The Computer Graphics Process and the Graphics Pipeline

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The Graphics Process

1. 3D Geometric Models
2. 3D Animation Definition
3. Rendering
   - Lighting Information
   - Surface Information
   - Texture Information
4. Image Storage and Display

Diagram showing the connections between the different processes involved in computer graphics, such as geometric models, animation definition, rendering, lighting information, surface information, texture information, and image storage and display.
The Graphics Process: Geometric Modeling

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

3D Geometric Models

- Rendering

The Graphics Process: 3D Animation

- Motion Design
- Motion Computation (physics)
- Motion Capture
- Dynamic Deformations

3D Animation Definition

- Rendering
The Graphics Process: Texturing

Scanned Image Textures

Procedural (computed) Textures

Painted Textures

Texture Information

Rendering

The Graphics Process: Surface Information

Alpha-Blended Transparency

Refractive Transparency

Reflectivity

Subsurface Scattering

Surface Information

Rendering
The Graphics Process: Rendering

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

3D Animation Definition

The Graphics Process: Image Storage and Display

- Hardware Framebuffer
- Rendering
- Disk File
- Recording
- Editing
- Compositing

Disk File

Recording

Editing

Compositing
The Graphics Process; Summary

3D Geometric Models

3D Animation Definition

Lighting Information

Surface Information

Rendering

Texture Information

Image Storage and Display

The Basic Computer Graphics Pipeline

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