



Visual Components 4.3.0 Release Notes – 21/01/2021

With this major release, we've added some exciting new features and made significant improvements to deliver a more streamlined simulation experience for the users. Here is an overview of new features in the Visual Components 4.3.0 release.

New Features

WinMOD connection

A connection to WinMOD is available in Visual Components Premium to support communication with other devices, such as PLCs and robot controllers. The coupling with WinMOD allows devices without a direct connection to Visual Components to communicate IO. For example, a device using Profinet, OPC DA, Y500 or EtherNET/IP could connect to WinMOD and use its services to communicate with a simulation in Visual Components. The coupling also reduces the amount of IO configuration needed on the Visual Components side to simulate processes, such as motor drives. The added benefit is the use of Visual Components as a virtual commissioning tool for planning, visualizing and testing solutions with those devices.

Technical: The connection uses WinMOD Net protocol based on TCP/IP, so local and network connections are supported. The computer hosting Visual Components Premium requires WinMOD Net library, which is available for download from the [WinMOD Customer Center](#).

SIMIT connection

A connection to SIMIT is available in Visual Components Premium to support communication with other devices and support projects done using TIA Portal. The coupling with SIMIT allows devices without a direct connection to Visual Components to communicate IO, such as virtual robot controllers and devices using Profibus-DP, shared memory (SHM) and OPC DA. In addition, Visual Components can perform similar role as NX MCD in a virtual commissioning pipeline with the added benefit of using SIMIT for small and larger scale projects.

Technical: The connection uses gRPC protocol, so local and network connections are supported. SIMIT requires an external coupling/add-on to communicate with Visual Components. The coupling is developed and distributed by Visual Components.

Assembly in Process Modeling

Process modelling in Visual Components now supports the simulation of assembly processes. With built-in tools and statements, you can define how work should be done. For example, you can define steps for assembling and disassembling products and create patterns for how products are placed in relation to one another.

Interactive VR conferencing

Visual Components Premium has improved streaming capability to support connections to apps other than Experience. A Unity asset/library developed by Visual Components is available for other companies to use for developing their own VR apps with the Unity platform.

Backup limits, storage and removal

Backup files are generated when saving components and layouts in Visual Components. You can choose where to store backups, when to remove them, and how many to keep while working on your projects. The incrementing and naming of backups has changed to clearly indicate the latest, most recent backup of your work.

Import CAD assembly structure

In the past, importing a CAD file in Visual Components created a new component to store the geometry in one or more features. You now have the option to read in the structure of assembly, sub-assemblies and parts of a CAD file and organize the geometry in a similar structure. For example, you can choose to generate one component that organizes subassemblies and parts in separate nodes or create multiple components for each part in an assembly.

CAD import and export update

Visual Components now supports import and export of 3MF files. We also added support for importing SolidWorks 2021, Creo 7.0 and Pro/Engineer 19.0 files, Siemens NX 12.0 and 1926. The update includes important fixes for JT, STEP, IFC and FBX files as well as the import of mathematical data.

Wizard for modeling machines

A wizard is available to quickly turn a component into a simulation-ready machine to be used with a PLC connection, the Machine Tending and Works libraries, and Process Modeling. For example, you can import the CAD file of your machine, click the wizard, and then start using the machine.

Tool for cloning components

You can quickly configure a layout by copying components in linear and radial patterns. For example, you can select one machine or workcell and generate multiples of it in a specified pattern.

New 3D PDF templates

A new set of templates can be used to record simulations and export them as 3D PDF files.

New templates for statistics charts

A new set of templates for reporting simulation statistics are available in the Statistics dashboard. New templates include the monitoring of travel distance and utilization of resources such as factory workers and mobile robots. There are also templates for monitoring productivity and battery life.

New snippets for Python scripting

The Python editor in Visual Components includes more snippets to greatly improve your coding experience. For example, you can generate a snippet of code to read and write to CSV files, read in data from Excel files, control servo movements, and execute interactive selections in the 3D world.

New helper for output messages

Printing feedback and messages is now easier and more appropriate for those interested in debugging and logging events and other data during a simulation. The helper is a Python module that you can import and use in a script.

New geometry tools

When a CAD file is imported in Visual Components, its geometry is tessellated. A new modeling tool is available to evaluate the triangle count of geometry. Another tool is available to simplify geometry as a convex hull, which reduces the complexity of the geometry with respect to its outer shape.

Import and export robot programs in XML format

A robot program in Visual Components can be exported as an XML file, and then reused by other robots in the same layout or a different layout as well. The import and export of a robot program is integrated in the Program Editor panel.

Optimizations for connectivity

Several improvements have been made to enhance the communication of Visual Components products with other apps and devices. One improvement includes the reading of value change events for connected inputs and outputs with OPC UA servers. An overall improvement is maximizing throughput of values Visual Components can receive per second.

New components for Process Modeling

Updates have been made to resources and transport controllers in Process Modeling. This includes the ability to prioritize the allocation of resources for tasks, work, and the delivery of products. Resources are also capable of multi-tasking such as collecting and delivering products for different work orders in parallel. Other updates include the reservation of resources for tasks, the loading/unloading of products with the assistance of other resources, collision avoidance, and a simpler way to teach human workers movements and gestures.

Legacy libraries of components and layouts

The eCatalog now comes with a list of legacy libraries. Each legacy library is a source of components and layouts that were available in previous product versions, such as Visual Components 4.0, 4.1 and 4.2. These sources work in the background, so loading an old layout works seamlessly. By default, components and layouts in legacy libraries are not visible in the eCatalog panel, so they do not appear in searches. If needed, you can make files in a legacy library visible in the eCatalog panel and searchable. You also have the option to turn on/off the use of a legacy library and remove it.

New Tools for Process Modeling

The Ribbon for Process Modeling has two new groups of commands. One group is useful for fixing issues related to the linking of processes. The other group has a command that allows you to create frames/points of reference in a component and then edit their location. This is helpful for Essentials users who need the ability to create frames in the 3D world for positioning products and resources despite not having access to the Modeling tab.

Stäubli CS9 connection

The Stäubli add-on in Visual Components Premium now supports a connection to Stäubli CS9 robot controller. The add-on has been tested with robots supporting the CS9 controller in Stäubli Robotics Studio 2019 via its CS9 emulator.

BUG FIXES

If you submitted a bug to Visual Components support and received an ID to track it, you can verify the bug is fixed from the following list.

ID	DESCRIPTION
531	Regional date and time issues with files displayed in the eCatalog panel
732	Robot moves to first position in path statement when edit other positions in the path
742	Application unresponsive when checking out license from server
759	Path behavior issue when its frames are in different nodes
924	Exception when running multiple instances of application, for example for automatic test cases
939	Action panel for add-on closes when updating property list of components
948	Cannot connect to external SQL database
1195	Issues associated with importing mathematical data from STEP file
1223	Cannot import Python module with non-ASCII characters in its file path
1437	Exception when adding robot controller behavior to component
1461	Organization of panels in dual monitors is not persistent
1462	Default color schema for XYZ point cloud is BGR instead of RGB
1563	Issues associated with STEP import
1571	Matrix property values displayed in wrong order
2064	Plane intersection issue with geometry when using .NET API
2074	Clicking toggle for showing behaviors selects the component
2353	Selected floor color is not used in 3D world
2708	Crash when using topology API to get curve length
2717	Path positions not generated properly on curve of part when using mathematical data
2814	Silent mode installation with initialization file fails when custom path is defined
2888	Action panel closes when dialog is opened
2972	Cannot delete selected IO mapping for Stäubli CS connection
3184	Crash when deleting feature with subfeature

3210	Application hangs while loading multiple layouts
3212	Fixed issues with point cloud Python API, such as color assignment
3214	Issue with the order of external axes in robot
3222	Fixed issues with point cloud .NET API
3408	Robot decelerates when exceeding its joint limits
3431	Exception when positions of robot program have NaN values
3749	Crash when loading same layout twice in 3D world
3817	Fixed issue with event handler when importing a .pts file
3951	Wrong indexing of schema properties when using API
4192	Fixed issue with deleting components in hierarchical structures and different states, e.g. robot on pedestal
4201	Transformed geometry with rotation applied gives faulty point when using API
4265	Exception and closing of action panel when shortcut and skip abort not defined properly
4566	Application moved behind other windows when opening a layout
4796	See item 531
4798	STEP import issue with materials that have some transparency
4815	Exception while using negative decimal values in max joint limits
4958	Fixed issue with exporting a selected component that is attached to another component
5113	Incorrect German translations for Inputs and Outputs for signal editor and task pane
5366	Fixed memory leak when streaming from Premium to Experience
5368	Adjusting Decimal Accuracy setting does not affect coordinate values
5441	Categories are not removed from Cell Graph when using Clear All
5859	Find and replace UI for script editor is garbled on high resolution screens
5897	Fixed cloning issue when component name contains a hash (#)
5920	Fixed issue with interactive handling of objects using origin
6181	Localized robot and servo controller properties
6190	Fixed naming issue with Revolve feature to localize its properties
6191	Localized Collider property of features
6192	Localized Visible property of features
6193	Localized geometry tools in author context/Modeling tab
6195	Localized Cylindrify properties
6196	Localized Blockify properties
6197	Localized Connections property of signal behaviors

6198	Localized Boolean Signal Map behavior properties
6199	Localized behavior properties for paths
6200	Localized Component Creator properties
6201	Localized CapacityBlock property for certain behaviors
6202	Localized Routing Rule behavior properties
6203	Localized Component Flow Proxy behavior properties
6204	Localized Component Path Sensor behavior properties
6205	Localized Volume Sensor behavior properties
6206	Localized Physics Entity behavior properties
6209	Localized Physics Cable behavior properties with exclusion for Physx named properties
6211	Localized Physics Path behavior properties
6212	Localized Process Executor behavior properties
6213	Localized Product Creator behavior properties
6214	Localized Python Process Handler behavior properties
6215	Localized Action Container behavior properties
6216	Localized Transport Protocol behavior properties
6217	Localized EOAT wizard properties
6218	Localized IO wizard properties
6219	Localized Sensor wizard properties
6329	Fixed icon issue when creating path statements via Python API
6339	Fixed icon issue when creating path statements via .NET API
6429	Fixed reporting of PartCurrent and other issues related to statistics
6469	Fixed issue with mouse double-click causing action panel to close
6634	Fixed exception when clicking Test Connection for server connection, e.g. OPC UA
6635	Fixed snapping issue with lines
6701	Fixed repair tool issue for standalone licenses
6707	Fixed layout load issue for special characters such as curly brackets
6714	Fixed Currently Open system collection listing components currently in 3D world
6717	Fixed gantry kinematics issue when jogging
6718	Fixed eCatalog download issue for Japanese OS
6726	Fixed Stäubli post-processor issue when saving to folder with non-ASCII characters
6915	Fixed issue with Save As action panel disappearing

6986	Fixed handling of products by TransportOut statement
7005	Fixed issue with grasp action of robot in relation to products
7006	Fixed reachability of robot in relation to simulation speed
7022	Fixed error message in relation to license transfers
7023	Fixed LayerName of 0 issue when exporting to DWG format
7036	Fixed display issue with Move handle in 3D world
7196	Fixed vcContainer.grab() issue in relation to node configuration
7264	Updated vcContainer.grab() to support additional arguments
7299	Fixed issue of products leaving feeder type components
7308	Fixed persistency issue with DistanceProperty value of interfaces when saving component
7310	Fixed messaging in Visual Components launcher
7333	Fixed import geometry issues for filling holes and geometry based on tolerances

CAD

Here is more information on fixes related to CAD import and export.

- Fixed invalid Creo file not read since HE 2020 SP2
- Fixed bad quality of CV5 import in B-Rep and Tessellation
- Fixed error upon opening some SOLIDWORKS files
- Fixed incorrect import of SAT file when the first string of attribute is ""%" ""
- Fixed textures not read in FBX materials
- Fixed error upon reading some STEP files
- Fixed file model not loaded upon reading some Solid Edge files
- Fixed duplication of faces with CREO assembly features
- Fixed missing colors in FBX
- Fixed error upon reading from Catia V5
- Fixed missing external reference within CATPart components
- Fixed incorrect import of some curve styles in Catia V5
- Fixed missing extrusions upon importing from IFC
- Fixed incorrect loading of some STEP242 files
- Fixed error upon reading binary FBX files
- Fixed error upon reading from some ACIS files
- Fixed error upon reading from some ProE files
- Fixed invalid structure of JT export
- Fixed reading of Inventor assembly file
- Fixed missing parts upon loading IFC files

Mathematical related

- Fixed Copy-and-Adapt failing with some Inventor files
- Fixed a crash on PRT files upon calling Adapt-And-Replace function
- Fixed shrinking NURBS surfaces upon converting from CATIA V5
- Fixed bad quality of some objects in B-Rep mode
- Fixed incorrect size upon converting some faces to NURBS

Other Fixes

If you submitted a feature request to Visual Components support and received an ID to track it, you can verify the feature is implemented from the following list.

ID	DESCRIPTION
383	Remove OPC UA browse items limit
536	Support to import Revit 2020 files
554	.NET API for layout configuration related to process modeling
562	Control component nodes visibility independently from hierarchy
582	Extend APIs to get access to current points in a cloud (vcPointSet)
618	.NET API for statements including all properties
785	Python API for transporting products
840	Extend ILineSet with LineWidth getters and setters
841	Extend ILayoutSchemaPropertyList with LineWidth getters and setters
842	Python API for process executor configuration
846	Python API for process flow sequences
850	Python API reference for process modeling statements
928	Python API for product creator
993	Python API for process flow groups
1199	3D text annotation
1386	Methods to serialize and de-serialize individual robot program routines via .Net API
1465	Reordering of robot program sequences / routines
2996	Python API event for closing action panel
3358	Uri property should use the given URI for InitialDirectory property
3469	Delete schema property for Path statements using Python API
3597	.NET API to add WPF UI components to viewport
3911	Translations for Japanese UI
4307	vcHelper.Selection allows getting geometry sets from feature tree

5060	Using different colors for collision detectors
5355	Progress bar improvements when importing DWG files
5482	Silent installation improvements
5631	New feature is added as child of selected feature

Remarks

Be aware of the following changes from Visual Components 4.2 to Visual Components 4.3.

- Size property of Text feature was changed from String type to Expression type.
- Default color configuration for point sets was changed from BGRA to RGBA