The Graphics Process and the Graphics Pipeline

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The Graphics Process

3D Geometric Models
3D Animation Definition
Texture Information
Surface Information
Image Storage and Display

The Graphics Process: Geometric Modeling

3D Scanning
Interactive Geometric Modeling
Model Libraries
Displacement Mapping
Material Properties

The Graphics Process: 3D Animation

Motion Design
Motion Computation (physics)
Motion Capture
Dynamic Deformations

The Graphics Process: Texturing

Scanned Image Textures
Procedural (computed) Textures
Painted Textures

The Graphics Process: Surface Information

Alpha-Blended Transparency
Refractive Transparency
Reflectivity
Subsurface Scattering

Rendering

Rendering
The Graphics Process: Surface Information

- Alpha-Blended Transparency
- Refractive Transparency
- Reflectivity
- Subsurface Scattering

The Graphics Process: Lighting

- Lighting Types (point, directional, spot, ...)
- Light Positions
- Light Colors
- Light Intensities

The Graphics Process: Rendering

- 3D Geometric Models
- Lighting Information
- Image Storage and Display
- Texture Information
- Rendering

The Graphics Process: Image Storage and Display

- Hardware Framebuffer
- Disk File
- Recording
- Editing

The Basic Computer Graphics Pipeline

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

MC → WC → EC → BB → SC