

Introduction to Layer Production

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(Key concepts, workflow, and best practices for creating layered assets in visual effects, animation, and game pipelines)

1. What Is Layer Production?

Aspect	Description
Definition	The process of building a final image or sequence by compositing multiple independent “layers” (e.g., background, characters, effects, UI).
Purpose	Enables artists to work in parallel, reuse assets, adjust elements without re-rendering the whole shot, and achieve complex visual results efficiently.
Typical Domains	- Film & TV VFX 3D animation 2D animation - Real-time game engines - Motion graphics - Non-destructive editing
Core Benefits	- Faster iteration - Greater control over color, lighting, and depth - Easier versioning and asset management

2. Fundamental Layer Types

Layer	Typical Content	Common File Formats
Background / Plate	Live-action footage, matte paintings, skyboxes	EXR, DPX, OpenEXR, TIFF, PNG
Geometry / 3D	3D models, render passes (diffuse, specular, normals)	OBJ, FBX, Alembic, .exr passes
Matte/Mask	Alpha channels, roto shapes, holdouts	EXR (single-channel), PNG (alpha)
Lighting / Shadow	Shadow passes, ambient occlusion, depth	EXR, OpenEXR

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Layer	Typical Content	Common File Formats
Effect (FX)	Particles, fire, smoke, water, lens flares	EXR, OpenVDB (volumes), PNG sequences
Composite / Adjustment	Color correction, grading, blur, grain	EXR, LUT files
UI / HUD	Text, graphics, on-screen readouts	PNG, SVG, PSD

3. Production Pipeline Overview

1. Pre-Production

- Storyboarding & animatics to define required layers.
- Asset list & naming conventions.

2. Asset Creation

- Modelers, texture artists, riggers generate geometry.
- FX artists build particle systems, simulations.

3. Rendering

- Render each element as a separate pass/layer.
- Use *multi-pass* (beauty, diffuse, specular, etc.) or *deep EXR* for depth information.

4. Compositing

- Import layers into a node-based compositor (Nuke, Fusion, Natron).
- Apply masks, color correction, depth-based effects.

5. Review & Iteration

- Use version control (e.g., Shotgun, Ftrack).
- Adjust individual layers without re-rendering the whole shot.

6. Export

- Final output: DPX/EXR for film, ProRes/H.264 for delivery, or real-time textures for games.

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4. Naming & Organization Conventions

[Shot]_[Element]_[Pass]_[Version].[ext]

Example: SH010_BG_plate_v03.exr

Token	Meaning
Shot	Unique shot identifier (e.g., SH010)
Element	Layer purpose (BG, CHAR01, FX_SMOKE)
Pass	Specific render pass (diffuse, `