



Halide FX: Enabling the Writer's Room

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Introduction

Authors can paint their visions with a metaphorical stroke of the pen. Creative artists in film and TV must rely on an army -- sometimes a sizeable army -- of technical assistants. Most visible in location shooting, this army persists even when production retreats to the safety of the studio -- and it grows in complexity as the desired scene becomes more exotic.

Case in point: to shoot a scene set in 18th-century Versailles, one can either go on location and redecorate Versailles, construct an on-set facsimile of the palace in a very large studio space, or digitally recreate Versailles via “green screen”.

Option 1 is effectively impossible, Option 2 makes for an awful lot of joinery work. Option 3 (shooting actors against a green screen and overlaying the shot onto a 2-D or 3-D background) is increasingly the avenue of choice. No more dealing with regulatory permits, iffy weather forecasts, ambient sound, construction battalions, and boundaries of space and time; in principle, you can digitally “build” your sets as large as you like, wherever you wish, in whatever period you desire.

This is a freeing of the artist from practical, financial, and logistical impediments that for decades have stood between vision and on-screen reality. It’s a wonderful promise. But unfortunately, it has been an elusive one.

The problem with traditional green screen shooting is that, despite many real benefits, it typically swaps one large, expensive, hard-to-coordinate technical army (carpenters, painters, regulatory permit providers etc.) for a different, less-visible army. To accomplish the Versailles shot in traditional green screen, the production must call upon a complex Visual Effects (VFX) “pipeline” that has been developed by VFX service providers, each with its own proprietary methodology. The result is pain and expense.

The complexity of these VFX pipelines has made green screen shooting inaccessible for most content creators. Green screen *should* be easy; it *should* give artists a powerful tool for realizing their visions. However, except for the largest and most well-heeled productions, it has been too difficult and too expensive to pull off high-quality, sophisticated green screen shots suitable for episodic TV or film.

Lightcraft Technology was founded specifically to take the complexity out of high-quality green screen shooting. We cut our teeth with our Emmy Award-winning *Previzion* system, launched 10 years ago, which has been used on **V**, **Pan Am**, **Once Upon a Time** and **American Gods**, among others.

With our second-generation system, Halide FX, our focus is to make background replacement as simple and easy to use as a camera rental. By removing the budget and location restrictions found in physical sets, Halide enables writers, directors, and producers to use the locations they want, when they want them.

Overview

Halide FX provides a simple, straightforward way for producers, writers, and directors to get the locations they want, when they want them, for the stories they want to tell. It is a real time visual effects system explicitly engineered for the demands of entertainment production and background replacement.

Advantages



Halide FX can be used for creating finished VFX shots on set or speeding up post production with recorded metadata. Any camera motion that the operator does with the physical camera will be matched with the virtual camera automatically.

Halide FX allows directors to work in virtual environments as if they were real. With this technology, any filmmaker can shoot in locations that would otherwise be too difficult to access, too dangerous to reach, or too expensive to produce.



This capability opens the creative landscape for writing teams and gives them the freedom to pursue the visual impact that audiences now expect.

What is it?

Halide FX includes:



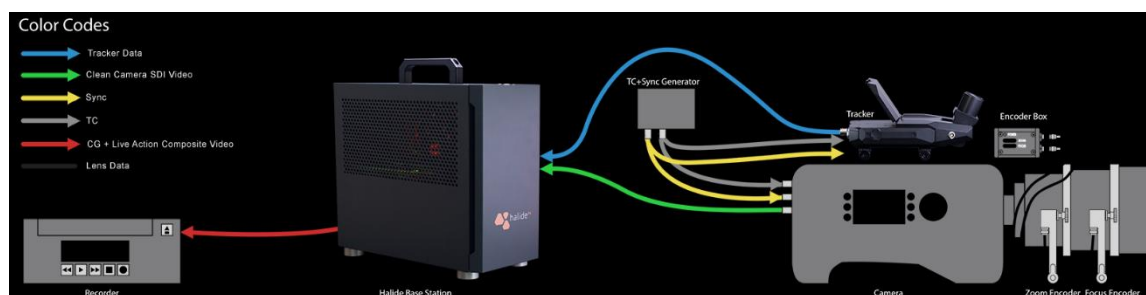
1. Halide Tracker: a self-contained tracking sensor that mounts onto a standard production camera.
2. Lens Encoders: passive high-resolution lens encoders that connect to standard camera mounts and track every movement of the lens zoom and focus.
3. Halide Base Station: a dedicated, portable, high performance compositing system that combines keying, compositing, color correction, data recording, and 3D rendering with external render engines such as the Unreal Engine.

System Integration

Halide FX is an **integrated** real time system. This fact sets us apart from every other system on the market and sets the bar in the most important aspect of any technology on a production stage: operator simplicity and production reliability.

From the integrated target mapping algorithms on the Tracker, to the built-in lens encoders, production-level keyer, color correction system, and integrated data recording system, Halide FX is designed to let productions focus on production, instead of technical debugging.

Even our tracking technology (fiducial markers mounted on a stage ceiling, wall, or floor) was chosen because it is fast to set up and works every time, even under fast-changing lighting conditions.



Key Features

I. Freeform, 6DOF Tracking

The Halide Tracker is an integrated, freeform 6DOF tracking sensor that combines built-in target mapping with lens encoders, timecode, and genlock to ensure perfect sync between foreground and background.



Its simple user interface can be learned in an afternoon and is familiar to any camera assistant comfortable with an Alexa or similar production camera. It can track nearly any type of camera move -- handheld, Steadicam, Techno Crane, dolly, tripod, etc.

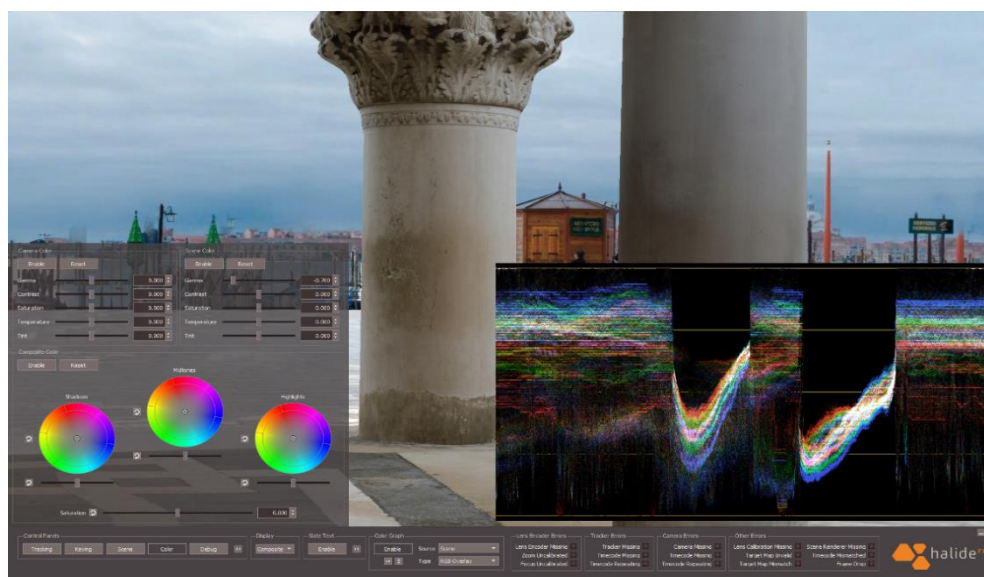
II. Integrated Target Mapping

Halide's integrated target mapping enables the user to rapidly map spaces from very small to very large, with targets mounted in arbitrary locations and orientations. A typical soundstage can be mapped in less than 10 minutes.



III. Real Time Keying and Compositing

Halide FX includes a production level, real time blue and green screen keyer, as well as a traditional 3-wheel color correction system that is familiar to anyone in post-production. Most other systems require an external keyer to achieve production results.



IV. Unreal Integration/Matched Depth of Field

Halide FX integrates seamlessly with external render engines such as Unreal. Operator motions such as zoom and rack focusing are seamlessly matched in real time.

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V. Mocap Integration

Any motion capture system that integrates with Unreal can integrate with Halide FX, with perfect, frame-accurate sync — yet another unique capability.

The integration can take the form of either green screen-enabled 'Jungle Book' style shooting, or CG characters merged into a live action scene.

<https://www.dropbox.com/s/2d5dtslhzyb4fo/Halide-lkinema-Mocap-Test-001.mp4?dl=0>

https://www.dropbox.com/s/r3mpc2u20gwp4uw/CG_Over_Live.mp4?dl=0

VI. Integrated Data Recording

Halide FX automatically embeds the camera and lens tracking metadata into a user-selectable audio channel in the HDSDI output. This ensures that timecode-matched tracking metadata is always available to radically speed up the post production process, with no need for external tracking data files that are easily lost in the heat of production.

VII. Lens Calibration Library

Lightcraft has an extensive range of pre-calibrated lens files, including most common production lenses, and can calibrate other lenses upon request.

Summary

Halide FX increases creative freedom while lowering the cost and time of production. Instead of flying a large cast and crew to an exotic location, a producer can send a small scanning team and capture a location digitally or choose from the content created by two million Unreal users. Halide FX enables all of this, with one additional feature unmatched by any other system in the world: **It's easy.**

