

Change list

City**GRID**[®] 2019 Release 13.00

This document outlines the improvements and enhancements made to City**GRID**[®]. 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.

Installation

Recent Developments

- FME 2019 has been added to the list of supported programs. City**GRID**[®] is currently executable under FME versions 2019, 2018 and 2017. The support for FME 2016 or older, is no longer available from this version. (A-1970)
- 3DStudio Max 2020 has been added to the list of supported programs. City**GRID**[®] is currently running under the 3D Studio Max versions 2020, 2019 and 2018. 3D Studio Max 2017 or older is no longer supported as of this release. (E-2174)
- The changes in the City**GRID**[®] setup have been completed so that the installation can now be carried out in silent mode. In order to be able to install City**GRID**[®] with the default settings via remote maintenance, the setup exe must be started with the parameter "/ q". (E-2114)

Fixed Problems

- The installation of City**GRID**[®] was performed correctly only for the registered user. In particular, the entries of the start menu were missing for other users. The changes in setup resolved this issue, making City**GRID**[®] available to every logged-in user, regardless of which user ran the setup. (E-2060)

CityGRID® Manager, CityGRID® Administrator

Recent Developments

- The CityGRID® converter (DWG to CityGRID® XML) now sets the parameters of the penetration resolution "Detail EC with detail EC" and "Detail EC with main EC" as standard. As a result, the generation of facade surfaces of a detail element complex within another detail element complex is prevented, as well as the surface generation of detail element complexes which penetrate into the parent roof. (F-1459)
- Depth Maps that have already been calculated will stay valid in the course of reuse with automatic aerial texturing if all units of the depth maps have not created a new version in the database since the last aerial image texturing. In this case, the depth map is preserved and will not be rebuilt, which will speed up the texturing process, with the "visibility analysis" option enabled. (E-916)
- In the settings of the CityGML export, an export of the units without roof overhang can now be set. With this option, the upper edge of the façade is extended to the roof level and the roof surface is trimmed. Parts of the roof surface, which extend beyond the upper edge of the façade, are omitted during export, so that the roof surface ends flush with the façade surfaces. The CityGRID®-specific roof overhang element is also not included in the export data set.

In addition to this option, the already known methods "roof overhang according to recommendations of SIG3D (AG Quality) and" unchanged "continue to exist. (E-1238)

- The dialog for setting the surface generation options now contains a button "Generate Faces" via which all units that have changed options of the penetration resolutions can be triangulated. During this process, the surfaces of the existing unit version are recreated, but no version is created. (E-1368)
- Generated depth maps can be reused when rerunning the automatic texturing process. After successfully texturing a model, all depth maps keep track of the modified element IDs (so called database Key Persits) of the model units, leaving the depth map in place. (E-912)
- CityGML export has been drastically accelerated. Especially for units with many complexes this change causes a reduction of the export time from several hours to a few seconds. (E-2092)
- When importing aerial images into the database, the import process checks to see if any camera orientation parameters already exist under the specified camera name and calibration date. If there are, the import generates a warning if the parameters to be imported differ from those in the database. This ensures that erroneously changed

orientation values enter the database and lead to misalignments of aerial images during automatic aerial texturing. (E-1559)

- Façades of detail element complexes of the roof, whose eaves points lie in or below the parent roof, are automatically assigned the extrusion type "parent element with hole" when triangulating. As a result, they immediately act as depressions (terraces) in the roof and no longer have to be manually set to the extrusion type. As soon as one or more eaves points over the parent roof, the extrusion type remains unchanged and the parent roof is not released. (E-1783)

Fixed Problems

- The logging of triangulation alerts has been improved, making it easier to find affected units. For each warning, besides the warning text, the UnitID as well as the affected element and the vertex coordinates of the problem location are now listed in the log file. These logfiles can be opened in the Modeler warning window, as before, and allow automatic introduction to the problem site, as long as the affected dataset was previously loaded in the Modeler. (F-2002)
- The Compress image database function caused an error when a texture directory that was no longer fully established should be checked. The problem occurred in cases where images of the image pyramid were missing, but the original image still existed. (F-2109)
- The surface modelling type "parental element with hole" did not expose the parental roof over a roof detail (terrace) if all penetration resolution options were disabled. (F-2155)
- When importing units with vertical roof surfaces from detail element complexes, the element could be duplicated if the vertical surfaces were in LoD3 and trimmed by the main roof. Due to the duplication, the creation of depth maps did not seem plausible and the scout had flickering effects. (F-2151)
- Date queries from the database failed if the date format of the operating system was not set to dd.mm.yyyy. As of this release, CityGRID® will convert any date format to the above format when importing a database, regardless of the operating system setting. (F-2140)
- The conversion of raster data using the general DTM converter in the administrator failed because the path to the conversion routine was incorrect. The required file is now installed on the expected path, which means that the conversion produces again valid terrain models in CityGRID® XML format. (F-2123)
- When setting the surface creation options, a crash could occur if an input was entered in the model list that did not match any model name and the value in the filter list of the unit list was also entered. (F-2130)

- When calculating a grid in TIN terrain models, images without georeferencing (Worldfile) could also be selected. This subsequently resulted in a crash of the Administrator. In future, the existence of a georeferencing file will already be checked when selecting the image. In addition to the format-specific files (.jgw, .tfw, etc.), the general file extension .wld is also permitted. (F-1381)

CityGRID® Modeler

Recent Developments

- The Modeler UI has been redesigned to appear in a new design. The controls were aligned and removed annoying columns that had been in existence since the last 3D Studio releases. Overlaps of CityGRID® control bars with 3D Studio controls have been corrected. CityGRID® controls have been adjusted to the now common dark color scheme of 3D Studio Max. Buttons and checkboxes received some new icons. Should the screen resolution or the size of the 3D Studio window be below the required space for the vertical display of the CityGRID® Tools, the changes mentioned did not change the known functionalities. (F-2107), (F-2125)
- The outdated "Update Model Extrusions" feature in Modeler has been removed. This feature could be misused to extrude units to a new terrain model. But since this function did not trigger a real new creation of the surfaces, but only stretched or compressed existing facades, the result was always suboptimal. As of this version, CityGRID® Administrator provides its own function for new surface creation, which should be used in case of a terrain model replacement. (A-629)
- The modeler's hierarchy window has been removed from the main bar and is now available as a stand-alone window. This window can be freely positioned and also moved to a possibly existing second monitor. Furthermore, the detached hierarchy window allows a free size scaling. This allows the range of loaded units to be individually adjusted and displayed as desired. (A-54)
- In the main window, in addition to the offset values of the reference coordinate system, there is now an icon that indicates whether the offset was derived automatically or through a user-defined reference coordinate system. (E-2168)
- Exports from the Modeler have been aligned with those of the CityGRID® Administrator and now run the same functions. This ensures that the same result is always achieved by both the administrator and the modeler. In the case of loaded models from XML files, a temporary export to XML is first performed with every export, which is then written to the selected target format. The temporary file is created at the location of the loaded XML file. For this to be successful, writing permissions for CityGRID® are required. When exporting from databases, the Modeler creates a temporary model in the database at runtime, which

is then exported. Both the temporary XML and the model in the database are deleted after the export. Due to these changes the Modeler-specific export settings "Each Unit as a separate file", "Use Clipped Terrain", and "Coordinate falsification", have been removed, which reflects the behaviour of CityGRID® Administrator. (E-2039, A-2112)

Fixed Problems

- The Terrain Trim Line (TIC) has sometimes not been consistently displayed in the texture window of the Modeler. There was a lack of segments of this line, giving the impression that they are separate lines and not a continuous line. Furthermore, it happened that when moving the anchor points, the TIC was not plausibly transformed and the vertices came to lie outside the facade surface. It is now ensured that the TIC remains in sync with the rear projection of the façade surface and is always a continuous line. (F-2105)
- When saving textured units to the database, the error message "Database member not defined" sometimes appeared. The reason for this has been to search for the use of the element color. (F-2108)
- Saving units with set element color could cause an error when saving in the database. As part of the resolution, orphan color entries were identified in the database and corrected by means of a database update. (F-2108)
- Saving to a read-only XML file resulted in an inconclusive error message, putting Modeler in an unstable situation that frequently ended in crashes. The error message has now been formulated more clearly and the instability has been resolved, so that further work in the Modeler is possible. Also, saving can be successfully repeated if the write protection of the XML file has been removed. (F-576)
- The KML export currently only considers the CityGRID® system colors if the "Texture" option was set during the export. In all other cases, the roofs were given randomly assigned colors. Now the CityGRID® surface colors are always applied, regardless of whether the "Texture" option has been set. If a unit has textures, they are treated preferentially. If none is available, the next step is to search for a material color. If this is not available, a possible set element color will be used next. Only when this is not the case, the export uses the CityGRID® system colors. This mechanism basically applies to all exports from the Modeler and Administrator. The examination of the textures and material color is linked to the "Texture" option of the export dialog. (E-2106)
- Model textures (roof textures) applied over the Modeler were partially lost after texturing when the orientation values had to be used in a triangulation. Also, no inheritance of the textures on any existing child elements (roof details). (F-2191)

CityGRID® FME Module

Recent Developments

- The Transformer CGOverlapAnalyzer outputs the attribute "OverlapArea" with the value of the coverage area of the examined polygon. As a result, the coverage can be measured in a metric size, and not as previously only relatively. (E-2116)

Fixed Problems

- The "Texture Resolution" parameter of the CityGRID® FME Readers was not evaluated correctly so that the image of the image pyramid was always loaded with the lowest resolution. Furthermore, textured 3D surfaces (surface features) from FME 2018 onwards could no longer be viewed in the Data Inspector. The workspace crashed as soon as the first feature was sent to an Inspector Transformer. (F-883, F-2119)
- In all CityGRID® specific files, all German special characters were removed, especially in comment lines. This should avoid any encoding problems in operating systems that do not use the Western European standard character set. (F-2135)

CityGRID® Builder

Recent Developments

- On the Config page, the names of the builder projects are now listed next to SuGu_X for all configurations that access partial scouts. This makes it easy to see which data is hidden behind the individual SuGu_X directories. Specifically, this measure affects the configurations: "Variants", "Transparencies", "Instances" and "Project".

In order to use the full power of this feature should be waived when creating the sub-scouts on any definition of variants. The variant selection must then be established in the merged Scout via the Config page. Variants within a sub-scout will continue to be referred to as "ClusterXXX"; unfortunately, it is not technically possible to allocate data packets once they have been found there. (E-2057)

- The configuration geodetics of the config site now offers a value "custom offset". This is used to specify local offset values that are needed to bring the project coordinates into the specified EPSG coordinate system, a prerequisite for using the preview map in the Scout. These are addition constants, which are added to the local coordinates to obtain the coordinate value of the EPSG code. The specification of this parameter can remain at 0/0 if the coordinates of the output data of the data presented in the Scout are already determined by an EPSG code. (E-2008, E-2009)
- The config page contains a new Configuration "Project". These can be used to set the parameters "Texture Mode" and "Cull Mode" for each sub-Scout. Texture Mode

determines the tile behavior of texture images. Previously, this was set to "repeat", which meant that texture images would automatically repeat on 3D surfaces if the image did not exactly match the dimensions of the geometry. This mode caused a disturbing raster-shaped pattern in terrain textures because the textures were projected on the surface at half a pixel offset. Adding Clamp now prevents this effect. Clamp texture mode once covers the 3D surface with the assigned texture image, but does not repeat it. Clamp can also be used for automatically textured building models to avoid similar disturbance effects as in the terrain. The Repeat texture mode is only applicable if generic textures are present on your 3D object.

- The Cull Mode in turn determines the visibility of all surfaces in the sub-Scout. So far, visibility has depended on a double-sided rendering. Now the visibility per sub-scout can be set individually and decoupled from the global setting. The system, off, front and back modes are available. System corresponds to the previous behavior and is set by default. Off instructs the scout to display all surfaces on both sides. Front defines the visibility on surfaces whose surface normal faces the direction of view. Back, in turn, represents only those surfaces whose normal direction points in the direction of view. If off, front or back is set on a sub-Scout, the global setting Double sided rendering will have no effect. (E-2120)
- The configuration "Engine" of the Config page can be used to set the default transparency value for partial scouts set via the "Transparencies" configuration. By default, the value is set to 70% transparent. (E-2062)
- The multicore threading quality values consumed too much system resources, so that only the option "low" enabled parallel working on the computer. With this version you can continue working with the option "Medium", only the option "Full" will continue to consume all available resources and should therefore only be used on your own computers reserved for Scout calculation. (E-2147)
- The Workspace "Builder_Point Cloud_coloriert.fmw" has been merged with the workspace "Builder_Workspace.fmw". Now all point cloud datasets for the scout can be handled via a central workspace. „Builder_Punktwolke_coloriert.fmw“ is therefore no longer part of the CityGRID® installation directory. (E-2150)
- Setting viewpoints from a running scout has been completed. Assuming that the scout was opened from a builder project and the builder project is loaded in the Builder Control Center at the same time, the current view can be converted to a viewpoint via the Builder Control Center's Config page. For this functionality it is necessary to enable the option "Allow external communication" of the Scout submenu "Settings ◊ Application". Set viewpoints are offered for selection after the scout is restarted. (F-2142)

Fixed Problems

- When optimizing the Scout data (Create) and the "Use multicore threads" option enabled, it often happened that Units had long narrow triangular areas across the Scout scene. These data errors were caused by the rendering and did not occur in the source data. Through memory management adjustments, this misconduct could be resolved, so the result with multicore support is now identical to that without this option. It is therefore recommended to re-enable the option "User multicore threads" in order to drastically reduce the processing time of the scout. (F-2010)
- Point cloud Scouts were only allowed to come first in linked builder projects, otherwise the visibility in the merged scout was severely limited. The problem has been fixed so that the point cloud Scouts can now again be anywhere in the linked scouts. (F-2128)

CityGRID® Scout

Recent Developments

- During the runtime of the Scout, the transparency value for data packages encapsulated in the Transparencies menu item can be varied in the Settings ◇ Engine menu using the slider. (E-2062)
- In the Measure tool, you can use the pressed shift key to activate an object snap on the corner points of the triangular faces and the Y key on a triangle edge. Without pressed keys, the measurement tool is in a free selection mode. (E-1794)
- The "Performance" submenu has been revised and expanded with numerous parameters. In addition to the known values for the quality range and texture quality, parameters such as anti-aliasing, shadow quality or shadow range can now also be set. (E-2146)
- To optimize the point cloud display, a separate menu item "Point clouds" has been added to the submenu "Settings". In this menu, parameters such as punk size and adaptive size variation (depending on the distance) can be set. (E-2149)
- The background color of menu selection lists has been set to gray. This makes this content stand out more clearly from the rest of the menu and is easier to read. (E-2088)
- In information mode, attributes such as the UnitID are now displayed as soon as the mouse is over an evaluable object. Furthermore, the Scout highlights surfaces of the same data class and attribute characteristic as soon as the mouse is moved over it. Currently, this functionality is still limited to data within a data sheet of the scout trees, which means that apparently contiguous areas within a building are not combined. The improvement of this condition is planned for the upcoming CityGRID® versions. For quick activation of the information mode, the control panel has been extended by a corresponding info button. This allows the information query without having to open the menu and start the

information query. However, the recording of queries is still only possible via the main menu. (E-2154, F-2144)

- The representation of the measuring line has been improved. The line now appears equally strong from every angle. (E-2081)
- A measurement mode for length measurement can be started via the control panel. When this mode is activated, the controller changes to the "card mode". If you end the measurement function by clicking the button again, the Scout will return to the previously used control mode. (E-2154)

CityGRID® Solid

Recent Developments

- Solid projects can now be opened even if the connection to the data source can not be restored. In this case, the user can determine if the Solid project is transitioned to a state that secures the data of the original step and protects it from any alteration. All print editing actions are then based on this data. Options that would change the output data, such as model selection or the level of detail, remain locked for input. Each time you reopen the Solid project, the connection to the data source resumes. If this connection can be restored, the backup mode is immediately canceled and the project can be used as usual. (E-2041)
- If, when opening a Solid project, it is detected that the specified export path is no longer valid, the user is offered an alternative path. (E-2041)
- For the processed print data, the appearance can now be selected from three variants: textured, CityGRID® element colors, standard color. Element color obtains the colors from the CityGRID® ini file, which can be edited via the CityGRID® Modeler, for example. For the unit color, an appropriate color selection is available on the surface of the solid. (E-1717)
- The Open button on the Recent page now behaves analogously to the Open button of the Active page if no project is selected from the list of recently opened projects. In this case, a file browser opens, which loads any Solid project. (E-1764)
- Database connections and 3D printers can now be deleted from the selection lists. To do this, activate the corresponding entry in the selection list and click the clear button. For databases, it must also be ensured that the database connection to be deleted is not currently active. If necessary, the connection to the database must be interrupted beforehand. (E-1880)
- Objects that have been created by a trimming process (raster or perimeter) and are below the set minimum wall thickness are now automatically removed during the print preparation. (E-1821)

- In order to further increase the rate of watertight processed data, a connection to the Windows Tool Builder3D was realized. Every 3D object is automatically checked for watertightness after processing in the Solid and repaired if necessary. (E-2061)

Fixed Problems

- In the "Hollowed" processing step, the print preparation was interrupted again and again with a "not yet implemented" error. The problematic data situation has now been implemented in the code so that the processing can be carried out to the end. (F-1878)
- Manipulated processing had a problem with duplicate terrain models. Each single surface triangle has been converted to a separate solid, making the Solid project unmanageable. This misconduct has now been resolved. During the print preparation, each terrain model is individually processed and transferred to a solid. However, there is no cleanup of the duplicate areas. This is still to be performed outside the Solid. (F-1837)
- When rendering textured terrain models, it was possible that the texture coordinates degenerated and the soil texture was displayed incorrectly. (F-1612)
- In the step Manipulated of the print preparation, a "Scale integer = 0" error could occur if the print scale was selected to be very large. (F-2161)
- The color selection of the print data has been suppressed for the export format STL, since this format only allows monochromatic models. For obj and 3mf, however, the color selection is available. (E-2159)
- Changes to the scale value and color settings now reset the print preparation, so that the changed settings are also taken into account. (F-2160)