



Change list

CityGRID® 2018 Release 12.00

This document outlines the improvements and enhancements made to CityGRID®. Items are listed by Module and referenced (where appropriate) by the issue tracking reference (otherwise known as the Team Foundation Server ID: e.g. F-425). References are used by clients to track implementation of requests submitted to UVM Systems. Further information on new and altered functionality is available in the relevant User Manual.

Following items are translated automatically, please apologize erratic spelling and unusual sentence compilation.

Setup

Recent Developments

- The CityGRID® setup has been created from scratch and is now based on Windows Installer (.msi). This means that the setup can now also be called from the command line and is therefore suitable for remote installation. To be able to install the new setup for the first time, the previous uninstalling of the CityGRID® software is absolutely necessary!
- FME 2018 is now supported. In addition to FME 2018, the 2017 and 2016 versions are also included in the scope of services of the CityGRID® setup. FME 2015 has been removed from list of supported programs. (E-1969, A-1970)
- 3D Studio Max 2018 and 2019 are now supported. The versions 2019 - 2017 are now available in the scope of services of the CityGRID® 64-bit setup. For 32-bit, however, the support of 3D Studio Max had to be completely set. Since the 32-bit development of 3D Studio Max was terminated with version 2013, and the changes to the current Max versions are now very massive, the support can no longer be maintained. (A-2040, F-2013)

CityGRID® Manager, CityGRID® Administrator

Recent Developments

- When saving unit textures in the texture directory of the CityGRID® database, no .png of the texture image is created anymore, but the images are saved only in .jpg format, with 95% compression. As a result of this, the memory requirement of the texture directory can be drastically reduced since the texture images mostly reproduce the real situation and are very poorly suited for the .png compression algorithm.

Excluded from this measure are only those pictures with alpha channel. They will be saved in .png format, as before, since .jpg doesn't support any alpha channel.

- Existing texture directories can be cleaned up using the CityGRID® Administrator function " Image Database →Compress ". All images that are no longer needed, including the .png files, are moved to a directory "invalid" in the texture directory. This can then be removed from the texture directory without compromising database integrity. (E-960, F-1502)
- When archiving from CityGRID® Administrator, storage location of the created archive XML is now saved. With a new call, the last used path is thus available again. (E-1813)
- There is now a separate database procedure for deleting a model including all assigned Units. When this procedure is called, no backup of the data is created, but the final deletion process is triggered immediately. The Units are then permanently removed with all their versions from the database. Due to the risk of unintentionally destroying data, this procedure is not connected to any user interface and can only be started directly on the database or via FME Workspace. If an application is desired, please contact the UVM Systems Support. (E-1675)

Fixed Problems

- Automatic texturing from aerial images now also supports boolean objects. In this way, it is also possible to provide images for recesses or depressions in the facade, which were formed over a boolean object. (E-1376)
- When exporting to CityGML, a memory overflow could occur as a result of an endless insertion of an intermediate point into a polygon. As a result, the export ended with an error. (F-1851)
- Lists of the model property window in the CityGRID® Administrator sometimes malfunctioned when a filter was inserted. Data (units, terrain models, images) still showed up in list "Database" although an assignment to the "Model" list was already carried out (F-1854)
- In the case of CityGML export, the texture was lost in some cases when geometric operations had to be used during export. These operations are necessary if, for example, the options "Merge Polygons" or various functions of "Data Preprocessing" are active. In addition, at the beginning (when the texture retention reference record is created), the triangle edges representing a boundary of the texture image are additionally stored. At the end, these lines are included in the surface framework before texture retention starts. (F-1908)
- When importing model images (perspective aerial images or orthophotos) into the texture directory of the database, no image data was created if the "Build Image Pyramid" option was disabled during import. Eliminating the .png file as the original file format solved this problem. (F-1913)
- Texturing with Visibility Analysis returned poorer results than without. The reason for this was the incorrect selection of the images as a result of the conversion of the CityGRID®

database schema to the object-relational schema in the last CityGRID® setup. (F-1936, F-1939)

- Saving in the Administrator's settings window is now also possible if the texture directory of the database has not been set. In this case "TODO" is shown instead of a folder path. In general, this only has an effect on users who do not want to process textures and therefore have not taken care of setting up the texture directory. (F-1956)
- Units with very complex facade edges (such as many circular arcs) ran into an infinite loop when any option of penetration resolution was enabled. (F-1985, F-1988)
- In rare cases it was possible that roof surfaces were formed outside the outer eave polygon. This always occurred when general roof lines with a segment of the eaves polygon formed a triangle. In future, such areas will no longer arise, so that the eaves polygon is actually the maximum limit of all roof areas. (F-1986)
- Vertical roof faces were added to the roof areas in the CityGML export if option "Roof overhangs according to German SIG3D (" AG Quality) recommendation" was activated. These surfaces now form their own wall element (F-1940)
- Various special cases in triangulation, that led to missing triangles, have been resolved. (F-1987)
- Roof details now also consistently use the methods of penetration resolution. In particular, in the face generation type "parent element with hole" rare triangulation errors can be avoided. (F-1353)
- During CityGML export, the export process could crash in rare cases when a textured terrain model was written. (F-2043)

CityGRID® Modeler

Recent Developments

- In tool "Detach Complex", in step two, the button for cancelling a candidate queue was changed from "Delete" to "Exclude" (E-1953)

Fixed Problems

- Selection objects were not always derived from the largest Element Complex of a Unit. In extreme cases, this gave the impression that the Unit had no Selection Object, in fact it was only very small and thus difficult to discover. It is now always derived from the largest Element Complex (largest volume of the 3D bounding box) (F-1855, F-1949, E-1144)
- The values for a custom RCS in the options menu of the Modeler allowed only positive values. (F-1948).

- When building a new Model from the Selection Objects of an existing Model, the subsequent loading of the newly created Model resulted in long load times and a high memory consumption. When hiding the Selection Objects, they were erroneously created as undo objects. (F-1952)
- If the terrain model was activated in the hierarchy window and then an export with the option "only the active unit" was started, a crash occurred because there was no active unit. If the terrain model is activated, in the future only the option "the entire model" will be available during export. (F-1980)

CityGRID® FME Reader/Writer

Recent Developments

- The Transformer CGBufferer has undergone a major redesign, eliminating existing functionality limitations. Specifically, the dividing line determination was revised. As a result, all previously reported problem cases were resolved. These adjustments allow FME processes that use this transformer, such as block splitting, to have much higher rates of success and drastically reduce interactive editing overhead. (F-27, F-45, F-153)
- The CGPolygon2Mesh transformer is now able to extend the reference planes beyond the introduced areas. This makes it possible to extrapolate base features that lie outside of the Supplier Boundaries and Faces. When extending, the position of the Supplier Faces is maintained in 3D, allowing interpolation into the imaginary extension of the surfaces. In addition, a buffer area can be defined until the interpolation is applied. If not all points of the base polygon can be extrapolated, the entire polygon is output via the Unchanged port. By means of this change in particular, tasks of the migration of building models and building footprints can be automated much better. (E-1957)

Fixed Problems

- In the CGPolygon2Mesh Transformer, base features might yield incorrect results when extrapolated into break line roof areas. This occurred when the base feature was closed only in 2D but not in 3D, and at the same time this discontinuity was at the intersection with the break lines. In the future, every base feature will automatically be closed in 3D before the extrapolation takes place. (F-2030)

CityGRID® Builder

Recent Developments

- The old SuGu Scout has now been completely switched to Unity and can no longer be generated. If a Builder project is to be opened with a SuGu Scout, an automatic conversion to the Unity Scout now takes place. If only one SuGu Scout was included, a Unity Scout will be derived and the SuGu Scout will be replaced. If there were both SuGu and Unity Scouts, the SuGu Scout will be moved to a directory OldScout and leave the Unity Scout alone in the Scout folder. (E-1999)

- The Create process in the Builder Control Center can now be set to a parallelization mode. This "Multi Core" setting is accessible on the "Settings" page and controls whether and how much parallelizable processes should be used during scout processing. By activating Multi Core, the calculation time can be significantly reduced. However, the process also requires significantly more system resources, which can sometimes make parallel work difficult. To be able to use the full parallelization strength, a separate workstation should be used. The degree of parallelization depends on the number of CPU cores. Depending on the number determined, the number of simultaneous processes (threads) is set equal to:
 - the number of cores,
 - the square of the number of cores,
 - or the maximum number of processes allowed by the operating system. (E-1808)
- Logos and captions of a Scout scene can now be set via the Builder Control Center. To do this, open the "Config" page and set a new entry for a logo or title bar under the Configuration "Layout". Due to the configuration of the GUI in the Scout, only the lower left corner or the middle upper area is available for the placement of logos / labels. If several logos are to be displayed, an appropriate assembly must be carried out in advance. For the labelling, the font colour can also be set via a parameter of the layout entry. (E-1842, E-1886)
- Via the "Config" page now all displayed parameters of the Scout can be set and no longer only selected ones. In addition to the direct input of values, certain values can also be obtained from predefined lists, or even directly from a running Scout. The values are accessible by double-clicking. In the case of decimal values, use the comma of the current keyboard layout as separator. With these new features, for example, viewpoints, POIs, or logos can be defined. (E-2000)
- Changes via "Config" page now also affect the Scout immediately, making "Adjust" no longer necessary. This feature only has to be done when synchronizing online Scouts with local changes in "Config". (E-1850)
- Instance objects can now also be assigned to a Builder project via the FME Builder. For this, the CityGRID® FME Builder has to pass the path to a library as a parameter and set the point features that define the insertion point for each instance object with the cginstance_XXX attributes. The CityGRID® FME Builder then retrieves the required library objects from the specified path and scales them according to the attribute values. Currently, only library objects prepared by UVM Systems can be placed using FME Builder, individually created libraries based on 3D Studio Max objects still require the 3D Studio Builder. (E-1954)
- The Config button has been moved from the Distribute page to the main bar of the Build tab. Any changes made via the Config page are immediately effective in the Scout, not just after publishing. (E-2033)

Fixed Problems

- If external data has a non-supported material type, a corresponding warning is now written to the log file. So far, it could happen in such a case that the optimization of the Scout ran in an infinite loop. Unsupported materials also cause the associated geometry not to appear in the Scout, or to appear untextured. In extreme cases, it may therefore happen that an empty Scout results if only data with invalid material types was available. (F-1858)

CityGRID® Scout

Recent Developments

- The Unity Scout has now implemented all the functionality of the old SuGu Scout and is therefore replacing the old SuGu Scout completely. SuGu Scouts are no longer available, every newly created scout is automatically a Unity-based scout. Already produced SuGu scouts are, of course, still executable and usable without restriction, as long as this is permitted by the system environment of the computer used. (E-1999)
- The Microsoft Kinect gesture control is now also implemented for Unity Scouts. Any Scout created or updated with this release may use the Kinect System without any additional software or license. Prerequisite is only the correct installation of a Kinect 2.0 system.

The registration, which was still necessary in the SuGu Scout, was eliminated as well as the introduction by the “Bipo” help system. From now on, each person whose hands can be detected, is declared “the player” and handed over control to him. In a schematic representation below the map icon is also apparent, which of the persons recorded currently has control over the Scout. (A-834, E-1893)

- Rendering of still images and image series is now also possible in the Unity Scout. There are four different modes (Preview, Normal, Detailed, 360 °) for camera animation. When rendering on computers with a CityGRID® Builder installation, the individual images can also be combined to form an MP4 movie.

Still images can be generated via the same menu. In addition to the saved viewpoints, the current view can also be used for rendering.

The output takes place in the desired image dimension by specifying image height and width. Common formats such as FullHD or Ultra HD are already preset and can be quickly selected from a drop-down list. (E-1634, E-1911)

- The Point of Interest (POI) presentation in the Unity Scout has been redesigned. The 3D markers in the 3D scene have been removed. Instead, the POIs are now displayed in the overview map. The menu has its own entry “Point of Interest”, which becomes active as soon as there is at least one POI set. As before, the POIs are assigned to categories that can be toggled in the menu using the checkbox. When this is clicked, the markers of the category are displayed in the overview map. If you click on the text area of the category in the menu, the submenu with the POI entries opens and with open map window the POI markers are

set. If you select a POI entry, a new dialog opens in which the description of the POI (as picture) is displayed. In the header on the left is the name and on the right a button with "Go To". The POI is defined in the Builder Control Center via the "Config" page. (E-1693)

- In the Unity Scout, the surfaces were often very overexposed when the shadow settings, and thus the lighting system, were activated. In particular, exposed areas were extremely bright, as a result of which the textures were often no longer recognizable. By adjusting the light colour and the type of reflection through the illuminated areas, this effect could be eliminated. As soon as a shadow setting (shaded, soft, hard) is active, the sunny sides are brightened but no longer overexposed and the shaded sides darkened. The overall impression of the 3D scene is preserved. (E-1890)
- Recording of camera animations can now also be performed in the Unity Scout. As a result, circular flights no longer need to be predefined in 3D Studio Max, or created using the old SuGu Scout. The corresponding tool is available in the menu under "Tools → Create Path". To create camera animations, there are four different methods that can be combined with each other within an animation: manual, orbit, rotation, and real-time. While manual sets a series of viewpoints (keyframes) and the Scout in between automatically adjusts the flight path as a smoothed curve, orbiting or rotation acts as circular flights, or turns around a certain point. Real time records the current flight route as a camera animation. (E-1894)
- The measuring tool has been completely reworked and equipped with a surface. Via the corresponding menu item, you can set the measurement mode, lock the image section, limit the measuring to terrain data and assign a name to the recorded measurements. Currently the following measurement modes are implemented: point, distance, angle, route, range. Each measurement is recorded and can be recalled at a later time. The measurement results are stored in the Scout directory under "Content \ data \ SuGu \ Measurement". The measuring tool suggests a free file name for each new measurement. (E-2016)

Fixed Problems

- The timeout for automatically starting a camera animation (idle duration) had no effect in the Unity Scout; it did not start a flight after the given time had elapsed. (F-1885)
- When closing controls (menu, overview map and control panel) of the Scout, clicking on the X button was also interpreted as a control signal for the Scout, causing the scene content to change slightly each time it was clicked. (F-1887)
- The quick help did not close on mobile devices (cell phone / tablet) if the screen resolution allowed the help to be displayed in full screen mode. There is now a separate closing button ready to quit the help. (F-2011)

CityGRID® Solid

Recent Developments

- On "Run" page of the CityGRID® Solids, a reset button is now available, via which the entire data genesis of a print preparation can be reset to the initial state. Invalid results or incorrect processing can thus be easily deleted. (E-1711)
- Dimensionless solids are now automatically removed. As a result, the number of warnings "Number of element complexes not equal to the number of solids" is greatly reduced and the printability of the buildings concerned is established. The reason for the occurrence of this warning was mostly found in data errors. Furthermore, all surfaces of a solid are combined into a single element complex. Should this fail for any reason, the building will be classified as non-waterproof and a warning will be generated in the log file. (F-1825)
- The export format 3mf (3D Manufacturing Format) is now supported alongside .stl and .obj. This format, developed by the 3MF Consortium, has been specially developed for data transmission to 3D printers. The properties are similar to those of .stl files, with the difference that colour and texture information can also be transported. (E-1730)

Fixed Problems

- If a building has a passage and the floor of the building is therefore divided into two or more parts, no waterproof object could be formed so far. Now, the Solid generates the required floor space during the printing process itself. In addition, possibly unevenly high floor areas, which were created due to the passage, are brought to the same height level. (F-1910)
- If a new project is to be created, the fields of the input mask of the page "New" were not reset. In addition, the fields emptied after they were already filled with the new values when the question "reset project data" was answered with "yes". Now the input fields are always empty and the question for resetting the project data has no effect on already entered values. (F-1881)