ARNOLD TO RADEON PRORENDER CONVERSION REPORT

Version 2.1, 25 January 2019 (all reports)

This report summarizes results of tests made to convert Arnold nodes to Radeon ProRender nodes.

- **Software**: Maya 2018, Arnold 2018, ProRender 2.5.245
- **Hardware**: Ryzen 1700x, i5 7500

SUMMARY

For the report, **107** Arnold nodes within **7** node groups has been tested in total. The results of conversion are as follows:

- CONVERTIBLE: **18 nodes** (**17%**), see details
- PARTIALLY CONVERTIBLE: **12 nodes** (**11%**), see details
- NOT CONVERTIBLE: **38 nodes** (**34%**), see details
- RESEARCH IS NEEDED: **39 nodes** (**36%**), see details

Our approach to convert nodes is – we preserve original information as is. When possible, we are trying to propagate input values from Arnold to ProRender features.

Currently, we support Remap HSV, Maya standard Multiply/Divide, aiFacingRatio, ai2bump, aiNormal node, aiImage, aiABS, aiAtan, aiCross, aiDot, aiPow, aiTrigo, and displacement texture maps connected to the SG node.

We are waiting for RPRMAYA-893 to improve the conversion results for aiAmbientOcclusion and aiFlat color. We are also planning to add aiCarPaints in future builds. Currently, aiFacing ratio can only be partially converted due to missing Bias and gain controls in RPR lookup.

To test all possible aspects for the Arnold conversion script, we created new complex scenes for manual tests and new scenes (278) for autotests in Jenkins (Arnold2RPRConvertToolManual).

REPORT DETAILS

In this report:

HISTORY

v.1.0 - first version.

v.1.1 - aiStandartSurface support.

v.1.2 - displacement, bump2d conversion.

v.1.3 - aiSkyDomeLight and aiAreaLight support.

v.1.4 - Opacity reverse node, rotate IBL and aiPhysicalSky support.

v.1.5 - aiPhotometricLight support.

v.1.6 - Fix ies light position; aiStandartVolume, aiMixShader, aiFlat, aiSky, aiAdd, aiSubstract, aiDivide, aiMultiply support.

v.1.7 - Fix bug with channel converting, fix bug with creating extra materials.

v.2.0 - Rewritten to python, update material conversion.

v.2.1 - aiMath nodes support, aiImage and aiFacingRatio conversion support, aiAmbientOcclusion material conversion support, Improve metalness, coat, subsurface and normal map conversion in aiStandartSurface, improve displacement conversion, fixed issue with group of lights, fixed issue with unassigned materials with shadow catcher

SCRIPT LINK

The latest version of the conversion script: download script.

KNOWN ISSUES

The following JIRA issues affecting the conversion process were identified:

- Passthrough brdf node is needed (RPRMAYA-893)
- Maya aiAmbientOcclusion can be connected to ProRender Passthrough node (RPRTOOL-99)
- aiShadowMatte to ProRender shadow catcher (RPRTOOL-61)
- Lights gets converted with Incorrect brightness (RPRTOOL-68)
- Render view doesn't conform to resolution gate in viewport (RPRMAYA-880)

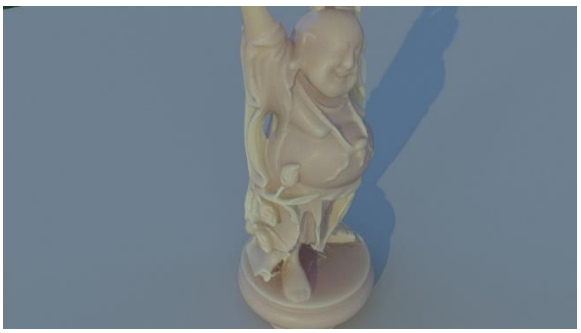
Currently, we have some issues with Maya's standard 2bump node being only converted to RPR normal node, even if *use as bump* is set in node settings.

Ai Normal map node now has missing texture connections when converting. Maya standard lights converts with incorrect brightness in render results.

COMPLEX SCENES

Scene 1

Subsurface scattering test.

Arnold	Radeon ProRender v 2.1
	

Scene 2

Porsche car scene.

Porsche car scene with Metal and roughness maps, aiSkyDome light, and AI shadow matte material. With some Adjustments to Ray depth settings, the glass material gives closer results. Currently in the scene, the Shadow Matte material is not converted (RPRTOOL-61).

Arnold	Radeon ProRender v 2.1
	

Scene 3

Gun scene.

Gun scene: using the newest addition of Arithmetic nodes. aiAbs, aiAtan, aiDot, aiPow and aiTrigo, alongside AI divide, add subtract and Maya standard Multiply/divide node.

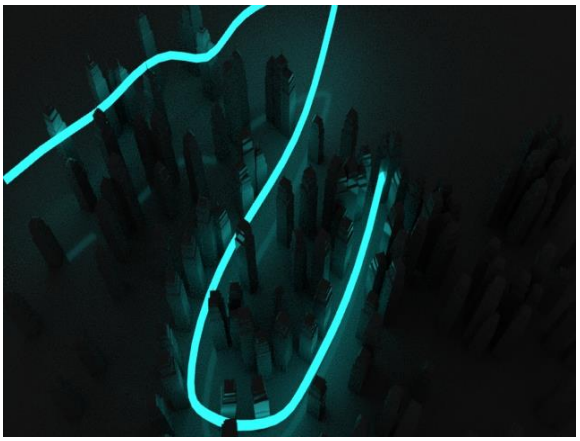
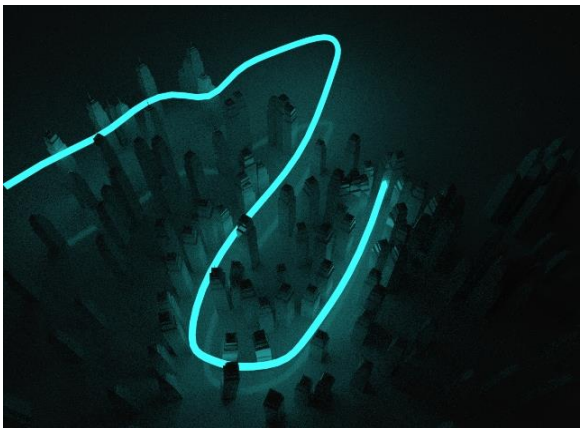
Arnold	Radeon ProRender v 2.1
	

Scene 4

Mesh-light scene.

The same issue with camera you could see in RS converter (RPRMAYA-880).

We still have issues with the Intensity of IBL conversions being slightly off. Current workaround is to manually tweak the intensity (RPRTOOL-68).

Arnold	Radeon ProRender v 2.1
	

Scene 5

Laptop scene.

Issue - RPRMAYA-880.

Arnold	Radeon ProRender v 2.1
	

Scene 6

Interior room scene.

Interior room using aiSky, aiSkyDome, Maya directional light with some Materials and textures aiStandardSurface Shader.

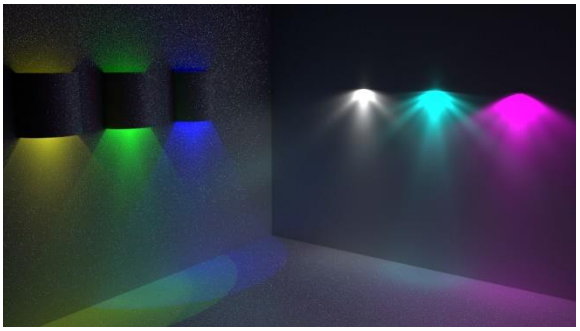
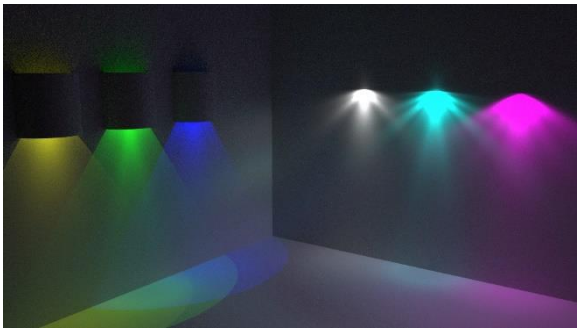
Tweaking Tone mapping in ProRender settings slightly helps with the brightness issue. But there's still a main issue that all lights are not converting intensity brightness correctly. There is an issue with brightness between Arnold and ProRender with Maya standard lights intensity. It seems Arnold handles these lights a bit differently with units (RPRTOOL-96).

Arnold	Radeon ProRender v 2.1
	

Scene 7

IES lighting scene.

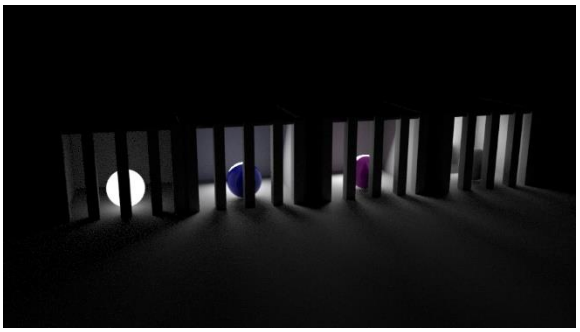
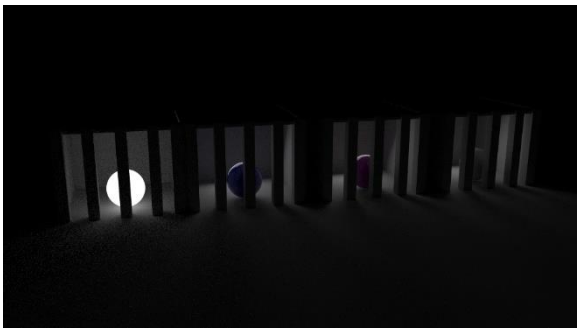
Scene using Photometric lighting with multiple IES lights.

Arnold	Radeon ProRender v 2.1
	

Scene 8

Light test Scene.

Scene with aiFLatMaterial, aiStandardSurface materials using SSS skin preset and Procedural math nodes aiAdd, aiSubtract, aiMultiply, and aiDivide.

Arnold	Radeon ProRender v 2.1
	

Scene 9

Dragon Scene.

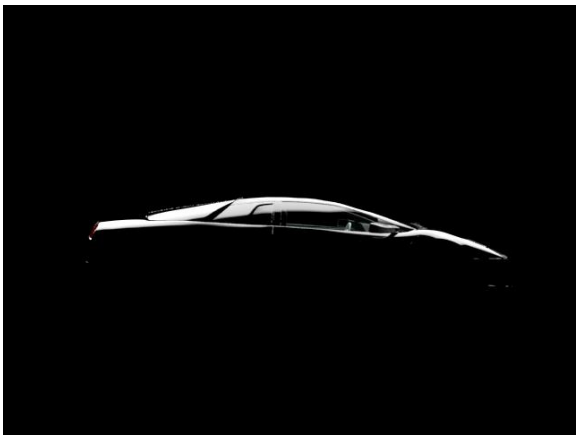
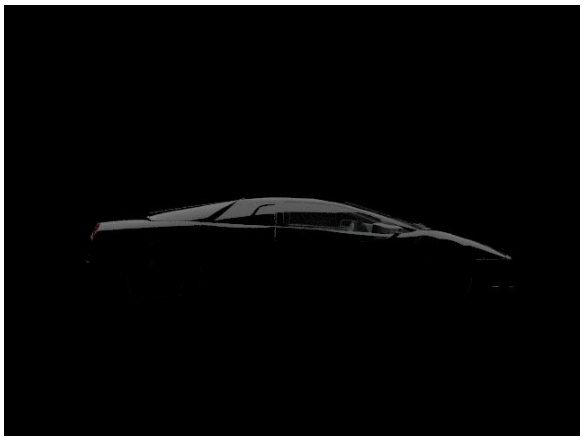
Dragon using aiImage, ai2dbump, aiSkyDome, as well using TIFF and TGA files types.

We still have issues with Intensity of IBL conversions being slightly off. Current workaround is to manually tweak the intensity (RPRTOOL-68).

Arnold	Radeon ProRender v 2.1
	

Scene 10

Studio-Side scene.

Arnold	Radeon ProRender v 2.1
	

Scene 11

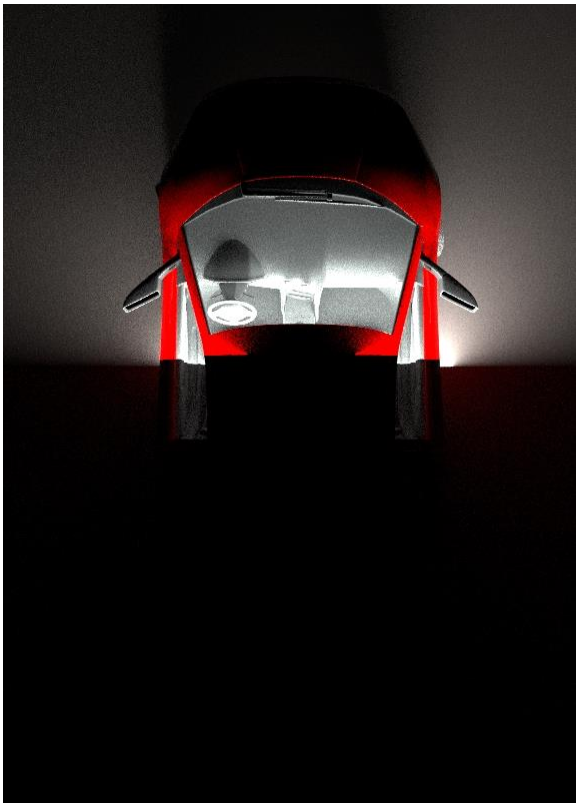
Studio-Rear scene.

Light conversion error/invalid RPR parameters.

Arnold	Radeon ProRender v 2.1
	
Radeon ProRender v 1.0	**Radeon ProRender v 2.1**
	

Scene 12

Studio_Top scene.

Arnold	Radeon ProRender v 2.1
	
Radeon ProRender v 1.0	**Radeon ProRender v 2.1**
	

Scene 13

Mercedes car scene.

Using aiNormal and aiImage files nodes. Combination of Emissive, metal, and glass materials. Currently planning to change some materials when the aiCar paint becomes available in script.

Arnold	Radeon ProRender v 2.1
	

TEST REPORT LINK

For detailed comparison of rendered scenes, see Test Report. The report includes 155 scenes.

Note that this is still the Alpha version of the report. The render process was run on two machines, with AMD and Intel CPUs.

CONVERSION STATUS BY NODE GROUP

Node Group	Total Nodes	Convertible	Partially Convertible	Not Convertible	Research is Needed	Details
Environment	4	0	2	0	2	Link
Files	5	4	1	0	0	Link
Filters	4	0	0	4	0	Link
Lights	4	0	4	0	0	Link
Materials	15	2	2	5	6	Link
Textures	7	1	0	1	5	Link
Utilities	68	11	3	28	26	Link
Total	**107**	**18**	**12**	**38**	**39**	Link