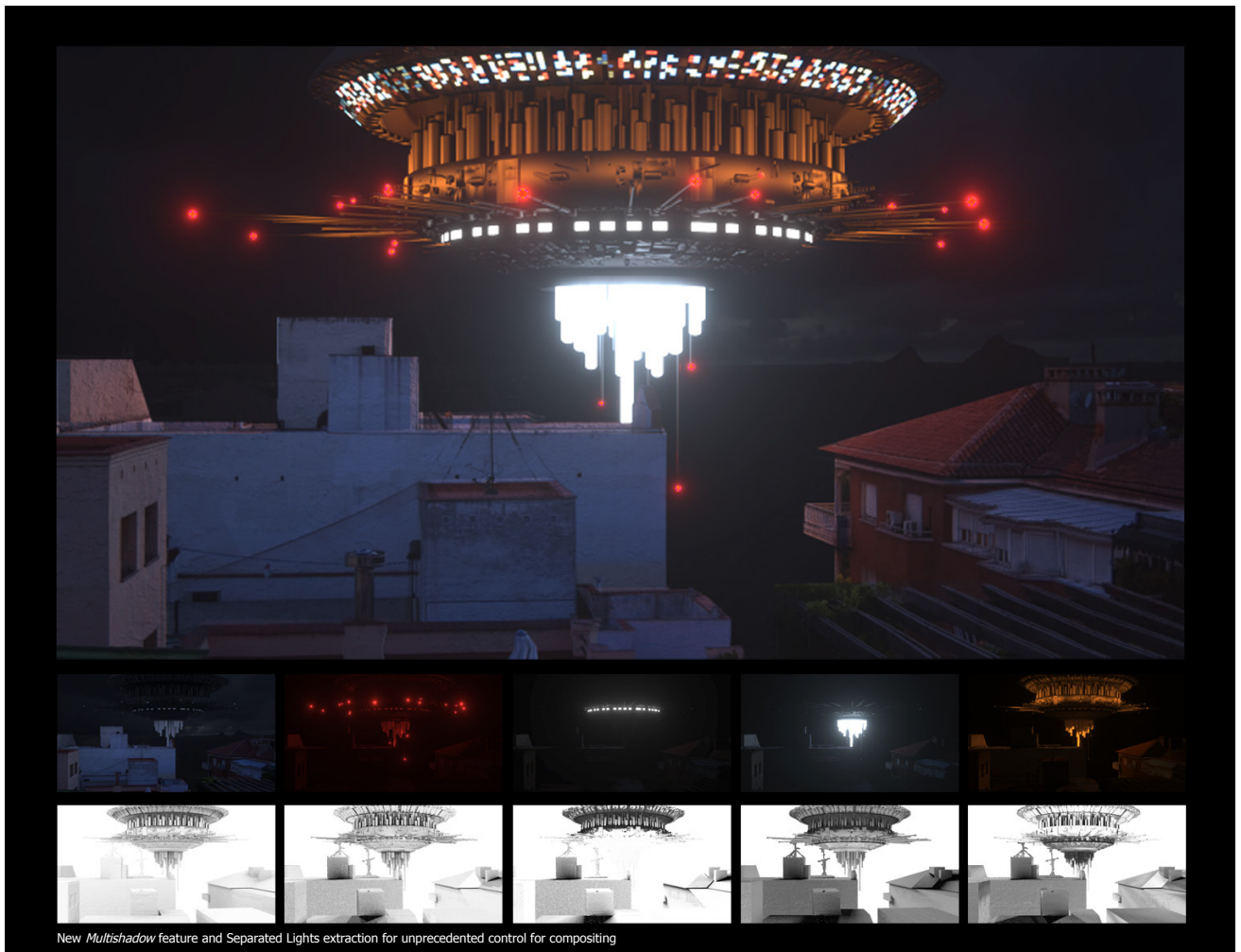


MAXWELL RENDER 2.1 – IMPROVEMENTS LIST

//// CORE ENGINE - NEW FEATURES

- New *Multishadow* feature. When Intensity Multilight is on and the Shadow Channel is enabled, Maxwell Render can export all the shadow buffers corresponding to each independent emitter to separated files, providing an extra control over the final compositing in post-production.
- Shadow Channel vastly improved now compatible with global illumination and with any number of emitters or illumination modes.



- Added support for embedding render channels as additional layers inside the output image in the formats that support it (exr, tiff).
- Added support to render region in Maxwell.exe. It is now possible to change an area to render inside Maxwell GUI. Render region is now available through scripting and command line. The command line argument is `-region: type,x1,y1,x2,y2` where type is "full", "region" or "blowup".
- Simulens maps are now embedded in the MXI file so the image can be properly restored even if the maps are not found.
- Now MXI files contain info from the camera used to generate the files and the info can be used in post processing plugins.

- It is possible to render regions smaller than 32 x 32 pixels.
- Now sky dome color can be set using two colors, for horizon and zenith with a parameter to control the gradient.
- New core routines that dramatically improve the performance in scenes with Motion Channel enabled.
- New GUI option to automatically save lights in separated files. To avoid performance issues, when this option is active, lights are separated in files only when the render finishes, not at every update. (Remember there is also a flag "-extractlights" to enable the same option through command line).
- New global flags added to the render options: "domotionblur", "dodisplacement", "dodispersion" to easily enable/disable these options without need to re-export the scene.
- Emixer files are now XML files, making it much easier to edit in external editors and to create light animations.
- Now Multilight sliders are logarithmic, providing improved control.
- New script included in the script folder "progressive_animation.ms". This script renders all the MXS files located in the input folder but instead of rendering them sequentially until each one reach the final SL, it renders them incrementally. First, it renders all the frames up to SL 4, then, to SL 8, SL 12 etc. It is useful for quick previewing of animations.
- New scripting functions (check the manual for details).
- New command line parameters (check the manual for details).
- New SDK functions (check SDK documentation for details).

//// CORE ENGINE - BUGS FIXED

- Fixed: crash with AGS + caustics disabled.
- Fixed: bump shading problems when UV mapping was mirrored.
- Fixed: coatings + dielectric bsdfs.
- Fixed: bug when a texture is used in more than one map and one of the maps has the "use alpha" flag enabled. That was generating artifacts in some scenarios depending on the interpolation settings of each map.
- Fixed: potential crash with transparencies.
- Fixed: transparency issues, improved performance in scenarios where there is transparency.
- Fixed: iso and shutter were not properly animated (Values of the first frame are no longer used for the whole sequence).
- Fixed: MXI merge with render region.
- Fixed: blow up renders were rendered at full size.
- Fixed: diffraction was not correctly applied in some scenarios.
- Fixed: render region was not working properly when the view was zoomed.
- Improved mechanism for searching missing simulens maps.
- Fixed: after rendering region it was not possible rendering at full size in Maxwell GUI.
- Fixed: potential crash opening MXI files with render region.
- Reading MXI process optimized.
- Fixed: some bugs in i/o area of simulens.
- Fixed: emitters appeared black in alpha channel.
- Fixed: shadow pass aliasing emitters with Multilight.
- Fixed: shadow pass emitters with depth of field and Multilight.
- Fixed: render pass was affected when shadow pass was active and there were dielectrics hidden to camera in the scene.
- Noise reduction improved in some channels.
- Fixed: gamma correction in object ID and material ID channels to match the selected color.
- Fixed: In 32 bits, embedding alpha channel in the image output was pre-multiplying it with the alpha instead of storing it as a separate channel.
- Fixed: GI was not properly calculated in shadows pass in some cases.
- Fixed: preview became corrupt when ML was enabled and any emitter had a very high value.
- Fixed: "Save Sequence" in Multilight panel was not working well when the main viewer was not displaying the render channel but rather any additional channel.
- Fixed: Memory consumption when using color + intensity multilight reduced.
- Fixed: extract lights in separate files process was failing if the light name contained characters that can not belong to a file name such as ":", "<", etc.
- Fixed: Script files now can be loaded, dragged and dropped to the viewer area or to the script editor.
- Fixed: crash when loading pd files without particles.
- Fixed: potential crash when loading bin files without particles.
- Fixed: instances ignore override material.
- Fixed: crash with instances of objects that had multimaterial.
- Fixed: potential issue opening old MXS files with shadow channel active.
- Fixed: instances rgb id was not properly saving in MXS files.
- Fixed: emitters with motion blur could render black under certain scenarios.
- Fixed: RGBA8 texture format was not properly handled.
- Fixed: emitters intensity balance was slightly incorrect in some scenarios with non lambertian bsdfs.
- New macro added %version % that replaces it with the current engine version string.
- Added several minor improvements when motion blur in enabled.
- Fixed: some ui issues.
- IES file parser is more robust now.
- Fixed: crash when using an override/default material with textures.
- Now Maxwell Render shows a warning when the render starts if the user is running out of space on disk.
- Fixed: padding issues using mximerge.

NETWORK - NEW FEATURES

- Added the ability to change the target sampling level of jobs that have already been submitted. There is a new "Edit" button in the monitor that carries out this action (or does this).
- Resume jobs in the network system is now possible for animations, cooperative and single renders. When submitting a job the system checks automatically if the MXI output exists and, if so, it asks to resume or to start the job again.
- Now it is possible to change priorities of pending jobs after they have been added to the job queue. The priority of a job is no longer determined in the job wizard but is launched in the order specified by the jobs list. There are two new buttons: "up" & "down" that change the order of executions of pending jobs.
- Added file transfer optimization in animation jobs to avoid the repetitive dependencies are sent repeatedly.
- New "reset all" button in the nodes list that resets the entire network.
- Multi-selection of frames list is now possible to make it easier to stop/remove more than one frame at once.
- Now it is possible to select depth/format separately for each render channel in network jobs.
- GUI updated to support the most recent parameters added to the engine (i.e motion blur on/off).

NETWORK - BUGS FIXED

- Memory consumption in the manager has been dramatically reduced.
- Fixed: potential crash rendering scenes larger than 2Gb.
- Fixed: potential crash when the MXI generated by the render engine was larger than 2Gb.
- Jobs/Nodes lists keep the columns width properly between sessions.
- Fixed: simulens was not applied after finishing a job.
- Fixed: final SL displayed after stopping a cooperative render was not good (it was just a display issue).
- Fixed: potential crash when closing the manager.
- "reset" nodes routines improved.
- "send textures" has been renamed to "send dependencies". This is not a minor change but it means that now when this option is enabled all the job dependencies (MXS file, MXI to resume, textures, ior files, etc.) are sent from the monitor to the render nodes. This option is faster and has several advantages (it is enabled by default), but it requires that the monitor who submitted the job is alive until the job starts. When "send dependencies" is disabled the MXS file and all the dependencies must be located in network paths accessible from manager and render nodes. This option is slower but it can be useful when the user wants to switch off the monitor that submitted the job or when the user has a fast repository server for textures/scenes.
- Fixed: bug parsing extra command line options contained in the "command line" GUI field.
- Job wizard GUI improved.

STUDIO AND THE MATERIAL EDITOR - NEW FEATURES AND BUGS FIXED

- Major improvements in render region support:
 - Now each camera stores a render region separately. The region type (full/region/blowup) is controlled through the camera panel menu.
 - The region type is store in the MXS file. It is now possible to launch renders with region in any scenario as in the network.
 - In the render toolbar the GUI is much simpler now. There are only 3 buttons to render in Maxwell Render, viewport, or network
 - Studio now supports blowup regions in the viewport.
- Added support to ascii and sdt's dem files.
- Added support to .pd files in RealFlow objects.
- Added support to ReaFlow meshes (rbin) and SD files.
- New menu above viewports to change openly display options.
- Fixed: some inconsistencies in keyboard shortcuts.
- Fixed: when zclip planes were enabled some entities were not properly drawn (cameras, projectors...).
- Fixed: file filter for missing resources.
- Fixed: when previewing a render in viewport only the render channel is saved to disk.
- Fixed: potential precision issues if the number of decimals used in numeric fields was too low.
- Now when a material contains info the info box icon is highlighted in yellow.
- Fixed: decimal precision of numeric fields in MXED was not properly stored.
- Interpolation is enabled by default in displacement.
- Fixed potential crash painting ies files if vertex buffers are not supported.
- Fixed: little gui issues.
- Fixed: shift lens display in opengl viewport.
- Fixed: tab order in material editor.
- Fixed: mark a region in viewport was failing if the viewport aspect ratio was smaller than the camera aspect ratio.
- It is not possible anymore to select a region render outside camera frustum.
- Fixed: blow up in viewport was rendered incorrectly in some scenarios.
- Fixed: render region in orthodox views.
- Drawing cameras routines improved.

- Fixed: precision issues in color picker when switching from rgb to xyz.
- Performance of painting the sky in the opengl viewport improved.
- Handling of name conflicts when importing MXS files vastly improved, especially in large scenes with hierarchies.
- Fixed: crash in some platforms when rendering region in viewport more than once.
- It is now possible to drag'n drop colors over the sky dome color buttons (from one button to another, or from the material editor color buttons).
- The sky color buttons now show a tooltip with the rgb value.
- Fixed: precision issues in color picker when switching from rgb to xyz.
- Performance of painting the sky in the opengl viewport improved.
- Fixed: crash in some platforms when rendering region in viewport more than ones.
- "add render to job queue" menu entry added.
- Fixed: UV channels names can now contain more than 256 characters.
- Fixed: potential crash opening large scenes.
- GUI adapted to the new parameters of the sky dome (2 colors + gradient).
- Now it is possible removing material assignments in instances selecting the material in the instances tree and clicking the "supr" key (remember that when an instance does not have a material applied it inherits the material of the original mesh).
- Fixed: material attributes were not properly refreshed after changing layer/bsdf weights in the layers list.
- Main menu improved to avoid some actions, is accessible only through right mouse menus.
- Fixed: minor memory leaks.
- To keep coherence with Maxwell Render, now the key used to show/hide panels is "H".



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