

R E D S H I F T

**Production-quality, final-frame
rendering on the GPU**

2017 New Features

- Tri-Planar shader
 - Great for objects that are difficult to unwrap for uvs
 - Works with bump and displacement maps
 - Works with root pose data too!
- Trace-sets
 - Works with reflections and refractions, with SSS coming soon
 - Technology allowed us to expand AO/Curve/RoundCorners shaders to include only 'self'
- Render View
 - Improved interactivity
 - Open Color IO support
 - AOV visualization in the viewport
- Custom AOVs
 - Deviated from our original plan - we consolidated AOV shader nodes to be both beauty 'pass-through' and file output capable
 - Building blocks for new tech to come – had to be fast!



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Big Ticket Features (1)

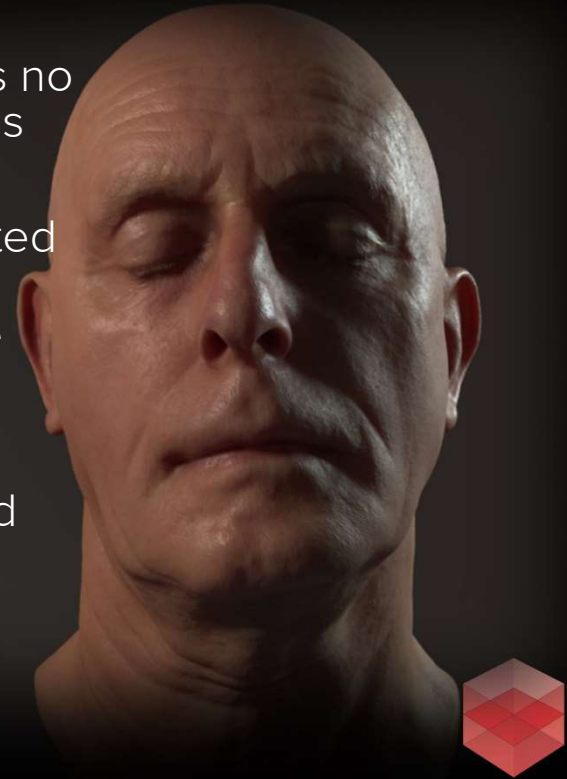
- Light Group AOVs
 - Popular request from SpecialFX studios
 - Lights can be assigned a group name
 - Group names can be assigned to lighting AOVs
 - Separate direct and indirect lighting contributions
 - Captures deep bounces correctly
 - Add all the results together and you have the beauty!
 - Generated concurrently with the beauty render, so it has minimal impact on rendering performance



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Big Ticket Features (2)

- Ray-Traced SSS
 - Great for capturing fine geometric details, has no problems with flicker or geometric edge-cases
 - Needed for progressive/IPR rendering
 - Slower than point-based though, but we wanted to make it fast!
 - Worked hard to get high performance importance sampling
 - Important for not wasting samples
 - Essential for multi-layered SSS
 - Results have to be comparable to point-based
 - No area normalization, though!
 - Flexible
 - Future profiles will be easy to add with limited programming effort



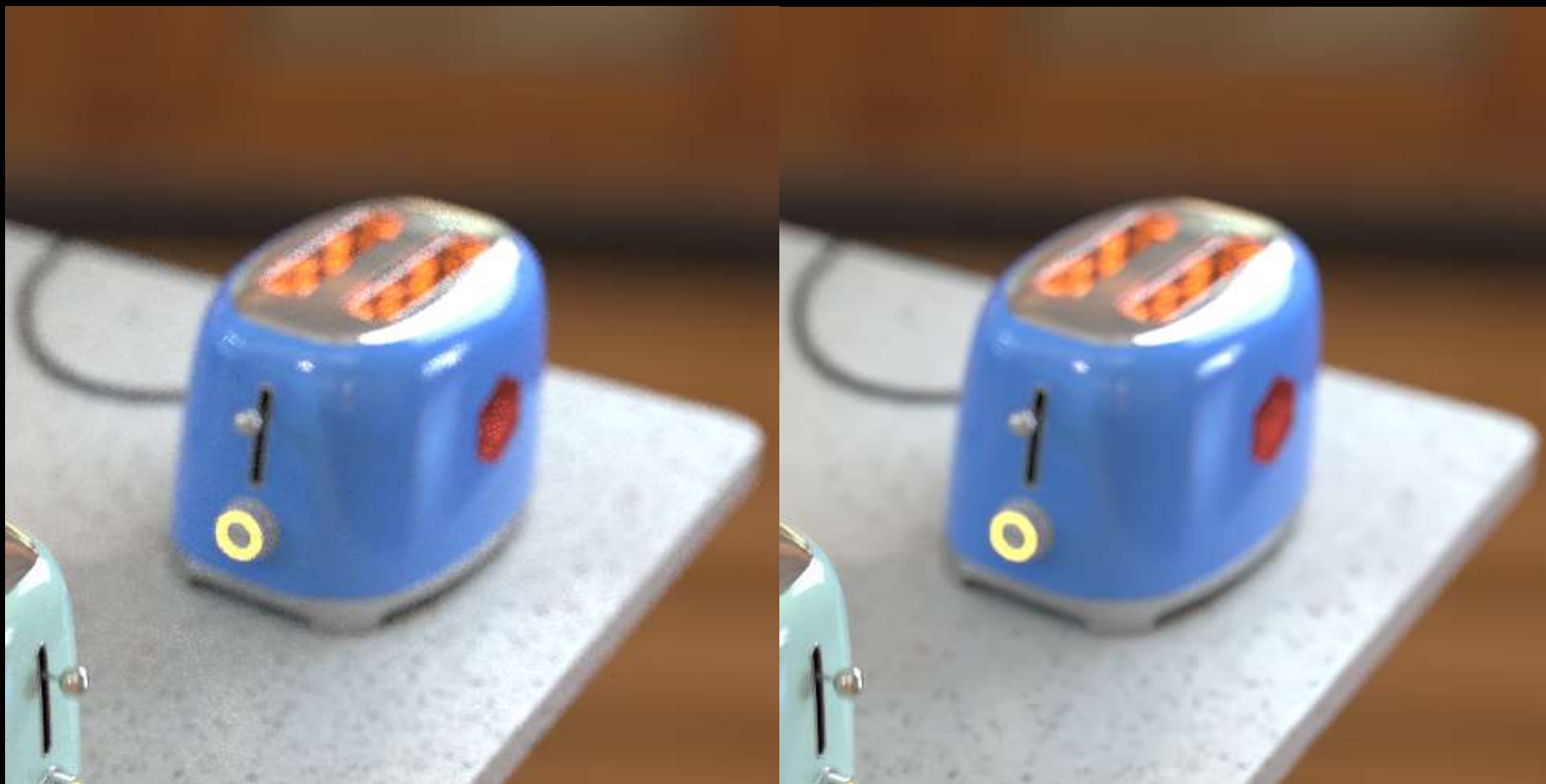
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Redshift 2.6

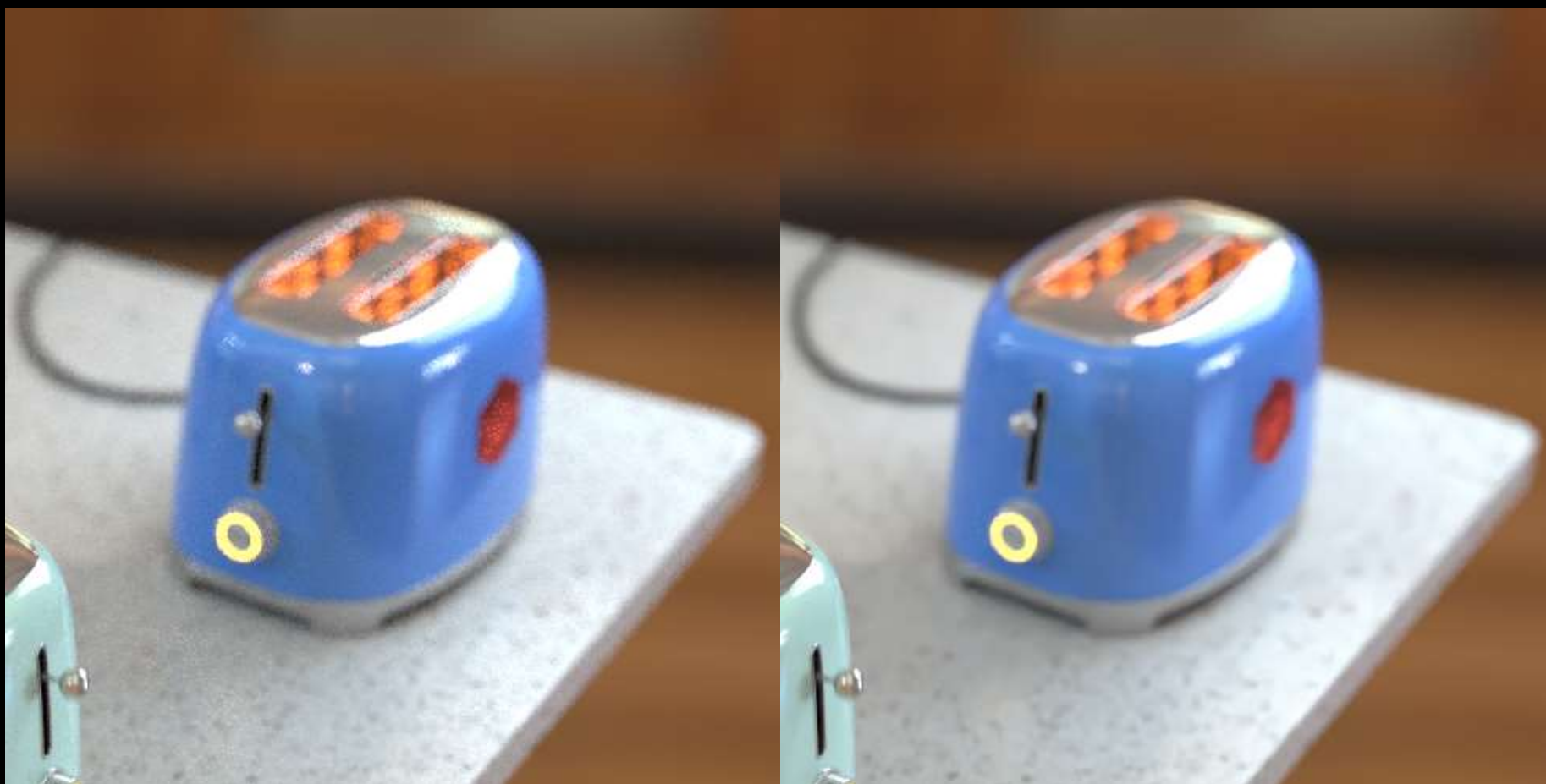
- Denoising
 - Denoisers are all the rage!
 - But Redshift's fast enough, right?
 - Denoisers add that final polish
 - No denoise technique is perfect, so...
 - We chose two solutions...



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2.6 - Other Cool Stuff

- Global Volume Shaders
 - Procedural noise now affects the scatter color
 - Affecting transmission involves ray marching – slow
- Cryptomatte
 - Attempts to solve the matte ‘coverage’ problem
- Area Light Spread / Barn Door
 - Allows you to focus area lighting, like a spot-light
- Refracted specular lighting
 - Required for realistic lenses, crystals
 - Most noticeable with dome lights



REDSHIFT

2.6 - Post FX

- Bloom
 - That dreamy effect, popular with glamour shots in the 1960s!
- Flare
 - Cool lens effect based on bokeh hexagonal shapes, with tweakable chromatic aberration
- Streaks
 - Make those hot-spots pop!
 - Fully directional, with tweakable tails
- Color Control / LUTs
 - Great for applying a final color grade to make the image more dramatic
- Intuitive controls but tons of flexibility
- Real-time in the RS RV, but available in batch too
- A separate AOV coming soon



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Redshift 3.0

- Let's make Redshift even faster and easier to use!
- Refactoring the core
 - Increasing the trace-depth limit
 - More indirect light bounces
 - Deeper transparencies / cut-outs
 - Faster rendering for deep bounces
 - Keep the GPU busy
 - Requires less VRAM than 'ray reserved' AMM
 - 3x faster for really horrible rough glass-scenes, with many bounces!
 - 10% faster for regular scenes
 - Ready for RTX
 - Using Nvidia OptiX library to support Turing architecture hardware ray-tracing
- Automatic sampling
 - Let Redshift choose how many samples to use for acceptable noise
 - Faster rendering, fewer options - easier to use!
- Even more aggressive optimizations
 - Faster transparencies, especially for hair
 - Better importance sampling for scenes with many lights
- Faster rendering = better looking images



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The Future

- More features
 - Light blockers
 - Toon Shading
 - Distributed/remote rendering
 - LPEs
 - Maya Fluids
 - XGen IGS
 - Shader SDK / OSL support



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Thanks!

- For more information, please contact us at info@redshift3d.com
- Or meet us at booth #515!



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