.0.2	1.0.2
Sphinxcontrib-serializinghtml	-	-	1.1.3	1.1.3
Sphinxcontrib-websupport	1.1.0	1.1.0	1.1.2	1.1.2
Sphinx-intl	0.9.10	0.9.10	2.0.0	2.0.0
Sphinx-rtd-theme	0.4.3	0.4.3	0.4.3	0.4.3
StaticMeshPlugin	5.11.0	5.11.0	5.11.0	5.11.0
Statsmodels	0.8.0	0.8.0	-	**0.9.0**
Swig	3.0.12	**4.0.2**	3.0.12	**4.0.2**
Tcl	8.6.0	8.6.0	8.6.9	8.6.9
Tk	8.6.0	8.6.0	8.6.9	8.6.9
Toml	0.10.2	0.10.2	0.10.2	0.10.2
Urllib3	1.23	1.23	1.25.3	1.25.3
URANIE	4.5.0	**4.7.0**	**4.5.0**	**4.7.0**
Zlib	-	-	1.2.5	1.2.5
Zeromq	4.3.1	4.3.1	-	-

*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.*

Note: listed versions of pre-requisites are considered as "base" ones; there can be minor differences in particular SALOME packages.

*Note: several prerequisites given in the above table are installed with **PIP** package manager. The installation folder for these PIP packages is SALOME-9.11.0-*-SRC/BINARIES-*/Python/lib/pythonX.Y/site-packages on Linux (where pythonX.Y corresponds to the version of Python being used - for example, python3.6) and SALOME-9.11.0\W64\Python\lib\site-packages on Windows.*

LICENSE RESTRICTIONS

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

https://riverbankcomputing.com/commercial/license-faq

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

❖ NEW FEATURES AND IMPROVEMENTS

GEOM

- Two new methods were added to `geomBuilder` to convert coordinates between X,Y,Z and U,V:
  - `geompy.XYZtoUV` converts 3D point coordinates X,Y,Z to U,V parameters on the given face;
  - `geompy.UVtoXYZ` converts U,V parameters on a given face to a 3D point coordinates X,Y,Z.

SHAPER

- Implemented the new **Sewing** feature similar to the one in GEOM. This feature allows to create optionally "Non-Manifold" results. If not explicitly chosen, this feature will not create any result, if there are no faces to be sewed.
- Implemented new **Glue Faces** feature similar to the one in GEOM.
- Implemented new **Limit Tolerance** feature similar to the existing one in GEOM. This feature allows to lower the precision of a shape to improve the success of e.g., subsequent boolean features applied on that shape.
- All existing boolean features, as well as the Partition and Split features, have now an optional fuzzy parameter to be used during their execution. The **Fuzzy parameter** serves as an additional tolerance value to eliminate thin regions where the used tools are almost tangent. By default, the fuzzy parameter is not used.
- Groups have now a **Bring To Front** option in the context menu of the object browser and the 3D view to ensure that the group is always displayed in front of any other regular result. The implementation of this option differs between SHAPER and GEOM in a way, that in SHAPER this option shows a real toggle behavior, while in GEOM, the user has to select the option each time again to show the group in front of other objects. The state of that option is stored with the group within the document.
- New Inspection feature **Check Shared Faces** is now available.

MESH

- The Scalar Bar Properties dialog contains a new option to apply a threshold on the view to only display mesh elements matching the control criteria.

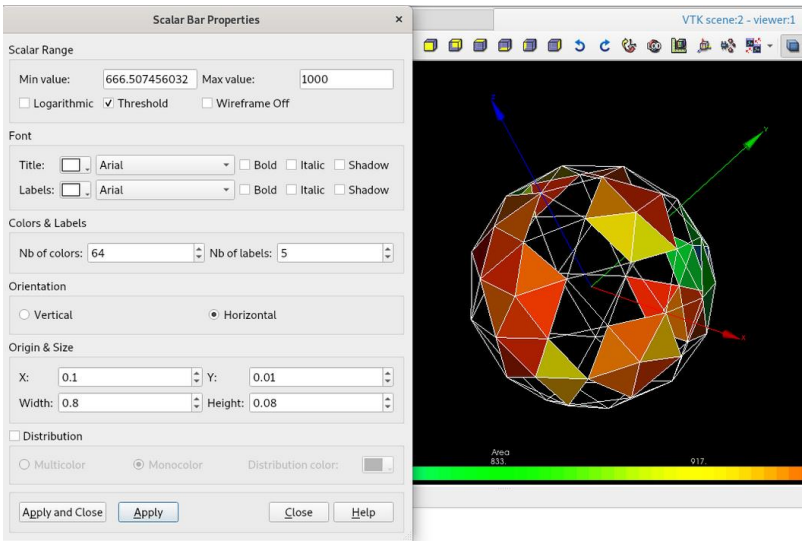

Figure 1: Threshold on Mesh elements

MESHGEMS PLUGIN

- MG-Tetra plugin now manage both algorithms MG-Tetra and MG-Tetra HPC and the MG-Tetra HPC plugin (GHS3DPRPLUGIN) has been removed.

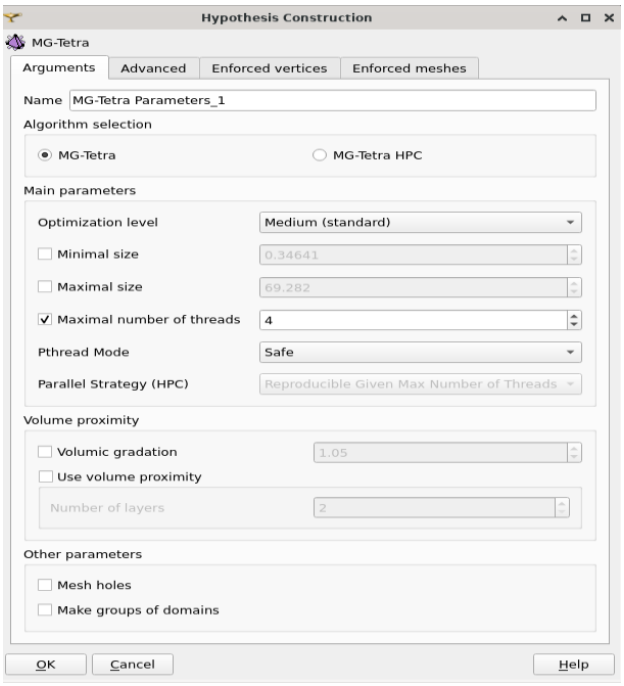

Figure 2: MG-Tetra parameter dialog

GMSH PLUGIN

- It is now possible to create a 3D mesh with GMSH based on a 2D mesh created with another algorithm.

PARAVIS

- **Bivariate representation**: SALOME 9.11 integrates new ParaVis plugin dedicated to the visual representation of a 3D field on cells, for which an associated field on the same support quantifies uncertainties. This representation uses dynamic noise whose amplitude is proportional to the value of the associated field.

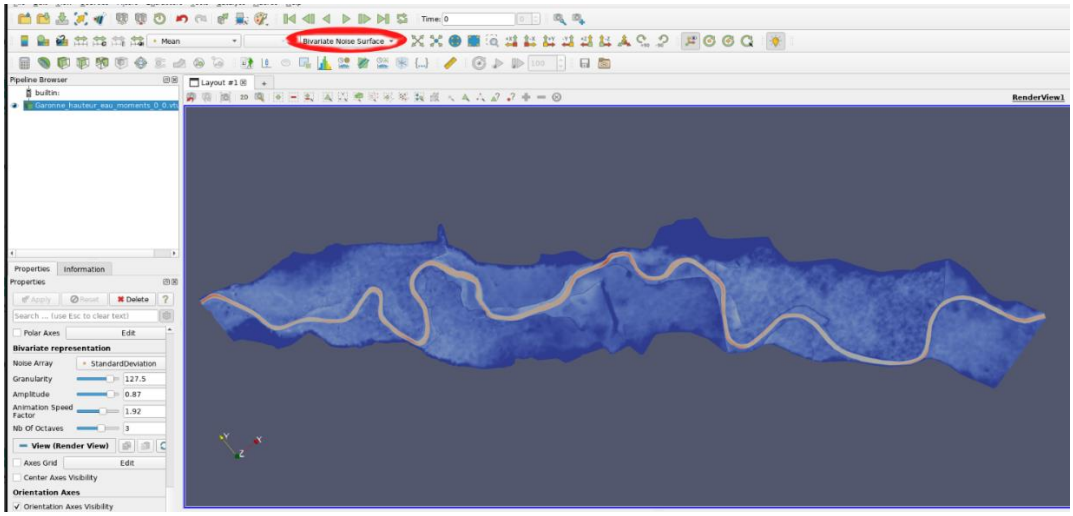

Figure 3: Bivariate representation in ParaVis

SALOME ON DEMAND

SALOME 9.11 includes a beta version (accessible by unsetting SALOME_ON_DEMAND environment variable) of the extension mechanism that will be put into production by default for SALOME10. With this version of:

- generate extensions
- dynamically add them to the list of modules in the current application
- delete an extension

The extension format is likely to evolve between now and its production release for SALOME10.

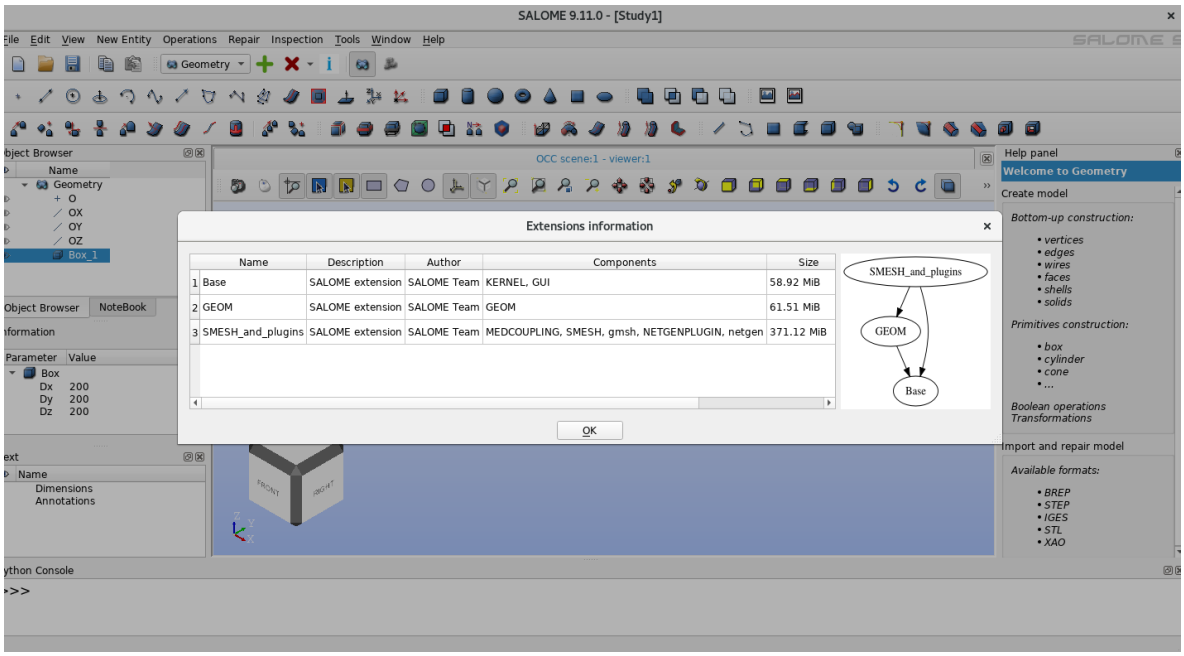

Figure 4: Salome On Demand Extension Information

OTHER

- Module Python MPMCN for YDFX: python module MPMCN.py with same API than multiprocessing one. This module has been developed to easily use multiple computation nodes to perform in parallel several independent tasks
- ParaView 3D viewer: To make module changes within SALOME as transparent as possible, a first version of a single 3D viewer (ParaView 3D view) was implemented and integrated into SALOME 9.11. It is now possible to manipulate (view / select) geometry / mesh and post-processing data in a single viewer. This first implementation will be enriched with refined selection capabilities and improved functional completeness
- Override commands for LIBBATCH & KERNEL: To facilitate the parameterization required by the specific features inherent in HPC clusters, the SALOME 9.11 kernel now allows you to customize server launch command without recompilation.
- **SOLVERLAB**

  SOLVERLAB is a geometrical and numerical C++/Python library designed for numerical analysts who work on the discretisation of partial differential equations on general shapes and meshes and would rather focus on high-level scripting. This includes PDE systems arising from the modeling of nuclear reactor cores which involves fluid dynamics, heat and neutron diffusion as well as solid elasticity.

  It is a simple environment meant at students and researchers for teaching and promote new numerical methods on general geometries with unstructured meshes.

Solverlab source code is available at this link: https://github.com/ndjinga/SOLVERLAB

In the scope of SALOME 9.11.0, the SOLVERLAB Graphics Interface (SOLVERLABGUI) used to perform simulation with SOLVERLAB physical models, was entirely rewritten. Extended information about the new GUI can be found by clicking in the main menu bar on Solverlab - Solverlab GUI help.

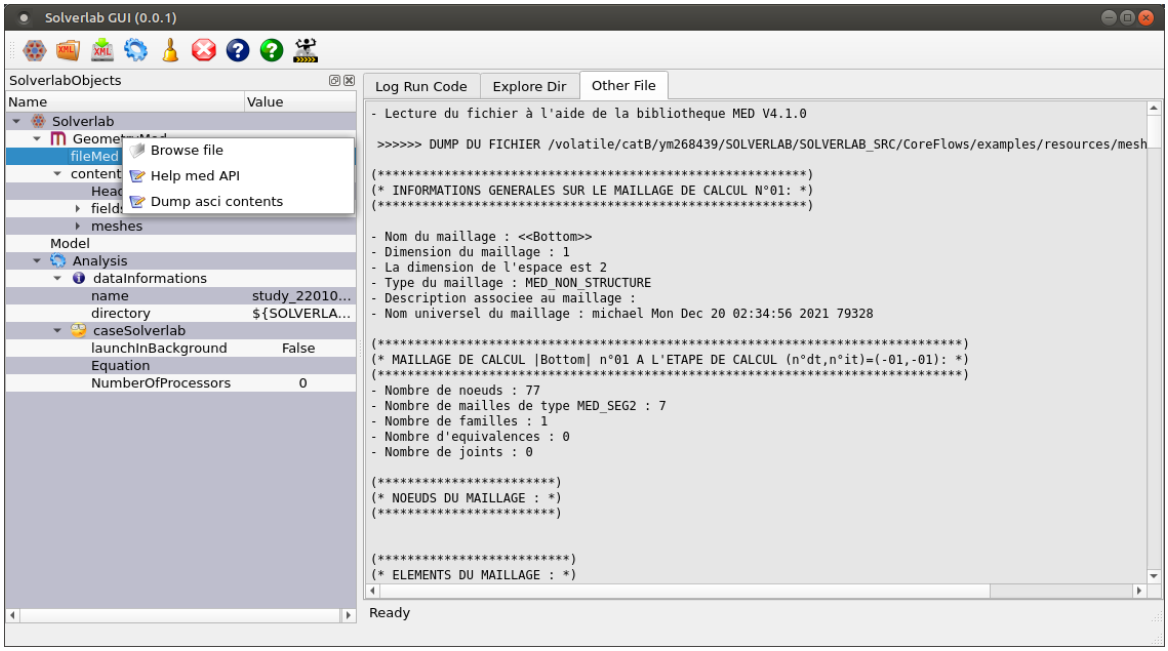

Figure 5: SOLVERLAB graphics interface

❖ CHANGELOG

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

KERNEL

35175	*Summary:* [CEA][FORUM][Windows] crash: Most recently used Fix issue with when selecting a study which was deleted from Most Recently used Files.
34685	*Summary:* [CEA] KERNEL: add SalomeContext::appendVariable
35167	*Summary:* [CEA] salome process gets detached

GUI

34660	Summary: [CEA][Windows] GUI compilation broken

SHAPER

24541	*Summary:* [CEA] [FORUM] help SHAPER built-in function issue Allow Python help() command to be used in Python console of SHAPER. Note that call without parameters hangs up as for other modules.
32317	*Summary:* EDF26101 - no name with group filter Names of selected elements in group filter now are not replaced by they types.
32342	*Summary:* EDF 26130 - Undo and auxiliarity Added sketch updating to set correct line after undoing the auxiliarity.
32757	*Summary:* [CEA][Forum] Importing one STEP file in SHAPER and GEOM Fix issue with STEP import.
34051	*Summary:* [CEA] Shaper fails to build with swig 4.1.1
34103	*Summary:* EDF 27369 - Cutting problem
34401	*Summary:* [CEA] Can't use move to the end on GroupSubstraction in GUI
34658	*Summary:* [CEA] Wrong cylinder base point stored in hdf Fix issue in study when point is created with intersection.

GEOMETRY

29724	*Summary:* EDF 25230 - intersection 2 lines Fixed a problem in OCCT, giving two points at lines intersection instead of one point expected.
33060	*Summary:* EDF 26527 - remove extra-edges doesn't work OCCT algorithm UnifySameDomain, used in Remove Extra Edges functionality, enhanced to correctly work with trimmed curves.

33687	*Summary:* EDF 26791 - Points cloud on face Fixed some problems in Point Cloud functionality.
34419	*Summary:* EDF 25230 - exportVTK KO with python
35366	*Summary:* EDF 27798 - SIGSEGV with WhatIs Fix crash when WhatIs is called with a NULL Shape.
35672	*Summary:* [CEA][Windows] GEOM compilation broken

MESH

29159	*Summary:* Issue with display in smesh
32896	*Summary:* [CEA 32881] dump study error for Pipe TShape
34020	*Summary:* Verify result of Compute in SMESH tests
34209	*Summary:* [CEA][Windows] SMESH compilation broken
34270	*Summary:* [CEA] After having changed an hypothesis, Length 2D is still displayed
35256	*Summary:* [CEA 33658] mg_tetra_parallel test.

PARAVIS

33724	*Summary:* [CEA 33696][Windows] StaticMesh in PARAVIS not built
34032	*Summary:* [CEA][Forum] Find data window not active

OTHER

26689	*Summary:* [CEA][FORUM] YACSGEN Error in gener.py YACSGEN - salome_context.cfg not found
33720	*Summary:* [EDF][Windows] PERSALYS windows build
35129	*Summary:* [EDF] DeprecationWarning imp module Replace imp module with import lib to fix warning deprecated warning.

❖ OCCT 7.5.3 BUG CORRECTIONS

This chapter lists bug corrections and improvements made for SALOME project in Open CASCADE Technology. Below listed bug corrections and improvements are included into OCCT version 7.5.3 patch #5 used by SALOME 9.11.0; complete list of bugs and improvements made in OCCT can be seen at https://dev.opencascade.org/forums/occt-releases.

0032934	Modelling Algorithms - BRepExtrema_DistShapeShape returns two solutions instead of one
0033156	Modeling Algorithms - Planar face creation problem
0033328	Modeling Algorithms - Integration request: UnifySameDomain improvement

❖ 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.

The table below lists the versions of the pre-requisite products used by SALOME platform. Other versions of the products can also work but this is not guaranteed.

Product	KERNEL	GUI	GEOM	SHAPER	SMESH	FIELDS	YACS	PARAVIS	HOMARD	HEXABLOCK	JOBMANAGER	NETGENPLUGIN	GHS3DPLUGIN	GHS3DPRLPLUGIN	BLSURFPLUGIN	HexoticPLUGIN	HEXABLOCKPLUGIN	HYBRIDPLUGIN	GMSHPLUGIN	ADAO	EFICAS
Gcc[1]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GNU make[1]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Microsoft Visual Studio[2]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cmake	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Python	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Qt		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sip		X																			
Pyqt	X	X			X	X		X												X	X
Boost	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Swig	X	X	X	X	X	X	X		X	X											
OCCT		X	X	X	X				X	X		X	X	X	X	X	X	X	X		
Qwt		X			X																
Omniorb	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Omniorbpy	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hdf5	X	X			X																
Med					X	X		X	X												
Vtk[3]		X	X		X	X		X		X		X	X	X	X	X	X	X	X		
Numpy		X			X	X		X	X											X	
Scipy																				X	
Graphviz	X	X	X	X	X	X	X					X	X	X	X	X		X	X		
Doxygen	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X		
Netgen												X									
Metis						X															
Scotch						X															
Libxml2	X	X		X		X	X														
MeshGems													X	X	X	X		X			
Sphinx	X	X		X	X	X	X	X	X	X	X									X	X
Libbatch	X																				
Cgns					X																
Paraview		X				X		X													
Psutil	X																				
Gmsh																			X		
Planegcs				X																	
Pillow						X															
Nlopt																				X	
Eficas (tool)																				X	X

[1]) *Linux only*
[2]) *Windows only*
[3]) *Version included into ParaView is used*

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	Required by	Comment
Alabaster	Sphinx	Not used directly.
Babel	Sphinx	Not used directly.
C3po		Not used directly.
Certifi	Sphinx	Not used directly.
Chardet	Sphinx	Not used directly.
Click	Sphinx	Not used directly.
Colorama	SAT	Not used directly. Windows only.
Cppunit	KERNEL, FIELDS, GEOM, YACS, HEXABLOCK	Optional, for unitary tests.
Cycler	Matplotlib	Not used directly.
Cython	Mpi4py, Scipy	Not used directly.
Docutils	Sphinx	Not used directly.
Eigen	Planegcs	Not used directly.
Embree	ParaView	Optional. Not used directly.
Expat	Graphviz	Windows only.
F2c	SMESH	Compile FORTRAN code (converted to C).
Freeimage	OCCT	Optional. Not used directly.
Freetype	OCCT, ParaView	Optional. Not used directly.
Gdal	ParaView	Optional. Not used directly.
Idna	Sphinx	Not used directly.
Imagesize	Sphinx	Not used directly.
Intel TBB	OCCT, Ospray, SMESH	Optional.
Ispc	Ospray	Optional. Not used directly.
Jinja2	Sphinx	Not used directly.
Kiwisolver	Sphinx	Not used directly.
Lapack	Numpy	Not used directly.
Libjpeg	Graphviz	Not used directly. Windows only.
Libpng	Graphviz	Not used directly. Windows only.
Llvm	Ospray	Optional. Not used directly.
Markupsafe	Shinx	Not used directly.
Matplotlib	ParaView	Optional. Not used directly.
Mesa	Visualization subsystem.	Optional. Not used directly.
Mpi4py		Not used directly.
Netcdf	ParaView, Gdal	Optional. Not used directly.
Nose		Not used directly.
Numpydoc		Not used directly.
Opencv	GEOM	Optional.
Openmpi	ParaView, Hdf5, Med, KERNEL, FIELDS	Optional.
Openturns		Not used directly.
OpenVKL	Ospray	Not used directly.
Ospray	ParaView	Optional. Not used directly.
Packaging	Sphinx	Not used directly.
Persalys		Not used directly.
Petsc	Solverlab	Not used directly.
Pip	Python extra packages	Optional. Not used directly.

Pthreads	OmniORB, and other	Not used directly.
Pygments	Sphinx	Not used directly.
Pyparsing	Matplotlib	Not used directly.
Pyreadline	SAT	Not used directly. Windows only.
Python-dateutil	Matplotlib	Not used directly.
Pytz	Matplotlib, Sphinx	Not used directly.
Requests	Sphinx	Not used directly.
RkCommon	Ospray	Not used directly.
Root		Not used directly.
Setuptools	Sphinx, Matplotlib, Numpy, Scipy, …	Not used directly.
Six	Matplotlib	Not used directly.
Snowballstemmer	Sphinx	Not used directly.
Sphinx-inlt	GUI, GEOM, SMESH, MEDCOUPLING	Optional.
Sphinxcontrib-applehelp	Sphinx	Not used directly. Windows only.
Sphinxcontrib-devhelp	Sphinx	Not used directly. Windows only.
Sphinxcontrib-htmlhelp	Sphinx	Not used directly. Windows only.
Sphinxcontrib-jsmath	Sphinx	Not used directly. Windows only.
Sphinxcontrib-qthelp	Sphinx	Not used directly. Windows only.
Sphinxcontrib-serializing	Sphinx	Not used directly. Windows only.
Sphinxcontrib-websupport	Sphinx	Not used directly.
Sphinx-rtd-theme	Sphinx	Not used directly.
Tcl	OCCT, Python	Optional. Not used directly.
Tk	OCCT, Python	Optional. Not used directly.
Toml	Sip	Not used directly.
Tclx	OCCT, Python	Optional. Not used directly.
Urllib3	Sphinx	Not used directly.
Zeromq		Not used directly.
Zlib	Hdf5	Not used directly.
FMILibrary	OpenTurns	Optional.
Pandas	OpenTurns	Optional.
Patsy	OpenTurns	Optional.
PyFMI	OpenTurns	Optional.
Statsmodels	OpenTurns	Optional.

SALOME 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[4].

Software Requirements

Product	Compilation and Development		Execution		Remarks
	Mandatory	Optional	Mandatory	Optional	
Gcc	X		X		C++17 support is needed to build Gmsh 4.8 + plugin
GNU make	X				
Microsoft Visual C++	X		X		For execution, runtime libraries are only required
Boost	X		X		
Cgns		X		X	For SMESH only

[4] Some optional pre-requisite products are not listed.

					Required only if used at compilation step
Cmake	X				
Cppunit		X			For testing only.
MeshGems	X	X	X	X	Compilation: depending on build optioned used, can be mandatory for BLSURFPLUGIN, GHS3DPLUGIN, GHS3DPRLPLUGIN, HexoticPLUGIN, HYBRIDPLUGIN. Runtime: mandatory for BLSURFPLUGIN, GHS3DPLUGIN, GHS3DPRLPLUGIN, HexoticPLUGIN, HYBRIDPLUGIN.
Doxygen		X			Needed only for documentation generation
Eficas (tool)	X		X		For ADAO, EFICAS
Freetype	X		X		
Freeimage		X		X	Required only if used when building OCCT
Gmsh	X		X		For GMSHPLUGIN only
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. Used by ADAO.
Med	X		X		
Metis		X		X	Required only if used at compilation step for FIELDS
Netgen	X		X		For NETGENPLUGIN only
Nlopt				X	Required by ADAO.
Numpy (+ Lapack)	X		X		Required by FIELDS, ADAO
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
ParaView	X		X		Mandatory for PARAVIS module; optional for GUI module
Pillow				X	Optionally required by FIELDS.
Planegcs	X		X		Required by SHAPER
Psutil	X		X		Required by KERNEL to simplify management of SALOME processes and services.
Pyqt	X		X		
Python	X		X		
Qt	X		X		
Qwt	X		X		
Scipy			X		Required by ADAO
Scotch		X		X	Required only if used at compilation step for FIELDS
Sip	X				
Sphinx		X			Needed only for documentation generation
Swig	X				
Vtk	X		X		

Note: additional pre-requisites may be required on some platforms. For example, to build SALOME on Linux CentOS 7, it is necessary to install devtoolset-8 package.

❖ HOW TO GET THE VERSION AND PRE-REQUISITES

Sources of SALOME 9.11.0 can be retrieved from the Git repositories using V9_11_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 9.11.0 patches some third-party pre-requisite products, such as ParaView, Netgen, Open CASCADE Technology and other. These patches solve different problems and introduce some specific features needed for SALOME 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/.

See also "*License restrictions*" paragraph above.

❖ KNOWN PROBLEMS AND LIMITATIONS

- Application crash might occur on the data publication in the study if both data server and CPP container are running in the standalone mode.
- Sometimes regression test bases give unstable results; in this case the testing should be restarted.
- 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 9x; 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 9x, there can be problems with opening of such studies in SALOME.
- 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
```

- ParaVis and Mesh modules work unstably using a remote connection. You can use VirtualGL to benefit from the remote graphic card (launch `vglrun salome`), or use `mesa_salome` to bypass the graphic card (but it is slower). For ParaVis, you can also launch `pvserver` in the remote desktop and connect to it from your local computer. Finally, clusters often provide their own solution to access visualization nodes for remote post-processing. Ask the cluster's support for dedicated information.
- 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.
  - Different visual artifacts may take place in ParaView or VTK viewer when using a remote connection; this is a limitation of indirect rendering: ParaView uses OpenGL 2.0 backend which some features are not supported by indirect rendering.
  - 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:

    ```
    $ 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 (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).
- ParaView application may crash during start-up on Linux because of graphics card driver's limitations. The following workaround may help solving this issue:

```
$ export VTK_DISABLE_VISRTX=1
$ export VTK_DISABLE_OSPRAY=1
```

- Med library (`medfichier`) can read only MED files of version 2.2 and newer.

- Users can experience OpenGL issues when running SALOME on virtual machines or with Intel graphic chipset. If such issue occurs, use `run_mesa_salome.bat` to launch SALOME.
- For Windows 10 operating system, the Microsoft Visual C++ Redistributable for Visual Studio 2017 is required. It can be downloaded from the official Microsoft site:

  https://support.microsoft.com/en-us/help/2977003/the-latest-supported-visual-c-downloads

  For convenience, the distributable is included into the SALOME archive as well.
- Because of the known 8192 character command line limit, On Windows, the installation directory should be as short as possible, e.g. C:\SALOME-9.10.0.On Linux and Windows, the installation folder should not contain spaces or special characters.
- There are known issues about behavior of the automatic link between Shaper and Mesh. The behavior will not be optimal if several iterations between the two modules are done by the user.
- When invoking context help from dialogs of Shaper module, an error message can be observed in the case of using old versions of Firefox as the default browser:

  ```
  PCOMGlueLoad error for file /usr/lib64/firefox/libxul.so:
  /usr/lib64/firefox/libxul.so: undefined symbol: FT_Palette_Select
  Couldn't load XPCOM.
  ```

  This error message happens, for instance, with Firefox v75. The problem is caused by incompatibility of freetype library, shipped with SALOME, with old versions of Firefox.

  The problem is not reproduced with newer versions of Firefox (e.g. v89). To solve mentioned problem, we suggest installing latest version of Firefox, or using other browser (e.g. Chrome) as the default one.
- Users can experience problem with launching SALOME because of absence of Python 3. For SALOME, Python 3 is a mandatory pre-requisite. It is available as a native package on most of Linux distributions, so if you experience this problem, just install the corresponding package. For example, on Debian or Ubuntu:

  ```
  $ apt install python3
  $ update-alternatives --install /usr/bin/python python /usr/bin/python3 1
  ```

  If you aren't able to install Linux packages (e.g. because of lack of permissions), you can use one of the following workarounds:

  a) Source environment file supplied with SALOME distribution:

  ```
  $ . env_launch.sh
  $ salome
  ```

  b) Generate bash script and use it as a launcher instead of default one:

  ```
  $ ./install_bin.sh
  $ sat launcher SALOME-9.11.0 --exe runSalome.py -n salome.sh
  $ salome.sh
  ```

- There is a known problem with saving / loading big studies. The problem is caused by SALOME architecture and CORBA used as the transport between components. CORBA has 2 GB data transfer limit, so one may experience a problem with saving / loading big studies in default mode. This problem can be partially bypassed by using "multi-file" save-mode.
- SALOME version 9.7 introduced a "Session Less" mode allowed using SALOME API without launching CORBA servers. There is a known limitation that "session less" and "standard" modes cannot be mixed in the same session as this may cause various artifacts.
- On Fedora 32 and 34 platforms, users can experience issue displaying SALOME icons. The issue can be resolved as follows:

  ```
  $ dnf install qt5ct
  ```

```
$ export QT_QPA_PLATFORMTHEME=qt5ct
$ qt5ct
```

Then, in qt5ct interface, choose "Fusion" instead of "Adwaita" or "Breeze" that are causing some issues.