



Open CASCADE Technology and Products ver. 6.7.1

Release Notes

Overview

Open CASCADE Technology and Products version 6.7.1 is a maintenance release, which includes about **170** improvements and bug fixes over the previous release 6.7.0.

Version 6.7.1 is binary incompatible with the previous versions of Open CASCADE Technology and Products, so applications linked against a previous version must be recompiled to run with this Version 6.7.1.

Highlights

- ➔ Numerous bug fixes and improvements in Modeling Algorithms, Visualization, Data Exchange;
- ➔ Parallelization of the Building and (partially) Intersection parts of Boolean algorithms;
- ➔ Class for display of a shape with different colors of sub-shapes;
- ➔ Extended control over depth buffer operation at the level of Z layers in 3D Viewer;
- ➔ Additional tools and documentation on debugging OCCT code;
- ➔ Support of SVG images in documentation;
- ➔ Generation of Reference Manual documentation by `gendoc` command (without WOK);
- ➔ Porting of Samples to Qt 5;
- ➔ CMake builds now support source patches and installation of multiple configurations in the same directory.





Table of Contents

Modifications	3
<i>Foundation Classes</i>	3
<i>Modeling Data</i>	3
<i>Modeling Algorithms</i>	4
<i>Visualization</i>	11
<i>Application Framework</i>	14
<i>Data Exchange</i>	14
<i>Draw</i>	15
<i>Mesh</i>	16
<i>Shape Healing</i>	16
<i>Configuration</i>	16
<i>Samples</i>	17
<i>WOK</i>	17
<i>Coding</i>	18
<i>Documentation</i>	19
<i>Products</i>	21
<i>Advanced Samples</i>	21
<i>Express Mesh</i>	22
<i>DXF Import-Export</i>	22
<i>Mesh Framework</i>	22
<i>Collision Detection</i>	22
<i>PARASOLID-XT Import</i>	22
Supported Platforms and Pre-requisites	23



Modifications

Foundation Classes

23427	<p><i>Summary:</i> Unused C-sources in OSD package</p> <p>The following unused files have been removed from package OSD: OSD_Getkey. c, OSD_Cmailbox. c, OSD_CSharedMemory. c, OSD_CSemaphore. c, OSD_Mailbox. cxx, OSD_SharedMemory. cxx, OSD_Semaphore. cxx, OSD_Mailbox. cdl, OSD_SharedMemory. cdl and OSD_Semaphore. cdl.</p>
24438	<p><i>Summary:</i> Provide customized status descriptions in Message_Algorithm</p> <p>New method Message_Algorithm::SetStatus(), which takes Message_Msg as argument, has been introduced to support fully customized status messages. Such messages completely override the text and parameters specified in other ways.</p>
24489	<p><i>Summary:</i> Avoid type casts in call to Standard::Free()</p> <p>Method Standard::Free() has been converted to template, so the pointer is nullified using its proper type.</p> <p>Unnecessary type casts in calls to Standard::Free(), Standard::Reallocate(), and NCollection_BaseAllocator::Free() have been eliminated throughout OCCT code.</p>
24603	<p><i>Summary:</i> The code of TCollection_AsciiString::Search* methods can be simplified</p> <p>Unnecessary use of Boolean flags has been avoided in some TCollection_AsciiString::Search* methods.</p>
24701	<p><i>Summary:</i> Drop redundant headers</p> <p>Obsolete headers Standard_ctype.hxx and Standard_inverse.h have been removed.</p>

Modeling Data

24474	<p><i>Summary:</i> GCPnts_AbscissaPoint calculates invalid point</p> <p>GCPnts_AbscissaPoint algorithm has been corrected. New command di scrCurve has been added to test GCPnts_UniformAbscissa by count of discretization point.</p>
-------	--



Modeling Algorithms

23855	<p><i>Summary:</i> Old BOPs fail on Win7 64bit when using TBB</p> <p>Casts of pointers to long integer, which fail on 64-bit platforms, have been fixed in class <code>TopOpeBRep_sort</code>.</p>
23884	<p><i>Summary:</i> Boolean Fuse between two faces fails</p> <p>The procedure <code>CheckPCurve</code>, which checks P-Curves obtained after approximation, has been extended to take into account the inner structure of P-Curve [<code>NbInterval s</code>] in method <code>IntTools_FaceFace::MakeCurve</code>.</p>
23892	<p><i>Summary:</i> Missing intersection edge between two faces</p> <p>The start points are manifolded on the boundaries of periodic surfaces in method <code>IntPatch_PrmPrmIntersection::Perform</code>, which allows correctly finding the edge of intersection between two faces.</p>
24157	<p><i>Summary:</i> Parallelization of assembly part of Boolean Operations</p> <p>The Building (Assembly) part of Boolean Operations has been parallelized. Among others, this concerns such extremely time-consuming operations as Building Faces and Building Edges.</p> <p>The following modifications have been introduced to manage parallelization:</p> <ul style="list-style-type: none"> ▪ New method <code>BOPAlgo_Algo::SetRunParallel</code> allows setting the flag of parallel processing: if <code><theFlag></code> is <code>true</code> it is switched on and if <code><theFlag></code> is <code>false</code> it is switched off. ▪ <code>BOPAlgo_Algo::RunParallel</code> returns the flag of parallel processing. ▪ Draw command <code>bbuild</code> now works in parallelized mode by default, but can be used with option <code>-s</code> in sequential mode. ▪ Auxiliary classes <code>BOPAlgo_BuilderSolidFunction</code> and <code>BOPAlgo_BuilderSolidCnt</code> provide the interface and implementation of the parallel computations. ▪ Parallel execution of the <code>WireSplitter</code> algorithm has been provided in method <code>BOPAlgo_BuilderFace::PerformLoops()</code>. ▪ Parallel execution of the <code>SplitBlock</code> algorithm has been provided in method <code>BOPAlgo_WireSplitter::MakeWires()</code>. <p>Other new features have been implemented in the frame of this issue:</p> <ul style="list-style-type: none"> ▪ New class <code>BOPAlgo_ShellSplitter</code> provides splitting of a set of connected faces into separate loops ▪ New class <code>BOPCol_BoxBndTree</code> provides instantiation of the algorithm of unbalanced binary tree of overlapped 3D bounding boxes. ▪ New class <code>BOPCol_Box2DBndTree</code> provides instantiation of the algorithm of unbalanced binary tree of overlapped 2D bounding boxes.
24204	<p><i>Summary:</i> <code>BRepOffsetAPI_MakePipeShell</code> algorithm produces a resulting shape with unwarrantably big tolerance</p> <p><code>BRepFill_Sweep::BuildShell</code> method has been modified to construct the first and the last V-iso-edges in the same way as other V-iso-edges.</p>





24208	<p><i>Summary:</i> Optimization of the edge-edge and edge-face intersection algorithms</p> <p>New Edge/Edge intersection algorithm based on the intersection between bounding boxes of edges has been implemented in <code>IntTools_EdgeEdge</code> class.</p> <p>The obsolete class <code>IntTools_BeanBeanIntersection</code> has been removed.</p>
24427	<p><i>Summary:</i> Wrong section curves</p> <p>The application of <code>DecomposeResult</code> method from <code>IntPatch_ImpPrmIntersection</code> class has been restricted by the cases when the intersection curve contains the parts where U-parameter on quadric surface changes too sharply.</p>
24463	<p><i>Summary:</i> <code>BRepAlgo_Section::Build</code> hangs</p> <p>The method <code>BRepTools::AddUVBounds</code> has been corrected to avoid hanging on faulty faces.</p>
24470	<p><i>Summary:</i> Wrong result done by General Fuse algorithm</p> <p>The General Fuse algorithm has been improved.</p> <p>The intersection between a Torus surface and a Plane, Cylinder, Sphere, Cone or Torus surface is processed as analytical in the following cases:</p> <ul style="list-style-type: none"> ▪ Torus and Plane: a) their surface axes are parallel or b) their surface axes are perpendicular and the location of the Torus lies on the Plane; ▪ Torus and Sphere: the location of the Sphere lies on the axis of the Torus; ▪ Torus and Cone, Cylinder or Torus: the axes of the surfaces are collinear. <p>In all cases the resulting intersection curve is a circle.</p> <p>The intersection between the torus whose minor radius is more than or equal to the major radius and any other surface is considered as parametric.</p> <p>The validity of the intersection point between an edge and a face is checked using the sum of their tolerance values.</p>
24472	<p><i>Summary:</i> Wrong section curves</p> <p>The following changes have been introduced to improve intersection algorithm results:</p> <ul style="list-style-type: none"> ▪ The check if the intersection curve is collapsed has been added in method <code>GeomInt_LineConstructor::Perform</code>. ▪ It is also checked in the same method if the first and the last points of every interval of the intersection curve belong to both intersecting surfaces (previously only the midpoint of the interval was checked, which was error-prone). ▪ The method <code>IntPatch_PrmPrmIntersection::Perform</code> has been modified to allow adding new points in the found intersection curve. Additional points are found by new <code>IntWalk_PWalking::SeekAdditionalPoint()</code> method that can use auxiliary methods <code>::DistanceMinimizeByExtrema</code> and <code>::DistanceMinimizeByGradient</code>.
24475	<p><i>Summary:</i> Wrong result of <code>ThruSections</code> algorithm on two wires</p> <p>The regression that made the loft between two wires twisted has been corrected in method <code>BRepFill-CompatibleWires::ComputeOrigin</code>.</p>





<p>24481</p>	<p><i>Summary:</i> Test “Perform Infinite Point” provides a wrong result for a solid</p> <p>The method <code>BRepClass3d_SClassifier::PerformInfinitePoint</code> has been rewritten: a normal to the first extracted face is taken in a random inner point and this reversed normal is intersected with the faces of the solid.</p> <p>Additional argument check has been introduced in method <code>BRepClass3d_SolidExplorer::FindAPointInTheFace</code>.</p>
<p>24484</p>	<p><i>Summary:</i> SGProps gives incorrect matrix of inertia and moments</p> <p>Modifications have been introduced in <code>GProp_SGProps</code> class to correctly compute matrix of inertia and moments.</p>
<p>24491</p>	<p><i>Summary:</i> Partition algorithm history bug</p> <p>The information submitted in the log of Partition operation has been modified in the following aspects:</p> <ul style="list-style-type: none"> ▪ All splits of the shape are returned as Modified from that shape; ▪ Section edges (in case of section operation) are returned as Generated from the face. <p>The corresponding changes have been introduced in <code>BOPAlgo_BOP</code> and <code>BOPAlgo_Builder</code> classes.</p>
<p>24492</p>	<p><i>Summary:</i> The command <code>bopargcheck</code> produces wrong results.</p> <p>The following improvements have been introduced in the command <code>bopargcheck</code>:</p> <ul style="list-style-type: none"> ▪ Classes <code>BOPDS_InterfVZ</code>, <code>BOPDS_InterfEZ</code>, <code>BOPDS_InterfFZ</code> and <code>BOPDS_InterfZZ</code> have been introduced to store the information about interferences of vertex/solid, edge/solid, face/solid and solid/solid type correspondingly. ▪ Methods <code>BOPDS_DS::InterfVZ()</code>, <code>BOPDS_DS::InterfEZ()</code>, <code>BOPDS_DS::InterfFZ()</code> and <code>BOPDS_DS::InterfZZ()</code> have been introduced to return collections of Vertex/Solid, Edge/Solid, Face/Solid and Solid/Solid interferences correspondingly. ▪ New <code>BOPDS_DS::NbInterfTypes()</code> method returns the number of interference types. ▪ Methods <code>BOPDS_Tools::IsInterfering()</code> and <code>BOPDS_ShapeInfo::IsInterfering()</code> return true if the type can be participant of an interference. ▪ Methods <code>BOPAlgo_CheckerSI::PerformVZ()</code>, <code>BOPAlgo_CheckerSI::PerformEZ()</code>, <code>BOPAlgo_CheckerSI::PerformFZ()</code> and <code>BOPAlgo_CheckerSI::PerformZZ()</code> allow computing Vertex/Solid, Edge/Solid, Face/Solid and Solid/Solid interferences correspondingly. ▪ Method <code>BOPDS_DS::HasInterfShapeSubShapes (theI1, theI2, theFlag)</code> now returns true if shape <code>theI1</code> is interfered with at least one sub-shape of shape <code>theI2</code> (if <code>theFlag=true</code>) or all sub-shapes of shape <code>theI2</code> (if <code>theFlag=false</code>). ▪ Methods <code>BOPDS_IteratorSI::Intersect()</code>, <code>BOPDS_Tools::TypeToInteger</code>, <code>BOPAlgo_CheckerSI::Perform()</code>, <code>BOPAlgo_CheckerSI::PostTreat()</code> and <code>BOPAlgo_ArgumentAnalyzer::TestSelfInterferences()</code> have been improved to process interferences with solids.



24495	<p><i>Summary:</i> Crash during Boolean operation for Windows VC2010 64 bit</p> <p>Recursion has been replaced with cycle in method <code>BOPAl go_Wi reSpl i tter: : Path</code>.</p>
24505	<p><i>Summary:</i> Wrong section curves between Cone and Cylinder with collinear axes</p> <p>The method <code>IntPatch_Intersection: : Perform</code> has been modified to process intersection between a Cone and a Cylinder, Sphere, Cone or Torus surface as analytical when the surface axes are collinear.</p>
24532	<p><i>Summary:</i> <code>BRepOffsetAPI_MakePi peShell</code> raises an exception in the case with an auxiliary guide line</p> <p>The method <code>BRepFill_Compati bleWi res: : PlaneOfWi re</code> has been protected against possible null curve.</p>
24558	<p><i>Summary:</i> Boolean operation cannot create all solids, which should be built</p> <p>The algorithm of checking 2D distances when splitting wires has been corrected in method <code>BOPAl go_Wi reSpl i tter: : Path</code>.</p>
24573	<p><i>Summary:</i> Wrong result of 2D offset algorithm on a shape</p> <p>New method <code>GccAna_Ci rcPnt2dBi sec: : Create(Ci rcl e1, Poi nt2)</code> has been implemented to construct bisecting curves between a circle and a point.</p>
24575	<p><i>Summary:</i> Exception is raised during checkshape operation.</p> <p>Recursion calling <code>BRepCheck_Shell: : Propagate()</code> function has been replaced with a cycle.</p>
24585	<p><i>Summary:</i> Wrong pcurve of the section curve</p> <p>The p-curve obtained by <code>IntPatch_PrmPrmIntersection: : Perform</code> as the intersection line is now forcefully extended to the surface boundary by appending points using <code>IntWal k_PWal ki ng: : PutToBoundary()</code> method.</p> <p>In DRAW, <code>bopcurves</code> command now returns the number of found 3D and (optionally) 2D curves.</p>
24586	<p><i>Summary:</i> Pipe construction is fails</p> <p>Processing of profiles representing shells and compounds of faces has been corrected in <code>BRepFill_Pi pe</code> algorithm.</p>
24597	<p><i>Summary:</i> Missing internal vertex in the result of General Fuse Operation</p> <p>New method <code>BOPDS_DS: : FaceInfoIn</code> has been implemented to add the information about internal vertices on faces to the Data Structure.</p>
24612	<p><i>Summary:</i> Wrong pcurve of the section curve</p> <p>Useless workarounds interrupting work of the algorithm have been removed from <code>IntWal k_I wal ki ng: : TestDefl ecti on()</code> function.</p>



24618	<p><i>Summary:</i> Embedding vertex in BOP depends on the order of arguments</p> <p>The following corrections have been introduced to make the Boolean operation result independent from the order of arguments:</p> <ul style="list-style-type: none"> ▪ The condition for DS vertex index has been corrected in method <code>BOPDS_DS::AllOneVertices</code>; ▪ The returning value has been corrected for vertices in function <code>BOPTools_AlgoTools3D::HasGeometry</code>.
24620	<p><i>Summary:</i> <code>BOPAlgo_CheckerSI</code> returns interferences that are not sub-shapes of the source shape</p> <p>The following new methods have been introduced to return correct interferences:</p> <ul style="list-style-type: none"> ▪ <code>BOPAlgo_CheckerSI::SetNonDestructive(theFlag)</code> sets the flag that defines what is processed: the argument copy when <code>theFlag</code> is true or the argument itself when it is false. ▪ <code>BOPAlgo_CheckerSI::NonDestructive()</code> returns the corresponding flag. ▪ <code>BOPAlgo_CheckerSI::PrepareCopy()</code> provides the argument copy; ▪ <code>BOPAlgo_CheckerSI::PostTreatCopy()</code> provides post-processing for the copy.
24628	<p><i>Summary:</i> Intersection result is unfixed</p> <p>The map for collecting pave blocks of two faces in class <code>BOPAlgo_PaveFiller</code> has been replaced with an indexed map to provide constant order of pave blocks when checking section curves for intersections.</p>
24633	<p><i>Summary:</i> Incorrect projection of a curve on a surface</p> <p>The algorithm of curve projection on surface has been improved in class <code>ProjLib_ComputeApproxOnPol arSurface</code>.</p>
24640	<p><i>Summary:</i> Broken logic of check of variable for zero in <code>IntCurvesFace_Intersection</code> constructor</p> <p>The check of variable for zero in <code>IntCurvesFace_Intersection</code> constructor has been fixed to avoid FPE division by zero.</p>
24648	<p><i>Summary:</i> Different types of intersection curves between Cone and Torus with a different order of arguments</p> <p>The processing of torus and cone intersections has been improved in classes <code>IntPatch_Intersection</code> and <code>BOPAlgo_PaveFiller</code>.</p>
24650	<p><i>Summary:</i> Wrong intersection curves obtained for a surface of revolution and a plane.</p> <p>The algorithm of intersection between a surface of revolution and a plane has been improved in method <code>IntPatch_ImpPrml ntersection::Perform</code>.</p>
24654	<p><i>Summary:</i> Result of Boolean operation is invalid for <code>bopargcheck</code> if rotated</p> <p>New function <code>ComputeBox</code> has been implemented in method <code>BndLib::Add</code> to compute the bounding box for a bounded hyperbola.</p>



24655	<p><i>Summary:</i> Boolean common produces incorrect result</p> <p>The processing of p-curves convergent in node has been improved in static functions <code>RefineAngles</code> and <code>RefineAngle2D</code> from method <code>BOPAlgo_WireSplitter::SplitBlock</code>. The algorithm refining the p-curve angles now takes into account bounding curves if they exist.</p>
24656	<p><i>Summary:</i> Exception during a Boolean operation</p> <p>Protection against null vector has been added in method <code>BRepClass3d_SolidExplorer::PointInTheFace</code>.</p>
24667	<p><i>Summary:</i> <code>BRepOffsetAPI_MakePipe::FirstShape()</code> and <code>::LastShape()</code> return shapes that are not from the result</p> <p>The method <code>BRepFill_Pipe::MakeShape</code> has been fixed to return correct shapes.</p>
24696	<p><i>Summary:</i> Low performance of the new Edge/Edge intersection algorithm</p> <p>The following performance improvements have been introduced in <code>IntTools_EdgeEdge</code> class algorithms:</p> <ul style="list-style-type: none"> ▪ The check for common box between edges has been added: if is thin, the algorithm tries to find exact solutions without looking for rough ranges first; ▪ Methods <code>::FindBestSolution()</code> and <code>::CheckCoincidence(...)</code> have been improved by using method <code>SplitRangeOnSegments</code> with resolution of the curve as a criteria for the range size.
24706	<p><i>Summary:</i> Solids produced by BOP do not have flag Closed set in shells</p> <p>The <code>BOPAlgo_ShellSplitter</code> class has been modified to set <code>closed</code> flag for closed shells created during a Boolean Operation.</p>
24733	<p><i>Summary:</i> Subshape IDs change between two executions of the same script</p> <p>Method <code>BOPTools_Set::IsEqual</code> has been modified to take into account locations of the shapes. Method <code>BOPTools_Set::AddEdges</code> has been removed as redundant.</p>
24738	<p><i>Summary:</i> <code>BRepOffsetAPI_MakePipe</code> algorithm fails on circular path and section (if the result is a part of sphere).</p> <p><code>GeomFill_Sweep</code> algorithm has been improved for the case when the resulting pipe is a part of sphere.</p>
24751	<p><i>Summary:</i> Performance improvements in the Edge/Edge intersection algorithm</p> <p>New static method <code>PointBoxDistance()</code> has been added to compute the distance between a point and a bounding box. The method <code>IntTools_EdgeEdge::FindRoughRanges()</code> has been removed.</p>
24764	<p><i>Summary:</i> Wrong subshapes in the result of bopcheck operation</p> <p>The methods <code>BOPAlgo_CheckerSI::PostTreat()</code> and <code>BOPAlgo_ArgumentAnalyzer::TestSelfInterferences()</code> have been modified to exclude new shapes from the processing.</p>

24767	<p><i>Summary:</i> Crash on making edges in HLRBRep</p> <p>Additional check of the incoming curve type has been implemented in method <code>HLRBRep::MakeEdge</code>.</p>
24775	<p><i>Summary:</i> False detection of intersection in <code>BRepMesh_Classifier</code> class.</p> <p>The accuracy of checking endpoints that touch segments has been improved in method <code>BRepMesh_Classifier::checkWiresIntersection</code>.</p>
24776	<p><i>Summary:</i> Wrong result for <code>distmini</code> between a <code>TopoDS_Shell</code> and a <code>TopoDS_Edge</code></p> <p>The definition of tolerance has been improved in <code>BRepExtrema_DistShapeShape</code> algorithm finding distance between a shell and an edge.</p>
24800	<p><i>Summary:</i> Point of intersection was not found for 2d offset curve</p> <p>The number of samples for 2d offset and trimmed curve is now computed in method <code>Geom2dInt_Geom2dCurveTool::NBSamples()</code> as the maximum value from the number of samples for the other curve and the number of samples for the basis curve.</p>
24809	<p><i>Summary:</i> Exception is raised during perform of <code>bfills</code> command</p> <p>Vectors are now normalized before calculation of an angle in the methods of class <code>IntPoly_MillageAffinage</code>.</p>
24820	<p><i>Summary:</i> CLang compiler warning <code>-Wreturn-stack-address</code></p> <p>The signature of function <code>BOPDS_DS::CommonBlock(const Handle(BOPDS_PaveBlock) & thePB)</code> has been changed to return a handle, not a reference to handle.</p>
24823	<p><i>Summary:</i> Hang up in <code>bopcheck</code> command</p> <p>Protection against large values of parameters on edges has been added in method <code>IntTools_EdgeEdge::FindParameters</code>. Methods <code>FindSolutions()</code> and <code>BndCommon()</code> of the same class have been removed as redundant.</p>
24825	<p><i>Summary:</i> Fit Boolean Operations to process multiple arguments</p> <p>It has become possible to define multiple arguments for Boolean Operations. The corresponding changes have been introduced in classes <code>BOPAlgo_BOP</code>, <code>BOPAlgo_Builder</code>, <code>BOPTest</code>, <code>BRepFeat_Builder</code> and <code>BRepFeat_MakeCylindricalHole</code>.</p> <p>Additionally, the format of command <code>bbop</code> has been changed to <code>bbop rop [-s -t]</code>. New options are <code>-s</code>, which allows running in serial mode, and <code>-t</code>, which prints the CPU time.</p>
24840 24849	<p><i>Summary:</i> Exception on Pipe creation</p> <p>The algorithm <code>BRepOffsetAPI_MakePipe</code> has been improved to preserve the order of edges in the source shape.</p>



24842	<p><i>Summary:</i> Crash on change of HLR-algo in top and bottom views</p> <p>Method <code>HLRBRRep_Curve::Parameter3d</code> has been fixed to take into account tolerance criterion.</p>
24844	<p><i>Summary:</i> Wrong result of Boolean Cut operation</p> <p>The algorithm of intersection between Cone and Torus with collinear axes has been fixed in method <code>IntAna_QuadQuadGeo::Perform</code>.</p>
24851	<p><i>Summary:</i> Extra vertex is in the result of Boolean Fuse Operation</p> <p>The faces based on cylindrical surface have been added to the list of candidates to extend the boundaries in the function <code>IntTools_FaceFace::CorrectSurfaceBoundaries</code>.</p>
24861	<p><i>Summary:</i> Extra solid is in the result of General Fuse Operation</p> <p>The function <code>BOPAlgo_ShellSplitter::IsClosedShell</code> has been modified to process empty shells.</p> <p>The method <code>BOPAlgo_ShellSplitter::SplitBlock</code> has been modified to process connected blocks of faces when the block begins with the face that is intended to be internal.</p>

Visualization

22974 24412	<p><i>Summary:</i> Impossible to customize text position</p> <p>The following improvements have been introduced to improve text presentation:</p> <ul style="list-style-type: none"> ▪ The methods <code>AIS_Dimension::GetTextPosition()</code> and <code>AIS_Dimension::SetTextPosition()</code> have been added to explicitly define the text position. It is also possible to set and unset text label alignment respectively to the attach points after the text position has been changed. ▪ The corresponding DRAW commands <code>vdi mparams</code>, <code>vdi mensi on</code>, <code>vmovedim</code>, <code>vangl edim</code>, <code>vdi st di m</code> and <code>vradi us di m</code> have been corrected.
24358	<p><i>Summary:</i> TKV3d – connected structures are not re-computed on device lost</p> <p>The method <code>Graphi c3d_StructureManager::ReComputeStructures()</code> has been corrected to take into account all child (connected) structures.</p>
24456	<p><i>Summary:</i> Use static assert instead of runtime exception</p> <p>Runtime check has been replaced with compile-time check in method <code>Graphi c3d_Materi al Aspect::NumberOfMateri als()</code>.</p>
24482	<p><i>Summary:</i> Provide description of <code>CSF_ShadersDi rectory</code> variable in the Overview</p> <p>System variable <code>CSF_ShadersDi rectory</code>, which defines the directory for GLSL programs (required for advanced rendering techniques and custom shaders) has been added in the list of system variables in the Overview.</p>





24483	<p><i>Summary:</i> Drop unused class <code>StdSelect_BRepHighlighter</code></p> <p>Obsolete class <code>StdSelect_BRepHighlighter</code> has been removed.</p>
24497	<p><i>Summary:</i> Add getter for window field</p> <p>New method <code>OpenGL_Context::GetWindow</code> gives access to the window of Open GL context.</p>
24511	<p><i>Summary:</i> Remove obsolete <code>Image_PixelAddress.cxx</code></p> <p>Obsolete file <code>Image_PixelAddress.cxx</code> has been removed from OCCT sources. Additionally some inconsistencies in file and unit lists have been corrected.</p>
24555	<p><i>Summary:</i> The same text is rendered with shift at the second time</p> <p>Method <code>Font_FTFont::loadGlyph()</code> has been modified to use the same flags as <code>RenderGlyph()</code>.</p>
24564	<p><i>Summary:</i> <code>Select3D_SensitiveFace</code> gives inaccurate picking depth for <code>AIS_Plane</code> (interior selection)</p> <p>More accurate <code>Select3D_SensitiveTriangulation</code> has been implemented instead of <code>Select3D_SensitiveFace</code> for rectangular sensitive objects in <code>AIS_Plane::Compute()</code> and <code>AIS_Dimension::Compute()</code>.</p>
24569	<p><i>Summary:</i> <code>AIS_InteractiveContext::Update(...)</code> does not update selection when <code>AIS_Plane</code> is changed</p> <p><code>AIS_InteractiveContext::Update</code> method has been modified to check, re-project and recompute selection structures even if presentations do not have the status "to be updated".</p>
24622 24725	<p><i>Summary:</i> Add method to <code>AIS_TexturedShape</code> class to assign texture data directly from byte stream</p> <p><code>AIS_TexturedShape</code> and the graphical resource class <code>Graphic3d_TextureRoot</code> have been patched to allow sourcing texture data with <code>Image_Pixmap</code> class. The following changes have been made in connection with this issue:</p> <ul style="list-style-type: none"> ▪ The constructors accepting <code>Image_Pixmap</code> instances have been added to <code>Graphic3d_TextureRoot</code>, which can specify texture data as path to texture image, or as a pixmap. ▪ The methods to specify the texture source as <code>Image_Pixmap::SetTexturePixmap</code> have been added to <code>AIS_TexturedShape</code>.
24641	<p><i>Summary:</i> Public methods of <code>OpenGL_Text</code> and <code>OpenGL_AspectText</code> classes are not exported</p> <p>The methods of <code>OpenGL_Text</code> and <code>OpenGL_AspectText</code> classes required to work with text objects have become <code>STANDARD_EXPORT</code>.</p>
24642	<p><i>Summary:</i> Rotation angle is ignored in case of 2D text</p> <p><code>OpenGL_Text::setupMatrix</code> has been modified to take the rotation angle into account.</p>





24668	<p><i>Summary:</i> Null flyout value case in AIS_Dimension::SetTextPosition() method is not considered</p> <p>The algorithms checking working plane and dimension geometry have been corrected in AIS_Dimension and its child classes.</p>
24671	<p><i>Summary:</i> glGetPointerv might be called without GL context</p> <p>GL function is now called with OpenGL_Context::IsValid() check in the destructor of OpenGL_Context.</p>
24747	<p><i>Summary:</i> Mesa fails to destroy context if it is set to the current thread</p> <p>The check to unset the threads of GL context before its destruction has been added in OpenGL_Window.</p>
24762	<p><i>Summary:</i> Visualization - new interactive object AIS_ColoredShape with customized subshape presentations</p> <p>New interactive object AIS_ColoredShape has been implemented to display a shape with different colours and other attributes of sub-shapes.</p> <p>The following changes have been made in the frame of this improvement:</p> <ul style="list-style-type: none"> ▪ The consistency of methods ::SetColor(), ::SetMaterial(), ::SetTransparency() and ::SetWidth() from AIS_Shape class has been improved. Color is now set for marker aspect as well. ▪ New command vaspect supersedes vsetcolor, vsetmaterial, vsettransparency, vsetwidth and their unset analogs. Syntax and arguments validation have been improved. ▪ OpenGL_AspectMarker::SetAspect() now does not reset myMarkerSize when the sprite is unchanged. ▪ Iterator::Key() and FindFromKey() from NCollection_IndexedDataMap have been extended with value copying.
24785 24867	<p><i>Summary:</i> Visualization - Modifying z-layers concept to gain more control over OpenGL depth buffer</p> <p>The concept of Z layers has been extended. It is now possible to enable or disable depth test, depth buffer writes, initial depth buffer cleaning and polygon offsets individually for each Z layer with help of the corresponding options.</p> <p>The following changes have been made in the frame of this improvement:</p> <ul style="list-style-type: none"> ▪ OpenGL_Layer object is associated to each OpenGL_PriorityList. It stores and handles options described above. It encapsulates OpenGL_PriorityList::Render in its own Render method where settings are applied. ▪ Method SetZLayerOption (LayerId, Graphic3d_ZLayerSettings) has been added to Graphic3d_GraphicDriver interface. Implementation has been added to OpenGL_GraphicDriver. ▪ Implementation of SetZLayerOption, which accesses the specified OpenGL_ZLayer of every OpenGL_View has been added to Visual3d_ViewManager and V3d_View. ▪ ZLayerOption getter has been added to Visual3d_ViewManager and V3d_View. It returns Graphic3d_ZLayerSettings cached in Visual3d_ViewManager for a given LayerId.



Application Framework

24535	<p><i>Summary:</i> Bad type cast in <code>TDocStd_Document::Update()</code></p> <p>GCC compiler warning on breakage of C pointer aliasing rules has been eliminated in method <code>TDocStd_Document::Update()</code>.</p>
24565	<p><i>Summary:</i> <code>MgtBRep</code> persistence bug</p> <p>The method <code>MgtBRep_TranslateTool::UpdateEdge</code> has been corrected to take into account edges with null 3d curve representation.</p>
24645	<p><i>Summary:</i> Pointer to the last is wrong for a tree node</p> <p>The method <code>TDataStd_TreeNode::Remove()</code> has been corrected to not lose the last child tree node on removal (detach) operation.</p>
24666	<p><i>Summary:</i> Removal of output information in debug mode in OCAF</p> <p>Specific pre-processor macro <code>DEB_BUILDER</code> is now used instead of <code>DEB</code> to eliminate extra output on setting a shape to a label.</p>
24822	<p><i>Summary:</i> Solve selection fails after copying</p> <p>Method <code>TNaming_Name::Paste</code> now copies <code>myIndex</code> to provide fail-safe computation of sub-shapes.</p>
24852	<p><i>Summary:</i> Crash on storage of an OCAF document in XML file format</p> <p>The definition of a GUID for storage and retrieval of OCAF documents in XML file format has been corrected in resource file <code>StdResource\XCAF</code>.</p>

Data Exchange

24517	<p><i>Summary:</i> Crash at <code>StepToTopoDS_TranslateEdge::Init()</code></p> <p>The crash at <code>StepToTopoDS_TranslateEdge::Init()</code> when a curve is absent has been fixed. Additionally, the error message shown if there is no geom curve in the edge curve has been corrected.</p>
24549	<p><i>Summary:</i> Faulty shape after IGES translation with <code>xstep.cascade</code>. <code>unit</code> set to M</p> <p>The method <code>ShapeConstruct_ProjectCurveOnSurface::PerformAdvanced</code> has been modified to avoid creating p-curves as <code>Geom_Line</code> objects, which might cause incorrect parameterization.</p>

24596	<p><i>Summary:</i> Slow import of IGES data</p> <p>The following changes have been introduced to accelerate data import and check shape functionality:</p> <ul style="list-style-type: none"> ▪ <code>ShapeFix_IntersectionTool::FixIntersectingWires()</code> algorithm now starts with constructing <code>ShapeAnalysis_Surface</code> tool for the whole face and computes 2D bounding boxes for edges and wires before intersection checking. ▪ <code>BRepCheck_Face::IntersectWires()</code> algorithm now starts with computation of 2d boxes for edges and wires to reduce the number of calls of intersection tool for a pair of wires.
24675	<p><i>Summary:</i> Crash reading a VRML file</p> <p>A node index for normal is now passed through a map of corrected references to node indices in method <code>VrmlData_IndexedFaceSet::Tshape</code>.</p>
24759	<p><i>Summary:</i> Crash on STEP import, when reading a file exported in non-"C" locale</p> <p>The algorithm reading Cartesian points from a STEP file has been protected against buffer overrun on broken data.</p>

Draw

24088	<p><i>Summary:</i> Unsafe window handle management in Draw using <code>GetWindowLong</code></p> <p>Window handle management has been improved to avoid crashes on 64-bit systems.</p>
24203	<p><i>Summary:</i> Command <code>sameparameter</code> on edge: tolerance is too great</p> <p>The command <code>sameparameter</code> now uses global extrema algorithm instead of the local one if the extreme point is too far from the initial point.</p> <p>Additionally, <code>mk2dcurve</code> command now can take the curve index as argument.</p>
24388	<p><i>Summary:</i> The option to enable visualization of hidden lines in DRAW</p> <p>The option to draw hidden lines has been added to <code>vhlr</code> command.</p>
24453	<p><i>Summary:</i> Extend information provided by <code>vstate</code> command</p> <p>The output of <code>vstate</code> command has been improved to display the following information.</p> <ul style="list-style-type: none"> ▪ Type of Interactive Object (basing on OCCT run-time information); ▪ Detected/Selected state; ▪ Sub-Shape numbers selected within the local context (for <code>AIS_Shape</code> only). <p>The local context is no more implicitly closed by <code>vstate</code> call.</p>
24458	<p><i>Summary:</i> Add commands for basic shape transformations</p> <p>The commands <code>bmove</code>, <code>btranslate</code>, <code>brotate</code>, <code>bmirror</code> and <code>bSCALE</code> have been added to <code>BRepTest_BasicCommands</code> to provide simple transformations of shapes by applying <code>TopLoc_Location</code> via the corresponding methods, such as <code>Location</code>, <code>Move</code>, etc.</p>

24485	<p><i>Summary:</i> Create a subfolder in the directory for temporary test results</p> <p>The test results are now saved in an automatically created temporary subfolder named by the model <code>group- gridname- casename_<data>_<time with secs></code>. Previously they were stored in the root of \$TEMP directory.</p>
24599	<p><i>Summary:</i> Tools for interacting with DRAW from Visual Studio debugger</p> <p>It has become possible to perform DRAW commands from the Visual Studio debugger (Command Window) when DRAW is interrupted on a breakpoint.</p> <p>“Debugging tools and hints” manual describing how to use debug functions and other facilities and providing some hints has been added to Developer Guides.</p>

Mesh

24530	<p><i>Summary:</i> Remove unused package <code>IntPoly</code></p> <p>The obsolete package <code>IntPoly</code> has been removed.</p>
-------	--

Shape Healing

24370	<p><i>Summary:</i> <code>ShapeFix_EdgeProjAux</code> breaks conventions on using <code>IsDone</code> flag</p> <p>The class <code>ShapeFix_EdgeProjAux</code> has been modified to consider projection of 3d points corresponding to the edge range on a 2d curve successful for all cases except for the ones when projection is not made.</p>
24684	<p><i>Summary:</i> Command <code>fixshape</code> hangs up on the attached shape</p> <p>The algorithm finding a internal point for the given face has been corrected in method <code>BRepClass3d_SolidExplorer::FindAPointInTheFace</code>.</p>

Configuration

24580	<p><i>Summary:</i> CMake does not unset variables when 3rdparty products are not used</p> <p>The variables that become unused if the option to build <code>freeimage</code>, <code>opencl</code>, <code>tbb</code> and <code>gl2ps</code> products is disabled are now unset automatically.</p>
24629	<p><i>Summary:</i> Possibility to install binaries in <code>vc*/bin(d)</code> and <code>vc*/lib(d)</code> directories</p> <p>CMake building procedure now allows having a single installation directory for several build configurations.</p> <p>The names of directories for binaries installation are constructed depending on the chosen configuration, compiler and architecture following the usual scheme of OCCT build procedures on Windows, e.g. <code>wi n32/vc10/bin</code>. Each configuration installs its own environment scripts.</p>

24630 24850	<p><i>Summary:</i> Support building with FreeType 2.5.3</p> <p>Building procedures have been updated to support building with FreeType 2.5.3.</p>
24810	<p><i>Summary:</i> "Patch" feature introduced in OCC CMake building procedure</p> <p>CMake procedures for building OCCT can now take into account additional patch stored in separate directory indicated by <code>BUILD_PATCH_DIR</code> variable in CMake project.</p> <p>The patch may contain arbitrary subset of OCCT source files (including CMake scripts, templates, etc.), organized in the same structure of folders as OCCT. The projects generated by CMake will use files found in the patch folder instead of the corresponding files of the OCCT source folder.</p>

Samples

24415	<p><i>Summary:</i> Update QT samples</p> <p>QT samples have been updated for the current OCCT version and now support both Qt 4.x and Qt 5.x.</p>
24479	<p><i>Summary:</i> Ray Tracing mode does not work in Qt IE sample</p> <p>The problems with the integration of Ray Tracing mode in IE sample have been fixed.</p>
24587	<p><i>Summary:</i> Separate TCL samples for ray tracing and creation of bottle</p> <p>New sample <code>raytrace.tcl</code> has been created to show ray tracing in DRAW. It renders a bottle and a glass on a rectangular table with shadows and reflections. The sample <code>bottle.tcl</code> now provides only modeling functionalities.</p>
24584	<p><i>Summary:</i> Windows start menu entries of C#-samples are interchanged</p> <p>The links between menu items and C# samples have been corrected.</p>

WOK

24625	<p><i>Summary:</i> Upgrade Bison to version 2.2 or above</p> <p>WOK on Windows has been upgraded to use Bison 2.7. MSVC warnings in the code generated by Bison 2.41 on Linux have been eliminated.</p>
-------	---



Coding

24209	<p><i>Summary:</i> Cppcheck errors unusedScopedObject</p> <p>The problems with temporary objects that caused cppcheck errors unusedScopedObject have been eliminated in classes StdSelect_BrepSelectionTool, Extrema_GenExtCS and Poly_CoherentTriangulation.</p>
24252 24536 24635	<p><i>Summary:</i> GCC warnings on breakage of strict-aliasing rules</p> <p>The OCCT code has been revised to avoid GCC warnings on the following issues:</p> <ul style="list-style-type: none"> ▪ breakage of strict-aliasing rules. ▪ breakage of pointer aliasing rules ▪ inconsistent use of #ifdef statement
24510	<p><i>Summary:</i> Remove unused local variables</p> <p>The code of OCCT has been cleaned to avoid compiler warnings on unused local variables and function arguments.</p>
24512	<p><i>Summary:</i> Clang compiler complains about extra semicolon</p> <p>Clang compiler warnings about extra semicolons have been eliminated.</p>
24516	<p><i>Summary:</i> Copyright information has been corrupted within some headers</p> <p>Copyright information in headers has been corrected.</p>
24588 24607	<p><i>Summary:</i> Fix some GCC compiler warnings</p> <p>The following GCC compiler warnings have been fixed:</p> <ul style="list-style-type: none"> ▪ Enumeration value not handled in switch in Aspect_ColorScale and TNaming_DeltaOnModification. ▪ Comparison between signed and unsigned integer expressions in NIS_Triangulated, OSD_MallocHook and RWStl. ▪ Static function is defined or declared but not used in OpenGL_Workspace and ProjLib_ComputeApprox.
24624	<p><i>Summary:</i> Lost word in license statement in source files</p> <p>The following issues with source files have been fixed:</p> <ul style="list-style-type: none"> ▪ License text on top of OCCT source files has been corrected; ▪ Compiler warnings caused by Bison 2.41 have been disabled for MSVC; ▪ Some other compiler warnings on 64-bit Windows have been eliminated by appropriate type cast; ▪ Copyright and license statements have been added in XSD and GLSL files.
24730 24754	<p><i>Summary:</i> Remove constructor</p> <p>Useless void constructors have been removed from static classes TopOpeBRep_GeomTool and TopOpeBRep_PointGeomTool.</p>



24745	<p><i>Summary:</i> Needless inheritance of <code>OSD_MemInfo</code> from <code>Standard_Transient</code></p> <p>Inheritance of class <code>OSD_MemInfo</code> from <code>Standard_Transient</code> has been removed.</p>
24818 24821 24843 24845 24846 24848 24853 24856 24857	<p><i>Summary:</i> CLang warnings</p> <p>OCCT code has been revised to avoid the following CLang compiler warnings:</p> <ul style="list-style-type: none"> ▪ - <code>Wlogical-not-parentheses</code>; ▪ - <code>Wunneeded-internal-declaration</code>; ▪ - <code>Wunused-private-field</code>; ▪ - <code>Wconstant-logical-operand</code>; ▪ - <code>Wunused-function</code>; ▪ - <code>Wunused-const-variable</code>; ▪ - <code>Wunused-variable</code>; ▪ - <code>Wunsequenced</code> ▪ - <code>Wunused-value</code>
24877	<p><i>Summary:</i> GCC 4.4.5 compiler warnings on Debian when OCCT is built using CMake</p> <p>The warnings reported by GCC 4.4.5 compiler warnings on Debian when OCCT is built using CMake have been fixed.</p>

Documentation

24364	<p><i>Summary:</i> Document system should use local MathJax</p> <p>Usage of MathJax for insertion of formulas in the documentation has been improved: it is now possible to define the location of MathJax in <code>gendoc.bat</code> script.</p>
24416	<p><i>Summary:</i> <code><3D curve record 8></code>-Trimmed Curve Example data wrong</p> <p>A typo has been fixed in BRep Format Description white paper.</p>
24431	<p><i>Summary:</i> Use of svg-images in the documentation</p> <p>It has become possible to use images in svg vector graphics format in the documentation. This format can be edited with Inkscape, which has become necessary for generation of PDF documents.</p> <p>Doxygen alias <code>@figure</code> has been added for insertion of images with a single command for both HTML and PDF output.</p> <p>More recommendations on document syntax, including formatting of plain text, code blocks, and references, have been added in <code>documentation.md</code>.</p>
24494	<p><i>Summary:</i> Value of <code>OCC_VERSION_DEVELOPMENT</code> is not taken into account in the generated overview documentation</p> <p>The parser of OCCT version has been corrected to include development macro in the complete version number.</p>



24526	<p><i>Summary:</i> Guide on Automatic Test System is obsolete</p> <p>The Testing System Guide has been revised and updated.</p>
24529 24722	<p><i>Summary:</i> Move functionality of WOK command wgendoc to OCCT tool gendoc</p> <p>Command <code>gendoc</code> has been improved to support the following operations:</p> <ul style="list-style-type: none"> ▪ Generate OCCT classes reference documentation with option <code>-refman</code>. Option <code>-overview</code> can be used for generation of overview documentation; ▪ Generate PDF documents for all User Guides automatically (for the files listed in <code>FILES_PDF.txt</code>); ▪ Check the availability of third-party tools (Doxygen, Inkscape, etc.) and properly report warnings and errors. ▪ Use templates of configuration files for third-party tools instead of hard-coding them in the generator script. These template files are located in <code>dox/resources</code> folder <p>Additionally, the following changes have been implemented:</p> <ul style="list-style-type: none"> ▪ Tcl scripts have been moved from <code>dox</code> folder to <code>adm</code>. ▪ Doxygen warnings have been eliminated. ▪ All auxiliary functions have been moved to <code>occaux.tcl</code>. ▪ Generation of the reference manual and PDF output on *nix platforms has been fixed.
24578	<p><i>Summary:</i> Typos in Developer Guide "Building OCCT from sources"</p> <p>Developer guides for building 3rd party products and a short guide to WOK have been reviewed to fix grammar and formatting issues.</p>
24602	<p><i>Summary:</i> Documentation Code Snippets missing sign</p> <p>User's documentation has been reviewed to restore occasionally missing symbols <code>""</code>, <code><</code>, <code>></code> and to fix issues with wrong formatting.</p>
24636 24685	<p><i>Summary:</i> Coding Rules - define rules for development of Draw Harness commands</p> <p>"Coding Rules" Developer guide that defines the rules for development of OCCT libraries and testing commands has been added to the documentation.</p>
24659	<p><i>Summary:</i> Misprints in draw documentation</p> <p>Some misprints in Draw documentation have been fixed.</p>
24793	<p><i>Summary:</i> Documentation of methods using <code>BRepFill_TypeOfContact</code> has to be updated</p> <p>The description of methods <code>BRepOffsetAPI_MakePipeShellSetMode::SetMode</code> and <code>BRepFill_PipeShell::Set</code> has been updated.</p>
24812	<p><i>Summary:</i> Provide VS2012 debugger visualizer for OCCT types</p> <p>File <code>occt.navis</code> providing an example of debugger visualizer has been added in the documentation.</p>

Products

Advanced Samples

23717	<p><i>Summary:</i> Improvements of C# wrapper</p> <p>The comments about the wrapping procedure have been added in the wrapper.</p>
24052	<p><i>Summary:</i> Building the C# wrapper with vc10 and vc11 is not clear</p> <p>The scripts have been updated to allow building the wrapper with vc10 and vc11 in 32 and 64 bit modes.</p>
24566	<p><i>Summary:</i> Remove redundant configs from C# advanced projects and configure bin directories.</p> <p>The following improvements have been introduced in the configuration files:</p> <ul style="list-style-type: none"> ▪ Only x86 and x64 configurations have remained; ▪ <code>/bi gobj</code> has been added in <code>OCCwrapCSharp</code> x64 config; ▪ redundant <code>CASPROD</code> variable has been removed;.
24726	<p><i>Summary:</i> Update C# wrapper for OCCT 6.7.0</p> <p>C# wrappers have been updated for OCCT 6.7.0:</p> <ul style="list-style-type: none"> ▪ New macros <code>WRAP_AS_NCOLLECTION*</code>, <code>WRAP_AS_MAP*</code> and <code>WRAP_AS_DATAMAP*</code> have been added for wrapping <code>NCollection</code> template classes; ▪ Low-level BOP classes (<code>BOPDS</code>, <code>BOPAI</code> go, etc.) have been wrapped; ▪ The script dispatching wrapper classes by namespaces corresponding to OCCT packages has been improved to analyze actual use of packages instead of using a hard-coded list; ▪ SWIG 2.x is now required for generating wrappers.
24744	<p><i>Summary:</i> False memory leak reported by C# wrapper test case</p> <p>Test for possible memory leaks and memory deallocation with garbage collector has been redesigned to not rely on the amount of memory reported by the system (it is unreliable); it just allocates and frees a huge amount of memory so that the system should die if it does not free it.</p> <p>Other minor improvements:</p> <ul style="list-style-type: none"> ▪ call to <code>env.bat</code> has been added in <code>listbad.bat</code> to allow using <code>custom.bat</code> for defining necessary paths; ▪ wrappers have been improved to avoid exporting dummy destructor functions; ▪ the hint to check and update .NET framework version has been added to documentation.



Express Mesh

24559	<p><i>Summary:</i> Improve performance of shape preparation: turn on ready to use mechanism of caching in <code>myMapFMinSize</code></p> <p>The mechanism that remembers the calculation result of a minimum face size has been enabled in class <code>QMShape_Tessellator</code>.</p>
-------	--

DXF Import-Export

24523	<p><i>Summary:</i> Colors and layers are lost during loopback test (read-write-read)</p> <p>The method <code>DxfData_TransferContext::SetTransferResult</code> has been modified. Command <code>XGetShapeColor</code> has been corrected to return generic color. The test scripts have been updated to avoid reporting false problems.</p>
-------	---

Mesh Framework

24501 24749	<p><i>Summary:</i> Regressions in OMF test cases after Boolean Cut operations</p> <p>The algorithms finding tangential intersections and free boundaries during Boolean Operations on meshes have been considerably improved.</p>
24506	<p><i>Summary:</i> Introduce history of modifications in OMF BOP</p> <p>A mechanism to trace modifications of nodes and elements during Boolean Operation on meshes has been introduced.</p>
24681	<p><i>Summary:</i> Improvement to estimate quality of a surface mesh by different criteria</p> <p>The mechanism to estimate surface mesh quality by several criteria has been implemented in the new type <code>OMFControl_MeshQuality</code>.</p>

Collision Detection

23896	<p><i>Summary:</i> Make the Collision Detection process thread safe</p> <p>Thread safety of collision detection process has been improved: individual requests for detection of collisions made from different threads to one tool now produce correct results.</p>
-------	---

PARASOLID-XT Import

24781	<p><i>Summary:</i> Binary files without schema modifications are not read</p> <p>The problem with incorrect processing of some fields in the header data of binary files has been fixed.</p>
-------	--

Supported Platforms and Pre-requisites

Open CASCADE Technology is supported on Windows (IA-32 and x86-64), Linux (x86-64) and MAC OS X (x86-64) platforms.

The table below lists the product versions used by OCCT and its system requirements.

The most up-to-date information on Supported Platforms and Pre-requisites is available at <http://www.opencascade.org/getocc/require/>.

Linux Operating System	Mandriva 2010, CentOS 5.5, CentOS 6.3, Fedora 17, Fedora 18, Ubuntu-1304, Debian 6.0 *
Windows Operating System	MS Windows 8 / 7 SP1 / Vista SP2 / XP SP3
Mac OS X Operating System	Mac OS X 10.9 Mavericks / 10.8 Mountain Lion / 10.7 Lion / 10.6.8 Snow Leopard
Minimum memory	512 MB, 1 GB recommended
Free disk space (complete installation)	650 MB of disk space, or 1,4 GB if installed with reference documentation
Graphic library	OpenGL 1.1+ (OpenGL 2.1+ is recommended)
C++ <i>For Linux:</i> <i>For Windows:</i> <i>For Mac OS X:</i>	GNU gcc 4.0. - 4.7.3. Microsoft Visual Studio 2005 SP1 with all security updates Microsoft Visual Studio 2008 SP1** Microsoft Visual Studio 2010 SP1 Microsoft Visual Studio 2012 Update 3 Microsoft Visual Studio 2013 Intel C++ Composer XE 2013 SP1 XCode 3.2 or newer (4.x is recommended)
TCL (for testing tools) <i>For Linux:</i> <i>For Windows:</i> <i>For OS X:</i>	Tcltk 8.5 or 8.6 http://www.tcl.tk/software/tcltk/8.6.html ActiveTcl 8.5 or 8.6 http://www.activestate.com/activetcl/downloads Built-in Tcl/Tk 8.5
Qt (for demonstration tools)	Qt 4.6.2 http://qt-project.org/downloads
FreeType (OCCT Text rendering)	FreeType 2.4.11-2.5.3 http://sourceforge.net/projects/freetype/files/
FreeImage (Support of common graphic formats)	FreeImage 3.16.0 http://sourceforge.net/projects/freeimage/files/Source%20Distribution/
gl2ps (Export of OCCT viewer contents to vector graphic file)	gl2ps-1.3.8 http://geuz.org/gl2ps/
TBB (optional tool for multithreaded algorithms)	TBB 3.x or 4.x http://www.threadingbuildingblocks.org/
OpenCL (optional for ray tracing visualization core)	OpenCL 1.2.8 (with GPU devices for run-time Ray Tracing rendering)
Doxygen (optional for building documentation)	Doxygen 1.8.5 http://www.stack.nl/~dimitri/doxygen/download.html

- * Debian 60 64 bit is a permanently tested platform.
- ** The official release of OCCT for Windows contains libraries built with VC++ 2008.

