

So you want to 3D....

GameWithUS 2017

Outline

- 3D Graphic Presentation
- 3D Physics
- 3D Motion
- 3D Animations
- 3D Asset Creation
- Free and Useful Packages

GRAPHICS PIPELINE

Geometry



Modelling Transformation



Lighting



Viewing Transformation



Clipping



Projection



Scan Conversion

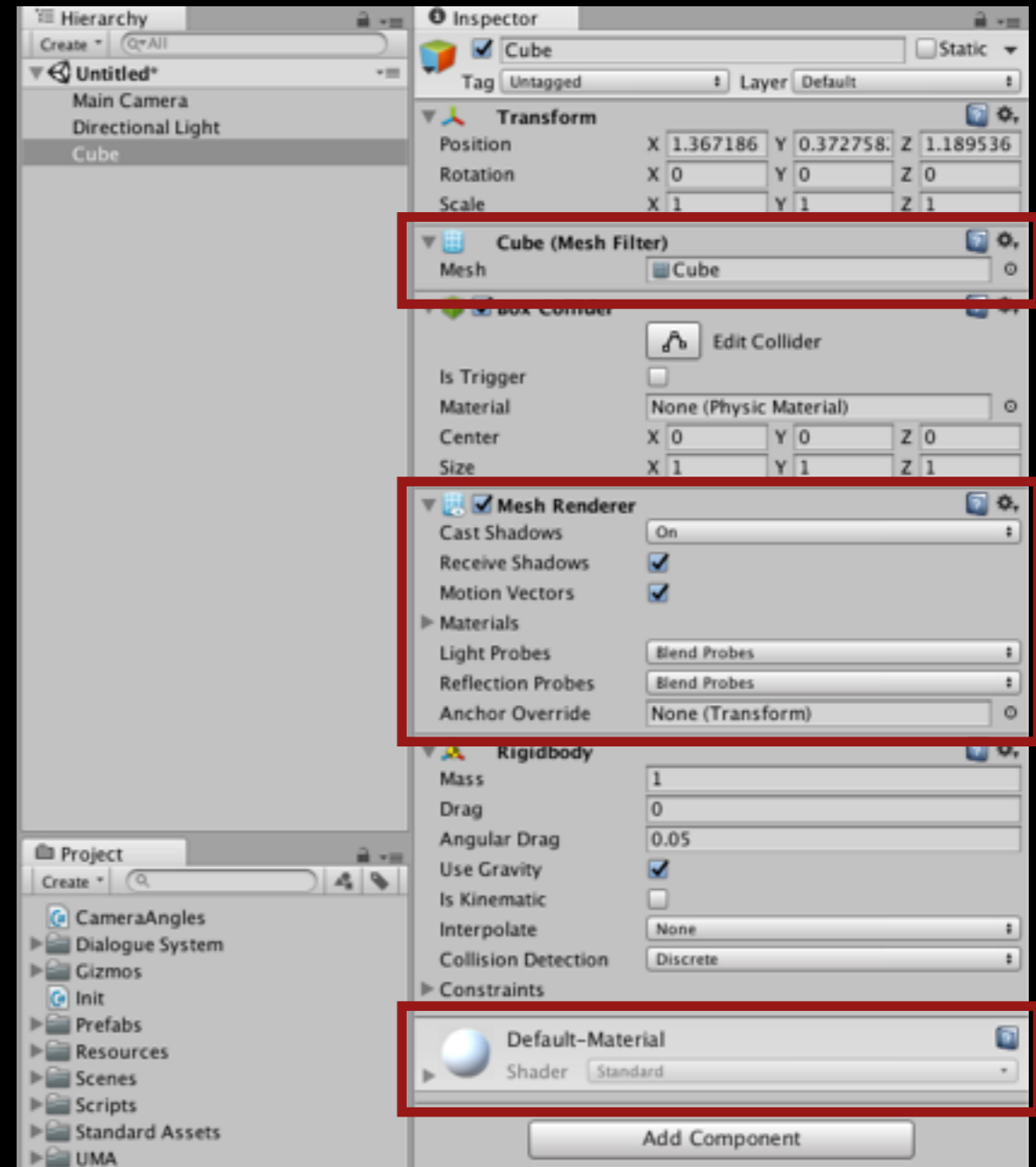


Image

- Transform into 3D *world coordinate system*
- Simulate illumination and reflectance
- Transform into 3D *camera coordinate system*
- Clip primitives outside camera's view
- Transform into 2D camera coordinate system
- Draw pixels (incl. texturing, hidden surface...)

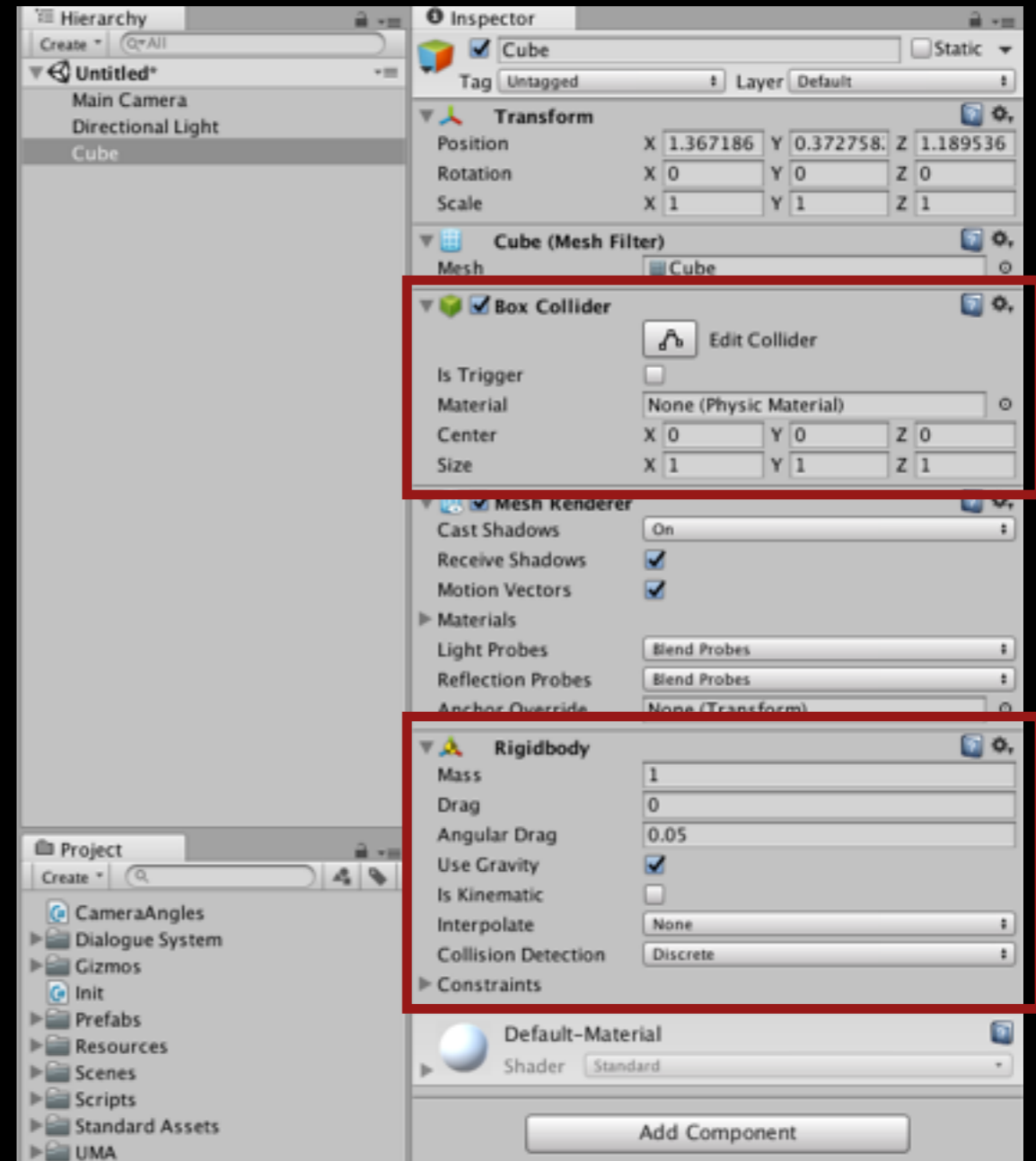
3D Graphics

- Mesh Filter
- Mesh Renderer
- Materials - Shaders



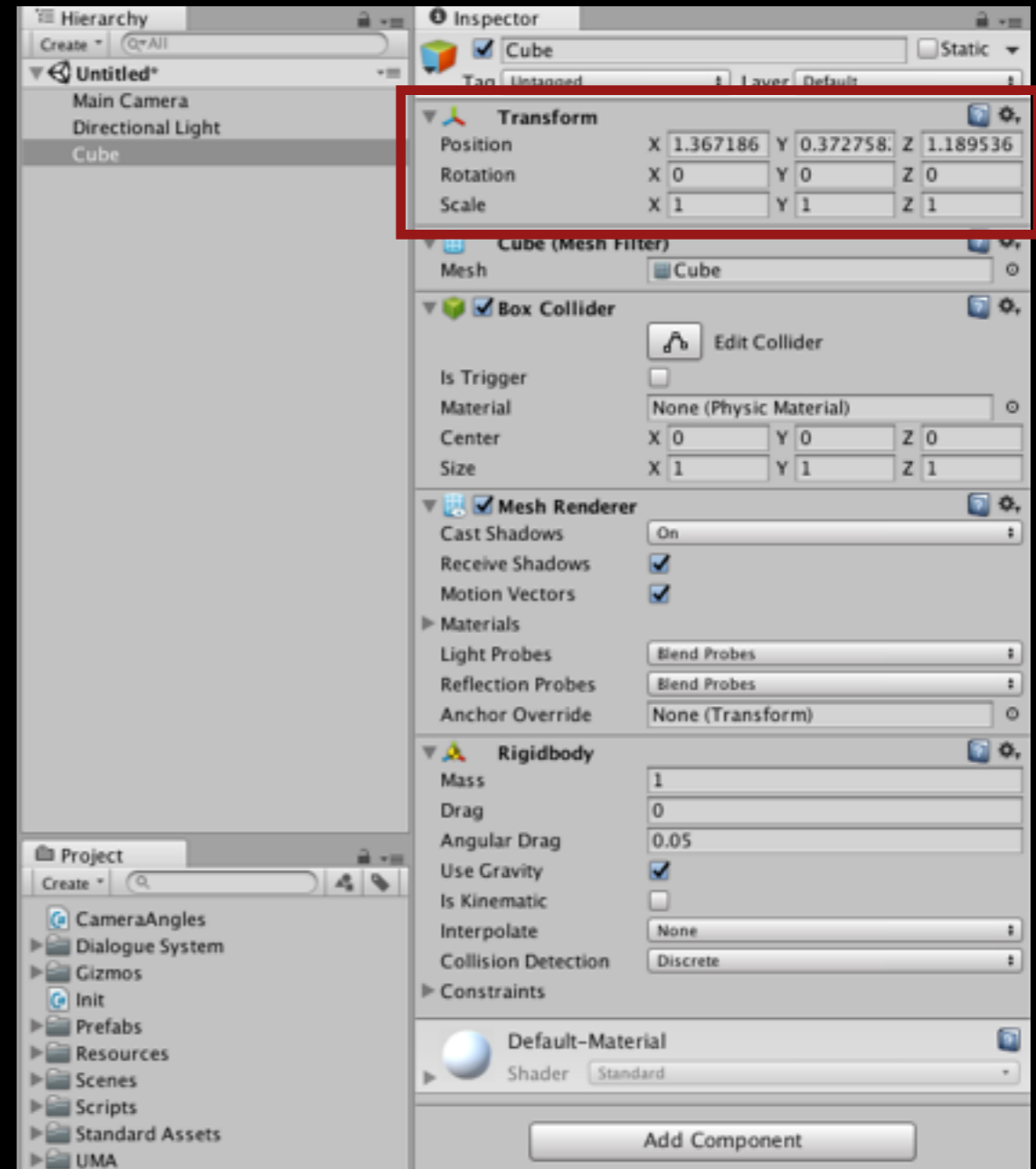
3D Physics

- Collider
- Rigidbody
- Physics Material



3D Transforms

- Transform
 - Position - (x, y, z)
 - Rotation - (x, y, z)
 - Scale - (x, y, z)



3D Animations

- Objects:
 - Animate position, rotation, scale, shader colour, etc
- Humanoid (Mechanim)
 - Universal Animations
- Movement is often baked into the animation



3D Asset Creation

- Unity was designed to integrate (sort of) seamlessly with Blender
- Build model in Blender
- Export .fbx directly into Unity Project
- Model and textures should be in your project and ready to add to a scene



Free 3D Models

- Unity Asset Store
- www.turbosquid.com
- <http://tf3dm.com>
- <https://www.cgtrader.com>

Free and Useful Packages

- Terrain System
- SabreCSG
- Unity Multipurpose Avatar
- First- and Third-person starter prefabs
- AI starter prefab
- Race car starter prefab