

Workflows for Virtual Production with Remote Teams

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Hardie Tankersley

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Hardie is a veteran builder of products at the intersection of entertainment and technology. Hardie has held previous roles as the Senior Vice President of Innovation at Fox and delivered new products around streaming and connectivity. He is currently on the forefront of developing high-quality immersive visualization solutions for design, marketing, and storytelling.



Erik Weaver

Entertainment Technology Center @ USC

Erik Weaver is a specialist focused on the intersection of cloud and the M&E industry, and is currently running special projects for the Entertainment Technology Center @ the University of Southern California (ETC). Recently, he led Global M&E Strategy for Western Digital. Prior work at ETC includes spearheading the *Production in the Cloud* project, which encompassed many aspects of the cloud, including transport, security, metadata, long-term storage, and the creation of an agnostic framework that unites key vendors and studios. Mr. Weaver recently finished “Ripple Effect” a short leveraging Unreal engine and Larger LED volumes for production.

SILVERDRAFT

**Visualization Tools that Drive High-Resolution
Photorealistic Experiences**





Why Now?

“We are seeing three years of digital and culture transformation in three months.”

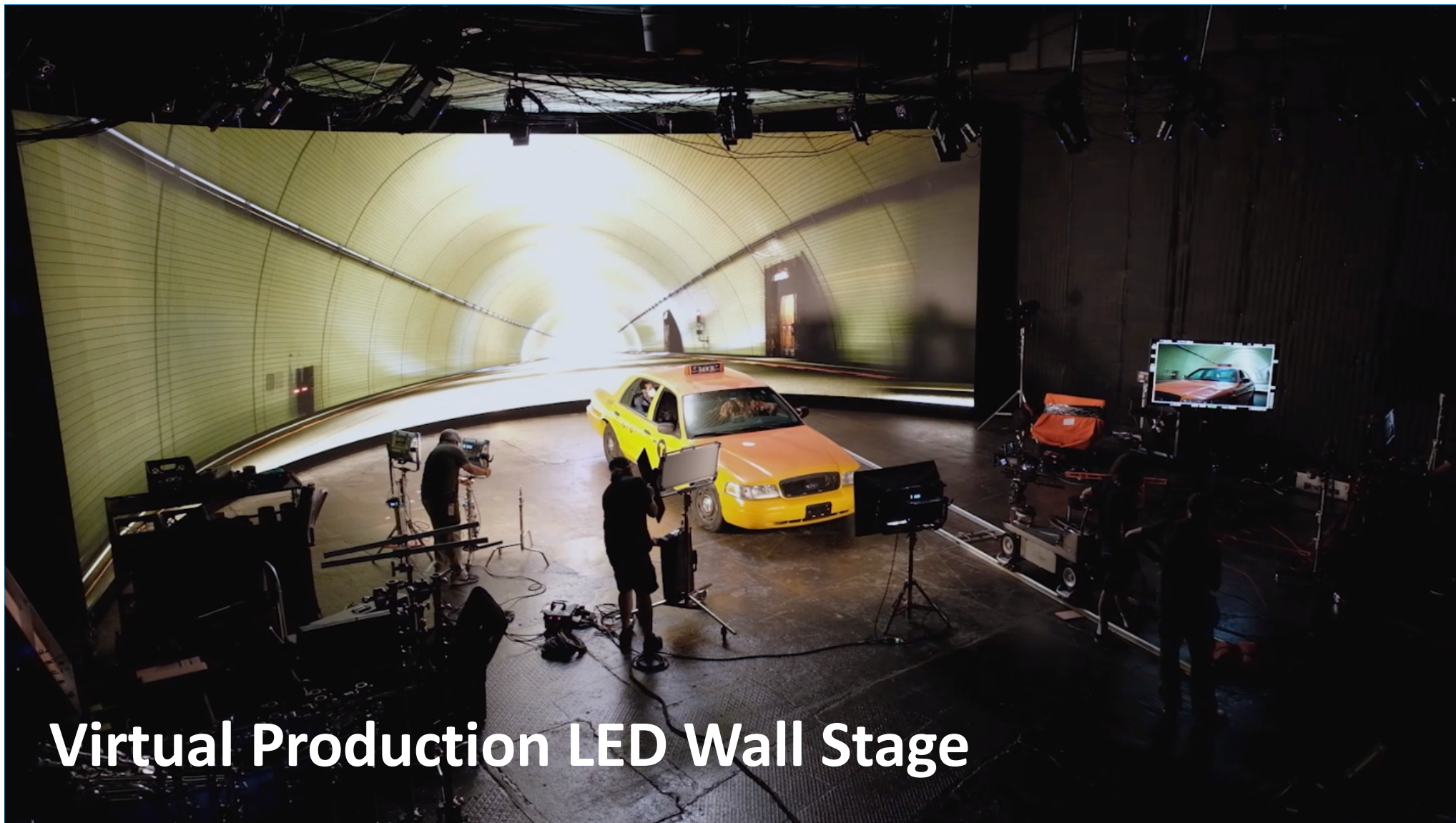
— Paul Daugherty, Accenture's group chief executive and chief technology officer

The Art of Storytelling



It All Started With Matte Painting





Virtual Production LED Wall Stage

Benefits

CREATIVITY

Cast and crew can actually see what the audience will see

LIGHTING

LED wall casts the correct light on the set and the performers eliminating the need to fix the green glow in post production and generating a more natural look.

FINAL PIXEL

WSYWIG applied to filmmaking. You see what you are getting. Fewer fixes in post.



Virtual Production Process

Virtual Production - Considerations

NEW PROCESS AND WORKFLOW

Production process gets flipped. VFX comes first, physical production after. Requires team to learn new flow.

TIMELINE

Prep time takes longer. But physical production should be faster.

CREATIVE CONSTRAINTS

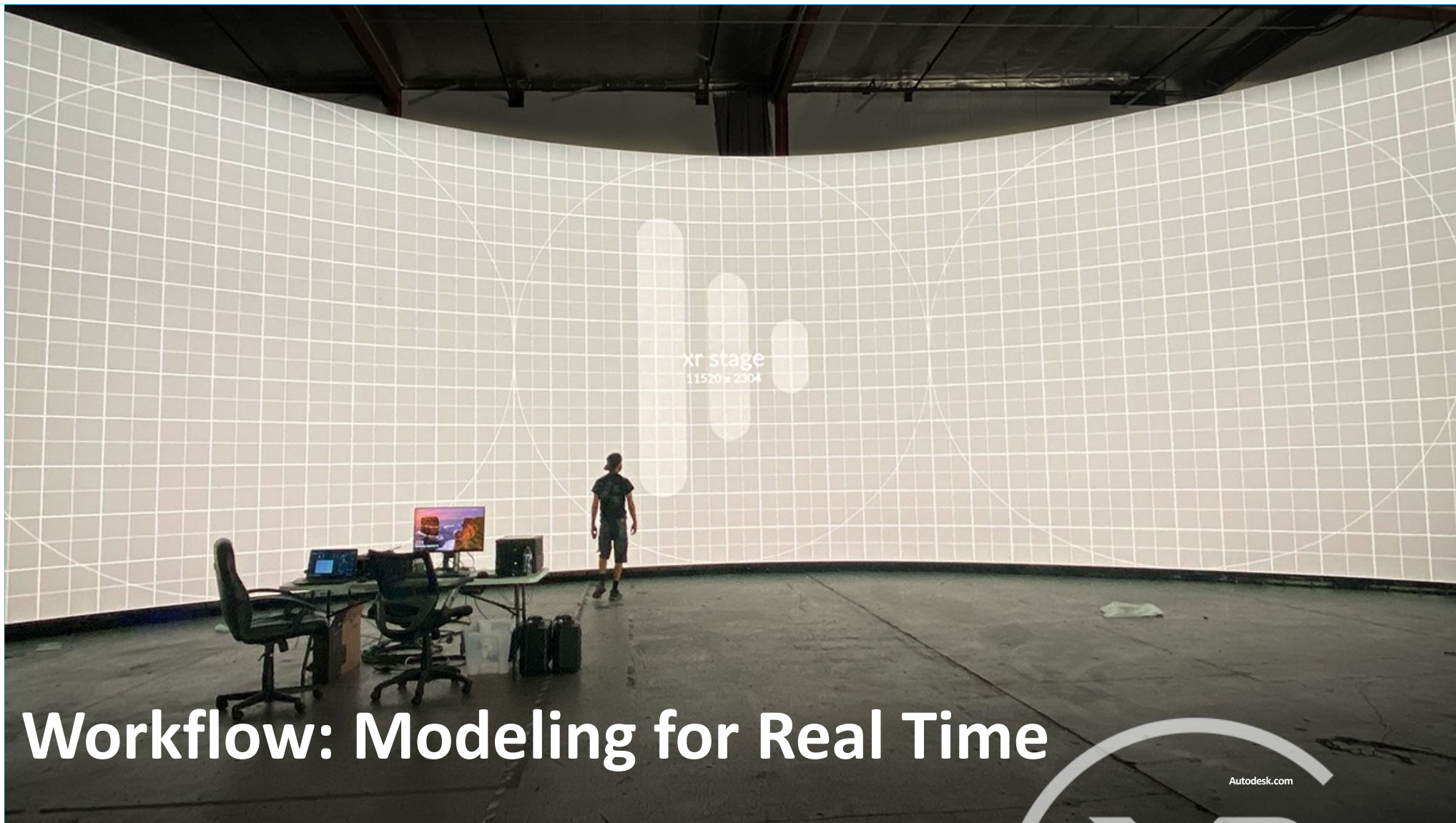
Physical constraints of stage size and LED density may limit camera placement, focal range, and depth-of-field

COMPUTE PERFORMANCE

Latency between motion capture and wall display may limit camera movement

PHYSICAL - DIGITAL

Matching color between LED characteristics, virtual elements (like lights), and physical elements can be challenging



Workflow: Modeling for Real Time

Autodesk.com

Cinematic Twin

Art Department

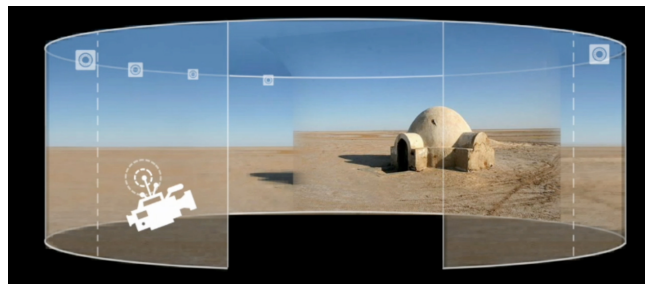
Modeling

Location Capture

Sets & Props
Capture



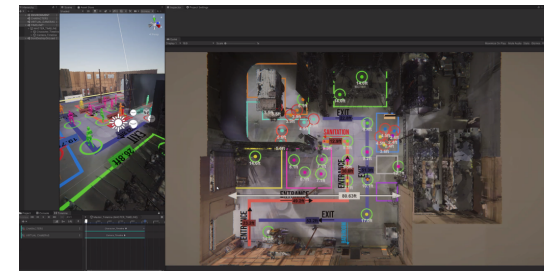
Cinematic Twin



Physical Production

Safety

Creative



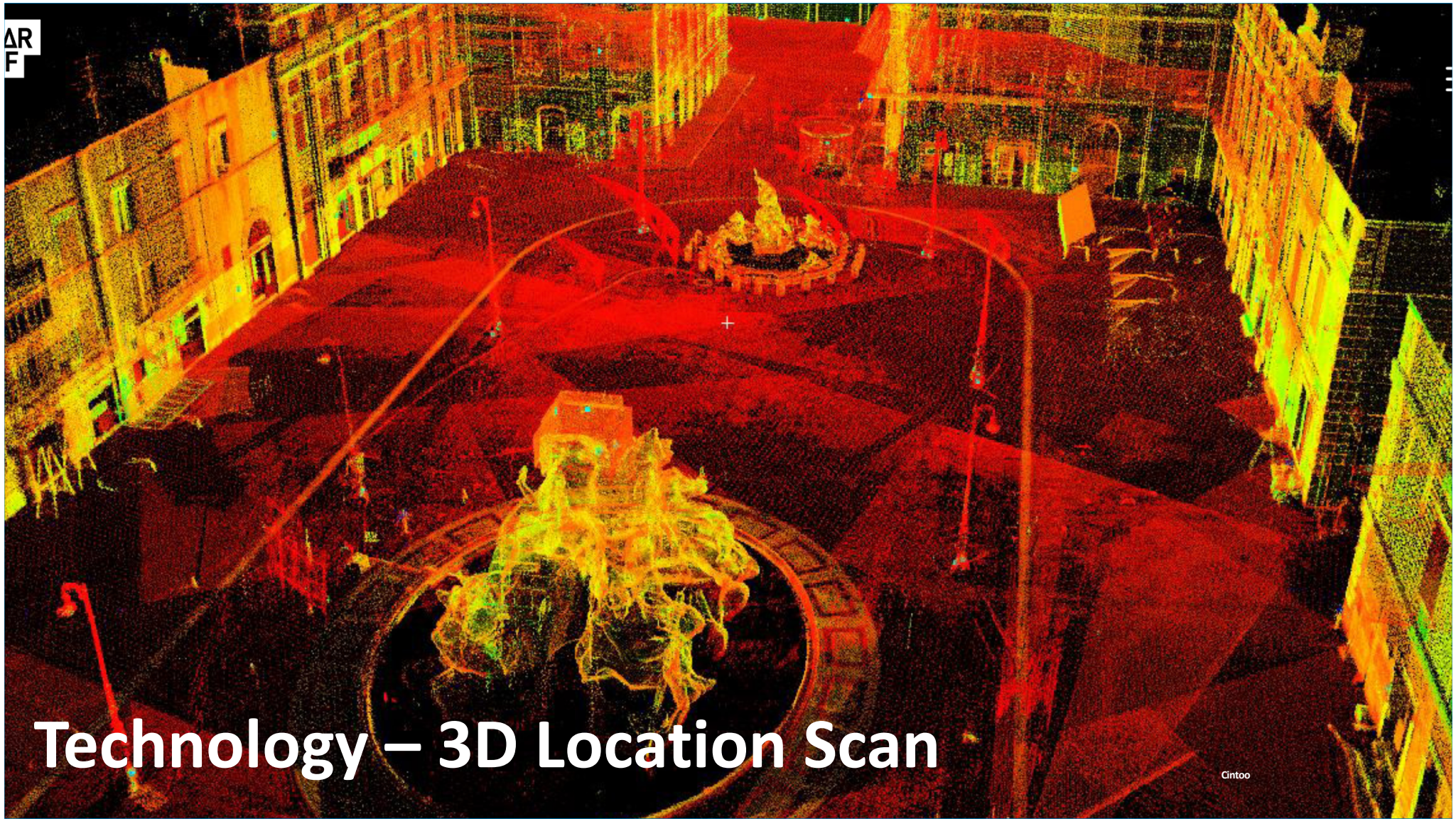
“Whether it’s innovating based on new production techniques we’re developing or innovating based on technology associated with new platforms of distribution, there is a way for filmmaking and technology to continue the dance that they’ve been in for 100 years that’s created breakthroughs for both.”

– John Favreau





Volumetric Production



AR
F

Technology – 3D Location Scan

Cintoo

Case Study: The Lion King



Case Study: The Mandalorian





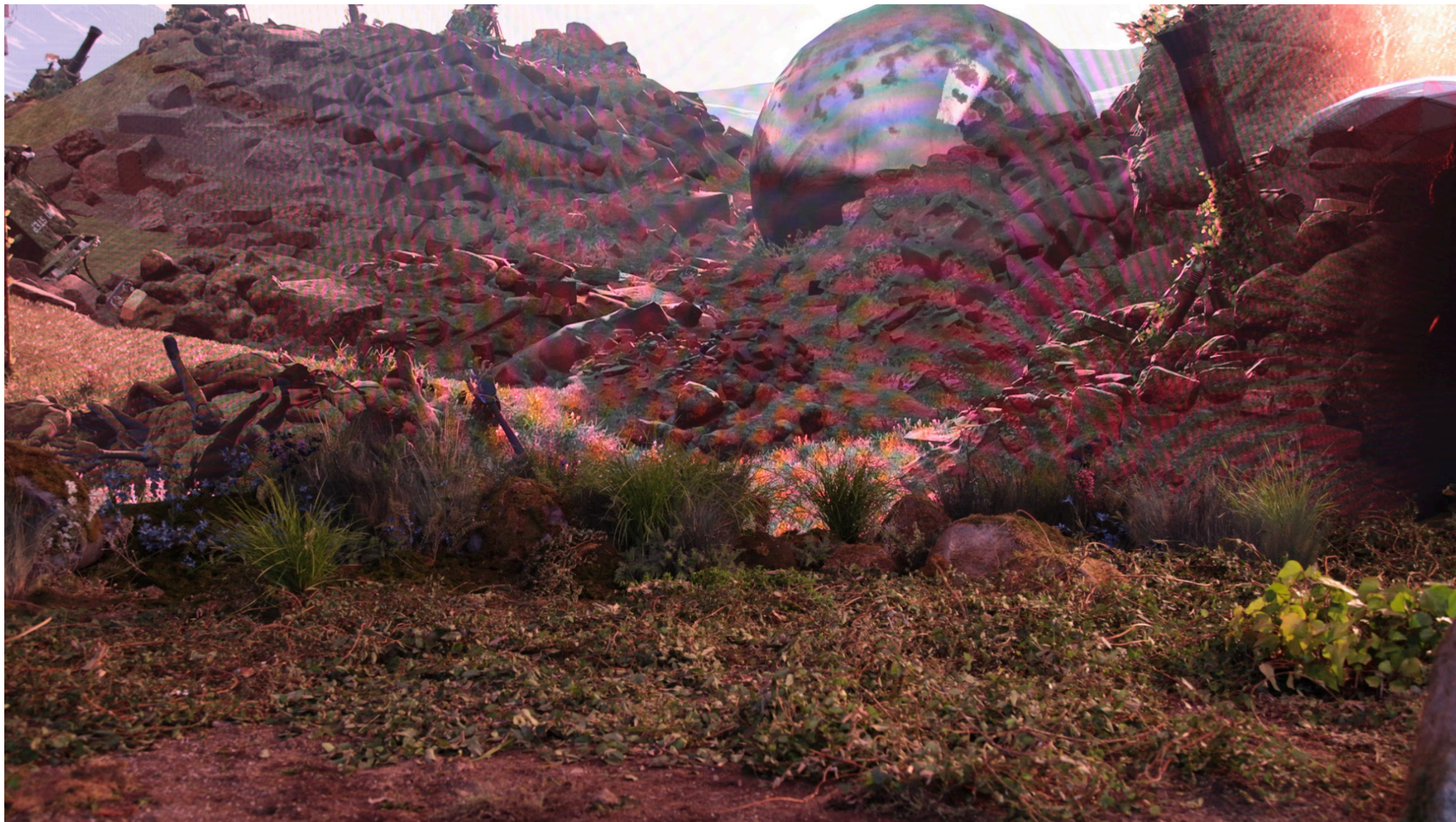
Case Study: Ripple Effect



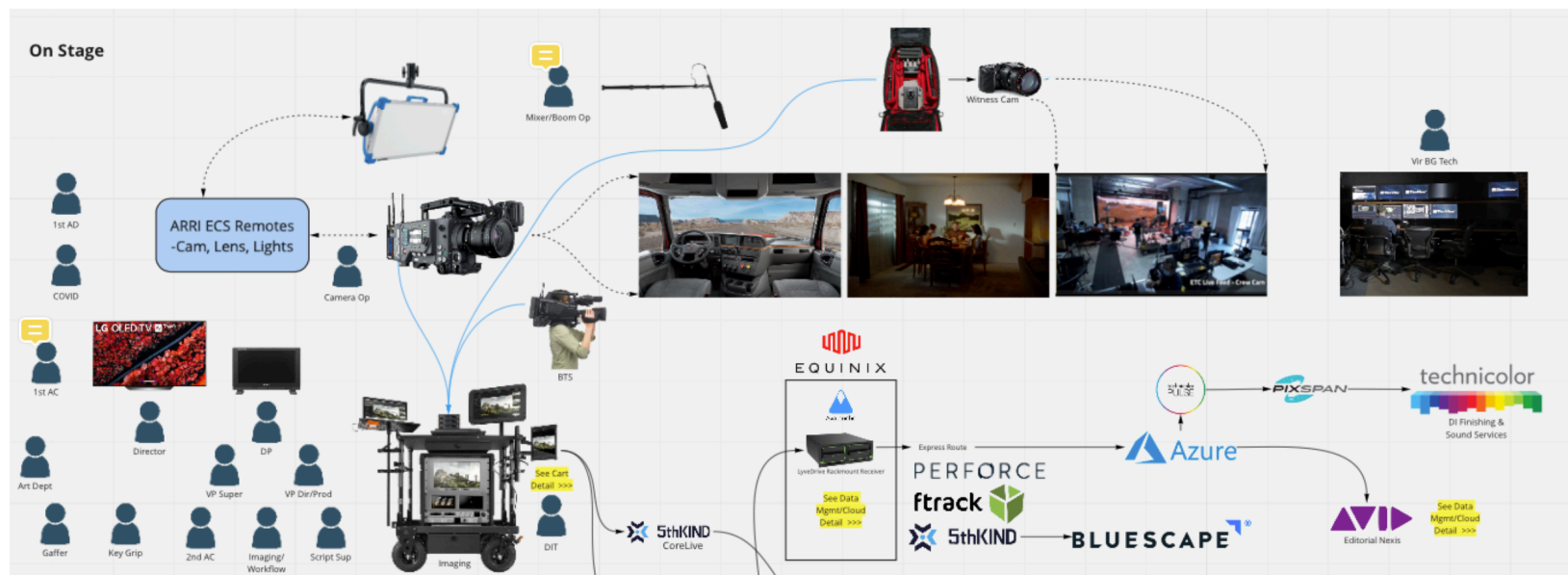
LED wall brings the fictional world into the scene

Ripple Effect BTS. Credit: USC





Dynamic Workflow



Remote Participation & Cloud Workflows

LIVE FEEDS FROM SHOOTING STAGE

Remote crew can monitor shooting and stage activities live.

CLOUD-BASED ASSET LIBRARIES

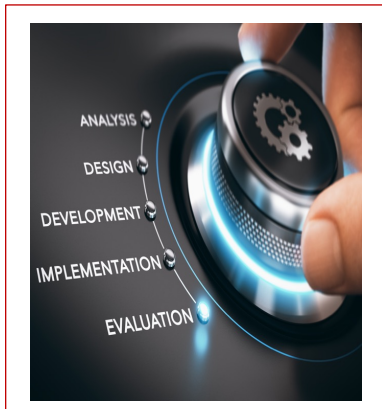
Full production data is available everywhere to everyone. Shared real-time access enables quick review and decision-making.

CLOUD EDITING AND POST PRODUCTION

Large data and images are quickly available to the whole team wherever they are.



R&D Services



Hardware



Software



Visual Displays



Complete End-to-End Workflow Solutions



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