



GENERATIONS / VANCOUVER
12-16 AUGUST
SIGGRAPH2018

Introduction to DirectX Raytracing

Welcome & Introductions

Chris Wyman, NVIDIA

Shawn Hargreaves, Microsoft

Peter Shirley, NVIDIA

Colin Barré-Brisebois, SEED

Course slides, resources, information:
intro-to-dxr.cwyman.org



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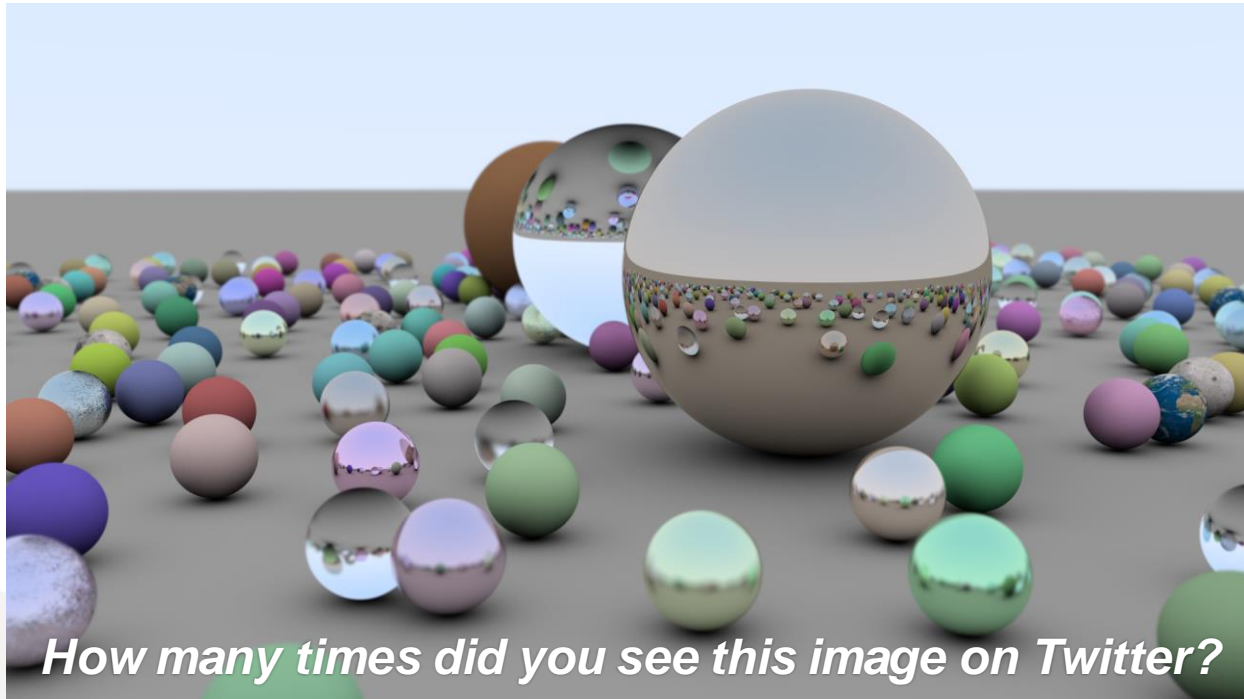
Photography & Recording Encouraged

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 - Straightforward sharing of GPU resources
 - Compelling demos suggest real use cases



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- Yesterday, accelerated hardware support



Course Goals



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- Target audiences:
 - *Students, faculty, 1st time SIGGRAPH attendees; little or no DirectX experience*
 - *Rendering folks figuring out what ray tracing means for their raster applications*

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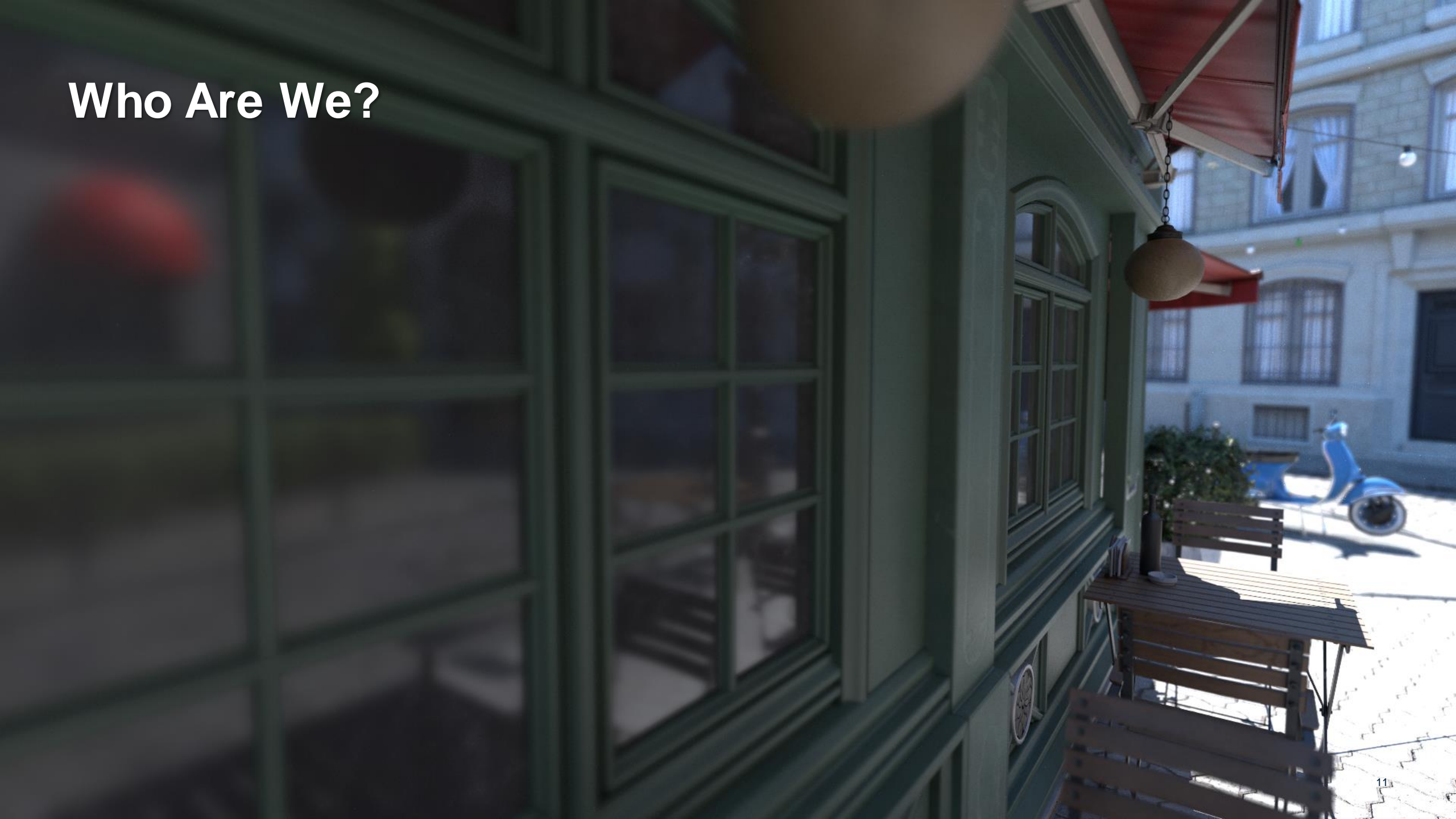
A modern living room scene with a white sofa, coffee table, and shelves, overlaid with a semi-transparent text box. The room features a white sofa with pink cushions, a white coffee table with a pink vase and a grey vase, and a white side table with a pink bowl. The background has a white wall with a white shelving unit holding several red vases. A large red abstract sculpture is visible on the right side of the image.

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 - *Introduction to ray tracing*
 - *Understand new DirectX shaders and a mental model of GPU's "ray tracing pipeline"*
 - *Walk through incremental shader tutorials to build a simple path tracer*

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- Second half of course – lower level API details:
 - *Basics of host-side / C++ DirectX changes for ray tracing*
 - *Understand mental model for programming the CPU for DX Raytracing*
 - *Share experiences integrating DXR into existing raster pipelines*

Who Are We?



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 - Principal Development Lead for Direct3D, Microsoft
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- **Colin Barré-Brisebois**

- Senior Software Engineer, SEED
- Previously at WB Games Montreal; blogs; shares ideas at GDC, I3D, HPG, SIGGRAPH, etc.

Today's Schedule



More information: intro-to-dxr.cwyman.org

Today's Schedule

Time	Session	Speaker
9:00 – 9:05	Welcome and introductions	Chris Wyman
9:05 – 9:25	Overview of ray tracing	Peter Shirley
9:25 – 9:55	Introduction to DirectX ray tracing Shaders	Chris Wyman
9:55 – 10:30	Building an HLSL path tracer step-by-step	Chris Wyman
10:30 – 10:40	Break	
10:40 – 11:40	Introduction to the DirectX Raytracing API	Shawn Hargreaves
11:40 – 12:00	Full rays ahead! From raster to real-time raytracing	Colin Barré-Brisebois
12:00 – 12:15	Question & answer session	All

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Some Thoughts

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- Not going to match film quality; but enough rays to do *useful* image generation
 - R&D still needed work; real-time very different than offline
 - Need to develop the fast “hacks” that look good in 16 ms; like those used in rasterization

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- Images in this talk all render in tutorial code (free to use on website)
 - All render at multiple spp in real time; though the images shown are converged

Putting On My NVIDIA® Hat

- We're talking a lot more about ray tracing throughout the week
 - Sponsored session on GPU Ray Tracing for Film and Design (Tuesday @ 2pm)
 - Sponsored session on Real-Time Ray Tracing (Wednesday @ 9am)
 - Various talks at our expo booth

Putting On My NVIDIA® Hat

- Resources online
 - [Research code](#) for low sample count reconstruction (SVGf filter)
 - In addition to more polished [GameWorks solutions](#)



Ray Tracing Gems call for participation

Article due date: October 15

For release at GDC 2019

Editors: Eric Haines and
Tomas Akenine-Möller

See <http://raytracinggems.com>



Image by Alexia Rubod



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