On-Set VFX Data Collection and Usage Guide

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Introduction

The Visual Effects Society Technology Committee is conducting a comprehensive assessment of the diverse on-set data types and capture methods overseen by production-side VFX teams. The primary objectives of this document are:

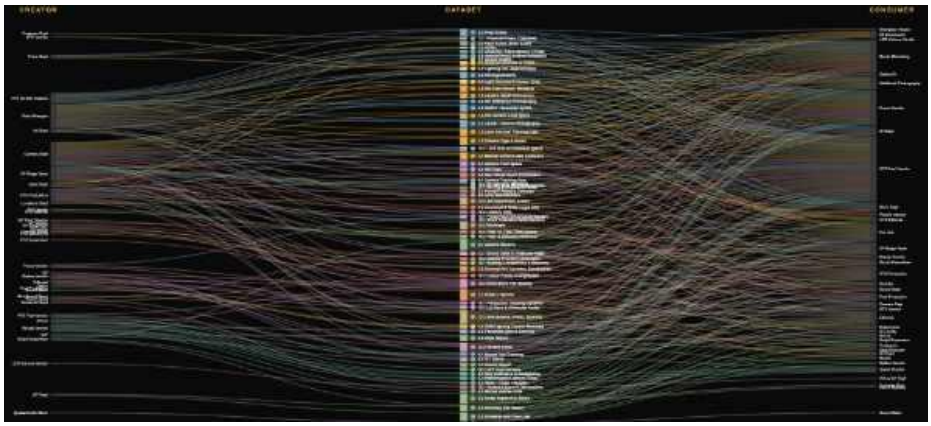
- To foster a common language across on-set VFX, production, VFX facilities, and technology teams, enabling clearer communication and collaboration.
- To detail the various on-set data types, describing their applications and intended stakeholders, so that all participants understand available resources.
- To document both current and emerging data capture workflows.
- To inform all stakeholders of potential data sources and highlight their implications for production pipelines, timelines, and budgets.
- To lay a groundwork for future initiatives focused on data hierarchies, database development, and workflow automation.
- To recognise that the Production-side VFX department serves as the primary custodian for the comprehensive management and tracking of on-set data throughout a film’s lifecycle, ensuring it is accessible for both present workflows

and future reference. Notably, VFX is uniquely positioned as the only department involved from pre-production to final delivery, making it responsible by default for maintaining the historical continuity and integrity of data assets across the entire production timeline. This includes data and assets generated by other departments on the production.

- To highlight that this data offers considerable value to every department on a production, supporting collaboration, optimizing workflows, and enabling better-informed decisions throughout the filmmaking process. Advocating for open access and visibility for these datasets allows all teams to engage with and benefit from this knowledge, strengthening collective outcomes and production efficiency.

This guide exists both as a complete PDF Document, as well as an interactive tool allowing users to focus on the relevant data types for their use case.

There is also a visualisation of the data relationships:



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Feedback

Feedback and insights on additional data sources not encompassed by this initial version are encouraged, recognizing that each project will bring unique processes and data requirements. Specifically 3D stereo conversion is not currently covered. Please send email to ves-tech-onset@googlegroups.com

Scope Definitions

We aim to clarify the specific relevance of each dataset. Whenever possible, we reference standard definitions or industry frameworks to enhance consistency and understanding across all stakeholders. For the purposes of clarity here are some fundamental definitions.

Take	A “take” in film production is a single continuous recorded performance of a particular shot or scene, starting when the director calls “action” and ending when they call “cut”. Multiple takes are often shot to capture different versions, allowing choices in editing to present the best performance or technical execution.
Slate	A “slate” refers to the clapperboard, a tool displayed in front of the camera at the start of a take, used to visually and audibly record details like the scene, shot, and take numbers for identification in post production. The slate ensures each take is uniquely labeled, aiding editors and VFX teams in tracking footage through the workflow.
Setup	In film production, a “setup” refers to the arrangement of camera position, lighting scheme, actor blocking, props, and set dressing that is required to capture one or more shots from a specific viewpoint or configuration. Each setup is distinct, and a new setup occurs whenever any of these elements—especially the camera position or lighting—are changed to achieve a different shot or look. This concept is key in scheduling and organizing a shoot efficiently, as

	multiple shots can sometimes be filmed from a single setup before moving equipment to create a new one
Lighting setup	The exact configuration of on-set lighting deployed, often varies per take. Proper lighting is crucial for both live-action and VFX integration.
Character	A “character” in film production is any fictional or real persona portrayed by an actor or performer within a story. The character is defined by specific traits, behaviors, and a narrative role, serving as a key element that drives the plot, interacts with other characters, and helps communicate the film’s themes. Each character is assigned to a performer and may be tracked during production and post production for continuity and VFX needs. A type of Asset but distinct from sets and props.
Vehicle	Film Vehicles: Vehicles that appear on camera within scenes, such as cars, motorcycles, or trucks driven by actors or used as part of the story. Production Vehicles: Specialized vehicles used behind the scenes to transport equipment, crew, or provide mobile workspace. Examples include grip and electric trucks carrying lighting and rigging gear, camera trucks with specialized mounts and climate control for camera equipment, wardrobe and makeup trucks for talent preparation, and production office trucks for administrative use. These vehicles are critical for logistical support and smooth operation on location. Vehicle Rigs: For filming car scenes especially, production vehicles may be outfitted with camera mounts, lighting setups, and power supplies to enable dynamic shots while in motion (camera cars). Thus, vehicles play both an on-screen storytelling role and an off-screen supporting role essential to film production logistics, equipment transport, and specialized shooting setup As with character, a sub category of Asset.
Camera	Referring to the back-end capture device body (typically not including the lens). A “camera” in filmmaking is the device used to capture the

	visual elements of a film or video. It records scenes and shots, translating the director's and cinematographer's vision into moving images.
Lens	Referring to the front-end capture device, can differ per take. A "lens" in filmmaking is an optical device attached to the camera that focuses and controls how light enters the camera sensor or film to capture an image. The lens affects the image's sharpness, perspective, depth of field, field of view, and overall aesthetic
Shot	A continuous sequence of frames captured without interruption. In VFX, a shot is the segment that requires visual effects work and is defined by the camera running from "start" to "stop," making it a basic unit for VFX budgeting and scheduling.
Sequence	A "sequence" is a series of shots that together form a distinct unit of the film, often representing a complete scene or action where they are thematically or logically connected. Sequences help organize the film's narrative and VFX planning.
Set	The physical build created by the Art Department or procured by Production for the purposes of filming.
Production location	Production location refers to the specific place where filming occurs, either outdoors or indoors, which may be an actual place or a set constructed to represent that place. Locations influence how scenes are lit, filmed, and what VFX may be required for environmental enhancements.
Virtual stage	The environment which integrates physical and virtual production. Typically a set of LED panels, projection screens and/or process screens for keying.
Prop	A prop is any physical object used by actors or set dressing present in a scene that isn't part of the set or costume, Props add realism, serve storytelling functions, and may include practical items on-set or digital objects inserted via VFX.
Actor	An actor is a performer who plays a character in a film. Actors deliver dialogue, interact with other performers and with practical or digital elements in scenes, and are often the core focus for integrating visual effects.

Animal performer	An animal performer is any trained animal used in place of a human actor in certain scenes or shots. Animal performers might be real or represented by digital doubles with VFX for safety, realism, or creative reasons.
Character_per_take	This refers to tracking which character(s) appear in each filmed take. A “take” is a single attempt at recording a shot, and documenting “character_per_take” is essential for VFX teams to plan the required work for each character’s appearance and interaction in a scene.
Performance	In some circumstances an actor may be required to create multiple performances in a single take.
Extras	Extras, also known as background actors or atmosphere players, are performers who fill out a scene to create a realistic background. They usually do not have lines but add to the authenticity of the environment by representing crowds, passersby, or bystanders.
Physical asset	A physical asset in filmmaking includes tangible items such as set pieces, costumes, props, camera equipment, or any real object physically present on set, relevant for reference or interaction by actors - including those later replaced or enhanced by VFX.
Digital and artistic assets	Digital and artistic assets refer to computer-generated elements like 3D models, matte paintings, visual effects layers. and animation files. These are created by VFX artists and inserted into scenes to realize effects, creatures, environments, or otherwise enhance or alter the filmed footage digitally.

0. Common Parameters

Units (metric vs imperial), defined by the production art department.

1. Camera & Lens Data

1.1 Manual Camera Data Collection

Data Collected	● Roll, slate, take ● Lens, f-stop, T-Stop, ND, filter ● FPS ● Camera height, start and end distances ● Camera orientation and GPS/gyro data ● Notes ● OpenTrackIO /OpenLensIO - camera & lens tracking data
Description	These are the foundational data points manually recorded on set for each shot.
Usage	Used for identifying shots, providing essential camera settings for matchmoving and compositing, potential backup for automatic capture pipeline.
Scope	● Shot ● Take ● Setup
Creator	● Data wrangler ● Camera department ● Virtual Production Department - stage team
Consumer	● VFX post production vendors ● Previz vendors ● Postviz vendor ● 3D conversion vendor ● 2nd unit team ● Additional photography team ● Studio marketing for commercial or game creation

1.2 Camera Type & Model

Data Collected	• Camera type & model (e.g., ARRI, RED, Sony Venice) • Sensor size. • Aspect Ratio • Colour space • Standard Pad - (how much padding around the frame do you add for stabilization, post-repo, 3D conversion) - e.g. 5%. • ASC FDL - Framing Decision List • Frame rate/shutter angle
Description	Specifies the exact camera used, which can affect image characteristics. Note, this should include reference cameras. Wherever possible the reference cameras should be jammed to the master TC on-set.
Usage	Ensures correct camera profiles are applied throughout the pipeline.
Scope	• Camera
Creator	• Data wrangler • Camera department
Consumer	• Dailies vendor • VFX post production vendors • Previz vendors • Post production vendor • 3D conversion vendor • Additional photography team • Studio marketing • VFX editorial

1.3 Per take Sensor Metadata

Data Collected	• ISO • White balance • F-Stop, T-Stop, FPS • LUT(s) • Grain/noise profile using an out of focus grey card where we bracket the iso of the camera by getting a perfectly exposed image by shifting the f-stop
Description	Information about the camera's sensor settings. Applies to film or digital cameras.
Usage	Crucial for colour grading and matching the digital footage to the live action.
Scope	• Take • Camera
Creator	• Camera department • Data Wrangler
Consumer	• Dailies vendor • VFX post production vendors • Previz vendors • 3D conversion vendor • 2nd unit team • Additional photography team

1.4 Per Camera Lens Specifications

Data Collected	• Focal length • Distortion profile using standard lens grid charts, done prior to shoot in lens rental shop • Lens characteristics - flare, aberrations, coatings • Spherical or Anamorphic
Description	Key parameters for the lens used, captured per camera body.
Usage	Essential for recreating the lens in CG and correcting distortion. Ensure the on-set data collection meets vendor pipeline needs.

Scope	• Lens
Creator	• Camera department • Data Wrangler
Consumer	• VFX post production vendors • Previz vendors • 3D conversion vendor • Studio marketing for commercial or game creation • VFX editorial

1.5 Lens Encoder Tracking Data

Data Collected	• Real-time lens settings during the shot
Description	Dynamic data from lens encoders.
Usage	Ensures accurate matchmoving, especially with variable focal lengths.
Scope	• Lens
Creator	• Camera department • Data Wrangler
Consumer	• VFX post production vendors • Previz vendors • 3D conversion vendor • Studio marketing for commercial or game creation • VFX editorial • 2nd unit team

1.6 Camera Depth Information

Data Collected	● Depth data from LIDAR on camera rig ● Range finder on camera for focus ● Depth camera or sensor fused camera (Depth +RGB)
Description	Data used to calculate distances.
Usage	Aids in creating a full 3D model.
Scope	● Take
Creator	● Camera department ● Data Wrangler
Consumer	● VFX post production vendors ● Previz vendors ● 3D conversion vendor ● Studio marketing for commercial or game creation ● 2nd unit team

2. Witness Cameras & Reference Video

2.1 Multiple Witness Cameras

Data Collected	● Multiple angles for tracking actor positions ● Practical vs. CG interaction data
Description	Footage from additional cameras to aid tracking.
Usage	Improves accuracy of 3D tracking and character placement.
Scope	● Take
Creator	● VFX production team ● Camera Department - operator or camera fixed to principal camera (simulcam-like setup)

Consumer	● VFX post production vendors ● Previz vendors ● Studio marketing for Behind-The-Scenes content ● If cameras are placed to capture head-to-toe actors (and preferably synched) can be used for postviz-level mocap.

2.2 Overhead & Wide-Angle BTS Coverage

Data Collected	● Wide context shots ● Behind-The-Scenes angles
Description	Footage to provide additional information for the scene set up.
Usage	Helps maintain continuity, resolve issues, and provide reference for set and actor positions.
Scope	● Take
Creator	● VFX production team ● Camera Department - operator if camera fixed to principal camera
Consumer	● VFX post production vendors ● Previz vendors ● Studio marketing for Behind The Scenes content

2.3 Real-World Depth Information

Data Collected	● Stereoscopic reference cameras
Description	Captures depth information of the set.
Usage	Accurate scene reconstruction for CG elements.

Scope	• Set • Setup
Creator	• VFX production team • VFX On-set capture vendor
Consumer	• Art department during principal photography • Previz vendors • Stunt team during principal photography • VFX post production vendors • Studio marketing for game or commercial creation

3. Production Reports & Metadata

3.1 Camera Reports

Data Collected	• Logs of camera settings, takes, and any issues encountered. • Realtime and virtual production reports
Description	Important documentation for each shot.
Usage	Helps track and ensure all necessary data is available for each VFX shot, and “hot costs” / unbudgeted or unforeseen overages. Useful for matching set-ups in additional photography and 2nd unit team.
Scope	• Setup • Take
Creator	• Data wrangler • Camera department • Script supervisor

Consumer	● Editorial ● Script Supervisor ● VFX post production vendors ● 2nd unit team ● Additional photography team ● Previz vendors ● Art department ● Hot cost reports: ○ VFX Production Team ○ Film producers ○ Studio executives

3.2 Clips Report

Data Collected	● Daily Report of all clips generated by the camera Department
Description	Ensures all clips are accounted for, fail safe for data wrangler reports.
Usage	Used for tracking and data confirmation.
Scope	● Take
Creator	● Camera department ● DIT
Consumer	● Dailies vendor ● Editorial ● VFX Editorial ● Script supervisor ● VFX data wrangler ● VFX DPM ● 2nd unit team

3.3 Shooting Day Report

Data Collected	● Summary of the day's shooting activities

Description	Documentation used to ensure all parts of the schedule are completed and logged.
Usage	Helps coordinate resources for the next day, track shot costs.
Scope	• Shot
Creator	• Script supervisor • AD department
Consumer	• First AD • Script supervisor • Line producer • UPM • VFX Production Team • VFX editorial • 2nd unit team

3.4 Sound Report

Data Collected	• Detailed logs of sound takes and equipment used
Description	Notes and records of the audio take. When working with Virtual Production & MoCap discuss sync sound
Usage	Used to sync the sound and visual elements.
Scope	• Take
Creator	• Sounds department
Consumer	• Editorial • VFX department • Virtual production Department • Motion capture vendor

3.5 Schedule and One-Liner

Data Collected	● Scene-based schedule ● One-line summaries of scenes
Description	Outlines the filming schedule for the scenes shot.
Usage	Used to plan out each stage of filming and shooting, organized by scene rather than shot. Used to reference back to a shot by date, scene and production location.
Scope	● Scene
Creator	● AD department
Consumer	● Entire film crew ● All departments ● Actors ● Studio ● Producers ● Editorial ● Dailies vendor ● Post production ● 2nd unit team

3.6 Script Supervisor Notes

Data Collected	● Notes on continuity, performance, and other important details
Description	Notes about each take and filming session.
Usage	Helps the VFX team maintain continuity and compare to data wrangler notes.
Scope	● Take
Creator	● Script Supervisor

Consumer	● Editorial ● Camera department ● AD department ● VFX department ● Costume department ● Hair and makeup ● Sound department ● 2nd unit team ● Additional photography team

4. Colour & Lighting Reference

4.1 Colour Charts

Data Collected	● Shots of standard colour charts under the scene lighting
Description	Charts with known colour values.
Usage	Used for colour calibration and grading.
Scope	● Setup
Creator	● Data wrangler
Consumer	● VFX post production vendors

4.2 HDRIs

Data Collected	● 360° HDR images of the set lighting per camera setup
Description	Captures a full light spectrum.
Usage	Enables accurate recreation of on-set lighting in CG.

Scope	• Lighting setup
Creator	• Data wrangler • VFX On-set vendor
Consumer	• VFX post production vendors • Studio marketing for commercial or game creation

4.3 Lighting Reference Objects/Props

Data Collected	• Props designed for VFX lighting reference
Description	Objects included to properly measure the lighting, made from materials that emulate the CG object to be added e.g. Fur, metal, skin, plastic…
Usage	Provides additional lighting information for digital recreation
Scope	• Lighting setup
Creator	• SFX vendor • Model or prosthetic companies • Props department • Art department • Stunt Department
Consumer	• VFX post production vendors • Studio marketing for commercial or game creation

4.4 DMX/Lighting Control Metadata

Data Collected	• Tracked data of lighting controlled by DMX
Description	Notes on the lighting for each take.
Usage	Helps to recreate the scene accurately, useful for interactive lighting.

Scope	• Take
Creator	• Virtual Production Department - Stage team • Gaffer • Post Production
Consumer	• VFX post production vendors • Virtual Production Department • Post production

4.5 Light Sources & Colour Temperature

Data Collected	• Record of the light source
Description	Temperature and intensity of the light being emitted on set.
Usage	CG lighting and scene matching.
Scope	• Lighting setup
Creator	• Data wrangler • Camera department
Consumer	• VFX post production vendors • Studio marketing for commercial or game creation • Previz vendors • Additional photography team

4.6 Shadow Behavior & Falloff

Data Collected	• Recording of the shadow cast and fall off
Description	The shape and intensity of the shadow.
Usage	To accurately portray the falloff of light on the subject and define the scale and distance of the light source.

Scope	● Lighting setup
Creator	● Data Wrangler
Consumer	● VFX post production vendors ● Studio marketing for commercial or game creation ● Previz vendors ● Additional photography team

5. Set, Prop, and Actor Scans

5.1 LIDAR Scans / Texture Photography

Data Collected	● 3D point cloud data of the set geometry ● High resolution photographic textures
Description	Physical set environment capture.
Usage	Used in CGI to recreate the physical set and aid in camera matchmoving. Art dept to aid in virtual set build.
Scope	● Set ● Production location
Creator	● VFX On-set capture vendor ● Data wrangler
Consumer	● VFX post production vendors ● Studio marketing for commercial or game creation ● Previz ● Stunt Department ● Art department ● Vendor creating LED volume content ● VFX production team in additional photography

5.2 Prop Scans

Data Collected	• High-resolution scans of props including textures
Description	Scans that allow for accurate CG prop creation.
Usage	Used to replicate props in CGI with correct materials and geometry.
Scope	• Prop
Creator	• Props department • VFX On-set capture vendor
Consumer	• VFX post production vendors • Previz vendors • Studio marketing for commercial or game creation • Stunt Department • Art department • Additional photography team

5.3 Photogrammetry

Data Collected	• Multiple photographs from different angles to create 3D models
Description	Used for set geometry in CGI reconstruction.
Usage	Provides detailed models for CG integration.
Scope	• Set • Props • Actors • Animal performers
Creator	• Data wrangler • VFX On-set capture vendor

Consumer	● VFX post production vendors ● Studio marketing for commercial or game creation ● Stunt Department ● Art department ● Additional photography team ● Previz vendors

5.4 NERFs, Gaussian Splats

Data Collected	● New methods of capturing geometry and appearance
Description	Used to make more accurate models. Useful if unable to scan or lidar.
Usage	Provides advanced methods for geometry and appearance capture.
Scope	● Set ● Setup
Creator	● Data wrangler ● VFX On-set capture vendor
Consumer	● VFX post production vendors ● Studio marketing for commercial or game creation ● Stunt Department (previs team) ● Art department ● Additional photography team ● Previz vendors ● Virtual Production Department / ICVFX

5.5 Face Scans, Body Scans

Data Collected	● Detailed scans of actors for digital doubles ● Light stage multi spectral capture ● FACS range of expression capture

Description	Used to create CGI doubles of the actors.
Usage	Used for digital human creation.
Scope	• Character • Actor
Creator	• VFX on-set capture vendor
Consumer	• VFX post production vendors • Studio marketing for commercial or game creation • Previz vendors • Animation / Cinematics vendors

5.6 Set Reference Photography

Data Collected	• Massive amounts of photographic reference
Description	Pictures used for continuity and unforeseen requirements.
Usage	Used for textures and modeling. Provides continuity and in context references.
Scope	• Set
Creator	• Data Wrangler • Camera Department
Consumer	• VFX post production vendors • Studio marketing for Behind The Scenes content • 2nd unit team

5.7 Costume, Face Marker, and T-Pose Reference

Data Collected	• Specific poses and marker placements for accurate tracking, per day. (If dots are re-applied, additional reference needs to be captured with exact timestamps, this allows correlation with motion picture photography.) • Still and motion picture photography
Description	Data acquired from body and face tracking.
Usage	Accurate motion tracking for character animation or live action enhancements.
Scope	• Actors • Extras
Creator	• VFX on-set capture vendor
Consumer	• VFX post production vendors • Studio marketing for commercial or game creation • Previz vendors

5.8 Reference of Vehicles, Props, Production Locations

Data Collected	• Extensive reference still photography • Physical distance measurements • LIDAR set scanning • Photogrammetry
Description	Measurements, photos, and data about the vehicle, prop, or production location. Depending on the vehicle VFX may need to take photogrammetry reference twice, once per on-camera usage and once with a dulling spray or dusting to remove specular information.
Usage	For recreation of CGI of the production location, prop, or vehicle.
Scope	• Vehicle • Set • Prop

Creator	● VFX on-set capture vendor ● Data wrangler
Consumer	● VFX post production vendors ● Studio marketing for commercial or game creation ● Previz vendors

6. Camera Rig & Technical Specs

6.1 Camera Tech Specs

Data Collected	● Graticule / frame guide ● Resolution ● Colour space ● Camera native ISO
Description	Camera tech spec for calibration.
Usage	Supports correct image processing in dailies and final extraction. Work safe area of the image and guide for multiple delivery formats. CG integration. This gets modified through production as additional cameras are added.
Scope	● Camera
Creator	● Data wrangler ● Camera department
Consumer	● VFX post production vendors ● Studio marketing for commercial or game creation ● Dailies and Digital Intermediate vendor ● Camera department ● Previz vendors

6.2 DIT Specs

Data Collected	• Pregrade, Color Decision List (CDL). If DP / DIT have done single frame looks beyond standard CDLs those should be requested for post production / DI. • ASC Media Hash List (MHL) • ASC Framing Decision List (FDL)
Description	Used to ensure colour accurate rendering, inline with On-set DoP colour decisions.
Usage	Ensure proper colour grading throughout the entire pipeline. In some instances CG integration is easier to composite on a graded image compared to the raw image.
Scope	• Scene • Take
Creator	• Director of photography • Digital imaging Technician (DIT) • Post production dailies vendor
Consumer	• VFX post production vendors • Studio marketing for commercial or game creation • Digital intermediatel vendor • Camera department

6.3 Lens Specification

Data Collected	• Lens size.
Description	Director of photography defines what lenses will be used for previz purposes
Usage	Used to match the DoP lens decisions by Previz and post vendors
Scope	• Lens

Creator	● Camera Department ● Virtual Production Department - stage team
Consumer	● Previz vendors ● VFX post production vendors

7. Vendor & Pre-Production Data from VFX Vendor to Production.

7.1 Previz/Techviz

Data Collected	● Pre-visualization data ● Technical visualization data
Description	Creative and technical visualization data used to plan live action photography, typically derived from production storyboards.
Usage	An animated guide for all departments based on real world specs. Helps determine camera shooting equipment, greenscreen size and placement etc. Used to guide asset creation and look development. Used to pitch a sequence or idea to the studio or client.
Scope	● Sequence ● Shot
Creator	● Previz vendors ● VFX production team

Consumer	● VFX production team ● Assistant Director ● Director ● Producers ● Studio ● Stunt Department ● Special effects ● Art department ● Entire crew pending approvals and confidentiality ● 2nd unit team

7.2 Concept Art, Lookdev, Character Designs, R&D, Storyboards

Data Collected	● Visual development materials from the VFX vendors and freelance concept artists
Description	Early development materials from the VFX vendor and freelance concept artists. This includes but it not limited to, reference materials, mood boards, key art, test animation cycles, storyboards, sculpts, character design, visualization materials.
Usage	Used to guide asset creation and look development.
Scope	● Entire production
Creator	● Concept artists ● VFX vendor art department
Consumer	● Entire On-set crew to see director’s vision ● Studio Executives when pitching concepts ● Studio marketing for Behind The Scenes content ● Previz vendors ● VFX post production vendors ● 2nd unit team

8. Mocap Data

8.1 Mocap Suit Tracking

Data Collected	• Data from motion capture suits
Description	The process of recording an actor's physical performance, body, face, hands, or full movement and translating it into 3D animation data that can drive digital characters, creatures, digital doubles, or previs/postvis assets.
Usage	Drives digital character animation.
Scope	• Take • Character_per_take
Creator	• Stunt Department • Actors • Motion Capture Vendor
Consumer	• VFX post production vendors • Previz vendors • Game studios

8.2 Performance Capture Facial Tracking

Data Collected	• Data from facial tracking systems
Description	Facial performance capture records an actor's detailed facial movements, muscle actions, expressions, lip shapes, eye motion, and subtle micro-expressions to create high-fidelity animation for a digital character. The system extracts precise motion data from markers or other (markerless) image features, solves it to a facial rig, and provides animators with a trackable, frame-accurate representation of the actor's performance.

Usage	Drives digital double / digital character..
Scope	• Take • Character_per_take
Creator	• Actors • Motion capture vendor
Consumer	• VFX post production vendors • Previz vendors • Game studios

8.3 Hand/Finger Tracking

Data Collected	• Data from hand/finger tracking systems • Optical marker positions • Inertial sensor data • Depth camera data • Glove sensor data
Description	Hand and finger tracking captures detailed palm and finger joint motion, which is solved and mapped onto digital characters to reproduce the actor's natural gestures and hand performance.
Usage	Digital human or creature hands driven directly from actor performance.
Scope	• Take • Character_per_take
Creator	• Actors • Motion capture vendor
Consumer	• VFX post production vendors • Previz vendors • Game studios

8.4 Raw Animation Data & Retargeting Settings

Data Collected	● Unprocessed motion curves output by tracking system ● Direct marker trajectories, sensor data, or initial joint solves ● Scale adjustments, joint alignment, rotation mappings ● Rig-specific controls
Description	Raw animation data and retargeting settings describe the post-capture stage of the pipeline. The system collects raw body-motion capture data, including marker or sensor trajectories, markerless image features, joint transforms, and the associated retargeting settings required to accurately map the performer's movements onto the digital character rig.
Usage	Drives digital character animation. The captured raw motion data and retargeting settings are used to solve the performer's movement into a clean animation rig and accurately transfer that motion onto the digital character for final animation and simulation workflows. Ensures believable motion on rigs with different proportions
Scope	● Take ● Character_per_take ● Performance
Creator	● Actors ● Motion capture vendor
Consumer	● VFX post production vendors ● Previz vendors ● Game studios

8.5 Motion Capture Volume Data

Data Collected	● Spatial position of markers and tracking points in physical motion capture volume
Description	To accurately place and manipulate CGI objects in virtual space.

Usage	Used in alignment of CGI and the set, for instance to add digital set extensions.
Scope	• Set
Creator	• Motion capture vendor
Consumer	• VFX post production vendors • Game studios

9. Camera Tracking & Sync

9.1 Camera Tracking Data

Data Collected	• Camera position • Camera rotation • Sensor detail • Lens intrinsics • Lens metadata • Vendor specific data formats
Description	Positional data and lens intrinsics.
Usage	Ensures CGI follows camera movements precisely.
Scope	• Take
Creator	• Camera Department • Data wrangler • VFX production team
Consumer	• VFX post production vendors • Previz vendors

9.2 Timecode Sync & Genlock

Data Collected	• Phase offset • Sync source • Sensor start • Sync pulse • Sensor readout time • Timecode & genlock alignment for LED volume, camera, tracking systems • Frame rate • Shutter angle • Timecode per frame • Precision Timing Protocol (PTP) timestamp • Genlock status
Description	Timecode associated with multiple media elements (audio, camera)
Usage	Ensures all systems are synchronized.
Scope	• Take
Creator	• Camera Department • Motion capture vendor
Consumer	• Camera • Audio • Virtual Production Department • Post production vendors

9.3 IMU Data

Data Collected	• X,Y,Z axis • Acceleration • Motion shake • Gravity vector
Description	Inertial Measurement Unit data for movement analysis, pitch / yaw / roll.

Usage	Improves stabilization of virtual camera.
Scope	• Take
Creator	• Camera Department • Data wrangler
Consumer	• Virtual Production Department • Motion capture vendor • VFX post production vendors

10. LED Volume & Environment Data

10.1 Volume Layout & Dimensions

Data Collected	• Size, arrangement and specifications of LED panels, including pixel pitch and colorimetry • 3D mesh of LED volume from LIDAR scan • Lighting plot • CAD models to convert to real-time graphics engine meshes
Description	LED volume physical layout.
Usage	Accurate mapping between virtual volume physical dimensions and realtime graphics engine rendering and/or media playback.
Scope	• Virtual stage
Creator	• LED design vendor • Virtual art department
Consumer	• Virtual Production Department - stage team • Virtual art department • VFX post production vendors

10.2 Display Frustum Calibration

Data Collected	● Frustum data via real-time graphics engine or media server
Description	Accurate data for parallax tracking.
Usage	Guarantee proper perspective between physical and virtual camera. Used to sync camera and frustum rendering. Derive a usable protection matrix with frustum planes for tracking, ray-tracing and compositing with the real-time graphics engine.
Scope	● Virtual stage
Creator	● Virtual Production supervisor ● Virtual Production technical director
Consumer	● Virtual Production Department - stage team ● Postviz vendor (camera path smoothing) ● VFX post production vendors

10.3 Colour Profile & Brightness Settings

Data Collected	● Consistent light output ● Photometric response ● Pixel accuracy and alignment calibration
Description	Calibration and color management from assets, virtual art department builds, all the way from camera to LED panels.
Usage	Integration between CGI and live action footage.
Scope	● Virtual stage
Creator	● Virtual Production Department - stage team ● Virtual art department ● Virtual production supervisor ● VFX supervisor

Consumer	● VFX post production vendors ● Post production vendors

10.4 Latency Data

Data Collected	● Latency between cameras, real-time graphics engine, LED panels and engineering
Description	Measuring latency loops between cameras, tracking, screens / LED walls and real-time graphics engine. Machine learning and predictive techniques can be used to lower latency in media servers and game engines.
Usage	Helps integrate CGI and live action footage.
Scope	● Virtual stage
Creator	● Camera department ● Virtual Production Department - stage team
Consumer	● VFX post production vendors ● Audio ● Post production vendors

10.5 Plate vs. Real-Time Rendered Assets

Data Collected	● Captured plate array assets ● Plate array libraries ● CG generated assets ● Virtual art department generated assets
Description	Provide captured 2D spherical plates vs. virtual art department built assets for ICVFX.

Usage	Used to improve rendering quality, identifying when real-time graphics engine backgrounds are used.
Scope	● Digital and artistic assets
Creator	● Virtual Production Department - stage team ● Virtual production vendors
Consumer	● VFX production team ● Virtual Production Department - stage team ● VFX post production vendors

11. Scene Metadata & Notes

11.1 Virtual Production Log and Continuity Notes

Data Collected	● Notes on continuity between shots ● Shot management via tools integrated in the real-time graphics engine or media server
Description	Structured and unstructured notes to maintain and identify any key continuity differences.
Usage	Ensures consistency.
Scope	● Setup ● Take
Creator	● Virtual Production Department - stage team
Consumer	● VFX post production vendors

11.2 Virtual Production Operator Metadata

Data Collected	● Unreal engine scene versions ● Changes made on set (if changes are made a scene snapshot needs to by output by mission control with a timestamp)
Description	Real-time graphics engine operator scene specific metadata..
Usage	Better integration between CGI and live action footage.
Scope	● Take
Creator	● Virtual Production Department - stage team
Consumer	● VFX post production vendors

11.3 On-Set Real-Time Adjustments

Data Collected	● Real-time graphics engine operations ● Lighting (DMX) ● Colour grading ● Projector mapping tweaks
Description	Colour correction and map alterations.
Usage	Better integration between CGI and live action footage.
Scope	● Take
Creator	● Virtual Production Department - stage team
Consumer	● VFX post production vendors

12. Audio & Sync Data

12.1 Sound Slate & Timecode Alignment

Data Collected	• Audio sync between virtual production, animation and motion capture
Description	Sync for the VFX elements.
Usage	To sync the audio and CGI
Scope	• Take
Creator	• Sound department • Camera department • Virtual Production Department - stage team
Consumer	• Sound department • Camera department • Virtual Production Department - stage team • VFX post production vendors

12.2 Spatial Audio Tracking Metadata

Data Collected	• Static and dynamic settings from spatial audio system
Description	Spatial, immersive and Ambisonic audio tracking metadata captures the 3D position, orientation, and movement of the microphone or recording device, providing the positional information needed for accurate spatialization in post-production.
Usage	To give dimension to spatial audio. Enables precise 3D placement and movement of sound during spatial audio mixing.
Scope	• Take
Creator	• Spatial audio mixer
Consumer	• Post production vendors • Sound mixer

12.3 Lip sync and character audio

Data Collected	• May be recorded as part of other media recordings, but may end up as a separate ADR recording.
Description	Sync for the VFX elements. Could be a scratch track, which is re-recorded by final voice talent.
Usage	To sync the audio and CGI
Scope	• Take
Creator	• Camera department • Editorial • Sound mixer
Consumer	• Editorial • VFX post production vendors

13. Data from Other Production Departments

13.1 Physical Props, Costumes

Data Collected	• Props • Costumes • Stunt props
Description	Items and actions that were either created on-set or used during principal photography.
Usage	Guides asset creation, scene layout, and VFX planning. Additional photography.
Scope	• Physical asset

Creator	● Props Department ● Costume Department ● Stunt Department
Consumer	● VFX post production vendors

13.2 Mudmaps

Data Collected	● Diagrams that depict the sets and blocking
Description	An informal, simplified diagram used in film and television production - especially in art department and production location planning, stunts - to quickly sketch out layouts or spatial relationships.
Usage	Aids in CGI planning and actor blocking on set.
Scope	● Setup
Creator	● Stunt Department
Consumer	● VFX production team ● Director ● Actors ● Stunt performers ● Editorial ● Previz vendor ● 2nd unit team

13.3 Storyboards, Previz, Techviz, Stuntviz

Data Collected	● Storyboards (PDFs) ● Previz (movie files) ● Techviz (movie files, PDFs) ● Stuntviz (movie files)
Description	Visualization that helps plan live action photography.
Usage	Guides principal photography, asset creation, action blocking, set, scene layout, camera and VFX planning.
Scope	● Sequence
Creator	● Previz vendors ● Stunt Department (previz team) ● Storyboard team
Consumer	● VFX production team ● VFX post production vendors ● Assistant directory (AD) ● Director ● Producers ● Studio executives ● Studio marketing ● Stunt Department ● Special FX ● Art department ● 2nd unit team ● Entire crew pending approvals and confidentiality

13.4 Art Department Assets

Data Collected	• Set blueprints (PDFs) • Location blueprints (PDFs) • Location scout reference photography (still images, movie files) • Key art • Sets • Graphics • Rigs • Construction drawings • Stage plans • Set list • Ref Images/movies • 3d Models • Concept Art • Maquettes
Description	Visual and logistical elements from the production art department.
Usage	Post production asset creation and additional photography.
Scope	• Digital and artistic assets
Creator	• Art department • Locations department
Consumer	• VFX post production vendors • Marketing • Studio executives • Additional photography team • 2nd unit team • Editorial • Previz vendors

14. Data Shared with VFX Vendors During Principal Photography

14.1 Previz, Techviz, Concept Art

Data Collected	● Development assets, media and documents from the production
Description	Used to visually communicate the creative vision between production VFX team and post production vendors.
Usage	Alignment between production and vendor teams.
Scope	● Entire production
Creator	● Previz vendors ● Art department ● Production VFX art department
Consumer	● VFX post production vendors

14.2 Lens Grid and Reference Specs

Data Collected	● Lens manufacturer, model and serial number ● Lens calibration data / lens grid capture media ● Dynamic camera lens metadata (aperture, zoom...)
Description	Specific data from the lenses used by the Camera Department.
Usage	Used to ensure the vendor has the correct lens information to perform image unwarping, and correctly match the CGI virtual camera to the physical camera and lenses used in live action photography.
Scope	● Lens ● Take
Creator	● VFX production team ● Virtual Production Department - stage team ● Data wrangler ● Camera Department

Consumer	● VFX post production vendors

15. Data Management, Tracking, and Review

15.1 Production Tracking Systems

Data Collected	● Any data, metadata and media for every shot and asset generated during production
Description	Database and front end application to manage production data.
Usage	Data integrity, standardization, shared access between departments and access control
Scope	● Entire production
Creator	● Editorial ● Dailies vendor ● VFX production team
Consumer	● VFX production team ● VFX post production vendors

15.2 Descriptive File Naming

Data Collected	● Descriptive and consistent names for the media
Description	Consistent naming conventions for all data
Usage	Data integrity, efficient and unambiguous access to digital assets.
Scope	● All production assets

Creator	• Editorial • Dailies vendor • VFX production team • VFX post production vendor • All production-side departments • Virtual Production Department - stage team. • Motion capture team • Data wrangler • VFX production team On-set vendor • Digital intermediate (DI) facility.
Consumer	• VFX production team • Editorial • Studio executives • VFX post production vendors • Previz vendors • Marketing • Digital intermediate (DI) facility • Any entity using this data

15.3 Review Tools

Data Collected	• Movie files • Image sequences • Audio files • Cut lists / EDLs • CDL / LUTs • Notes • Graphical annotations • Recipient lists • Approvals
Description	Tools used to review work in progress and give feedback.
Usage	Collaboration and review of VFX shots between production and vendor teams.

Scope	• Entire production
Creator	• VFX Editorial • Editorial • Dailies vendor • VFX production team • VFX post production vendors
Consumer	• VFX production team • Director • Actors • Stunt Department • Editorial • Studio executives • Previz vendors • 2nd unit team

15.4 Show Technical Specifications

Data Collected	• All standards agreed upon upfront
Description	A single document aggregating all standards for VFX data and metadata interchange between VFX production team and VFX post production vendors.
Usage	Establish common standards to avoid ambiguity and ensure consistent interchange with VFX post production vendors.
Scope	• Entire production
Creator	• VFX production team
Consumer	• VFX post production vendors

16 Plate Deliverables

16.1 Naming Conventions and Metadata

Data Collected	● Project or Show ID: a short code identifying the project ("ABC", "SHOW01") ● Short code or numerical identifier for the sequence or episode (optional for features) ● Short label for type of file or work ("_comp", "_plate", "_model", "_anim", ...) ● Short code or numerical identifier for version information ("_v0001") ● File extension: standard extension appropriate for the format (".exr", ".usd", ".mov") ● Date / time format ● Numbering format / number of digitals / zero padding ● Allowed characters ● Metadata to be encoded as filename components / folder hierarchy
Description	Naming conventions for file based image sequences.
Usage	Standard for naming image sequences in an unambiguous way, allowing for smooth interchange between production departments and vendors, avoiding as much as possible need to rename sequences to satisfy specific requirements. Encoding more metadata fields in folder hierarchy / filename components allows image sequences to be interpreted without access to external database or sidecar files, at the cost of complexity and visual clutter.
Scope	● All production assets
Creator	● DI vendor
Consumer	● VFX post production vendor ● Marketing ● Virtual Production Department

16.2 Plate and Editorial Reference Media

Data Collected	● Per shot EXR sequences ● Corresponding editorial reference movie files ● Timing reference files (EDL, cutlist, AAF, OTIO, ALE) ● Image extraction, retiming, scaling and reposition metadata ● Metadata burn ins ● Color correction metadata (CDLs) ● Reference audio files
Description	EXR file sequences for shots requiring VFX, referred to as VFX pulls, and corresponding editorial media and metadata.
Usage	Background plates and live action photography used by VFX vendors for creation of VFX. VFX editorial team provides EDL information to Pull vendor. Pull vendor transcodes Original Camera Negative (OCN) data to EXR sequence with correct colourspace, image extraction and scaling, metadata and naming conventions. Data delivered from Pull vendor to VFX production team, which then delivers to VFX post production vendor. At the start of a shot, a full package of test data is sent through the delivery pipeline to confirm and to end color and imaging transparency.
Scope	● Sequence ● Shot
Creator	● Pull vendor ● VFX editorial ● VFX production team
Consumer	● VFX post production vendor ● Virtual Production Department

16.3 VFX Shot Delivery

Data Collected	• Per shot EXR sequences • Corresponding editorial and supervisor reference movie files • Metadata burn ins • Slate frames • Original metadata files • In context cut sequence reference
Description	EXR file sequence and ancillary data with Work In Progress or Final VFX shots.
Usage	Intermediate or final shots delivered from VFX vendors back to VFX production team for notes or final approval.
Scope	• Sequence • Shot
Creator	• VFX post production vendor
Consumer	• VFX production team • VFX editorial • Production editorial

16.4 Digital Camera Raw

Data Collected	• The raw files from the camera
Description	Individual takes from the Camera Body, typically a single file per take. For film work this is known as the Original Camera Negative.
Usage	These are generated on set, managed by Digital Imaging Technician as part of the camera department.
Scope	• Take
Creator	• Digital Imaging Technician
Consumer	• Pull Vendor • Dailies Vendor

16.5 Editorial Media

Data Collected	• The Digital camera original with any CDL and FDL applied.
Description	Individual takes from the digital camera raw but processed based on the ASC CDL (from the DIT specified by the Cinematographer) and ASC FDL, typically a single file per take. Typically these would be delivered as MXF or ProRes encoded media. These would be delivered with a ALE file which would contain the CDL information applied. Note, these can be created by the DIT on set.
Usage	These are the elements that Editorial and VFX Editorial would use.
Scope	• Take
Creator	• Dailies Vendor
Consumer	• VFX Editorial • Editorial

17. Reference Documents

- SanKey visualisation of the above on-set data relationships.
- Netflix On-set Digital Imaging and Data Management: Roles & Responsibilities
- Netflix VFX Media Review - Delivery Specifications
- Netflix Status Reporting Instructions
- Netflix VFX Shot and Version Naming Recommendations
- Netflix VFX Best Practices
- MovieLabs Ontology
- MovieLabs VFX Image Sequence Naming
- VES Transfer Spec
- OpenTrackIO / OpenLensIO
- ASC FDL Framing Decision List
- ASC Framing Decision List GitHub Repository
- ASC MHL Media Hash List Specification
- ASC Media Hash List GitHub Repository

- The Virtual Production Glossary