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The Computer Graphics Process and the Graphics Pipeline

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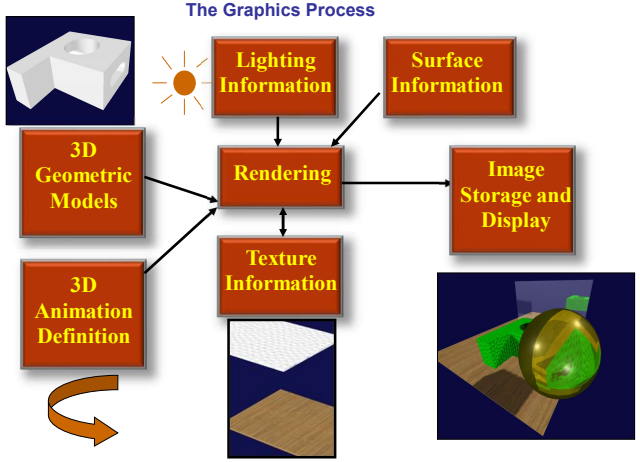
The Graphics Process



2

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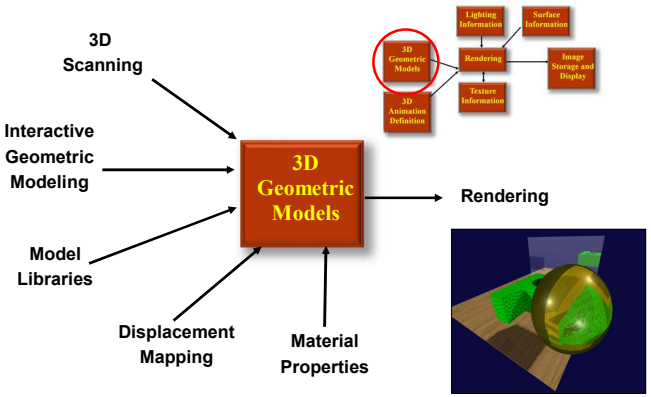
The Graphics Process: Geometric Modeling



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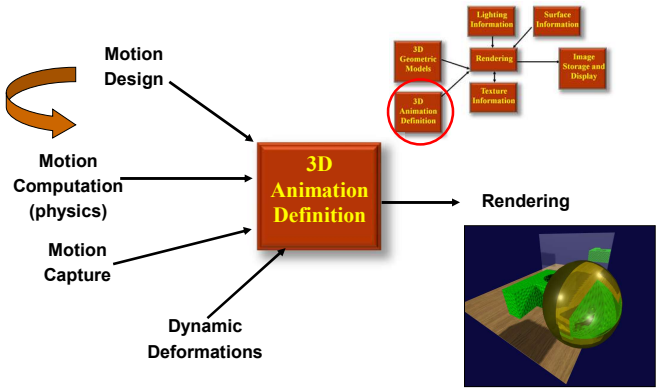
The Graphics Process: 3D Animation



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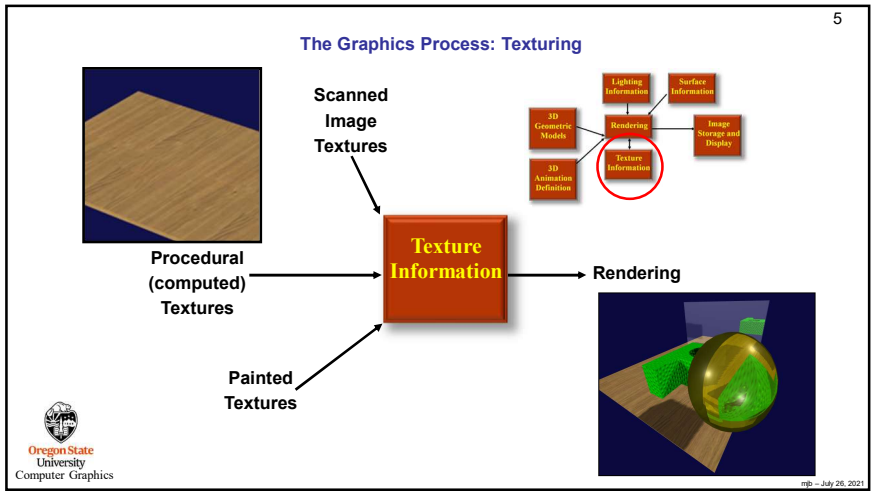
5
The Graphics Process: Texturing
Scanned
Image
Textures
Procedural
(computed)
Textures
Painted
Textures
Texture
Information
Rendering
Lighting Information
Surface Information
3D Geometric Models
Rendering
Image Storage and Display
3D Animation Definition
Texture Information
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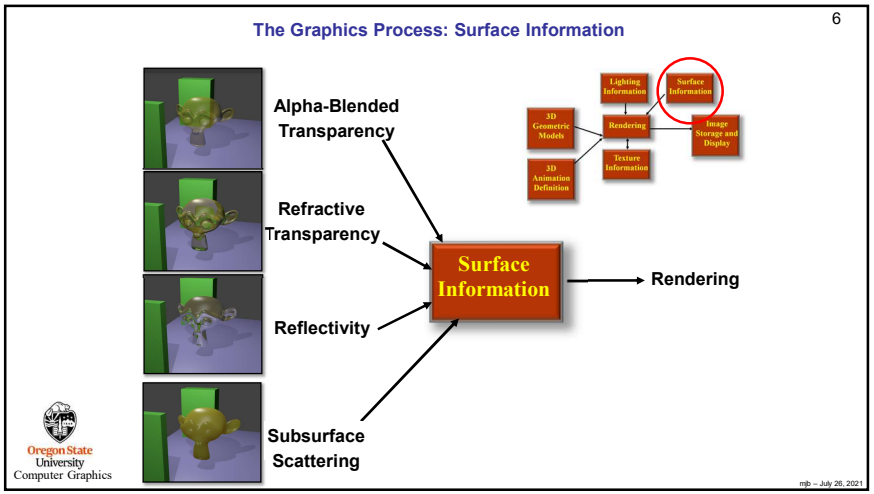
6
The Graphics Process: Surface Information
Alpha-Blended
Transparency
Refractive
Transparency
Reflectivity
Subsurface
Scattering
Surface
Information
Rendering
Lighting Information
Surface Information
3D Geometric Models
Rendering
Image Storage and Display
3D Animation Definition
Texture Information
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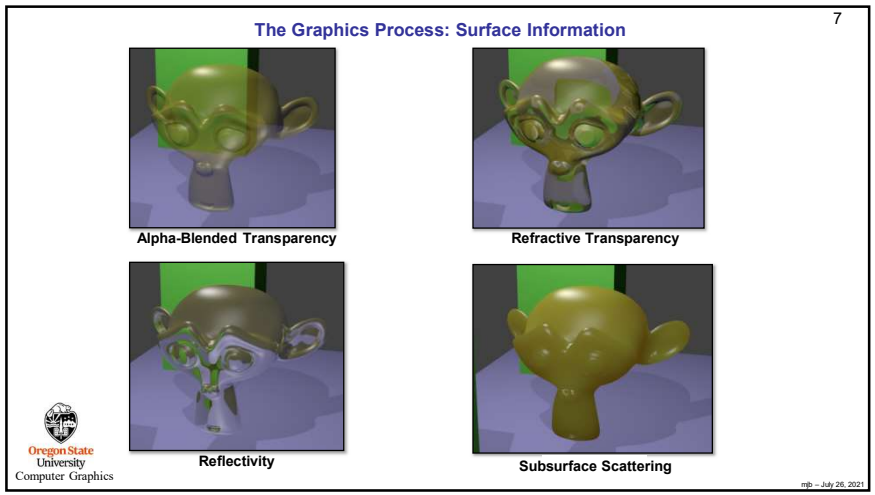
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The Graphics Process: Surface Information
Alpha-Blended Transparency
Refractive Transparency
Reflectivity
Subsurface Scattering
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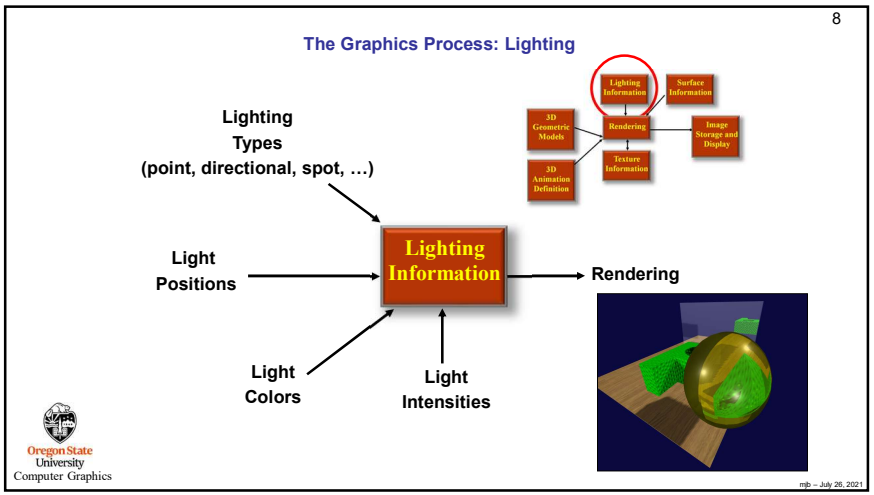
8
The Graphics Process: Lighting
Lighting
Types
(point, directional, spot, …)
Light
Positions
Light
Colors
Light
Intensities
Lighting
Information
Rendering
Lighting Information
Surface Information
3D Geometric Models
Rendering
Image Storage and Display
3D Animation Definition
Texture Information
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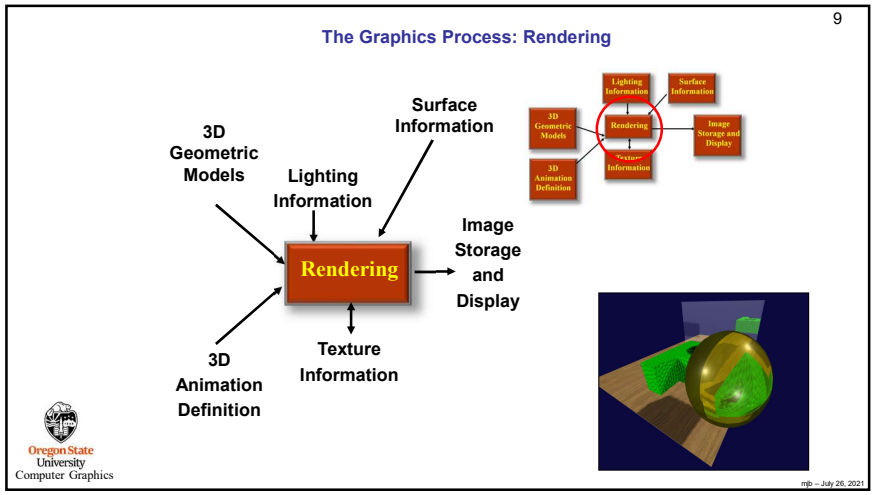
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The Graphics Process: Rendering
3D Geometric Models
Lighting Information
Surface Information
Rendering
Image Storage and Display
3D Animation Definition
Texture Information
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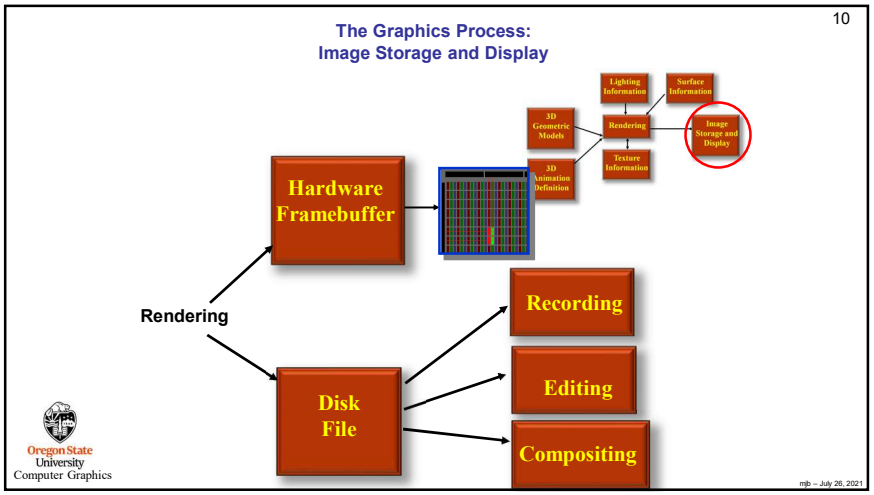
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The Graphics Process: Image Storage and Display
Hardware Framebuffer
Rendering
Disk File
Recording
Editing
Compositing
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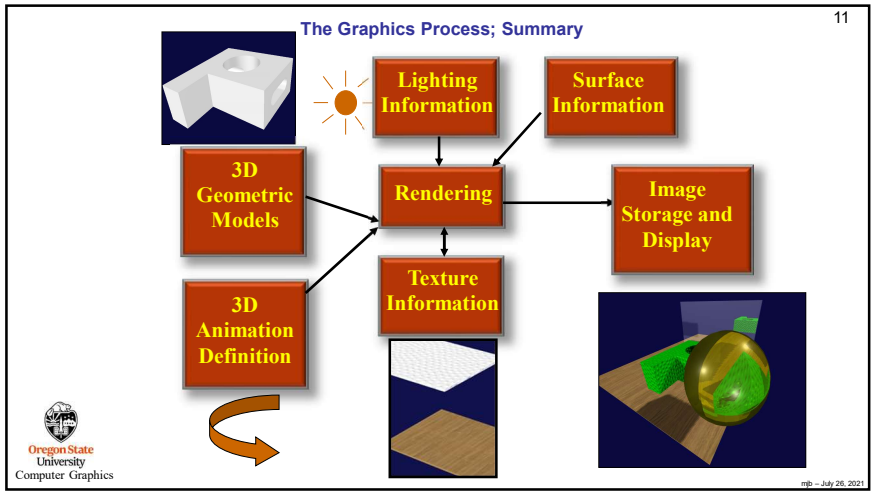
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The Graphics Process; Summary
Lighting Information
Surface Information
3D Geometric Models
Rendering
Image Storage and Display
Texture Information
3D Animation Definition
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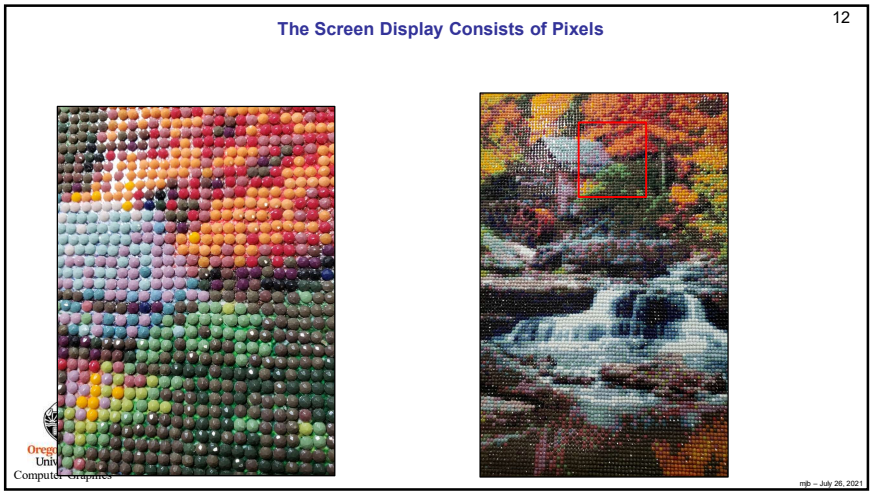
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The Screen Display Consists of Pixels
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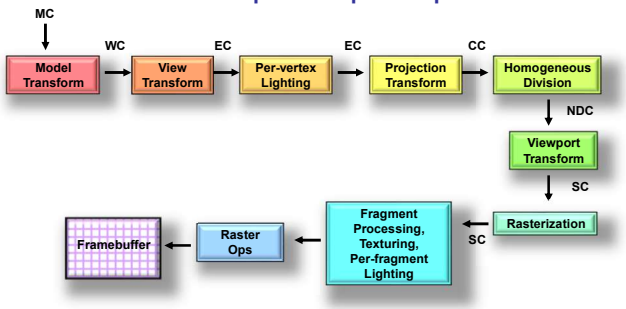
The Basic Computer Graphics Pipeline



MC = Model Coordinates
WC = World Coordinates
EC = Eye Coordinates
CC = Clip Coordinates
NDC = Normalized Device Coordinates
SC = Screen Coordinates

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