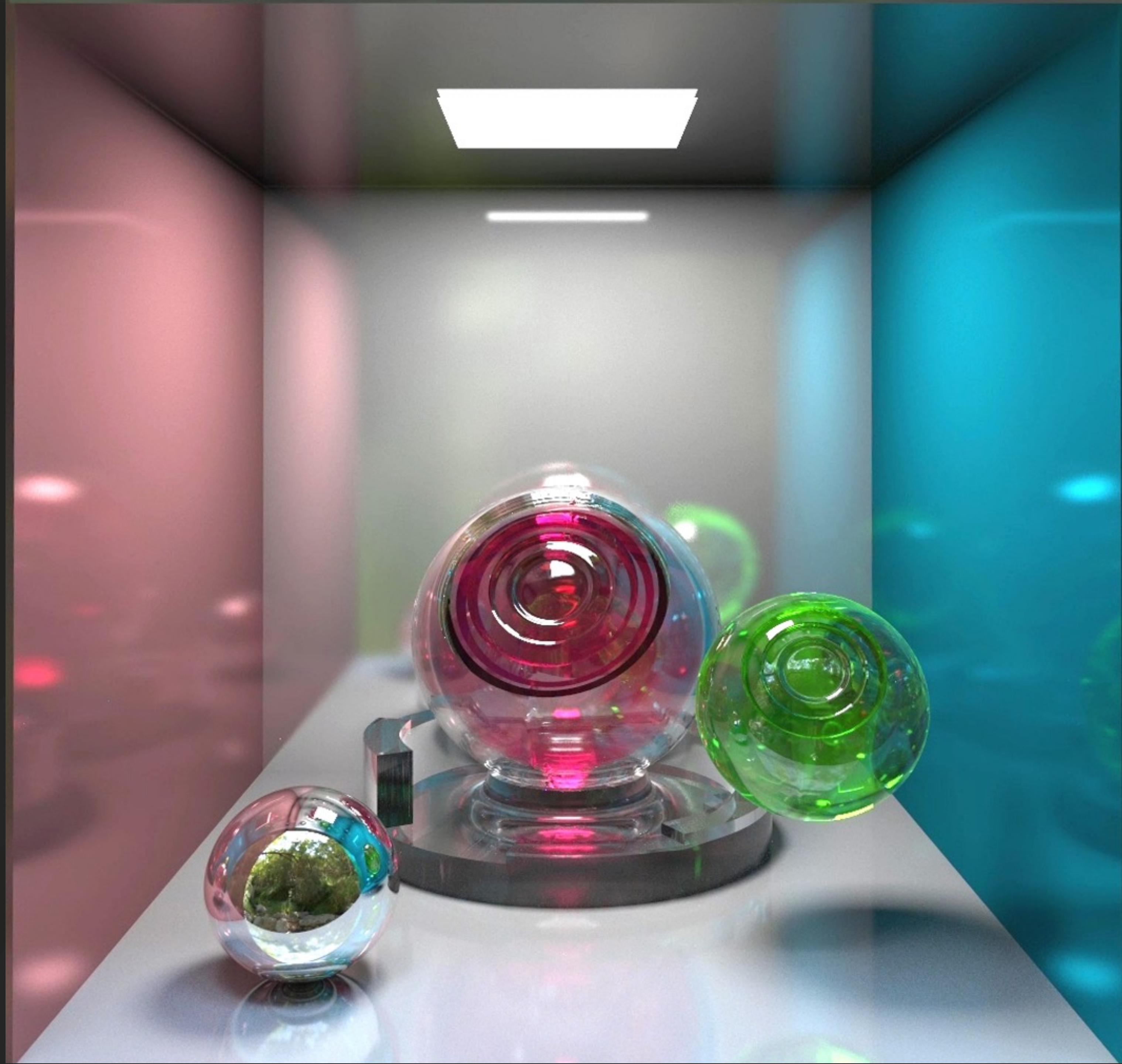


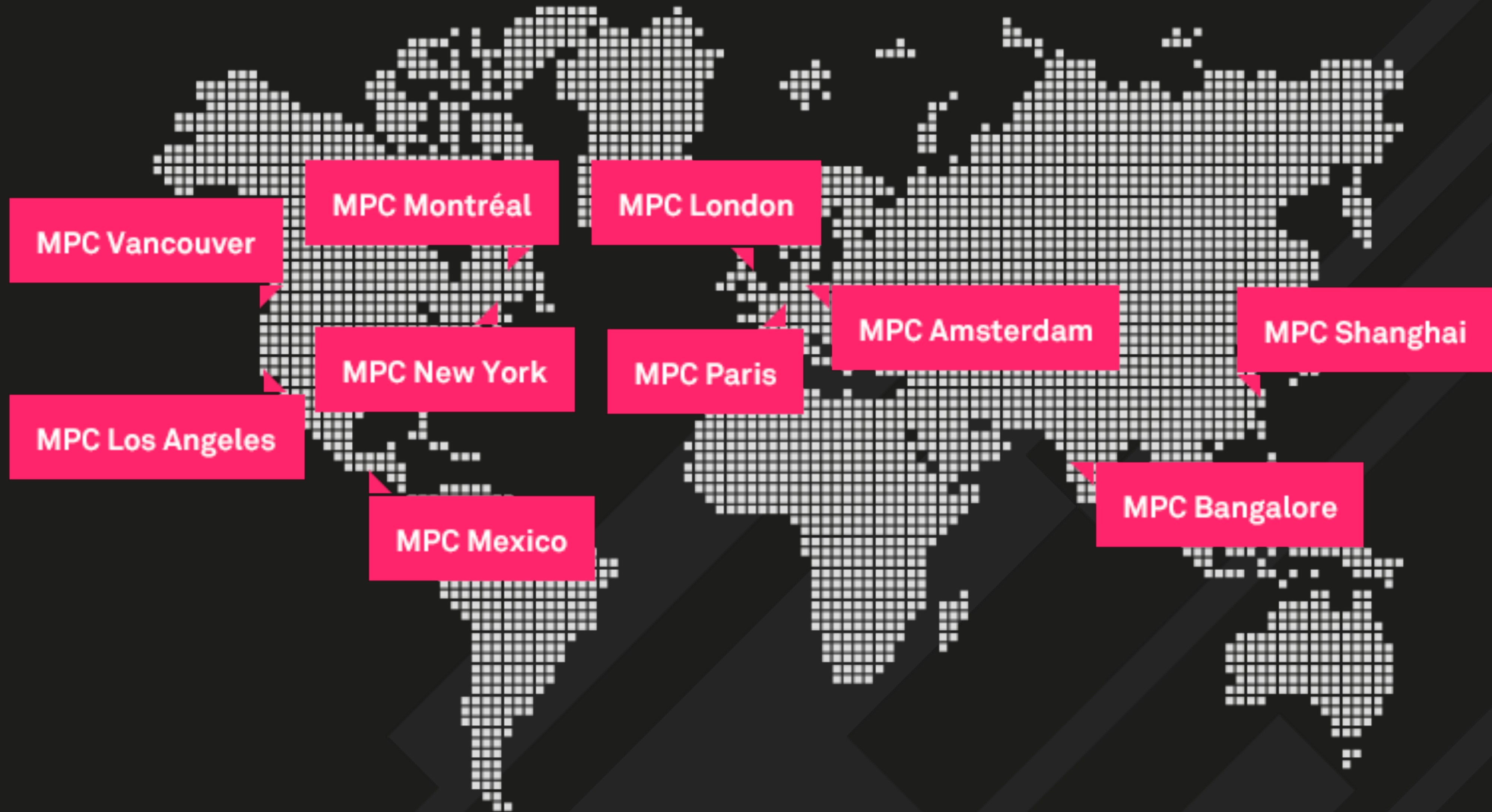
MPC Film

Dekko : A Realtime
Preview Framework

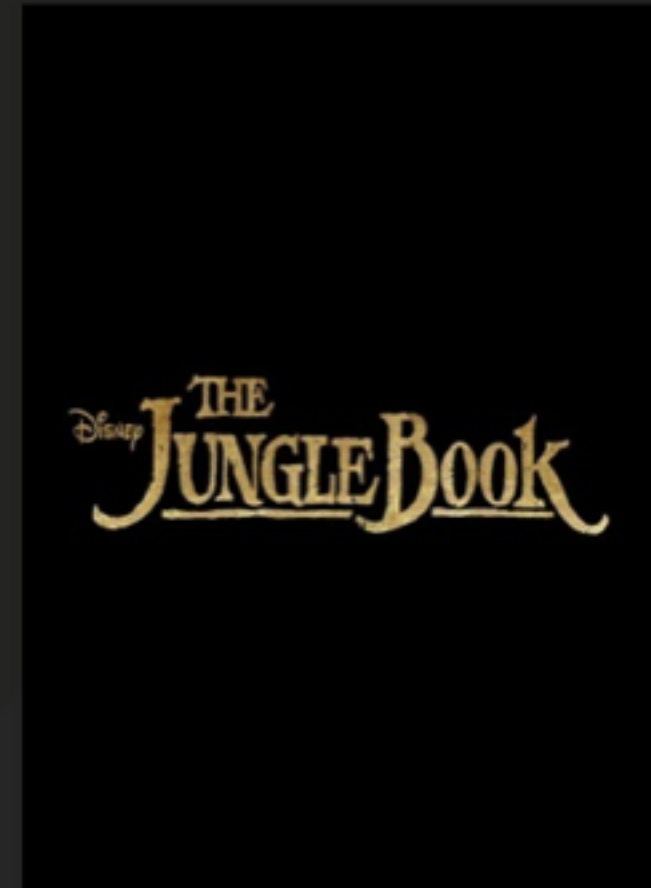
GTC 2015



MPC



MPC Film Recent Shows





Preview for VFX



Challenges











Billions of Polygons

Speed

Quality



OpenGL

GameEngine

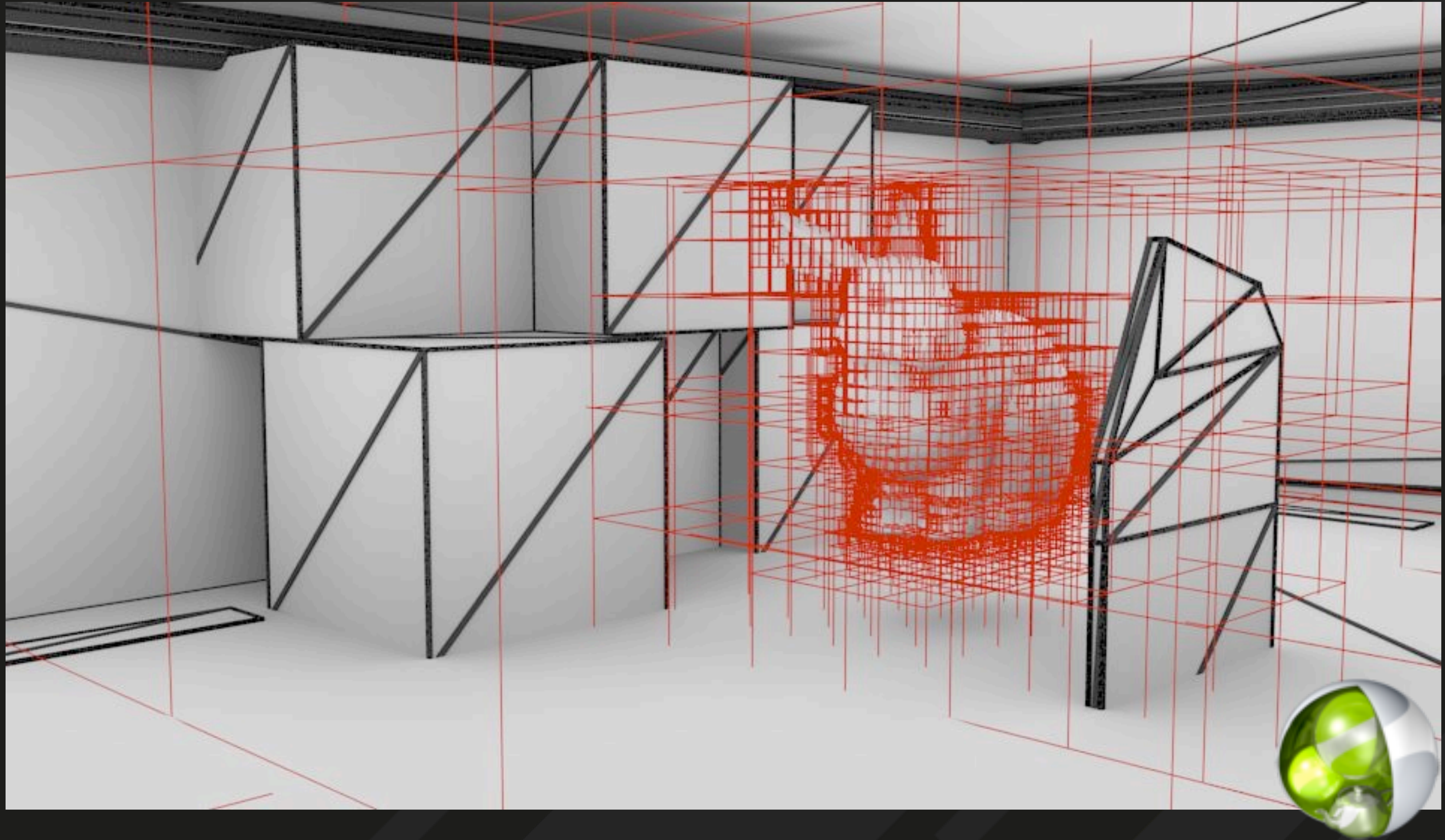
Re-Rendering

RenderMan

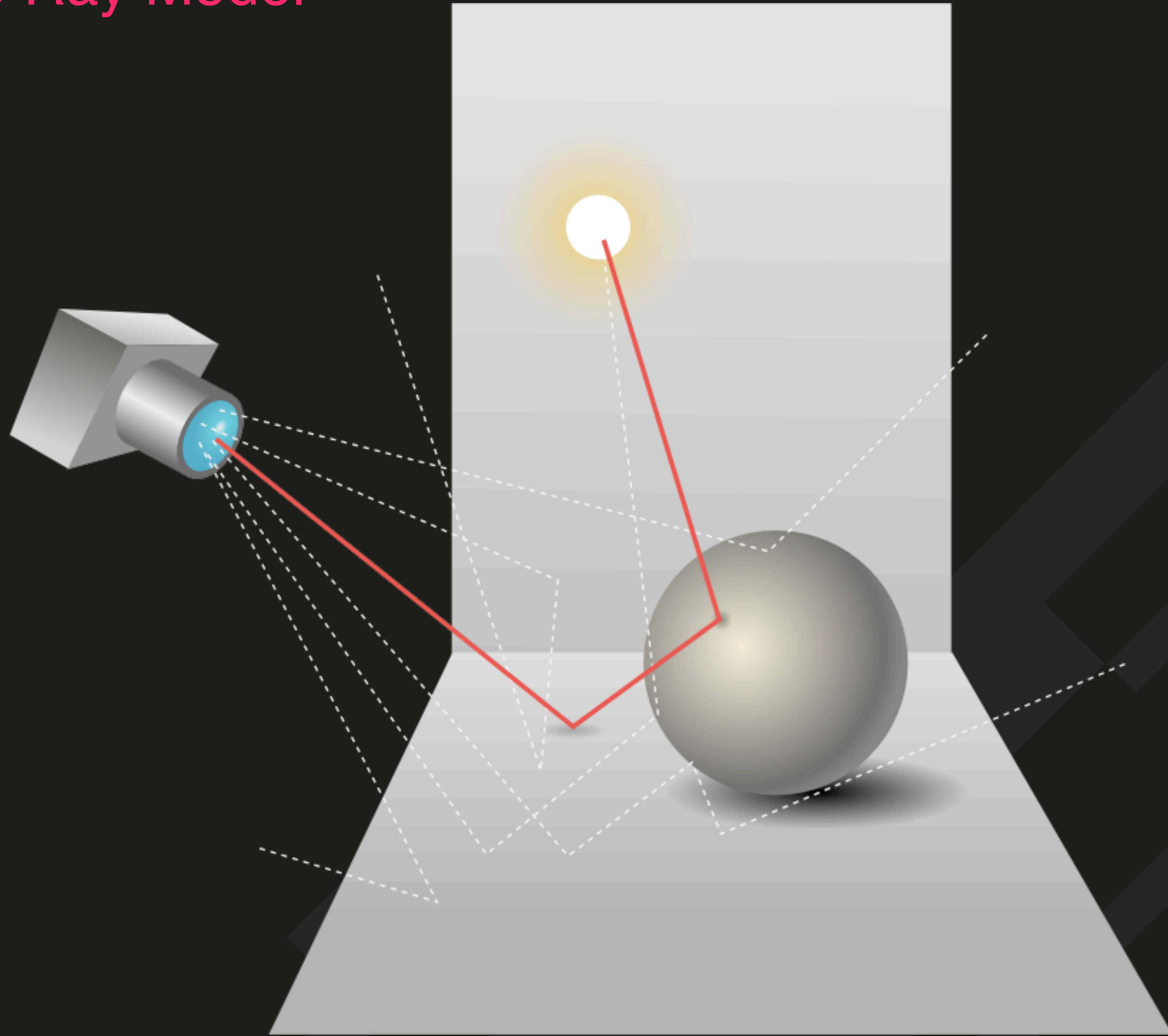
Dekko

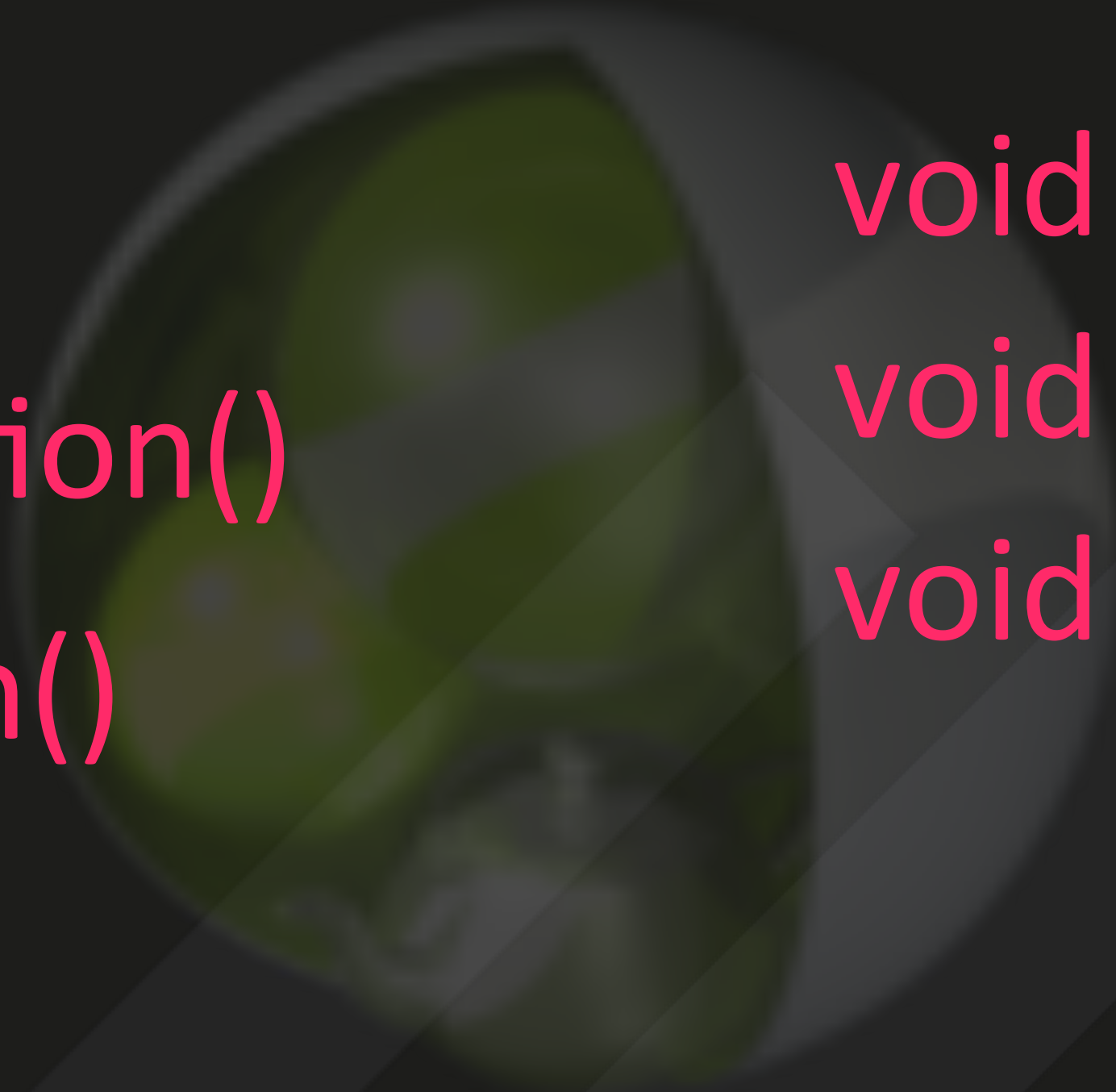
GPU Raytracing
+
Modern Scene Assembly

Dekko : Build using NVIDIA OptiX



OptiX : Single Ray Model



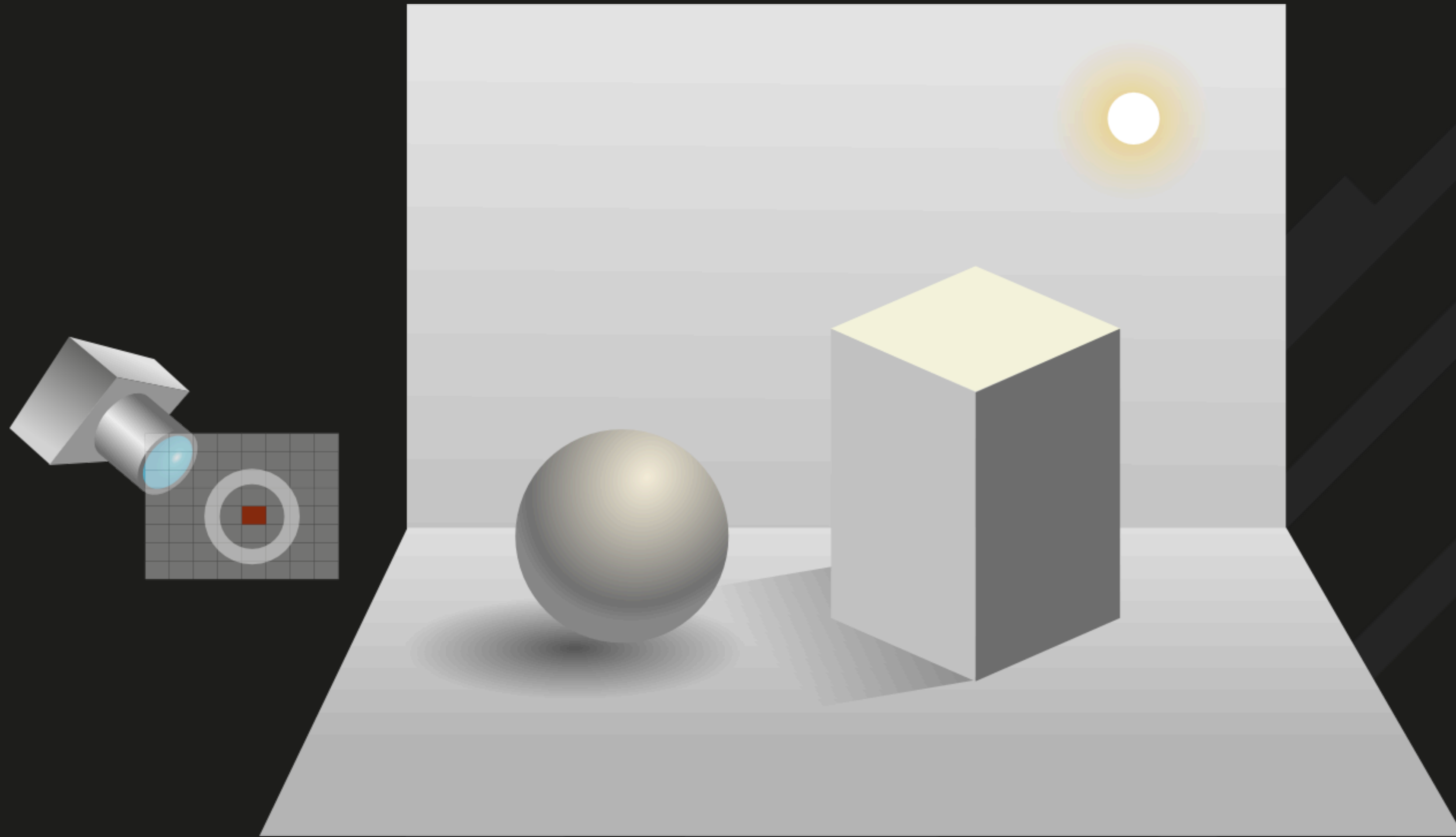


```
void ray_generation()  
void exception()
```

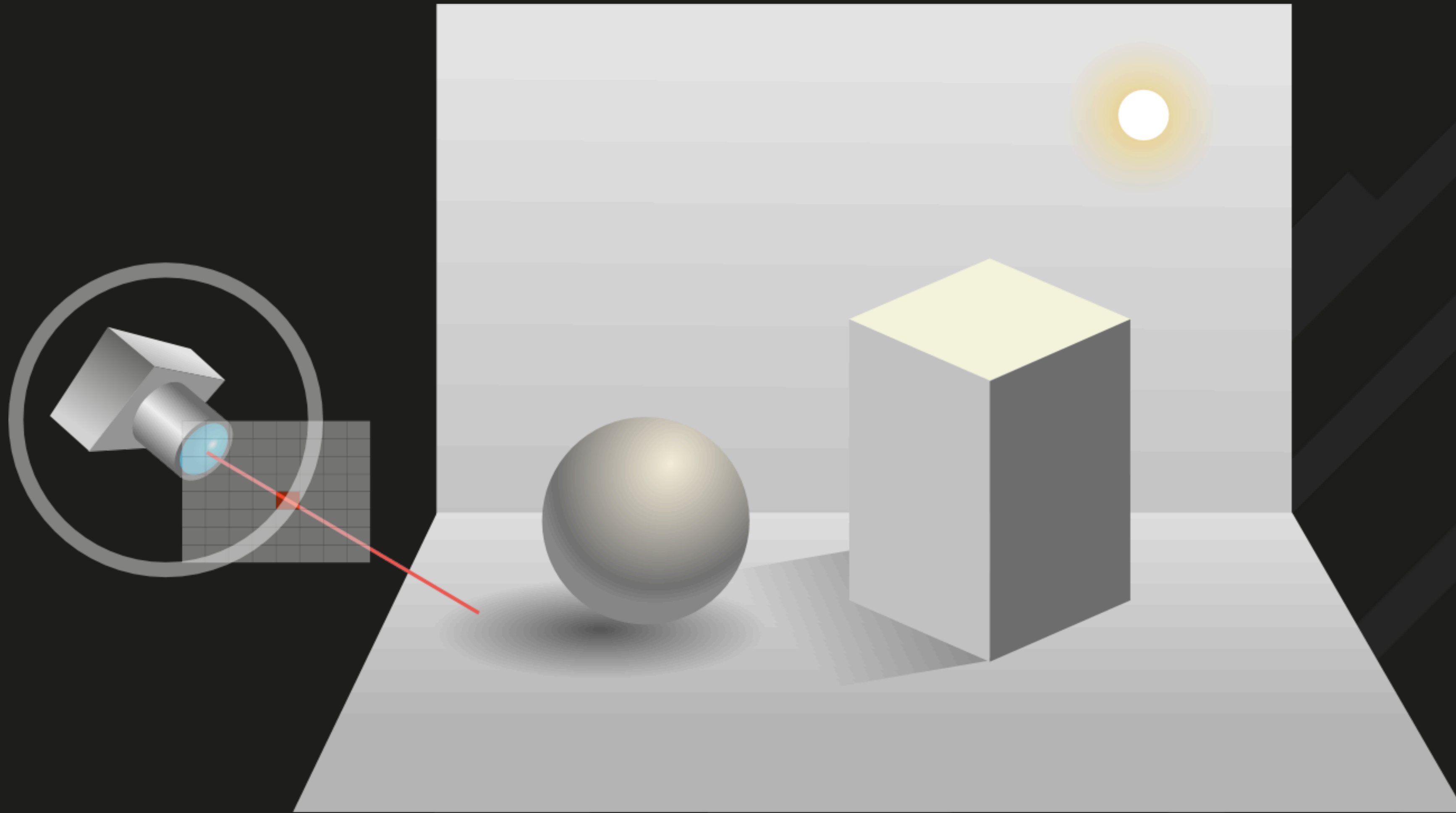
```
void intersection()  
void closest_hit()  
void any_hit()
```

```
void miss()
```

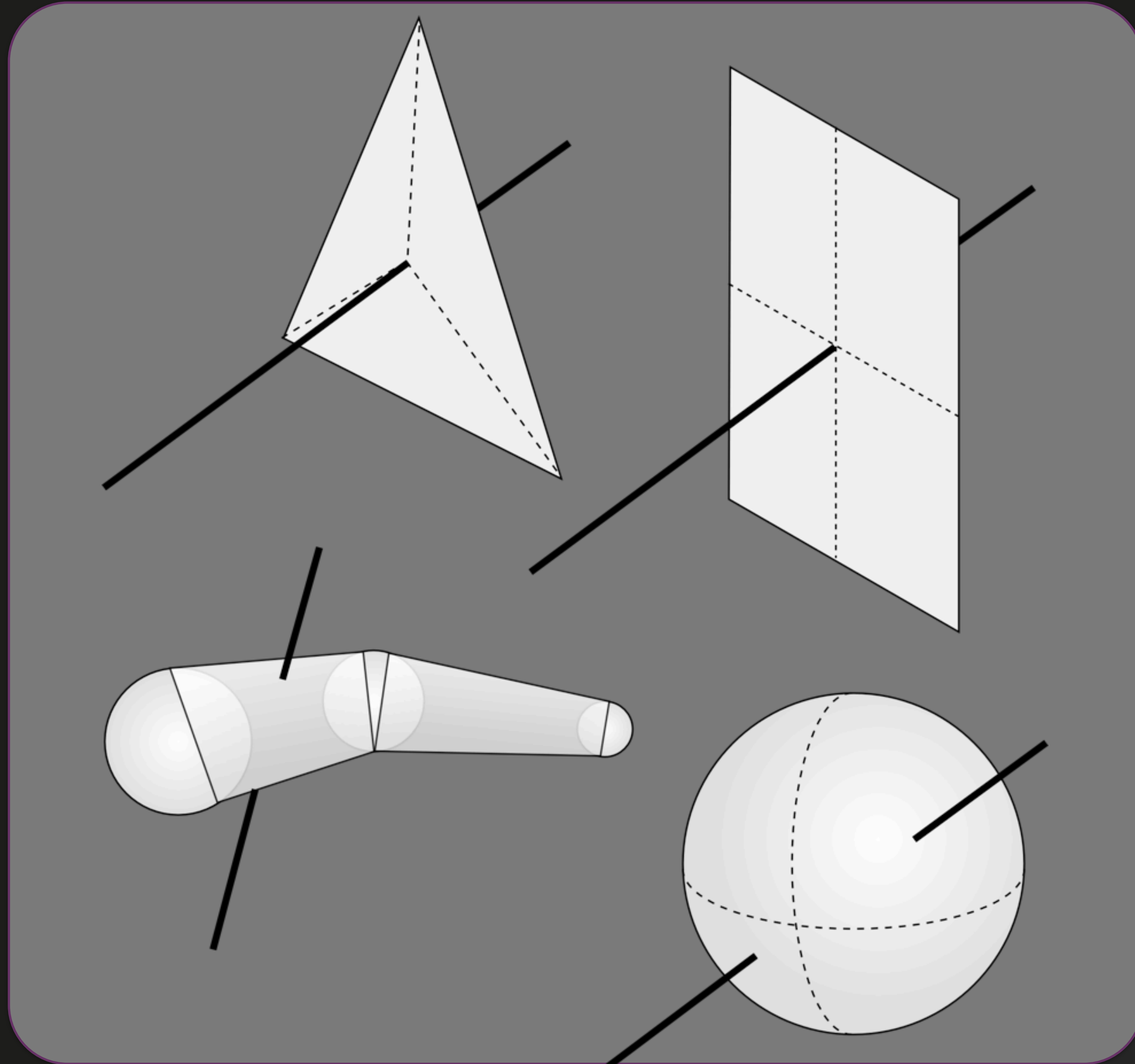
Dekko : Single Ray Programming Model



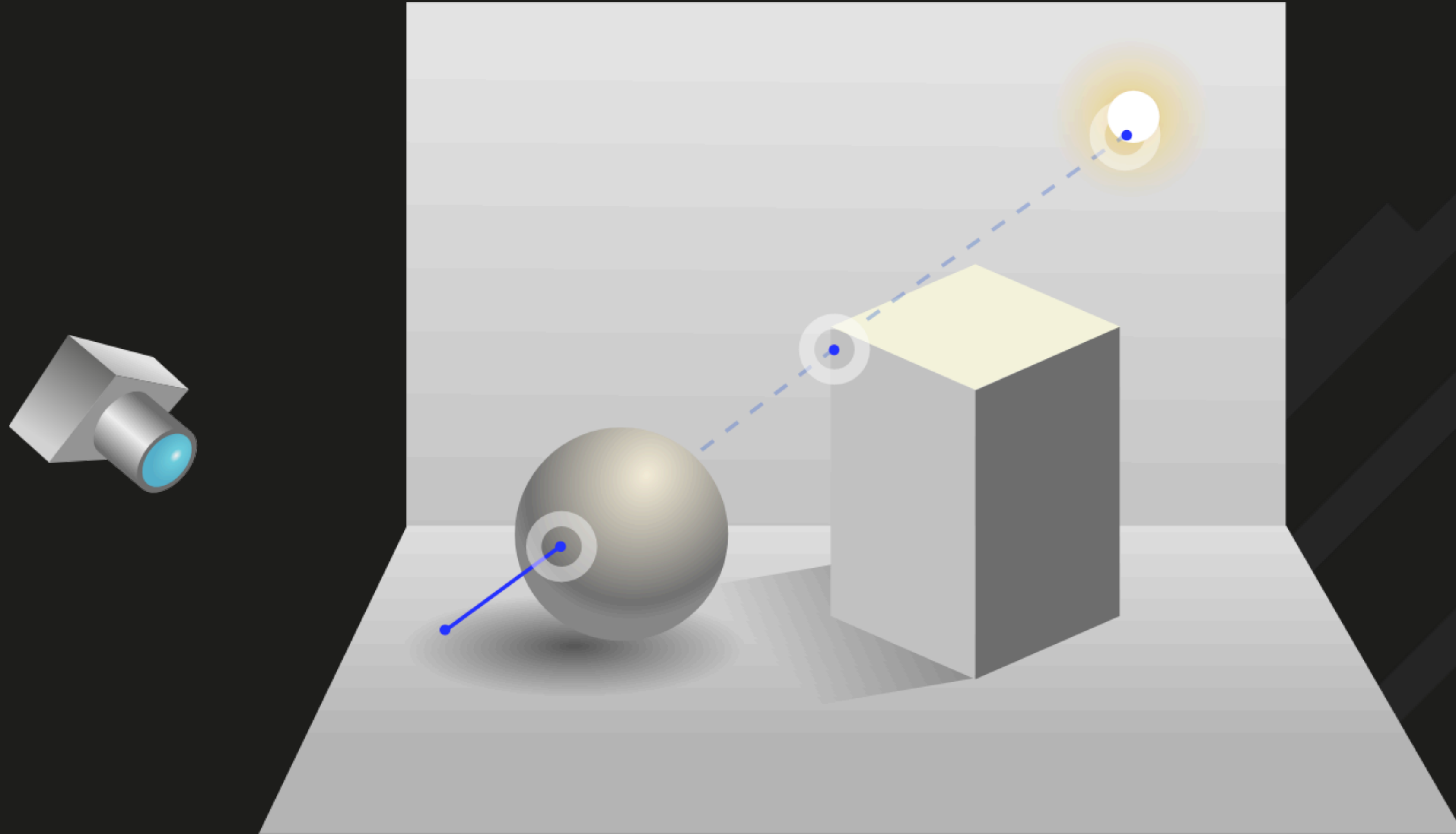
Send a ray from the camera



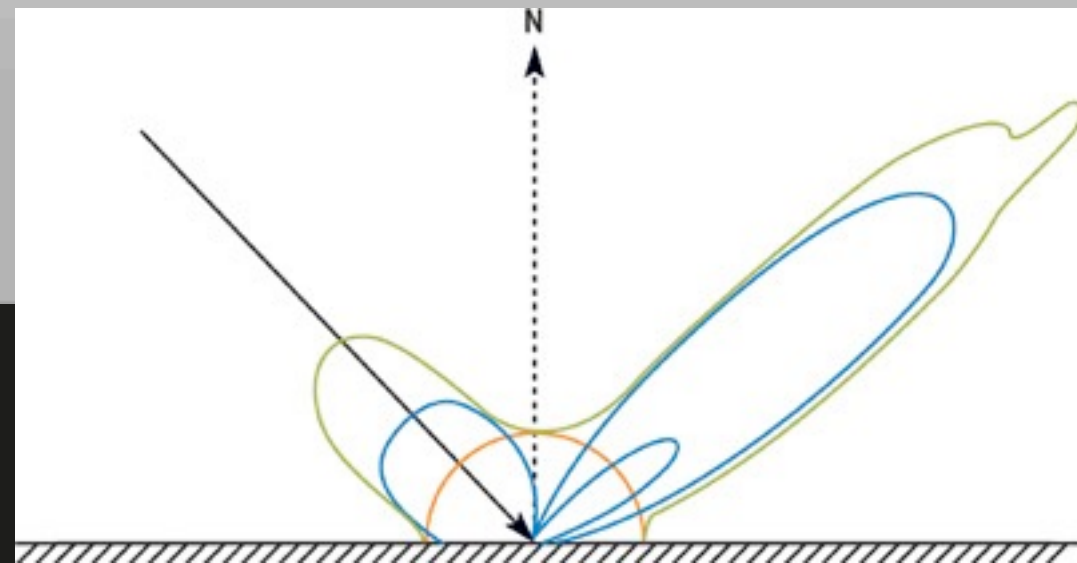
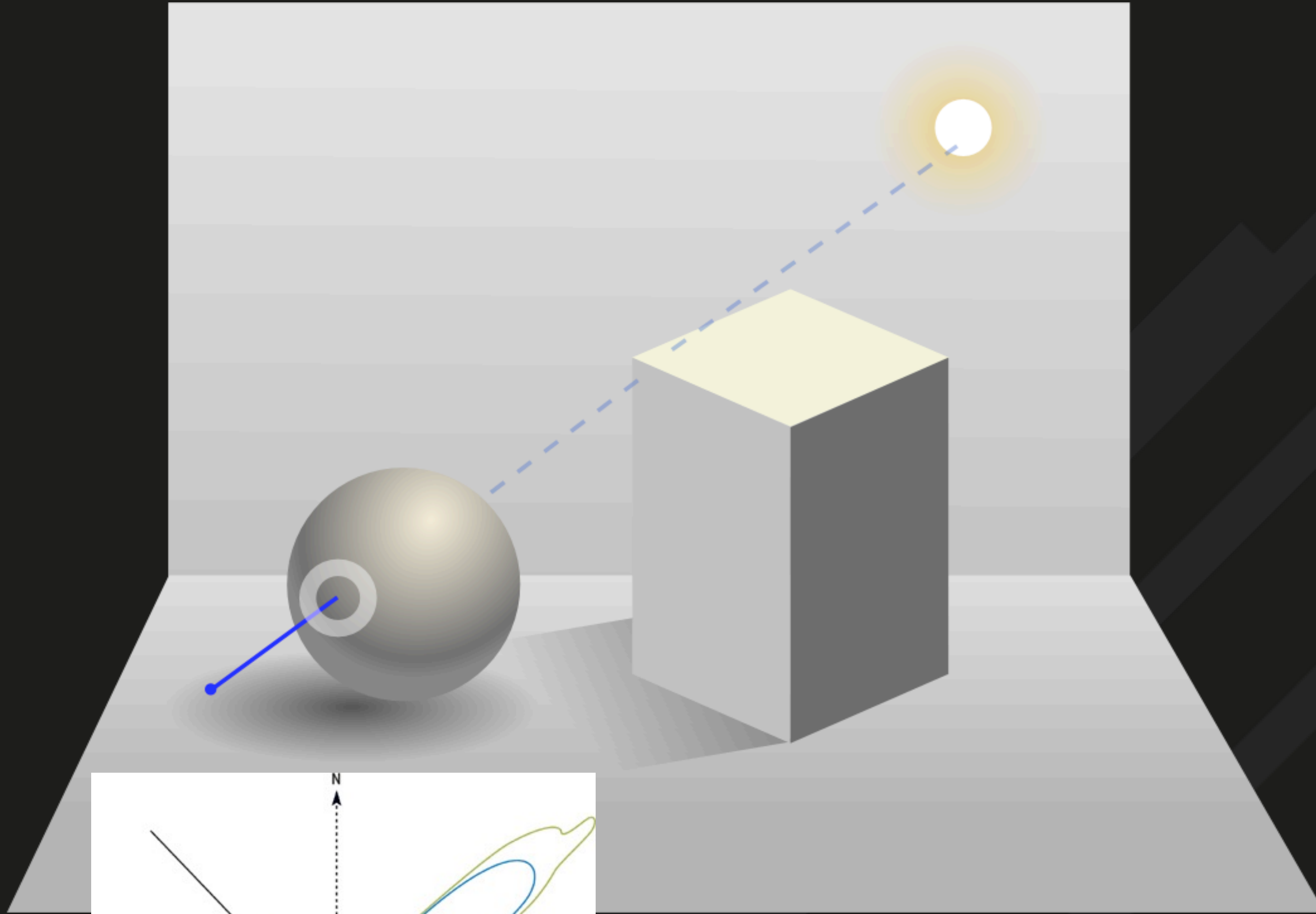
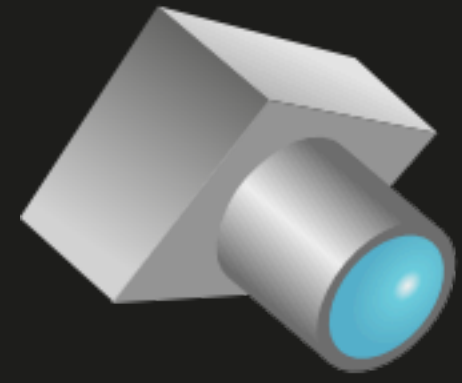
OptiX : Customisable Primitive



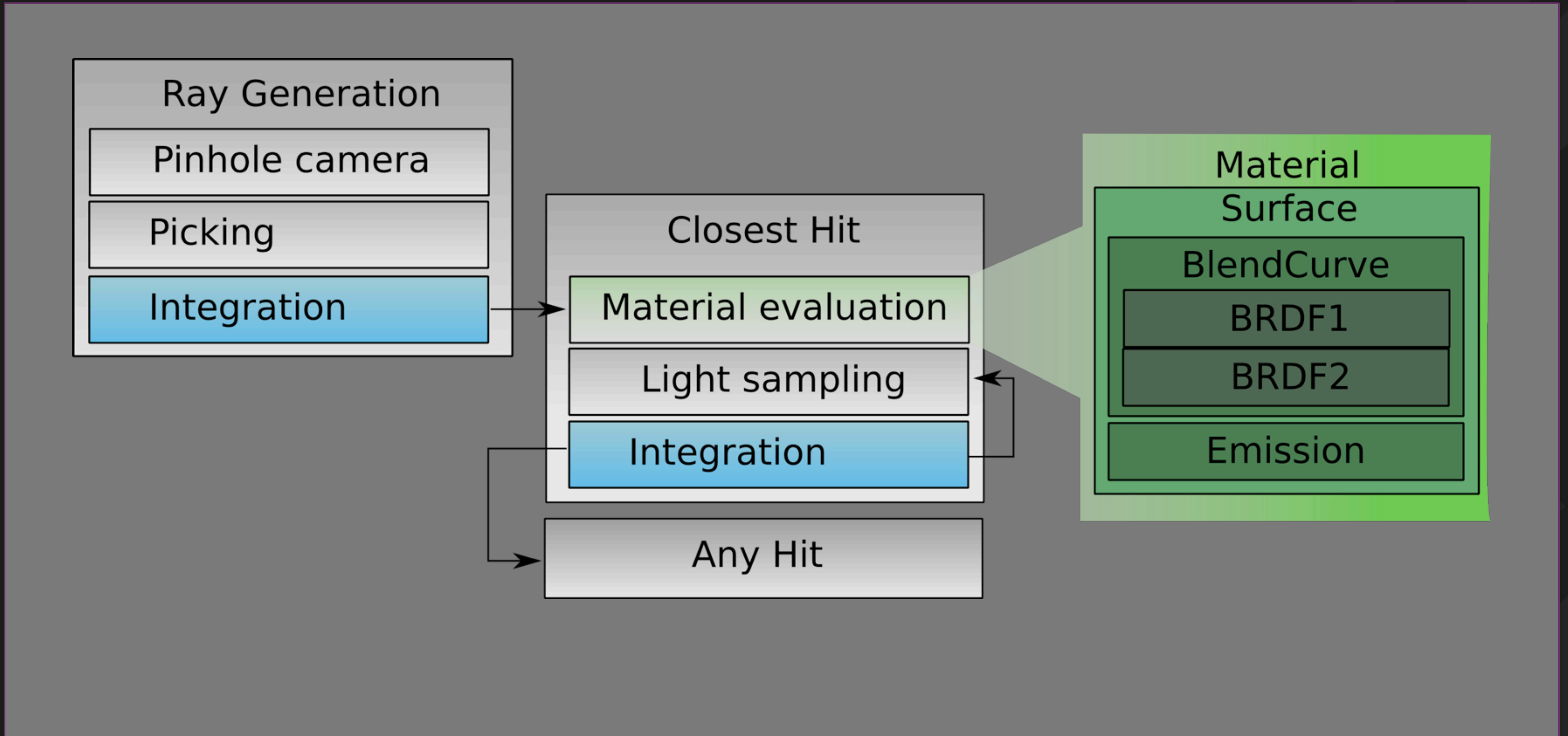
Any Hits



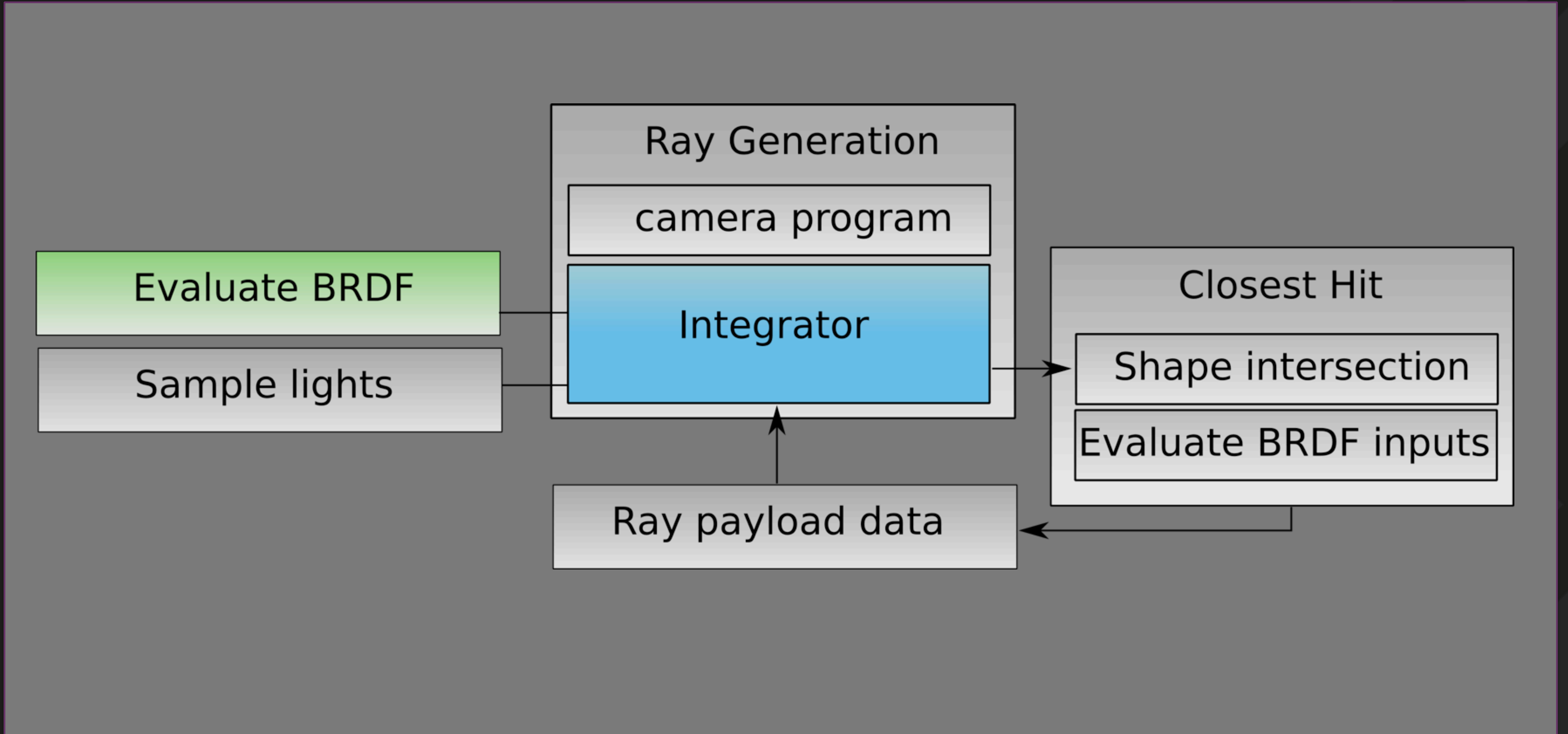
Closest Hit



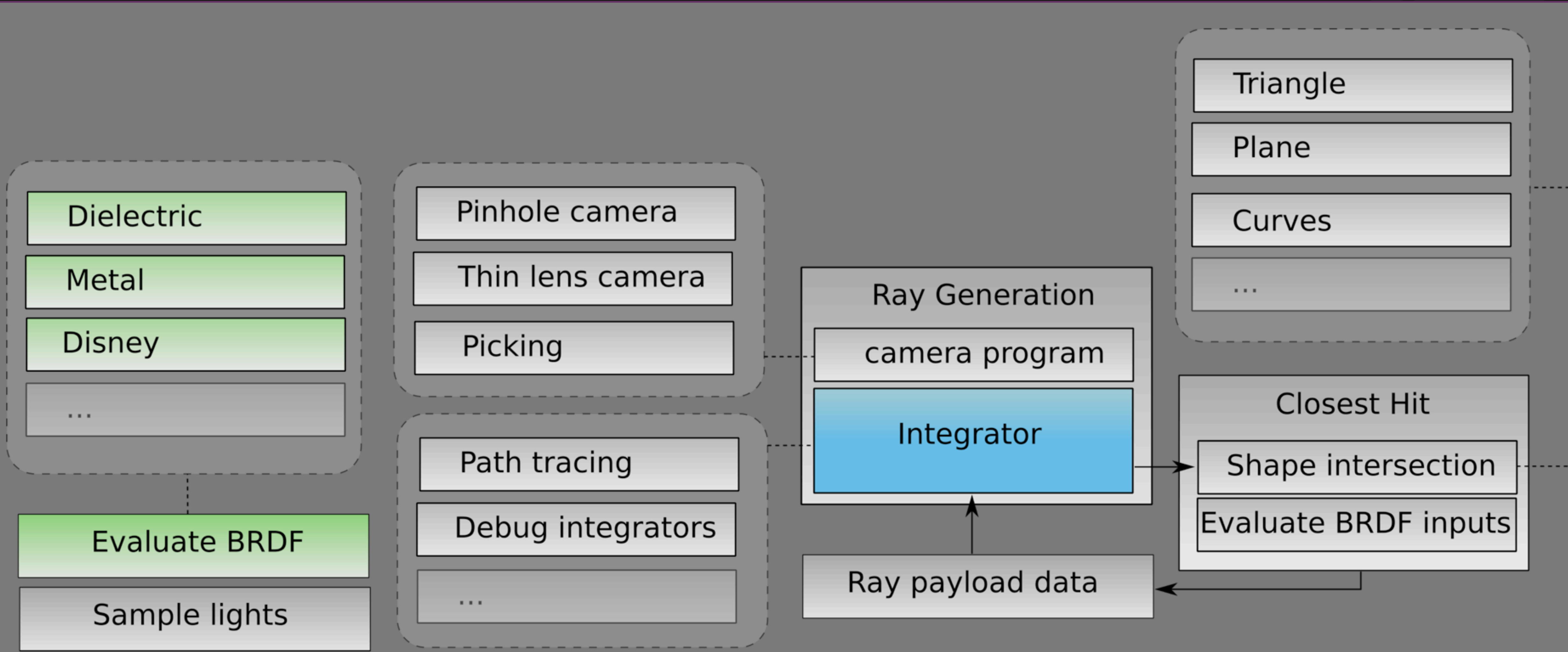
Preview Implementation (GTC 2014)



Dekko New Flexible Design

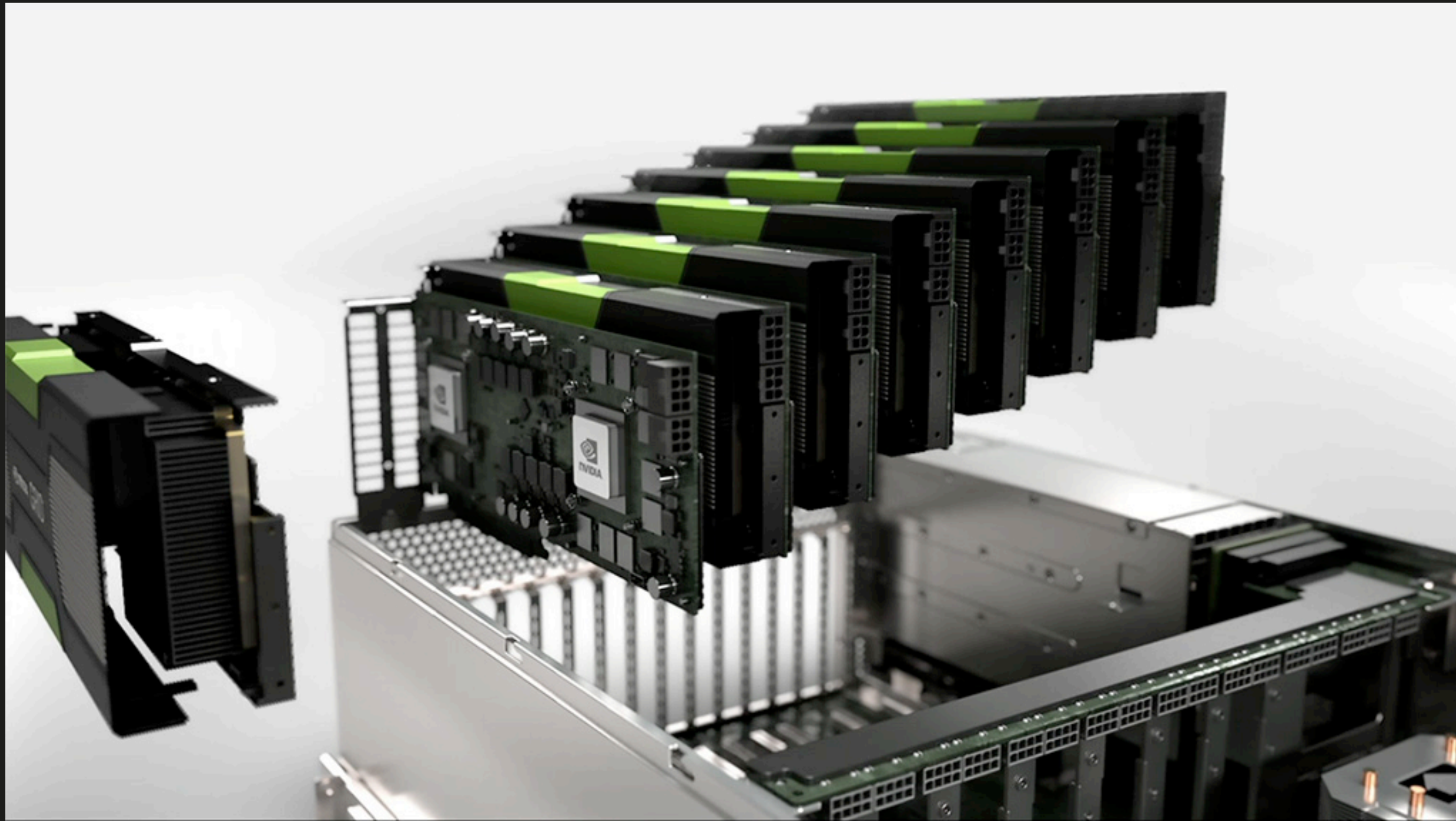


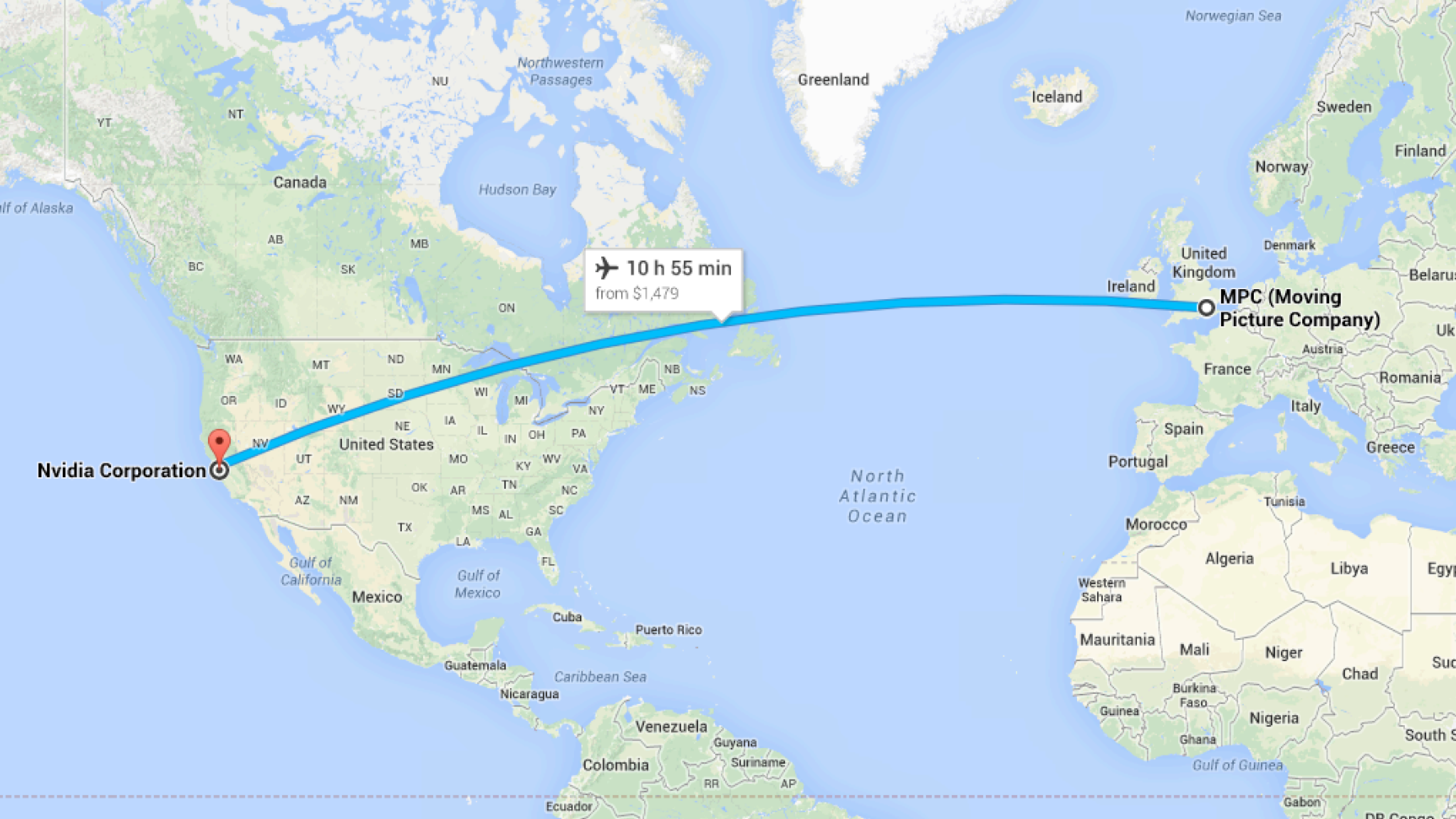
Dekko New Flexible Design



NVIDIA VCA Support

- Worked with NVIDIA to have Dekko running on NVIDIA VCA
- Current Build running with Optix 3.8
- Goal is to disconnect the compute from the artists
- Also enable better scaling for reviews





Nvidia Corporation

✈️ **10 h 55 min**
from \$1,479

MPC (Moving Picture Company)



FABRIC SOFTWARE



FABRICKL

KL is easy to learn: think Python

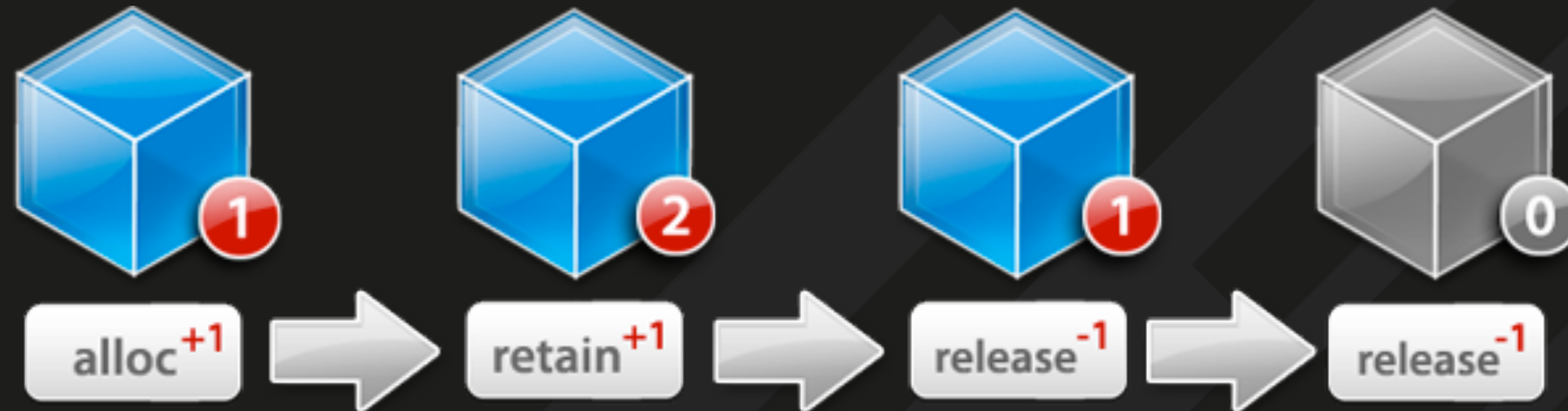


Designed for performance using LLVM compilation

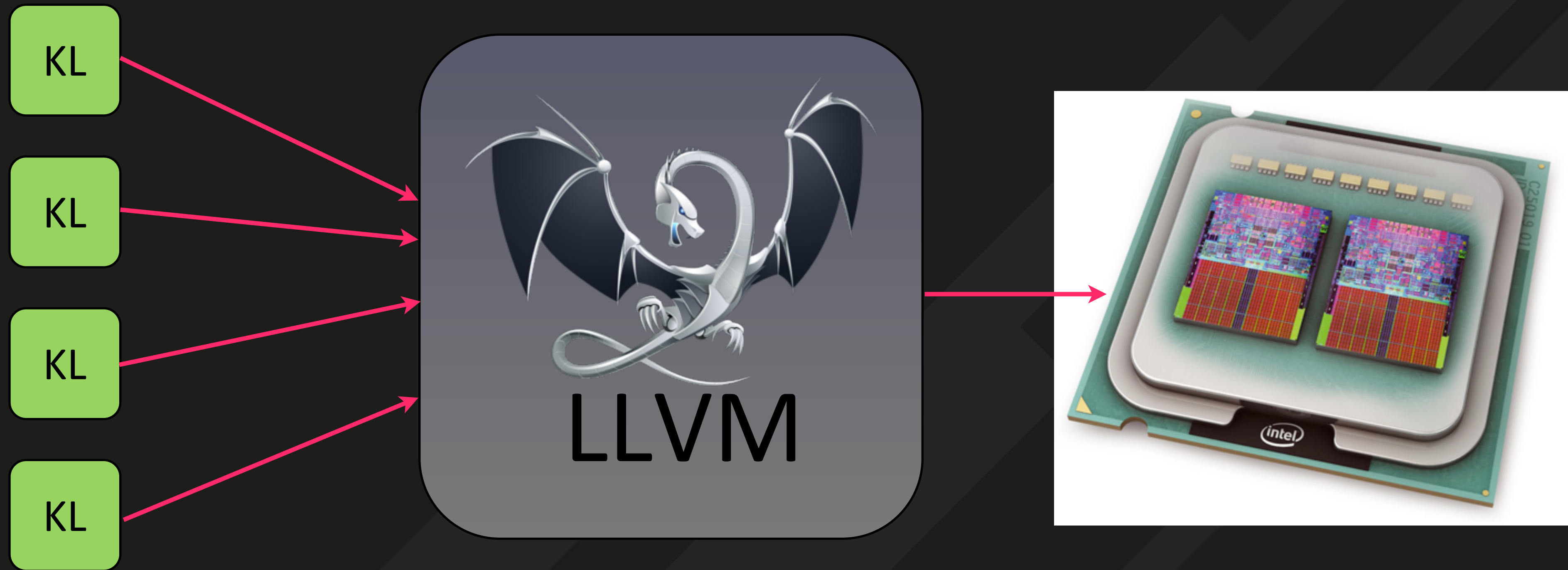


LLVM

Automatic Memory Management



Compile at Runtime



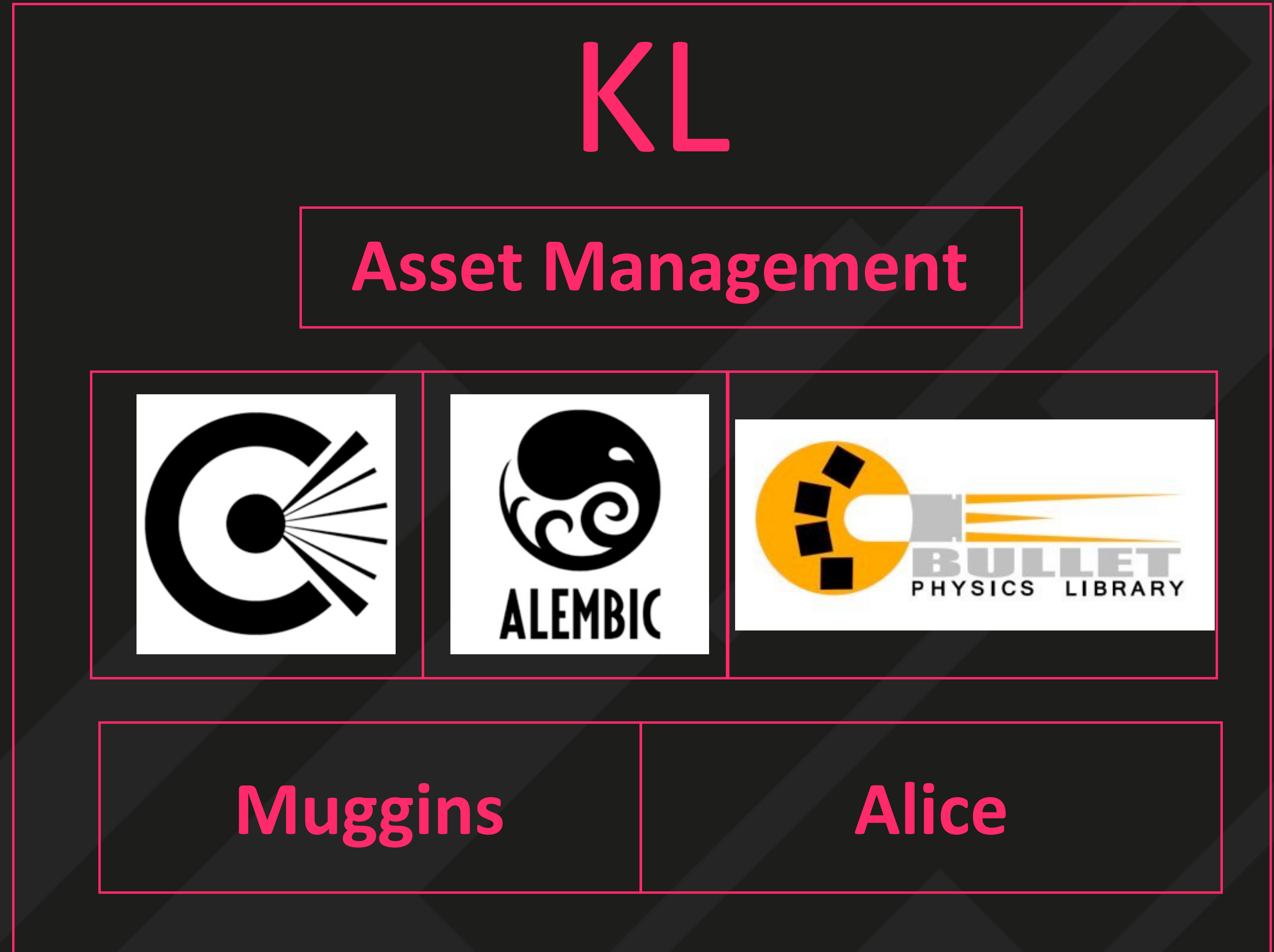
Extensible Runtime

— Built-in Extension

- Alembic
- Bullet
- OIIO

— EDK to Build your own

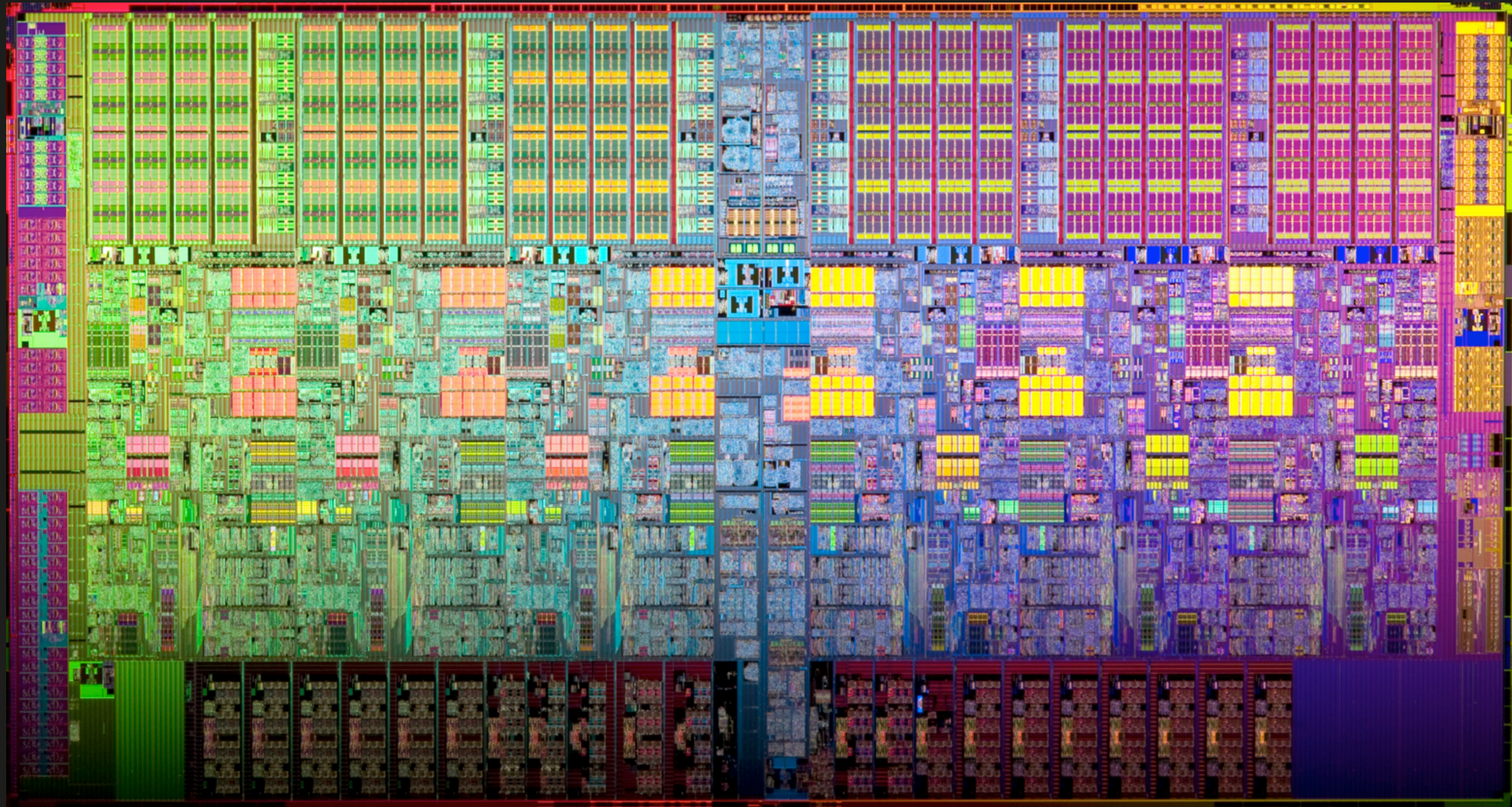
- Muggins
- Alice



Modern Programming Language

```
752 ▼ function String RenderData.getPrimitiveName?(· Size primIndex ·) ·{  
753   · Size numLayer = this.primitives[primIndex].params.getNumLayers();  
754   · String desc;  
755   · if(· primIndex == 0 ·)  
756     · desc = "(root/viewport)";  
757   · else if(· this.primitives[primIndex].used == false ·)  
758     · desc = "(unused)";  
759 ▼   · else {  
760     · RenderParamKey nameKey = this.primitives[primIndex].params.getKey(· "name" ·);  
761     · if(· nameKey.isValid() ·)  
762       · this.primitives[primIndex].params.get(nameKey, desc, 0);  
763     · else if(numLayer)  
764       · desc = this.primitives[primIndex].params.layers[numLayer-1].layerRef[0].ownerName;  
765     · else  
766       · desc = "(undefined)";  
767   · }  
768   · return desc;  
769 }
```

Multi-Threaded engine for the CPU



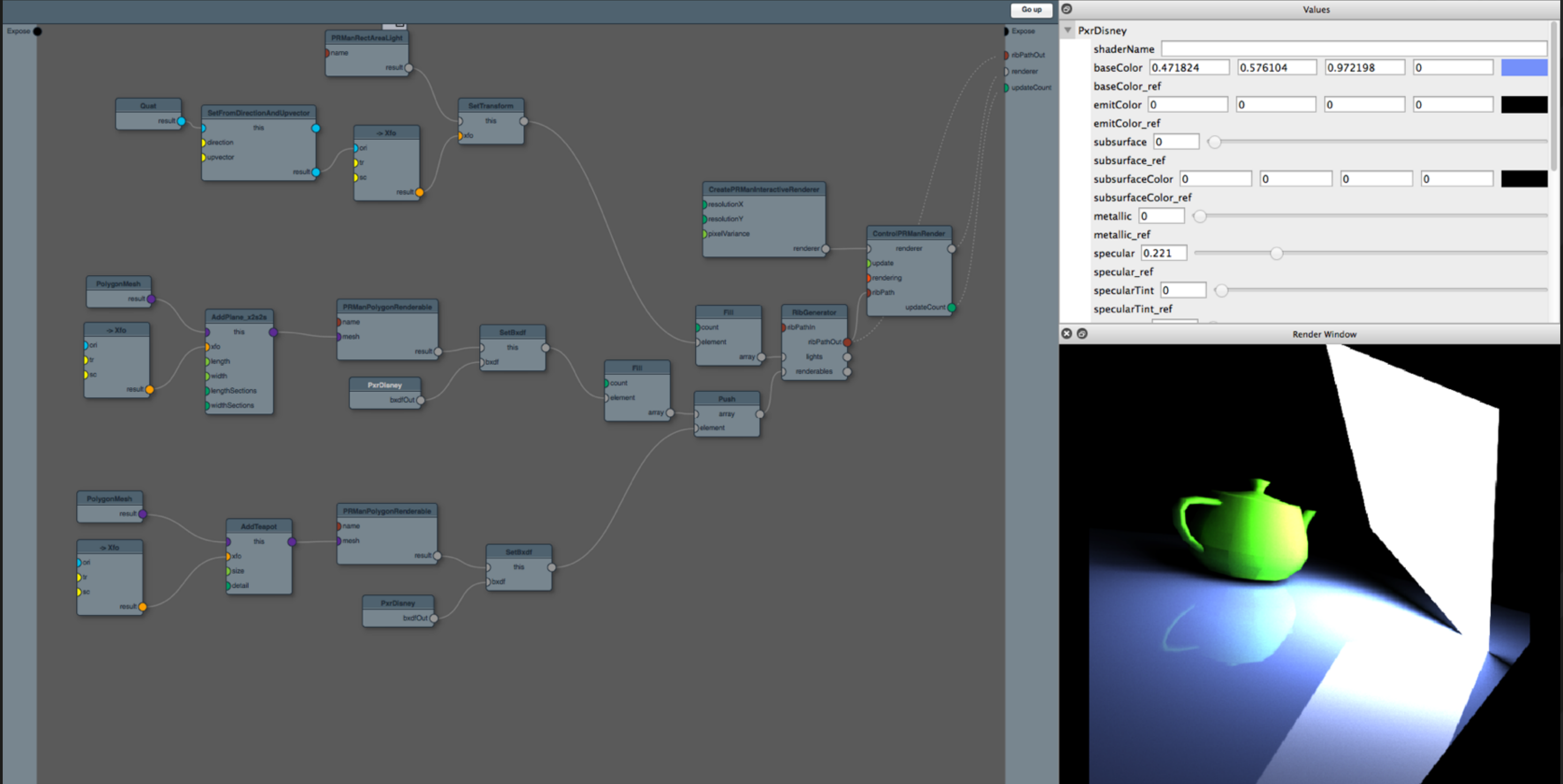
Multi-Threaded engine for the GPU





CANVAS

Visual Programming using Fabric Canvas and Data Flow Graph



The image displays a visual programming environment for rendering a scene. The main workspace is a dark grey canvas with a light blue grid, containing a data flow graph of interconnected nodes. The nodes are organized into several functional groups:

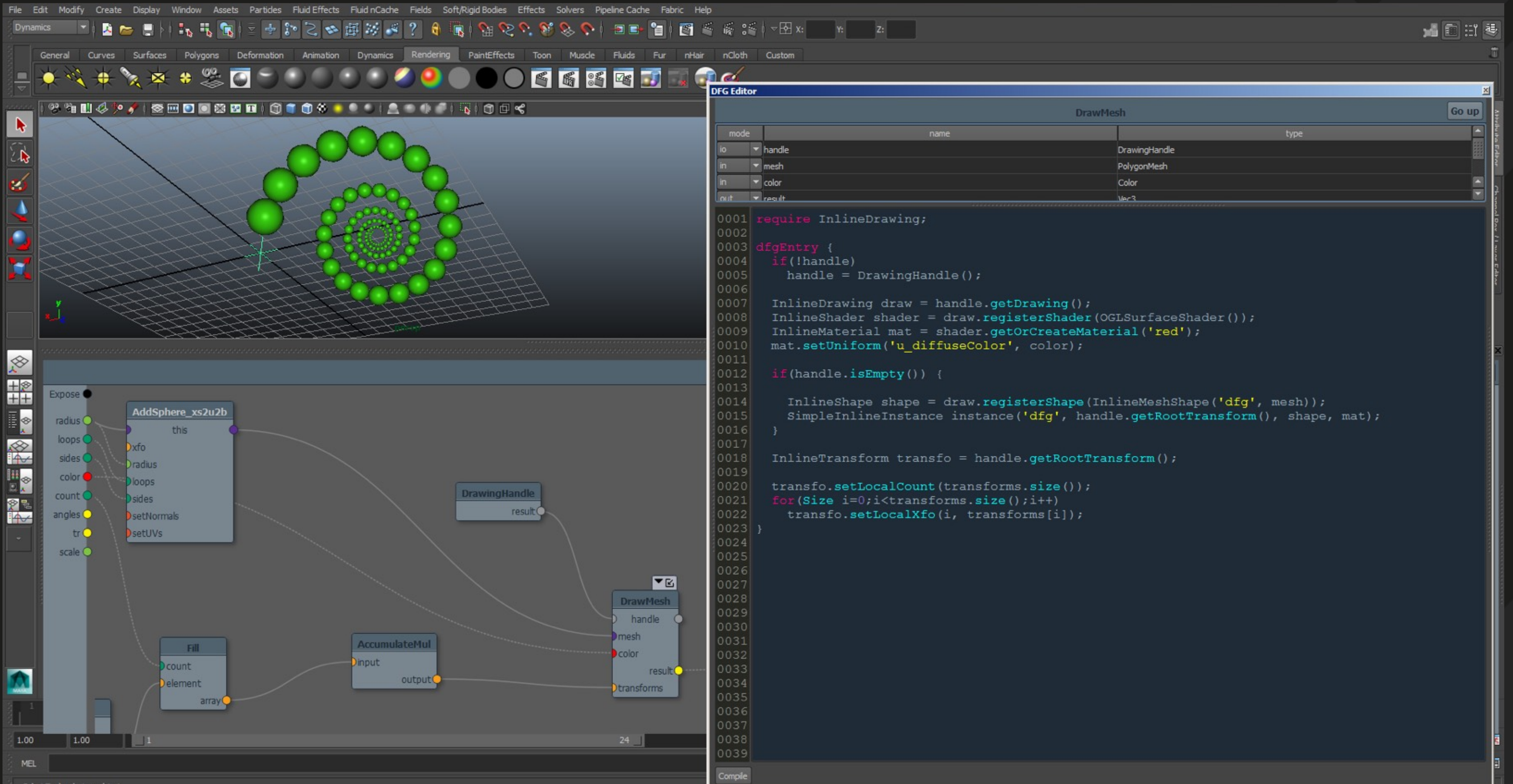
- Light Setup:** A `PRManRectAreaLight` node is connected to `SetFromDirectionAndUpvector` and `SetTransform` nodes. The `SetFromDirectionAndUpvector` node receives input from a `Quat` node. The `SetTransform` node receives input from an `Xfo` node.
- Teapot Object Setup:** A `PolygonMesh` node feeds into an `AddTeapot` node. The `AddTeapot` node also receives input from an `Xfo` node. Its output goes to a `PRManPolygonRenderable` node, which also receives input from a `PxrDisney` node.
- Plane Object Setup:** A `PolygonMesh` node feeds into an `AddPlane_x2s2s` node. The `AddPlane_x2s2s` node also receives input from an `Xfo` node. Its output goes to a `PRManPolygonRenderable` node, which also receives input from a `PxrDisney` node.
- Rendering Pipeline:** The `PRManPolygonRenderable` nodes feed into `SetBxdf` nodes. These feed into a `Fill` node, which then feeds into a `Push` node. The `Push` node feeds into a `RibGenerator` node. The `RibGenerator` node feeds into a `ControlPRManRender` node. The `ControlPRManRender` node also receives input from a `CreatePRManInteractiveRenderer` node. The `ControlPRManRender` node outputs to a `Render Window`.

On the right side, there is a `Values` panel for the `PxrDisney` material. It contains the following parameters and values:

- `shaderName`: [Empty field]
- `baseColor`: 0.471824, 0.576104, 0.972198, 0
- `baseColor_ref`: [Empty field]
- `emitColor`: 0, 0, 0, 0
- `emitColor_ref`: [Empty field]
- `subsurface`: 0
- `subsurface_ref`: [Empty field]
- `subsurfaceColor`: 0, 0, 0, 0
- `subsurfaceColor_ref`: [Empty field]
- `metallic`: 0
- `metallic_ref`: [Empty field]
- `specular`: 0.221
- `specular_ref`: [Empty field]
- `specularTint`: 0
- `specularTint_ref`: [Empty field]

The `Render Window` at the bottom right shows a 3D rendered scene. It features a bright green teapot on a blue reflective surface. A white rectangular plane is positioned to the right, casting a shadow on the surface. The background is black.

Integrated into Maya like Splice

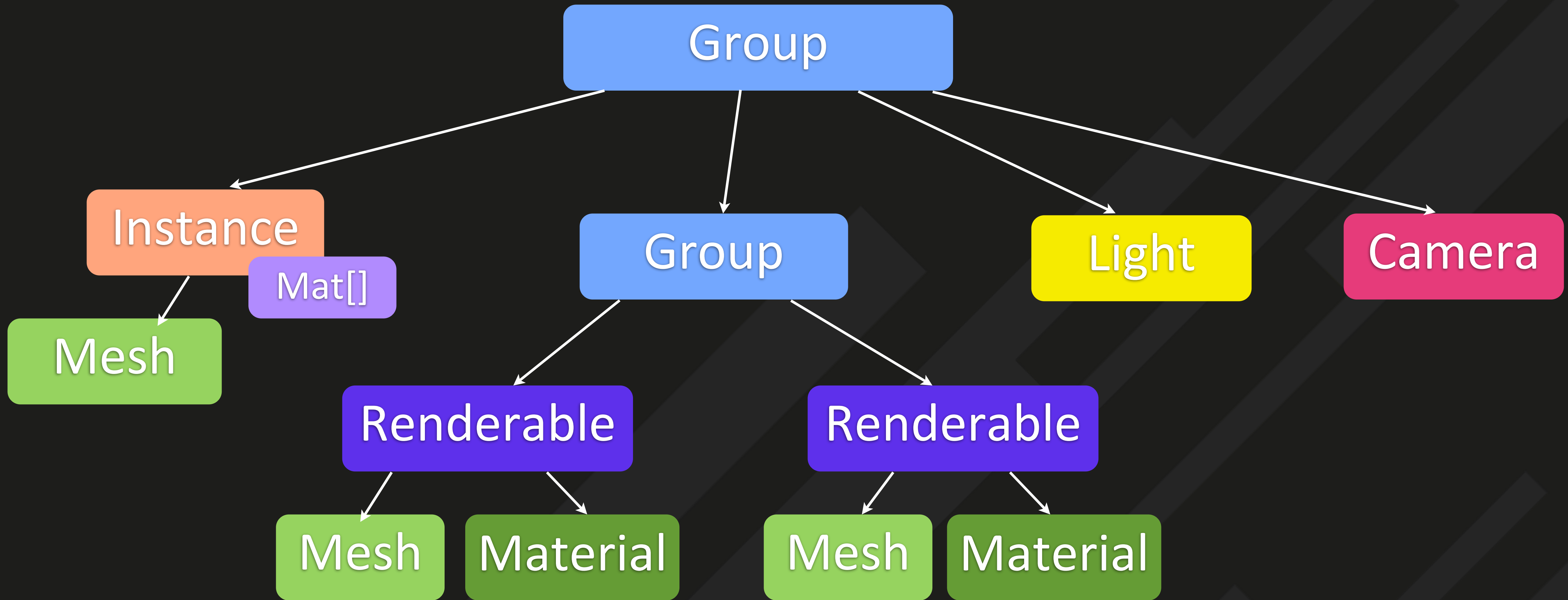


The image shows the Autodesk Maya software interface. The top menu bar includes File, Edit, Modify, Create, Display, Window, Assets, Particles, Fluid Effects, Fluid nCache, Fields, Soft/Rigid Bodies, Effects, Solvers, Pipeline Cache, Fabric, and Help. Below the menu is a toolbar with various icons for modeling and rendering. The main viewport shows a 3D scene with a grid floor and a spiral of green spheres. The bottom-left panel shows the node graph with nodes like 'AddSphere_xs2u2b', 'Fill', 'AccumulateMul', 'DrawingHandle', and 'DrawMesh'. The bottom-right panel is the 'DFG Editor' window, which displays C++ code for the 'DrawMesh' node.

mode	name	type
io	handle	DrawingHandle
in	mesh	PolygonMesh
in	color	Color
out	result	Vec3

```

0001 require InlineDrawing;
0002
0003 dfgEntry {
0004     if(!handle)
0005         handle = DrawingHandle();
0006
0007     InlineDrawing draw = handle.getDrawing();
0008     InlineShader shader = draw.registerShader(OGLSurfaceShader());
0009     InlineMaterial mat = shader.getOrCreateMaterial('red');
0010     mat.setUniform('u_diffuseColor', color);
0011
0012     if(handle.isEmpty()) {
0013
0014         InlineShape shape = draw.registerShape(InlineMeshShape('dfg', mesh));
0015         SimpleInlineInstance instance('dfg', handle.getRootTransform(), shape, mat);
0016     }
0017
0018     InlineTransform transfo = handle.getRootTransform();
0019
0020     transfo.setLocalCount(transforms.size());
0021     for(Size i=0;i<transforms.size();i++)
0022         transfo.setLocalXfo(i, transforms[i]);
0023 }
0024
0025
0026
0027
0028
0029
0030
0031
0032
0033
0034
0035
0036
0037
0038
0039
  
```



SLItem params

Material:

Basecolor:

Subsurface Color:

Metallic Coefficient:

Subsurface Coefficient:

Specular Coefficient:

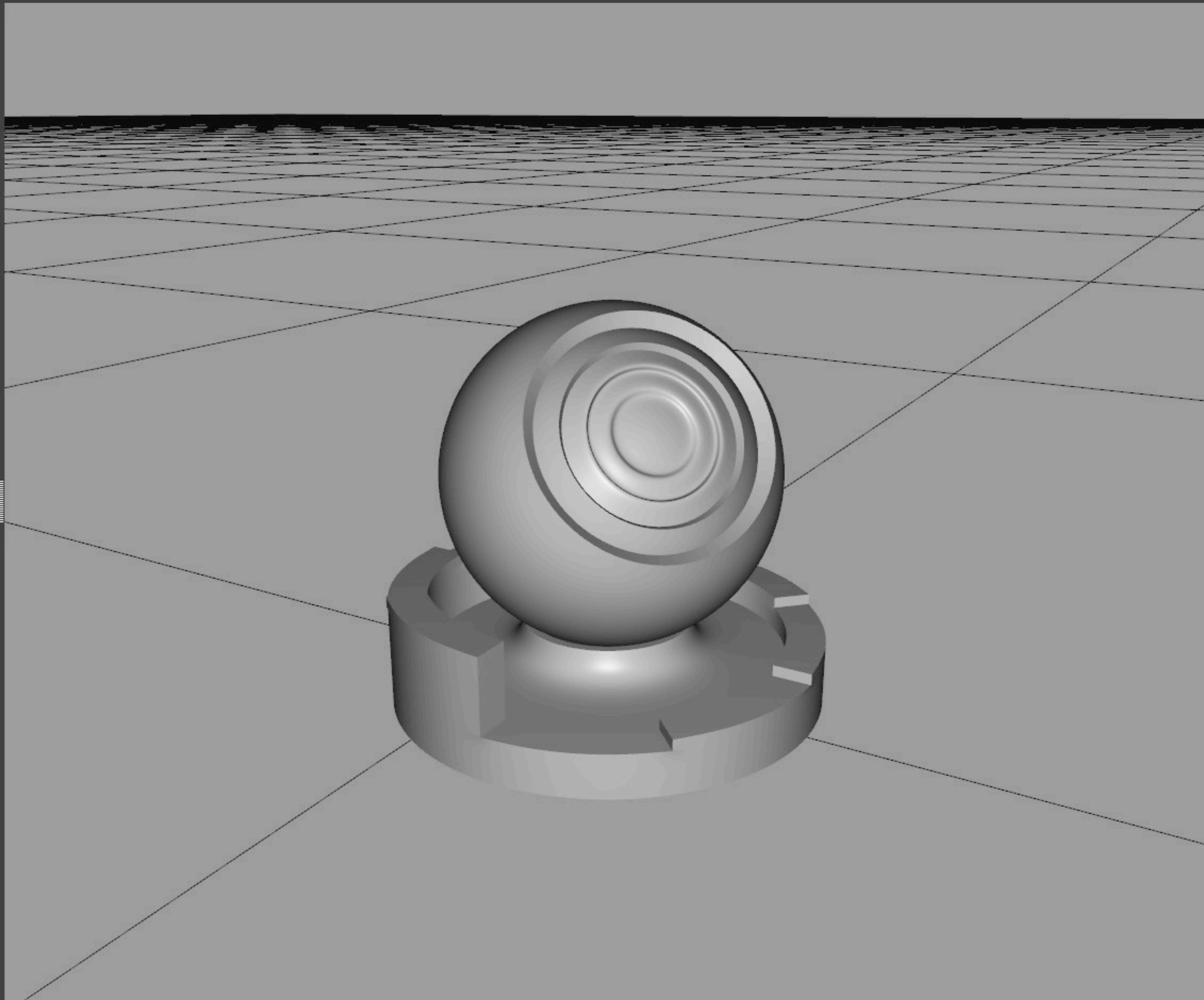
Roughness Coefficient:

SpecularTint Coefficient:

Anisotropic Coefficient:

Sheen Coefficient:

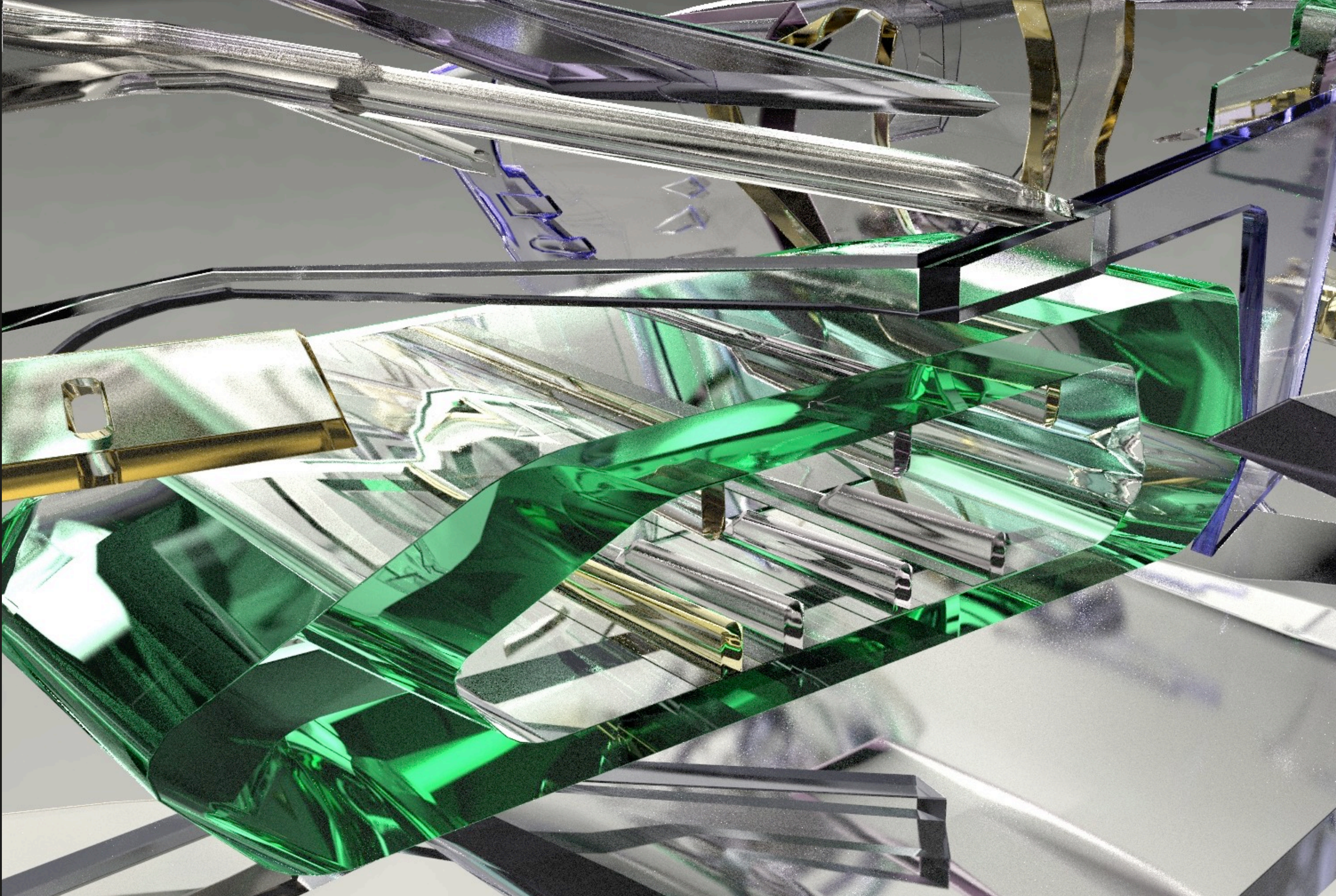
SheenTint Coefficient:



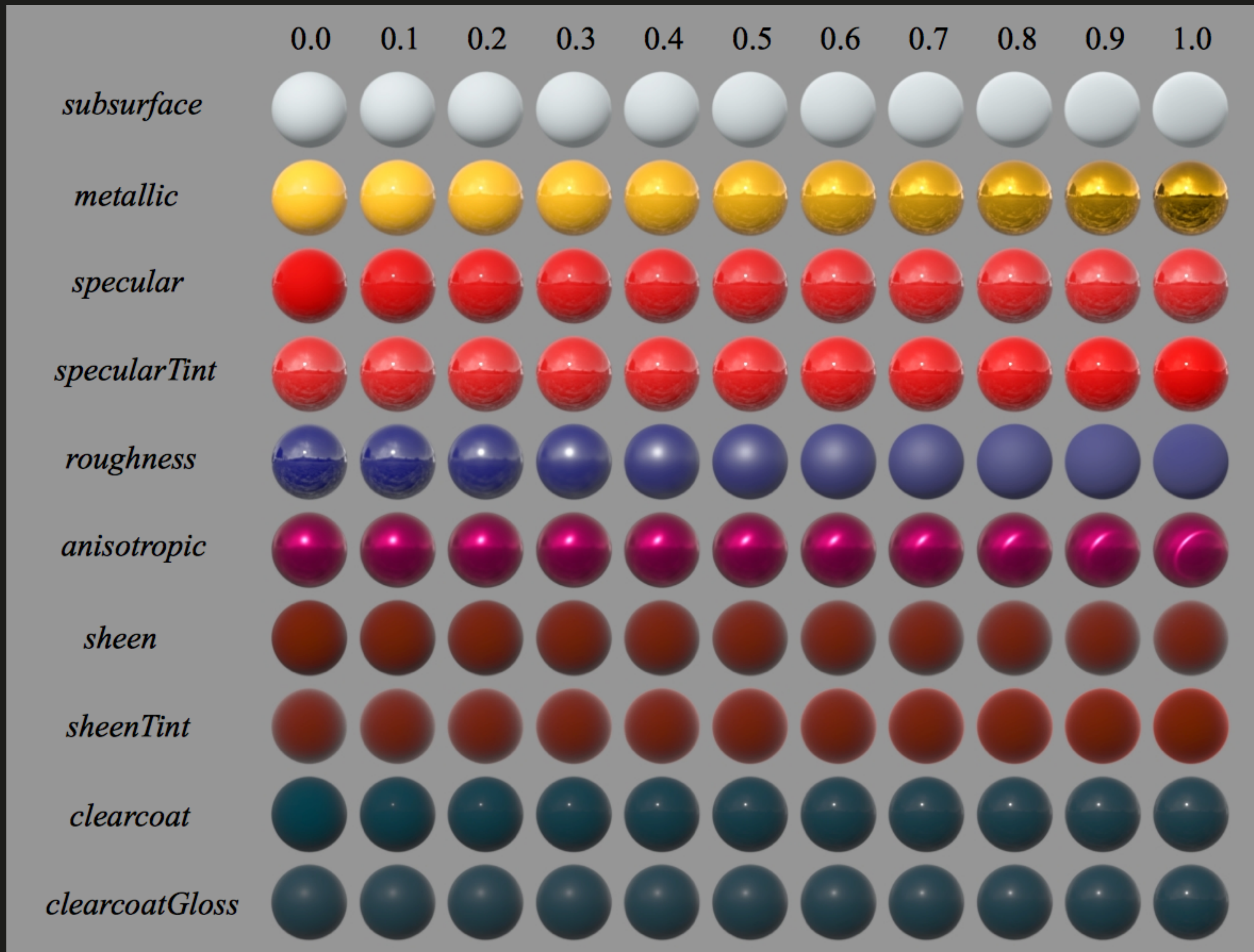
- root
 - baseMaterial
 - innerSphereMaterial
 - outerSphereMaterial**
 - glass
 - base
 - innerSphere
 - outerSphere
 - LG
 - freeCamera
 - camera_0

```
[FABRIC:MT:test/materialSC.kl_KLCode:commandsHistory] [Applying Command History] Setting item: '/camera_0' property: 'focalLength' value:'15'
[FABRIC:MT:test/materialSC.kl_KLCode:commandsHistory] [Applying Command History] Setting item: '/outerSphereMaterial' property: 'baseColor' value:{"r": 0.5686274766921997, "g": 0.5686274766921997, "b": 0.5686274766921997, "a": 4.561787020763009e-41 }
[FABRIC:MT:test/materialSC.kl_KLCode:commandsHistory] [Applying Command History] Setting item: '/outerSphereMaterial' property: 'baseColor' value:{"r": 0.7450980544090271, "g": 0.7450980544090271, "b": 0.7450980544090271, "a": 0 }
[FABRIC:MT:test/materialSC.kl_KLCode:commandsHistory] [Applying Command History] Setting item: '/outerSphereMaterial' property: 'baseColor' value:{"r": 0.7607843279838562, "g": 0.7607843279838562, "b": 0.7607843279838562, "a": 4.561787020763009e-41 }
[FABRIC:MT:test/materialSC.kl_KLCode:commandsHistory] [Applying Command History] Setting item: '/outerSphereMaterial' property: 'subsurfaceColor' value:{"r": 0.615686297416687, "g": 0.615686297416687, "b": 0.615686297416687, "a": 4.561927150609442e-41 }
[FABRIC:MT:test/materialSC.kl_KLCode:commandsHistory] [Applying Command History] Setting item: '/outerSphereMaterial' property: 'subsurfaceColor' value:{"r": 0.7450980544090271, "g": 0.7450980544090271, "b": 0.7450980544090271, "a": 0 }
[FABRIC:MT:test/materialSC.kl_KLCode:commandsHistory] [Applying Command History] Setting item: '/outerSphereMaterial' property: 'subsurfaceColor' value:{"r": 0.7803921699523926, "g": 0.7803921699523926, "b": 0.7803921699523926, "a": 0 }
[FABRIC:MT:test/materialSC.kl_KLCode:commandsHistory] [=load history end]=====
[FABRIC:MT] CppNotificationObserver.set: registerObserver 756434304
```

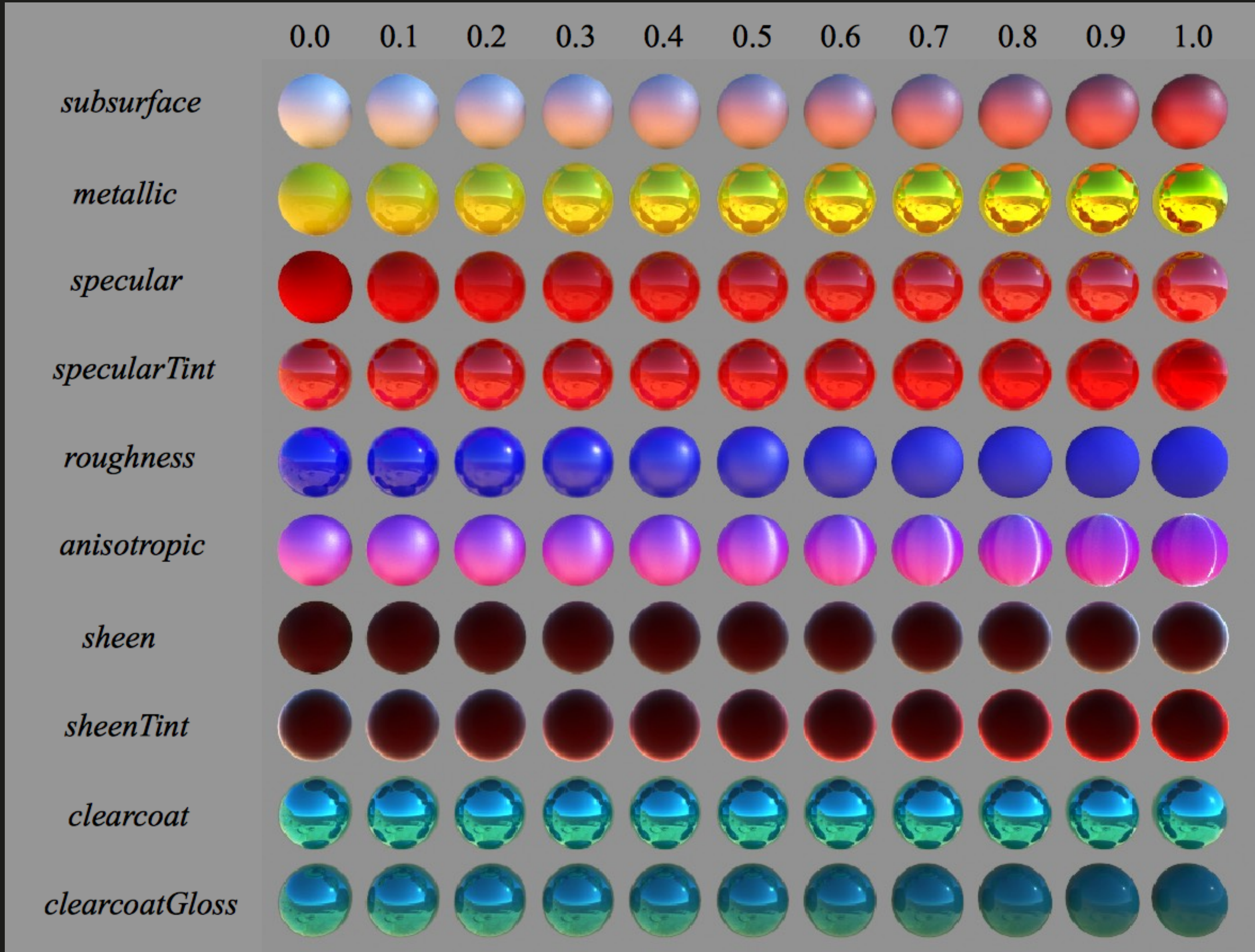
Demos



Disney Shader



Disney Shader Written in Cuda



SLItem params

Camera: camera_3

DOF:

Focal Length (mm): 29

f-Stop: 5.0

Auto-Focus:

Focal Distance (m): 0.4

Transform params

Translation

Translation X: 0.521

Translation Y: 1.526

Translation Z: 4.015

Rotation

Euler X: 0.000

Euler Y: 0.098

Euler Z: 0.000

Scale

Scale X: 1.000

Scale Y: 1.000

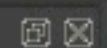
Scale Z: 1.000



SceneLib Tree

- root
 - BaseMaterial
 - InnerMaterial
 - OuterMaterial
 - + sphere
 - LightRig
 - environmentLight
 - KeyGroup
 - Key
 - FillGroup
 - Fill
 - RimGroup
 - Rim
 - + materials
 - Ground
 - camera_1
 - camera_2
 - freeCamera
 - camera_3

```
"g" : 0.329412, "b" : 0.329412, "a" : 0}' multiplier:'48.925'
[FABRIC:MT:test/lightingRig_gtcDemo.kl_KLCode:commandsHistory] [Applying
Command History] Setting Radiance: '/LightRig/RimGroup/Rim' radiance: '{ "r" : 1,
"b" : 0.329412, "a" : 0}' multiplier:'48.925'
[FABRIC:MT:test/lightingRig_gtcDemo.kl_KLCode:commandsHistory] [Applying
Command History] Setting Radiance: '/LightRig/RimGroup/Rim' radiance: '{ "r" : 1,
"b" : 0.329412, "a" : 0}' multiplier:'49.462'
[FABRIC:MT:test/lightingRig_gtcDemo.kl_KLCode:commandsHistory] [Applying
Command History] Setting Radiance: '/LightRig/RimGroup/Rim' radiance: '{ "r" : 1,
```



SLItem params

Shape Name:

Material:

Basecolor:

Subsurface Color:

Metallic Coefficient:

Subsurface Coefficient:

Specular Coefficient:

Roughness Coefficient:

SpecularTint Coefficient:

Anisotropic Coefficient:

Sheen Coefficient:

SheenTint Coefficient:

Transform params

Translation

Translation X:

Translation Y:

Translation Z:

Rotation

Euler X:

Euler Y:

Euler Z:

Scale

Scale X:

Scale Y:

Scale Z:



```

SLGroupGenerator.kl:221
[FABRIC:MT:test/lightingRig_gtcDemo.kl_KLCode:commandsHistory] 4
method.getChild.io_AS0.UO_SLGroup.in_AS0.OO_SLContext.in_AS0.ST()
SLGroup.kl:129
[FABRIC:MT:test/lightingRig_gtcDemo.kl_KLCode:commandsHistory] 5
method.findChild.io_AS0.UO_SLScene.in_AS0.OO_SLContext.in_AS0.OO_SLItem.in
AS0.ST() SLScene.kl:447
[FABRIC:MT:test/lightingRig_gtcDemo.kl_KLCode:commandsHistory] 6
method.findChild.io_AS0.UO_SLScene.in_AS0.OO_SLContext.in_AS0.OO_SLItem.in
AS0.ST() SLScene.kl:441
[FABRIC:MT:test/lightingRig_gtcDemo.kl_KLCode:commandsHistory] 7
method.findChild.io_AS0.UO_SLScene.in_AS0.OO_SLContext.in_AS0.ST()
SLScene.kl:467
[FABRIC:MT:test/lightingRig_gtcDemo.kl_KLCode:commandsHistory] 8

```



```

- root
  BaseMaterial
  InnerMaterial
  OuterMaterial
+ sphere
+ LightRig
+ materials
  Ground
  camera_1
  camera_2
  camera_3
  freeCamera

```


SLItem params

Material: glass

Bump Strength: 0.001

Basecolor: [Color Picker]

Subsurface Color: [Color Picker]

Metallic Coefficient: 0.000

Subsurface Coefficient: 0.000

Specular Coefficient: 0.900

Roughness Coefficient: 0.145

SpecularTint Coefficient: 0.000

Anisotropic Coefficient: 0.000

Sheen Coefficient: 0.000

SheenTint Coefficient: 0.000



- root
 - materials
 - wagon
 - metal
 - wood
 - leather
 - paper
 - string
 - rope
 - cotton
 - glass**
 - materials
 - ground
 - wagon
 - metalRenderable
 - woodRenderable
 - leatherRenderable
 - paperRenderable
 - stringRenderable
 - ropeRenderable
 - cottonRenderable
 - glassRenderable
 - groundRenderable
 - LightRig
 - environmentLight
 - KeyGroup
 - Key
 - FillGroup
 - Fill
 - RimGroup
 - Rim
 - freeCamera
 - camera_0
 - camera_1
 - camera_2
 - camera_3
 - camera_4
 - camera_5
 - camera_6
 - backDOF

```
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command History] Setting Radiance: '/LightRig/FillGroup/Fill' radiance: '{ "r": 0, "g": 1, "b": 0, "a": 0}' multiplier:'10'
```

```
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command History] Setting Radiance: '/LightRig/FillGroup/Fill' radiance: '{ "r": 0, "g": 1, "b": 0, "a": 0}' multiplier:'10'
```

```
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command History] Setting Radiance: '/LightRig/RimGroup/Rim' radiance: '{ "r": 0, "g": 0, "b": 1, "a": 0}' multiplier:'10'
```

SLItem params

Material: cotton

Bump Strength: 0.001

Basecolor: [Color Picker]

Subsurface Color: [Color Picker]

Metallic Coefficient: 0.000

Subsurface Coefficient: 0.000

Specular Coefficient: 0.600

Roughness Coefficient: 1.000

SpecularTint Coefficient: 0.000

Anisotropic Coefficient: 0.000

Sheen Coefficient: 0.000

SheenTint Coefficient: 0.000



- root
 - materials
 - wagon
 - metal
 - wood
 - leather
 - paper
 - string
 - rope
 - cotton**
 - glass
 - materials
 - ground
 - wagon
 - metalRenderable
 - woodRenderable
 - leatherRenderable
 - paperRenderable
 - stringRenderable
 - ropeRenderable
 - cottonRenderable
 - glassRenderable
 - groundRenderable
 - LightRig
 - environmentLight
 - KeyGroup
 - Key
 - FillGroup
 - Fill
 - RimGroup
 - Rim
 - freeCamera
 - camera_0
 - camera_1
 - camera_2
 - camera_3
 - camera_4
 - camera_5
 - camera_6
 - backDOF
 - frontDOF

```
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command History] Setting Radiance: '/LightRig/FillGroup/Fill' radiance: '{ "r" : 0, "g" : 1, "b" : 0, "a" : 0}' multiplier:10'
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command History] Setting Radiance: '/LightRig/FillGroup/Fill' radiance: '{ "r" : 0, "g" : 1, "b" : 0, "a" : 0}' multiplier:10'
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command History] Setting Radiance: '/LightRig/RimGroup/Rim' radiance: '{ "r" : 0, "g" : 0, "b" : 1, "a" : 0}' multiplier:10'
```

SLItem params

Camera: back_againDOF

DOF:

Focal Length (mm): 29

f-Stop: 1.0

Auto-Focus:

Focal Distance (m): 6.9

Transform params

Translation

Translation X: -35.704

Translation Y: 25.722

Translation Z: -66.602

Rotation

Euler X: -2.879

Euler Y: -0.588

Euler Z: -2.994

Scale

Scale X: 1.000

Scale Y: 1.000

Scale Z: 1.000



- root
 - materials
 - wagon
 - metal
 - wood
 - leather
 - paper
 - string
 - rope
 - cotton
 - glass
 - materials
 - ground
 - wagon
 - metalRenderable
 - woodRenderable
 - leatherRenderable
 - paperRenderable
 - stringRenderable
 - ropeRenderable
 - cottonRenderable
 - glassRenderable
 - groundRenderable
 - LightRig
 - environmentLight
 - KeyGroup
 - Key
 - FillGroup
 - Fill
 - RimGroup
 - Rim
 - freeCamera
 - camera_0
 - camera_1
 - camera_2
 - camera_3
 - camera_4
 - camera_5
 - camera_6
 - backDOF
 - frontDOF
 - back_againDOF**

```
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command History] Setting Radiance: '/LightRig/FillGroup/Fill' radiance: '{ "r" : 0, "g" : 1, "b" : 0, "a" : 0}' multiplier:'10'
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command History] Setting Radiance: '/LightRig/FillGroup/Fill' radiance: '{ "r" : 0, "g" : 1, "b" : 0, "a" : 0}' multiplier:'10'
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command History] Setting Radiance: '/LightRig/RimGroup/Rim' radiance: '{ "r" : 0, "g" : 0, "b" : 1, "a" : 0}' multiplier:'10'
```

SLItem params

Env. light color

Env. light multiplier

Transform params

Translation

Translation X

Translation Y

Translation Z

Rotation

Euler X

Euler Y

Euler Z

Scale

Scale X

Scale Y

Scale Z



SceneLib Tree

- root
 - materials
 - wagon
 - metal
 - wood
 - leather
 - paper
 - string
 - rope
 - cotton
 - glass
 - materials
 - wagon
 - groundRenderable
 - LightRig
 - environmentLight**
 - KeyGroup
 - Key
 - FillGroup
 - Fill
 - RimGroup
 - Rim
 - freeCamera
 - camera_0
 - camera_1
 - camera_2
 - camera_3
 - camera_4
 - camera_5
 - camera_6
 - backDOF
 - frontDOF
 - back_againDOF

Log

```
"b" : 1, "a" : 0}' multiplier:2.5'  
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command  
History] Creating Camera: back_againDOF  
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command  
History] Setting item: '/back_againDOF' property: 'dofOn' value:'true'  
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command  
History] Setting item: '/back_againDOF' property: 'fStop' value:'1'  
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command  
History] Setting item: '/back_againDOF' property: 'fStop' value:'1'  
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command  
History] Setting item: '/materials/wagon/wood' property: 'bumpMapMultiplier'  
value:'0.0049999999888241291'  
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command  
History] Setting item: '/materials/wagon/wood' property: 'bumpMapMultiplier'  
value:'0.0099999999776482582'  
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command  
History] Setting Radiance: '/LightRig/environmentLight' radiance: '{ "r" : 1, "g" : 1,  
"b" : 1, "a" : 0}' multiplier:1'  
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command  
History] Setting Radiance: '/LightRig/environmentLight' radiance: '{ "r" : 1, "g" : 1,  
"b" : 1, "a" : 0}' multiplier:2'  
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command  
History] Setting Radiance: '/LightRig/environmentLight' radiance: '{ "r" : 1, "g" : 1,  
"b" : 1, "a" : 0}' multiplier:2.5'  
[FABRIC:MT:test/GTC/wagon.kl_KLCode:commandsHistory] [Applying Command  
History] Setting item: '/materials/wagon/wood' property: 'bumpMapMultiplier'
```



SLItem params

Camera: freeCamera

DOF:

Focal Length (mm): 29

f-Stop: 2.0

Auto-Focus:

Focal Distance (m): 8.2

Transform params

Translation

Translation X: -51.213

Translation Y: 11.277

Translation Z: 43.462

Rotation

Euler X: 0.017

Euler Y: -0.798

Euler Z: 0.012

Scale

Scale X: 1.000

Scale Y: 1.000

Scale Z: 1.000



```

- root
+ materials
+ wagon
  groundRenderable
- LightRig
  environmentLight
  - KeyGroup
    Key
  - FillGroup
    Fill
  - RimGroup
    Rim
- freeCamera
  camera_0
  camera_1
  camera_2
  camera_3
  camera_4
  camera_5
  camera_6
  backDOF
  frontDOF
  back_againDOF
  pumpkinCam
  generalCam
  wheelCam
  interiorCam

```



```

method.findChild.io_A50.UO_SLScene.in_A50.OO_SLContext.in_A50.ST()
SLScene.kl:467
[FABRIC:MT] 13
method.getItemGivenPath.io_A50.UO_SLScene.in_A50.OO_SLContext.in_A50.ST()
SLScene.kl:473
[FABRIC:MT] 14
_callMethodWithWithArgs_getItemGivenPath_RT_OO_SLItem_OO_SLContext_ST
()
_callMethodWithWithArgs_getItemGivenPath_RT_OO_SLItem_OO_SLContext_ST.
kl:2

```

Boggart

SLItem params

Camera: portrait

DOF:

Focal Length (mm): 29

f-Stop: 1.0

Auto-Focus:

Focal Distance (m): 3.7

Transform params

Translation

Translation X: 25.288

Translation Y: 49.215

Translation Z: 23.099

Rotation

Euler X: 0.397

Euler Y: 0.817

Euler Z: -0.297

Scale

Scale X: 1.000

Scale Y: 1.000

Scale Z: 1.000



SceneLib Tree

- root
 - boggartA
 - materials
 - boggart
 - wood
 - teeth
 - nail
 - skin
 - eye
 - cornea
 - water
 - materials
 - ground
 - LightRig
 - environmentLight
 - KeyGroup
 - Key
 - FillGroup
 - Fill
 - RimGroup
 - Rim
 - groundRenderable
 - DOF
 - freeCamera
 - portrait

Log

```
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] 10  
operator.commandsHistory.io_AS0.OO_SLSScene.io_AS0.BO()  
commandsHistory.kl:273  
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] 11  
kl.internal.commandsHistory.stub.cpu()  
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] [Applying Command  
History] Setting item: '/DOF' property: 'focalLength' value:'1'  
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] [Applying Command  
History] Setting item: '/DOF' property: 'focalLength' value:'15'  
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] [Applying Command  
History] Setting item: '/DOF' property: 'focalLength' value:'2'  
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] [Applying Command
```

SLItem params

Area light color

Area. light multiplier 15.000

Transform params

Translation

Translation X 176.330

Translation Y 74.373

Translation Z 176.330

Rotation

Euler X 2.934

Euler Y -0.766

Euler Z 2.635

Scale

Scale X 1.000

Scale Y 1.000

Scale Z 1.000



SceneLib Tree

- root
 - boggartA
 - boggart_lodA_GRP
 - roots_GRP
 - body_level1Zbrush_GRP
 - eyes_GRP
 - r_tearDuct_IDskin_GEO
 - l_eye_IDeye_GEO
 - renderable
 - r_cornea_IDcornea_GEO
 - l_tearDuct_IDskin_GEO
 - r_eyeWetness_IDwater...
 - l_eyeWetness_IDwater...
 - l_cornea_IDcornea_GEO
 - r_eye_IDeye_GEO
 - renderable
 - body_level2Zbrush_GRP

- materials
- boggart
 - wood
 - teeth
 - nail
 - skin
 - eye
 - cornea
 - water
- materials
- LightRig
- environmentLight
- KeyGroup
- FillGroup
- RimGroup
 - Rim**
- groundRenderable
- freeCamera

Log

value:'-107'

[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] [Applying Command History] Setting item: '/LightRig/RimGroup' property: 'transformTranslationY' value:'4'

[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] [Applying Command History] Setting item: '/LightRig/RimGroup' property: 'transformTranslationY' value:'48'

[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] [Applying Command History] Setting item: '/LightRig/RimGroup' property: 'transformTranslationZ' value:'-3'

[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] [Applying Command History] Setting item: '/LightRig/RimGroup' property: 'transformTranslationZ'

SLItem params

Transform params

Translation

Translation X: 0.000

Translation Y: 0.000

Translation Z: 0.000

Rotation

Euler X: -0.034

Euler Y: 0.001

Euler Z: 0.101

Scale

Scale X: 1.000

Scale Y: 1.000

Scale Z: 1.000



- root
- + boggartA
- + materials
- LightRig
 - environmentLight
 - + KeyGroup
 - + FillGroup
 - RimGroup**
 - Rim
 - groundRenderable
 - DOF
 - freeCamera

```
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] 10
operator.commandsHistory.lo_A50.OO_SLScene.lo_A50.BO()
commandsHistory.kl:273
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] 11
kl.internal.commandsHistory.stub.cpu()
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] [Applying Command
History] Setting item: '/DOF' property: 'focalLength' value:'1'
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] [Applying Command
History] Setting item: '/DOF' property: 'focalLength' value:'15'
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] [Applying Command
History] Setting item: '/DOF' property: 'focalLength' value:'2'
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] [Applying Command
History] Setting item: '/DOF' property: 'focalLength' value:'29'
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] [Applying Command
```


SLItem params

Shape Name: gums_IDskin_GEO

Material: skin

Basecolor: [Slider]

Subsurface Color: [Slider]

Metallic Coefficient: 0.000 [Slider]

Subsurface Coefficient: 0.000 [Slider]

Specular Coefficient: 0.050 [Slider]

Roughness Coefficient: 0.400 [Slider]

SpecularTint Coefficient: 0.000 [Slider]

Anisotropic Coefficient: 0.000 [Slider]

Sheen Coefficient: 0.000 [Slider]

SheenTint Coefficient: 0.000 [Slider]

Transform params

Translation

Translation X: 0.000 [Slider]

Translation Y: 0.000 [Slider]

Translation Z: 0.000 [Slider]

Rotation

Euler X: 0.000 [Slider]

Euler Y: 0.000 [Slider]

Euler Z: 0.000 [Slider]

Scale

Scale X: 1.000 [Slider]

Scale Y: 1.000 [Slider]

Scale Z: 1.000 [Slider]



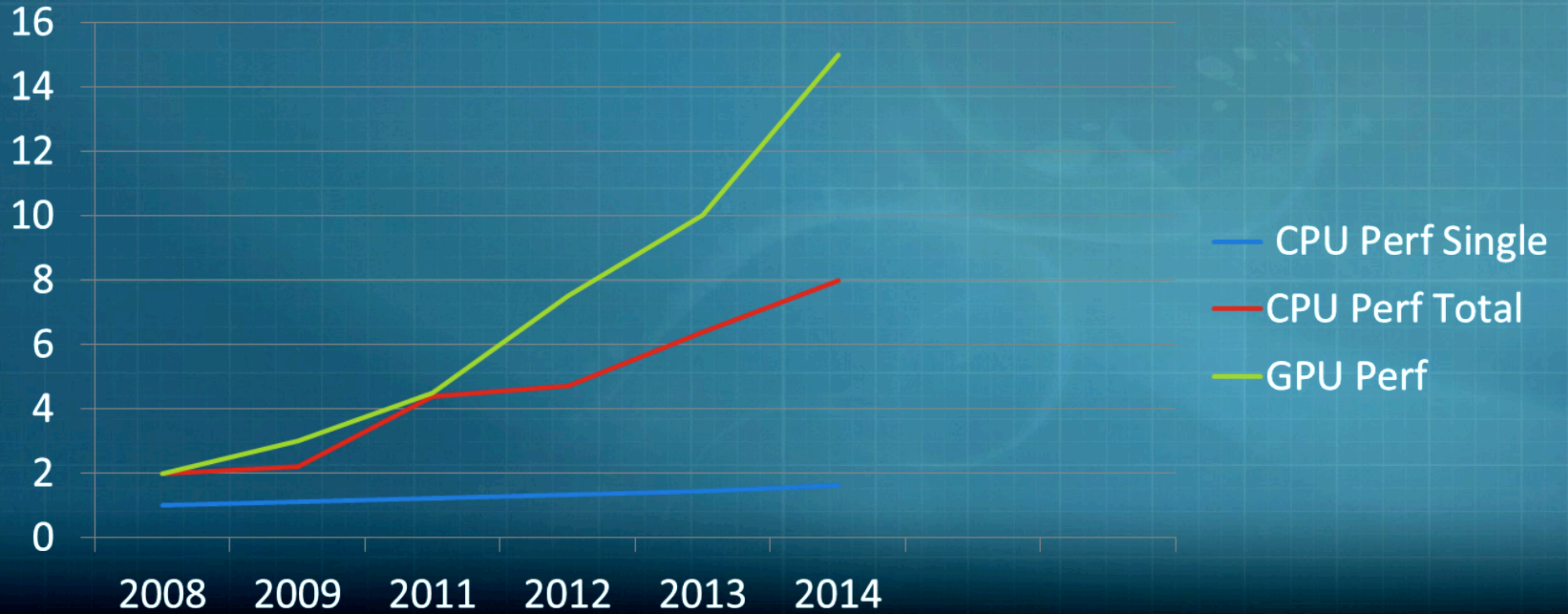
SceneLib Tree

- root
 - boggartA
 - boggart_lodA_GRP
 - + roots_GRP
 - + body_level1Zbrush_GRP
 - eyes_GRP
 - + r_tearDuct_IDskin_GEO
 - + l_eye_IDeye_GEO
 - + r_cornea_IDcornea_GEO
 - + l_tearDuct_IDskin_GEO
 - + r_eyeWetness_IDwater...
 - + l_eyeWetness_IDwater...
 - + l_cornea_IDcornea_GEO
 - + r_eye_IDeye_GEO
 - body_level2Zbrush_GRP
 - + body_level2_IDskin_GEO
 - materials
 - boggart
 - wood
 - teeth
 - nail
 - skin
 - eye
 - cornea
 - water
 - materials
 - ground
 - + LightRig
 - groundRenderable
 - DOF
 - freeCamera
 - camera 2

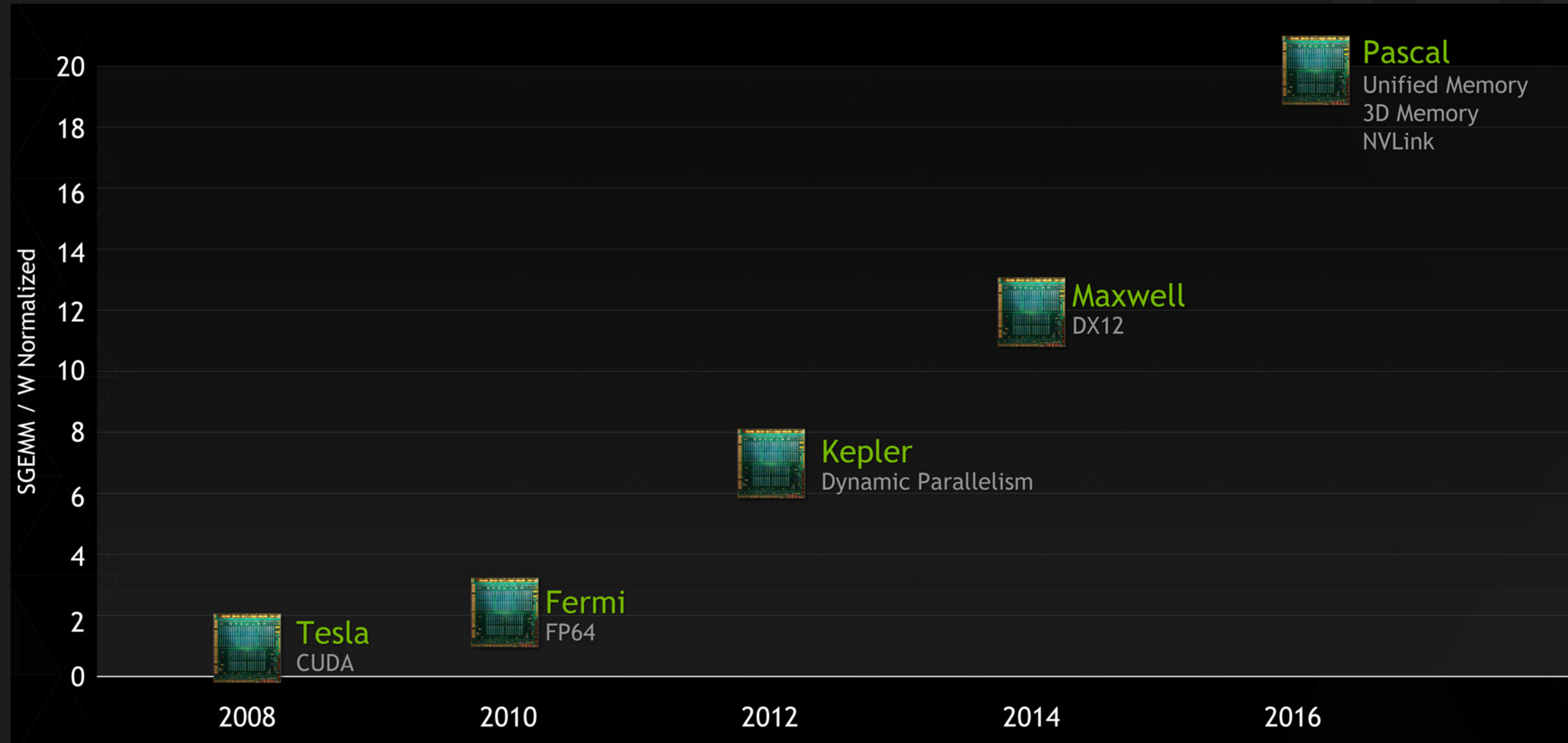
Log

```
operator.commandsHistory.io_A50.OO_SLScene.io_A50.B0()
commandsHistory.kl:273
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] 11
kl.internal.commandsHistory.stub.cpu()
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] [Applying Command
History] Setting item: '/DOF' property: 'focalLength' value:'1'
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] [Applying Command
History] Setting item: '/DOF' property: 'focalLength' value:'15'
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] [Applying Command
History] Setting item: '/DOF' property: 'focalLength' value:'2'
[FABRIC:MT:test/GTC/boggart.kl_KLCode:commandsHistory] [Applying Command
History] Setting item: '/DOF' property: 'focalLength' value:'29'
```

Threading



Future Ahead





Thanks

MPC Research Team

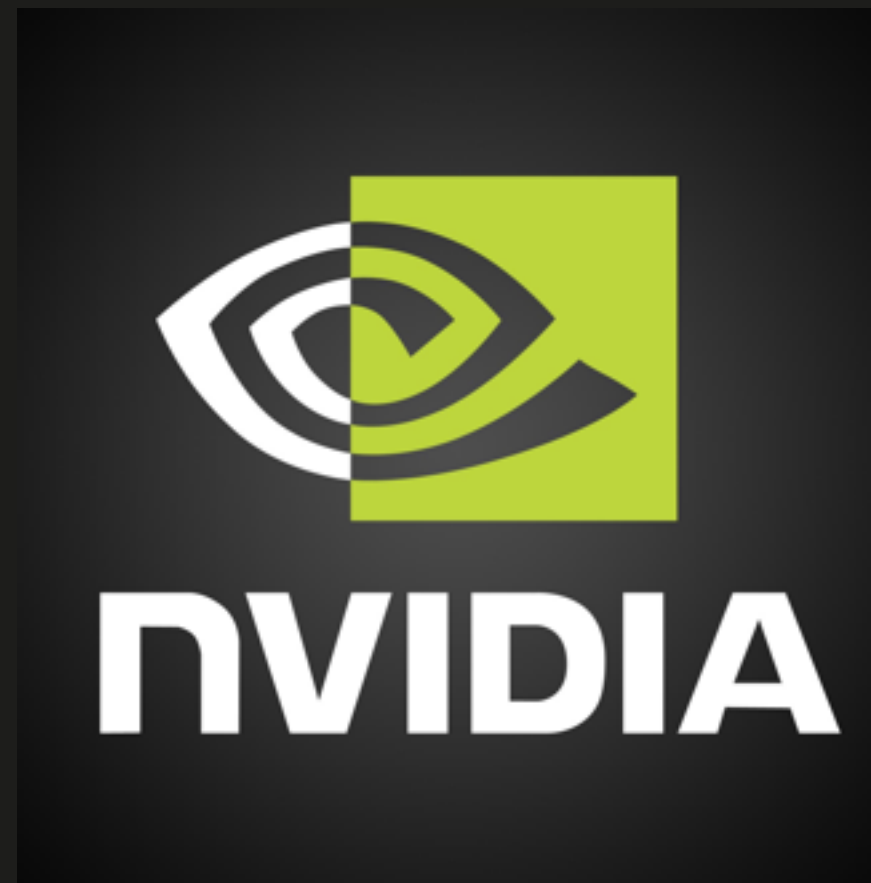
Stephane Bertout

Jose Esteve

Jamie Portsmouth

Ivan Castane Capel

Stephane Le Boeuf



John Ison

OptiX & VCA Teams

THANKS

Q & A

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