

Change list

CityGRID® 2017 Release 11.00

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® manuals can now be accessed via a central entry of the start menu. By clicking on "Manuals", a selection window opens, in which all manuals of the installed modules are listed. Manuals from a previous CityGRID® installation are not automatically uninstalled and can still be retained in the Start menu, but they do not represent the final state. We therefore recommend to delete the old entries from the Start menu independently and to access the documentation only via the menu item "Manuals". (A-1543)
- FME 2017 is supported (A-1540), (A-1765)

CityGRID® Manager, CityGRID® Administrator

Recent Developments

- In the course of the triangulation of break edges, the additional line framework is now taken into account for the orientation of the edges. The idea is that no roof lines are allowed to open in break edges on the vertical side. If it is recognized that lines nevertheless enter, the orientation must be reversed. By this measure, the triangulation of break edges, that are not connected to eaves at different points with an upper and lower break edge, can be significantly improved. In the case of incorrectly oriented break edges without connected roof lines, it is therefore advisable to connect a roof line with a vertex of the break line in order to correct the orientation automatically. (E-1373)
- The time for loading a Unit from the database has been decreased by a factor of 2 to 3. For this, the database schema was changed from a purely relational to an object-relational

schema. The geometry is stored in the database (BLOB) and can be loaded faster. For making use of this acceleration, Units in the database must be converted to the new schema. Specifically, each Unit is loaded and saved as a new version. In order to be able to control this, sometimes time-intensive, process, the Administrator offers a separate conversion routine by means of which models can be transferred to the new schema. Thus, the conversion work can be scheduled, for example overnight or over the weekend. Data in the old database schema remain valid. These can be loaded and exported without restriction, of course without the speed advantage. If saving the Unit is necessary, a version is automatically created in the new schema. (F-1291), (E-1635), (F-1504)

- If the top and bottom break edges intersect at a point, the break lines are now split. This allows the orientation of the break edges, which must change at this point, to be adjusted automatically. The interactive separation of the break edge in the modeler is thus eliminated and the number of triangulation warnings is significantly minimized. (E-1639)
- Taking over texture was redesigned. As a result, geometrical changes can now be carried out without problems in textured buildings without losing the texture. In particular, the application of a penetration resolution to such data now provides significantly better results. However, the texture preservation can work successfully only if the image is large enough to completely contain the geometry. (F-1748)
- The process of automatic texturing from aerial images now accesses directly image tiles of the aerial image to perform the texturing. This causes a significant acceleration of the process, especially in the case of large or uncompressed images. Depending on the parameters of the aerial images, a reduction in the time required can be measured by a factor of 3-5. (E-1666)
- Eave and floor boundaries may now have common segments and may even lie in the same 3D position. The facade element adapts to the line structure accordingly and in extreme cases will no longer have any faces. A triangulation warning isn't produced any longer. (F-1574)
- When importing aerial images into the database, it is now checked whether the camera's interior orientation parameters change as compared to a parameter set already stored in the database. When this happens, an information window appears with the request to confirm this change or abort the import. Each camera is uniquely stored in the database with its calibration date. In general, the interior orientation parameters do not change. The appearance of the information window typically indicates an error in the image configuration. (F-1797)
- The selection of connected surfaces during automatic texturing depended on the order of the loaded faces. As a result, neighboring surfaces could be textured from different images, which could lead to visual impairments. (F-1828)

- The object class of Boolean objects can be selected for automatic texturing, so they can be handled correctly during texturing. (E-1817)
- Via the CityGRID[®] Manager, textures of CityGML files can be packed into texture atlases by means of post-processing. The textures atlases are limited to a size of 1014 * 1024 pixels (if there are single images larger than this size, they are preserved in their original resolution) and are organized by Units. Each Unit thus produces 1-n atlases, which replace the individual images. This functionality is currently only available as a service from UVM Systems. (E-1654)
- The CityGRID[®] Manager can determine façade surfaces for buildings with a closed construction that are connected directly to adjacent buildings (parts). These so-called warm facades can also be painted in their texture images (gray coloring). In addition, each facade area is assigned an attribute with the percentage of occlusion. Surfaces that are completely occluded by other facades are painted using a uniform gray tone and their texture images are deleted. This functionality is currently only available as a service from UVM Systems. (E-1653)

Fixed Problems

- When importing into a CityGRID[®] database, an error occurred (yellow process control window) with error text "Executing command: insert into CITYMAN.EDGECONNECT (MASTER, SLAVE) ..." The cause was a roof overhang element without surfaces removed during import. The master-slave relationship between the eaves, the roof overhang and the top of the façade was no longer valid. Now, when the element is removed, the master-slave relationship between the eave boundary and the façade top boundary is reestablished. (F-1659), (F-1660)
- Removing coplanar surfaces during triangulation resulted in an endless loop that led to a storage overflow and, in extreme cases, a complete system crash. In rare cases, this behavior occurred during database import. (F-1661)
- When logging on to a CityGRID[®] database that was created after the last CityGRID[®] Setup, the message "Database connection failed" was displayed even though the connection was established correctly. (F-1669)
- In the case of break edges, that were connected to courtyard polygons, a faulty surface formation could occur. In the roof area, triangles were missing, although the edge topology was correct. (F-1705)
- The error message "Empty lists", which has occurred during the course of the triangulation with 3D identical eave lines and floor boundaries, no longer occurs. The surface generation algorithm has been modified in such a way that eave lines and floor lines can now be identical in 3D. (F-1574)

- Complexes with Element Colors have not yet generated an Appearance node in the CityGML export, and have always been displayed with CityGRID® standard colors. To export Element Colors the checkbox "Unit Textures" must be activated. If the complex to be exported has only Element Colors but no material (texture / face color), the Element Colors appear in the export. If, however, a material is on a surface, it is always exported and a possible Element Color is ignored. (F-1192)
- When loading XML files into the import dialog of the CityGRID® administrator, a program crash occurred if the read models had a different number of referenced terrain models. (F-1790)
- In the case of the CityGML export, the "invalid material (texture) id found during take over texture" error occurred when the option "roof overhangs according to German SIG3D (AG Quality) recommendation" was activated and no terrain model was assigned to the exported model. (F-1815)
- In CityGML Export, the checkboxes for surfaces and texture were sometimes deactivated in the Administrator, which made an export impossible. The check boxes for surfaces and textures can now be checked again to perform a CityGML export. (F-498)
- In the case of CityGML export, the "exit condition reached for face ..." error occurred in some cases when the option "Roof overhangs according to German SIG3D ("AG quality") recommendation" was activated. (F-1826)

CityGRID® Modeler

Recent Developments

- Extension of the function list for shortcut assignment. The following functions can now also be provided with a shortcut:
 - Set / remove highlighted status
 - Delete active complex
 - Representation of inactive complexes / units
 - Switch the selection mode "Layer" (point / segment / polyline / polygon)

The shortcuts have to be set via "Customize user interface" of the 3D Studio Max. A description of this process can be found in the Modeler manual. (E-1229)

- In the options window of the modeler, the inheritance of textures to child elements can now be controlled. In addition to the previous standard case "always", there are now also the modes "only to Elements of corresponding Element Class", as well as "never". By means of this parameter, it is possible to prevent the inheritance of the texture from the roof surfaces of a main element complex to the facade surfaces of its child elements. (E-1793)

Fixed Problems

- When accessing the Cyclomedia image server, an error message occurred if the images should be loaded from a wrong server. (F-1636)
- During the surface generation, it could happen that the process of merging line segments of the terrain intersection line was not completed. Now, if too many line segments are to be merged, they remain as individual segments and are not combined into one polygon. (F-1648)
- If in an XML data set a material was created using the "automatically derive from model" method and the <images> node was not defined correctly in XML, the City**GRID**[®] Modeler crashed. In such a case, a warning is displayed and the material preparation terminates in an ordered manner. (F-1649)
- If more than one terrain model was assigned to a model, and the texture display was activated, a texture was shown correctly only in one terrain, but the other was distorted. In the case of a representation of the whole terrain, the same texture appeared on all terrain models. (F-1657)
- The modeler crashed under 3D Studio Max 2017 as soon as a selection in the viewport has been started via the pick mode. This affected the "Selection via Viewport" functions or the selection functions in the tools "Point in area", "Roof overhang" as well as terrain intersection ". Older 3D Studio Max versions were not affected by this crash (F-1656), (F-1655)
- When exporting Units with courtyards, the master-slave relationship between the courtyard and the associated façade top edge was lost when the export selection was set to "only the active units" or "the loaded area". When the whole model was exported, the master-slave relationship was retained. (F-826)
- Deleted complexes could occur again during a session through the warnings window by double-clicking a warning that related to the deleted complex. As a result, this behavior resulted in an unstable behavior of the modeler. An error message appears in this case and the deleted complex remains deleted. (F-1786)
- After the action "Selection via Viewport", the selection mode of the 3D Studio always changed to "Select and move". With this version, the last selection cursor remains after the selection. (F-1792)

CityGRID® FME Reader/Writer

Recent Developments

- The CityGRID® Writer or CityGRID® FME Builder can now process images with a 32-bit color depth. This allows to use images with an alpha channel to display transparency. (F-1690)
- If 3D polygons in FME are closed only in 2D, ie the start and end points have different Z values, the CityGRID® FME transformers, in particular CGPolygonJoiner and CGPolygonVertexSynchronizer, close these to create true 3D-closed polygons. (F-1329)

Fixed Problems

- In the CGPolygonVertexSynchronizer, the warning "The feature could not be added to the search tree" often occurred. The reason for this were degenerated segments with a length of less than 1 mm, which should be included in the search tree. However, since the length is below the accuracy limit of CityGRID® such cases have led to the triggering of the error message and subsequently to a faulty behavior of the transformer. From now on, segments under 1mm are ignored and the warning suppressed. (F-1416)
- The CGPolgon2Mesh Transformer did not correctly calculate points in the reference surface if the underlying surface network had oblique edges for vertical breaks. Such surface networks originate from third-party data since the CityGRID® surface generation algorithms do not produce such edges. (F-1729)

CityGRID® Builder

Recent Developments

- The exchange format FBX has been added to the list of supported third-party formats of the 3D Studio Builder. FBX files can be accessed with the button "Import external data". When importing an FBX file, the standard import dialog appears, which determines the exact specification of the imported file. A detailed description of this dialog can be found in the 3D Studio Max Help. (E-1468)
- On the "Config" page of the "Distribute" dialog, you can now control the order of all list elements. This makes it possible to re-order viewpoints, camera flights and variants. (E-1676)
- Sub scouts with animated objects can now be placed as a scout in a merged Scout at any position and no longer have to be routed to the first place. (E-1309)
- In the CityGRID Builder menu of the 3D Studio Builder, the "Clear deleted data" menu item is now available. When clicking, all the data in the recycle bin of Project Explorer is removed and the associated data in the builder directory is permanently deleted. (E-586)

- In the course of the scout optimization using Create, intermediate results which are no longer required are now cleaned up at the end of the optimization and no longer immediately after the data are no longer required. This avoids the occasional warnings that access to a file / directory is locked during optimization. Only after the scout has already been created completely this warning may now occur, but it has no effect on the already completed creation any longer. (E-1681)
- On the "Config" page of the "Distribute" dialog, the parameters LaunchCameraMode, LaunchCameraCollision and LaunchCameraSpeed can be set under "Configuration" of "Engine" parameter. This influences start behavior of the UnityScout with regard to the camera, the collision detection and the flight speed. (E-1807)

Fixed Problems

- The variant settings failed in rare cases and combined data packages undesirably. Thus, some variants showed too much data and other variants did not contain any. (F-1708)

CityGRID® Scout

Recent Developments

- The Unity Scout has the behavior that a flight movement slowly decelerates when the left mouse button is released. A mouse movement, after releasing all the keys, still had an effect on the direction of the view, which is disturbing since the direction of the flight changed unexpectedly. With this version, the last set flight direction remains constant when the left mouse button is released until the movement has come to a standstill. (E-1678)
- In Unity Scouts menu items Viewpoints and Camera Animation have been combined to the View item to free up space for the Variants and Points of Interest items on the main menu level. (E-1691)
- The menu of the Unity Scout has been fundamentally revised and adapted to the requirements of the different viewing systems (offline, web, mobile, VR). In addition, only those menu items which are also used with data / functionality in the scout project are displayed. For example, the menu item "Variants" is dimmed if no variants are contained in the scout project. (E-1573), (A-1682) , (E-1696)
- In the Unity Scout, a quick help is available, which can be called up via the control console. The help is started with the "?" Icon of the control console. (E-1803)
- The Scout.exe of the SuGu and Unity Scouts can be called up in the console window with the desired starting point. Enter the parameter "--VIEWPOINT" followed by the name of the desired viewpoint. (E.g., Scout.exe --VIEWPOINT start "). This option can be used to start the same scout with different user groups with individual viewpoints, without having to make any changes to the project itself. (E-1769)

- In the Unity Scout, it is now possible to query attributes of objects (scene, unit ID, model, general attributes) directly in the scout. As soon as the mouse pointer is placed over an object that can output attribute information, the Unity Scout displays it in the menu under Tools → Info. In order to use attributes, the scout data must be processed via FME. Via the menu item "Info" you can also start a marking mode by which the attributes, the 3D position of the click as well as a freely selectable description text are written into an XML file with every click on an object. This XML file can be found in the directory of the scout under Content \ Data \ SuGu and is named "Info", followed by the date of capture (e.g. Info_2017-05-05_04-26-13.xml) This XML file can be loaded into the CityGRID® Modeler's warning window in order to find and correct any defective buildings detected in the scout. (E-1382)
- The rendering of single images and serial images is now possible in the Unity Scout. From the "Tools → Renderer" menu, the render image is started. Currently the render modes "Preview" and "Normal" are available. In "Preview", one image per second is generated for serial images, "Normal" renders the current image content of the scout. The image size can be determined by predefined resolutions, or individually defined. It should be noted that only those resolutions can be generated, which can also be calculated from the graphics card of the computer. The rendered images are stored in the directory "Media" under Content / Data / SuGu of the Scout directory. (E-1634)
- The Unity Scout can now also display logos and display a caption of the project. In order to display logos, these must first be created in the SuGu Scout, using the traditional way to be used when publishing the Unity Scouts. In the Unity Scout, only the positions "CenterTop" (for labeling) and "LeftBottom" are supported, logos that appear elsewhere in the SuGu Scout are not taken into account. In addition, the image files must be copied to the directory "Content \ Settings \ Textures" in Unity Scout. (E-1777)
- Point of Interests can now also be displayed in the Unity Scout. To do this, you have to follow the well-known route through the SuGu Scout, and the POIs are included in the course of publishing a Unity Scout. The Point of Interest is accessed via the menu and the "Point of Interest" entry. The 3D markers to display POIs of the same category were removed from the scene and moved to the map window. (E-1693)

Fixed Problems

- Transparency of objects can now be easily displayed in the Unity Scout. All well-known ways to generate transparency (builder property window, opacity of the material, texture texture alpha-character) are correctly supported. (F-1431)
- In the course of the data processing, the error message "Access to the path denied" occurred again and again. This was due to a still existing file access through the operating system and could be fixed. (F-1831)

CityGRID® Solid

Recent Developments

- If a dataset has been detected as non-watertight in the stages Watertight or Hollowed, the dataset can be re-examined after an interactive revision has been made in the modeler. The check is performed by clicking on the pen icon in the corresponding field of the "Run" page. If the test results in a watertight result, the icon of the print state changes, otherwise a new warning file is generated, which can be loaded again in the modeler. (E-1827)

Fixed Problems

- Project names with "_" were not displayed correctly in the status line; the "_" character did not appear in the name of the loaded project. (F-1645)
- In the design Windows Classic, the selected radio buttons appeared as not selected because in this design the white font color that was used for the representation of the selected radio button and did not differ from the white background. (F-1646)
- An error occurred while writing to STL if an export to OBJ was carried out before. (F-1642)
- An error occurred while preparing the print of a single-Unit-Model from the database and loading the data from the database failed. The reason for this was the interpretation of the UnitID as a model name. (F-1644)
- If there was a mixed state of data already loaded in the Solid project and not yet processed in the "Original" stage, there was an error message and the termination of the work in the event of a new print processing. (F-1647)
- Buildings with roof details could not be converted into watertight bodies; the roof details always lacked the bottom surface. In the course of the printing process, the roof details are now converted into main element complexes and in this step also the required floor surfaces are obtained, so that each complex is made watertight for itself. (F-1641)
- In the "Hollow" step, too many intermediate points were created for the boolean solid, so that the calculation gradually became slower and finally reached the maximum number at permitted points, which led to the termination of the process. (F-1640)
- In the automatic creation of groups on the Run page, the maximum allowed number of parts was incorrectly calculated, resulting in the error message "Too many cells. We recommend to change the settings to reduce the number of grid cells. No processes will be initialized ". This message now only occurs if the user specifies a tiling and this exceeds the maximum number of 100 parts. (F-1662)

- XML files of interim results of the print processing have often not been released by the operating system, which led to an access problem when saving this file. The memory operation is then carried out as far as possible at the end of the processing step and repeated several times if the access by the operating system should still be blocked. (F-1664), (F-1651), (F-1713)
- With the tiling of the print data and several terrain models used, tiles did not include any terrain model if they were completely contained in the terrain model. (F-1838)
- When exporting to OBJ, all exported data were always written with the same export name. This preserves only the last exported object and all previously written data has been overwritten by the following. (F-1713)
- OBJ exports had flipped the Y and Z axes, causing the models to be twisted by 90 °. (F-1716)
- The "waterproof" stage (make3Dprintable) always produced LoD3 element complexes, regardless of the LoD's output data. If a lower LoD was set in the export settings, empty export files were created because the requested LoD was no longer present in the data record. (F-1835)