

NICON | VFX

REDEFINING VFX

MOTION CAPTURE

N | VFX

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BUILT FROM THE GROUND UP, SHŌGUN TAKES ADVANTAGE OF VICON'S 35 YEARS' EXPERIENCE IN MOTION CAPTURE AND THE IMPROVED TECHNOLOGY AVAILABLE IN VICON VANTAGE AND VICON VERO CAMERAS.

Today's visual effects productions need to be achieved in real time and deliver the highest quality skeletal data in the shortest time possible. Shōgun 1.6 Live and Post are designed to help studios of any size optimize capture and processing for maximum quality results. Updates in 1.6 include best in class, low latency tracking for both film and virtual cameras, support for Viper and Viper X, and much more.

"We consider Vicon the gold standard for production. It is unbelievably powerful."

- Dan Pack, Founder Silver Spoon Animation

WHO IS SHŌGUN IDEAL FOR AND WHY?



GAMES COMPANIES

- Ubisoft
- EA
- Sega
- Nintendo
- Square Enix
- Epic Games
- Warner Brothers
- Activision
- Ninja Theory
- Larium
- Valve
- Myrkur Games
- Bandai Namco
- Plarium



FILM PRODUCTION COMPANIES AND STUDIOS

- Framestore
- Double Negative
- ILM
- Disney
- Pixar
- Digic Pictures
- Dreamworks



SERVICE PROVIDERS

- AudioMotion
- House of Moves
- Imaginarium
- Silver Spoon
- Beyond Capture
- Neoscape
- The Capture Lab
- MOOV



UNIVERSITY FILM & GAME DEPARTMENTS

- DAVE School
- Staffordshire University
- NYU
- Portsmouth University
- Savannah College of Art & Design
- FIA
- USC

KEY MARKET USE CASES

SQUARE ENIX – VISUAL WORKS

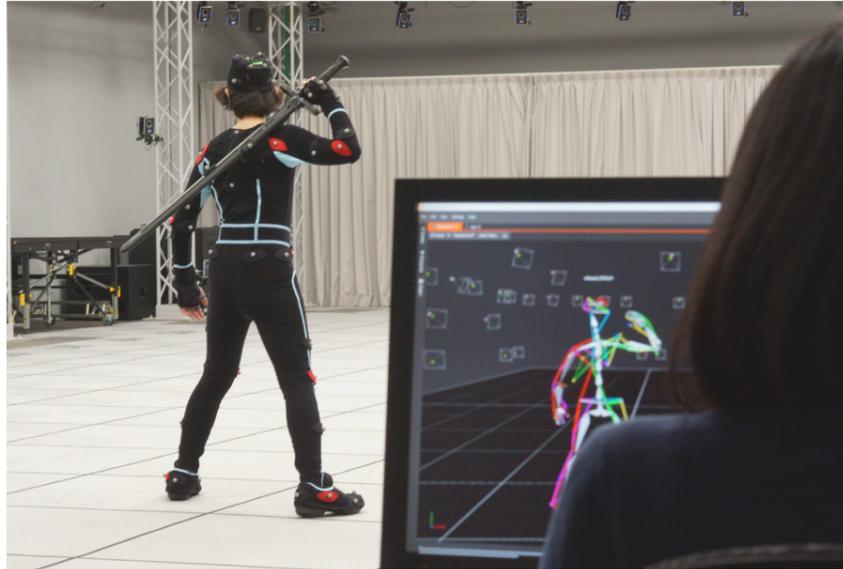
Video game titan Square Enix has built its reputation and its fan base by drawing gamers deep into immersive worlds such as those of the famous Final Fantasy series. One of the cornerstones of this worldbuilding is the use of lengthy, increasingly lifelike cut scenes that bring the games' stories and characters to life, and one of the most powerful tools for creating them is Square's Vicon motion capture stage.

Visual Works

Since the groundbreaking release of Final Fantasy VII in 1997, Square's Visual Works CGI animation studio has been the driving force behind the cutscenes illuminating the publisher's games. The studio has worked on multiple entries in blockbuster franchises such as Final Fantasy.

Branching out, the production house began extending itself to standalone CGI films in 2005 with Final Fantasy VII: Advent Children, and taking on AAA Western series such as Tomb Raider since Square's acquisition of British publisher Eidos in 2009.

Visual Works has used Vicon technology since 2006 and currently boasts a huge motion capture volume equipped with 100 Vantage cameras, making it one of the largest mocap stages in Japan. In keeping with the epic scale of Square's games the team often uses the large space to capture casts of 10 or more actors, while at a more granular level they're investigating Shōgun's new high fidelity finger solver as an option for producing hand animation.



DREXEL UNIVERSITY

The Animation Capture & Effects Lab (ACE-Lab) at Drexel University's Westphal College of Media Arts & Design looks, on the surface, like a training program for VFX-led entertainment industries. Under the stewardship of Nick Jushchyshyn, Program Director for VR & Immersive Media, Drexel prepares students not only for the visual effects applications that exist right now but also those that are coming up five or even 10 years down the line.

The department's news page is full of headlines about alumni working on high-profile projects such as Star Wars and Frozen II, but the ACE-Lab takes its students down less well-trodden paths, too. In fact, it's had a wide-ranging mission from the outset.

Early adopters

Motion capture is a core part of the department's offering. ACE-Lab was an early adopter of Vicon's Vantage cameras, proud that its entertainment set-up was one of the first Vantage installations in the US. The lab upgraded their T-Series system when the department moved to a larger 40ft x 40ft stage, complete with a huge green screen cyclorama.



Nick points to the value the system offers. "Price-to-performance was hands-down the best for what we needed. There was nothing at that price point that would deliver that type of performance - five megapixel cameras, and several hundreds of frames per second. That was a whole new order of accuracy for us."

A versatile approach

Aiming to give students a dynamic mocap skillset, the department has brought in subjects ranging from martial artists to dancers to a troupe of performers in the mold of Cirque du Soleil for capture sessions.

Collaborations have brought in the engineering college, the education college, the law school and nursing and medical students.

Virtual production is an increasingly crucial component of ACE-Labs' programs, both for entertainment and for other sectors. "Right now we're investigating and deploying virtual production technologies towards remote teaching and learning scenarios, incorporating motion capture into virtual production and leveraging that for teaching," Nick says.



"We're looking at ways of creating virtual learning experiences that are better than in-person. What can we do in these spaces that isn't even possible when you're here in person?"

The diversity of industries that the program feeds into means that Nick and his colleagues are constantly looking to the future. "The trajectory is then transferring these technologies that are being driven by entertainment production into non-entertainment fields," he says.

"How would you use virtual production in aerospace design, automotive design? How do you use that in training law enforcement? How can you build up awareness and train people without putting them at risk? How can you create simulations that are genuinely visceral, that feel completely real, but they're completely safe and allow people to experience all sides of a scenario?"

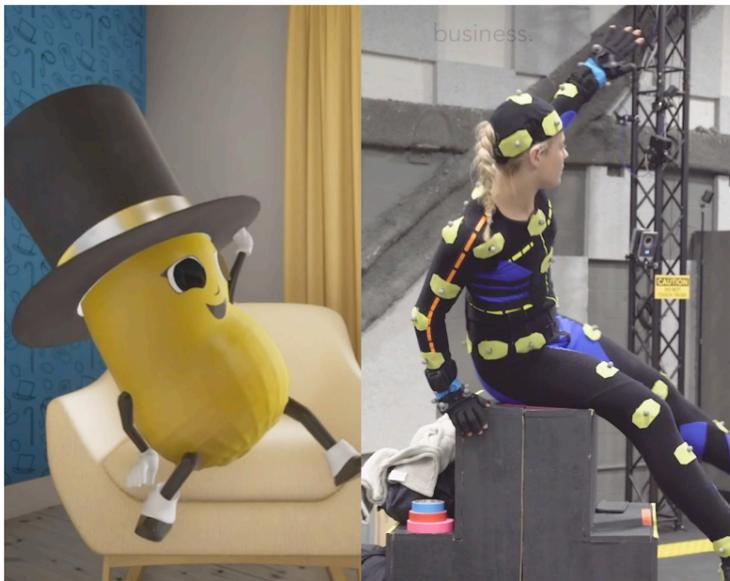
"Those are the directions that I see our practitioners moving towards in the years ahead."

SILVER SPOON ANIMATION

Just one week before the 2020 Super Bowl, Mr. Peanut sacrificed himself to save his friends.

Left without its 104 year old mascot, snack food brand Planters needed to do something big to make a marketing splash on the day of the game. Creative use of motion capture and real-time animation technology proved to be the well-received solution.

Mr Peanut sacrificed himself in an explosive commercial but, in a move worthy of Game of Thrones, he was brought back to life as Baby Nut.



Game actress Erica Citrin, with direction from director Marcus Perry, took on the role of Baby Nut for the duration of the livestream Silver Spoon's Vicon motion capture set-up allowed Baby Nut to play, dance and delight viewers throughout the entire performance.

The stunt was a hit, with 1.9 million people viewing the livestream, 20.9k likes, 5.8k comments and 4.6k retweets.

It was mentioned in a host of publications, including Vanity Fair, BuzzFeed, Vox, The Daily Mail, Mashable and Business Insider. The campaign wasn't just a success for Planters, it was also a big step into an exciting new frontier for Silver Spoon.

The road to real-time

Silver Spoon was originally conceived by founder Dan Pack as a one-stop shop for visual effects support to other businesses working in the field. Motion capture was initially a small part of the equation, but it became apparent that there was a gap in the market and mocap grew as part of Silver Spoon's

Over time- that motion capture offering has evolved further into real-time animation. "We're being much more involved in the creative end, too, and taking our technology and years of experience working in this format, and applying that to these new types of opportunities and new types of engagements with viewers," says Pack.

Silver Spoon's Vicon setup, which can capture 12 or more people at once with its 48 Vantage cameras and Shōgun software, is a crucial element of the equation. "For production, we still consider it the gold standard," says Pack. "It's just unbelievably powerful."

He points to developments in fingertracking as especially important to Silver Spoon's work. "Finger tracking has always been a complex issue. They are small, they cover each other, they are complicated! Vicon has always been leading the pack in pushing mocap development and they were the first to really nail down proper finger tracking."

"So now, we're capturing unbelievable finger movement, which is such a big deal, especially when you're doing any type of real-time engagement with a client. It adds a depth and realism to characters that body language and facial expression alone can't offer", says Pack. Then Shōgun, plugged into Unreal Engine, enables the turnaround speed that Silver Spoon needs to generate animation in real

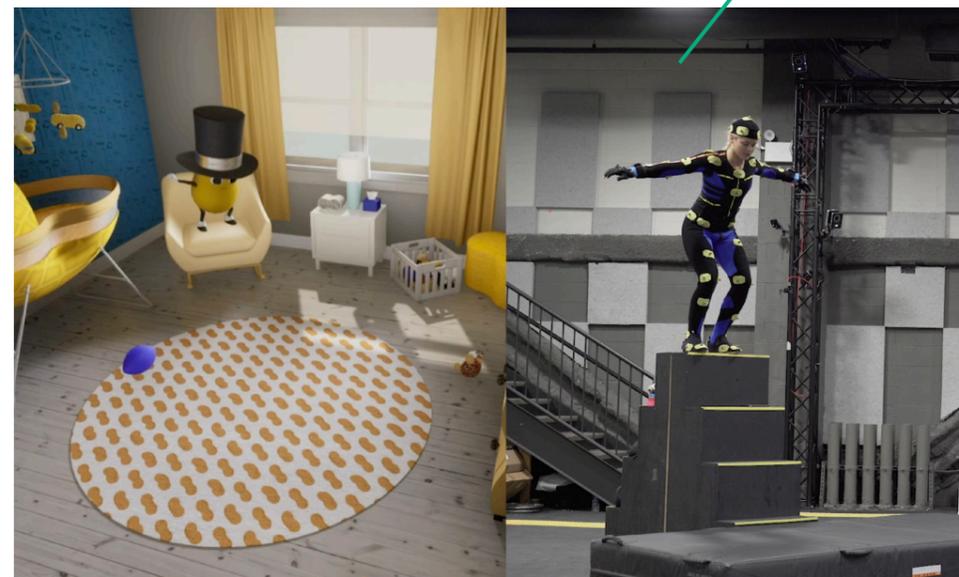
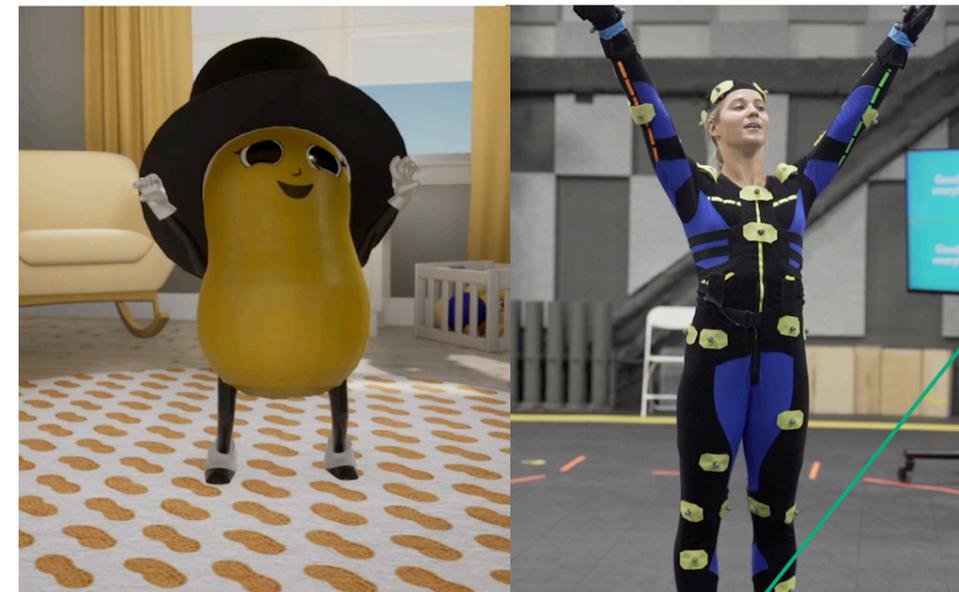
Real-time animation on a national stage

The Planters campaign was a bold move, using Silver Spoon's real-time approach in front of an audience of millions. The team built a virtual, interactive bedroom for Baby Peanut ahead of time, and then created physical props in the studio that were twice their normal size to reflect the fact that Baby Peanut is only half the size of the actress. Vicon's ability to track multiple props made the integration between the two seamless.

When the big game rolled around, Silver Spoon was ready. "The technical aspect of it wasn't really different from what we've done in the past," says Laura Herzing, Executive Producer at Silver Spoon. "The difference was that we distributed it via a live stream. So, we had a truly interactive back and forth with the Twitter community, which was something that we hadn't done before, that the brand hadn't done before."

"I think it was, from our perspective, technically a great success," she adds.

"And I think from the brand's perspective, we achieved what they were going for. They got a lot of eyeballs, they got a lot of attention. They were able to really roll out this character in a groundbreaking new format."



Looking forward

Silver Spoon has big plans for the future. One avenue the studio plans to explore alongside the character work is real-time photorealistic shoots done in-engine, enabling actors to be filmed live 'on location' anywhere in the world without having to leave the studio.

"We can utilize this technology to tell engaging stories and to create rich interaction between viewers or consumers," says Pack. "And if we can do it in a way, like with any good VFX, that makes less of a spectacle of the technology and allows

people to interact with characters in a way that's more seamless, that's what we're all about.

"With technologies like Vicon and Unreal Engine, Silver Spoon can turn around large volumes of content quickly while still retaining a very high level of quality."

"We're poised, I think, to do a lot more of it," adds Herzing. "Because what brand doesn't want their character to be able to really interact live with people? That's the next level."

silverspoonanimation.com

Planters, VaynerMedia and Silver Spoon teamed up to introduce Baby Nut to the world during a 4.5-hour animated livestream running on Twitter during and after the 2020 Super Bowl.

It was something that hadn't been seen at that scale before – an animated character responding live, in real-time, to a worldwide audience following along through Twitter.

At the heart of every project that ILM has utilized performance capture for over the last 25+ years lies a core technology that helps push the boundaries of visual effects: Vicon motion capture systems.

It is no exaggeration to say that the collaboration between ILM and Vicon has helped redefine the extent of our imagination.

The latest example of this work is one of ILM's most challenging and ambitious projects ever – The Mandalorian.

Following the Emmy Award-winning season one, the latest season of The Mandalorian pushes the thrilling ride for fans to new heights — all thanks to ILM's ground-breaking StageCraft technology that achieves a giant leap forward in filming techniques.

Working with Vicon, ILM has evolved well beyond traditional VFX motion capture to become a world leader in virtual production.



Turning vision into reality through technology

With The Mandalorian, filmmakers Jon Favreau and Dave Filoni have been explicit in their desire to “bring Star Wars to the screen in a new way.”

With the scope and ambition of the series only increasing on the second season it was crucial that the actors and viewers not only experience a huge range of new worlds — but truly believe in the reality of the worlds being created and are able to build emotional connections with the characters.

This ambition has required new filming techniques to be rapidly developed and deployed — chief among them virtual production techniques including camera tracking for in-camera VFX (ICVFX).

Virtual production in its simplest form is the merger of physical and digital worlds. Through a combination of immersive technologies like virtual reality (VR) and augmented reality (AR), as well as ILM StageCraft and real-time render engines, virtual production allows filmmakers to view their projects live on set to quickly react

and make changes as needed, rather than having to wait until post-production.

Virtual production also offers several logistical benefits as it allows for more iterations of scenes or shots to be created with fewer personnel in a shorter space of time, therefore significantly reducing production costs.

Allowing the creative team and the actors themselves to better visualize the environments on shoot day is paramount. Production teams previously had to imagine the final scene while using green screens to shoot, with visuals applied in post-production after the fact.

ILM has invested heavily in leading the way with these techniques – and projects such as The Mandalorian and George Clooney's feature, The Midnight Sky has been a tour de force of just what is possible with virtual production.

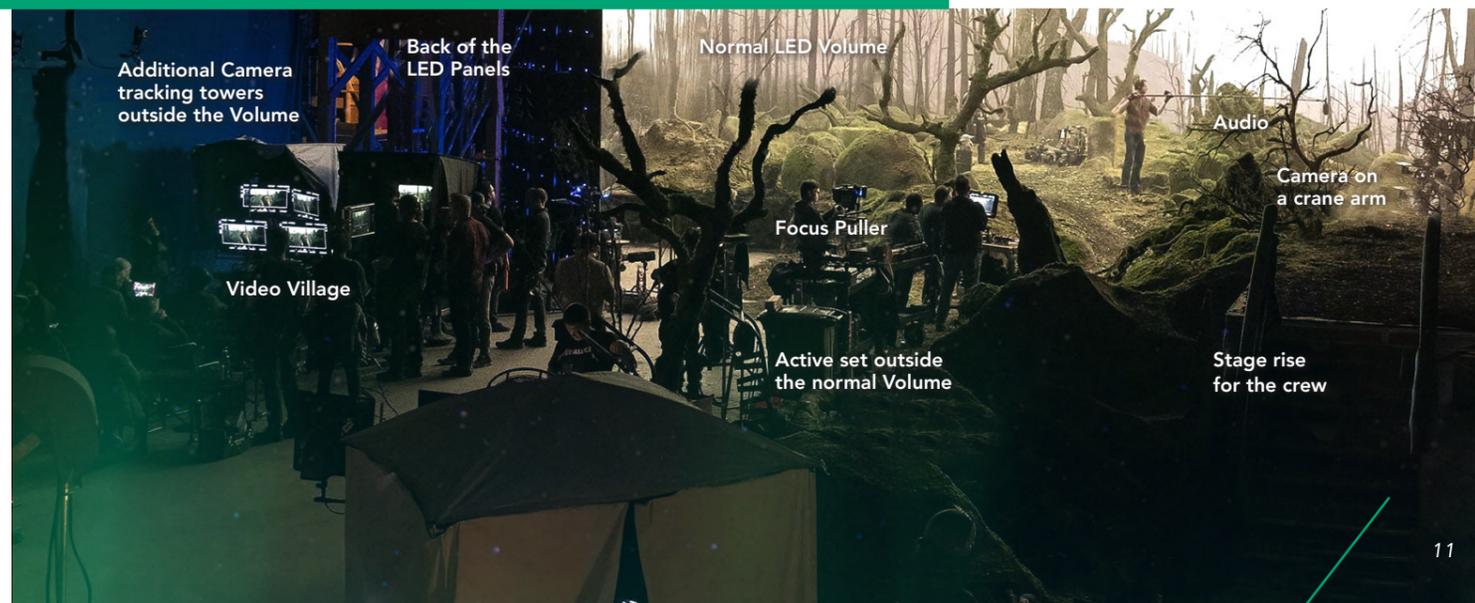
Motion capture technology in a virtual production pipeline is a crucial component in making these endeavors a reality.

Vicon's technology has allowed ILM to recreate the universe of Star Wars in compressed time with 60 different live environments, which they can use over and over again.

Everything from VR scouting, previsualization, performance capture and in-camera VFX using giant LED walls can make use of Vicon technology in some way.

One of the biggest leaps forward has been real-time capture in the volume itself, which requires high-resolution cameras and large frustums. The latest Vicon hardware has enabled ILM to accurately track cameras on set while moving about no matter if the camera is handheld, on a crane, a Steadicam, or some other support equipment. This has helped to create a 360 degrees virtual production environment at large scale such as ILM's pioneering StageCraft LED volumes, enabling them to capture a whole new category of shots while successfully blending photoreal visual effects with live action, which previously wasn't possible.

SETS EXTENDING OUT OF THE CAPTURE VOLUME



Additional Camera tracking towers outside the Volume

Back of the LED Panels

Normal LED Volume

Audio

Camera on a crane arm

Video Village

Focus Puller

Active set outside the normal Volume

Stage rise for the crew

Making the impossible, possible for 25 years

For Rachel Rose, ILM R&D Supervisor who oversees the studio's developments for virtual production, the success of The Mandalorian and all ILM projects requiring motion capture owes much to the collaboration:

"Since day one Vicon has enabled us to do things that were never possible before — and that's as true today as it was in the 90s. Vicon's technology and hardware have constantly advanced throughout our relationship, and the processing power available to us with their technology is like no other. We can deploy and always count on Vicon's tech as it's such reliable, robust hardware requiring only a quick calibration."

"ILM always looks to collaborate with those who are making best-in-class software/hardware solutions for problems we're solving."

If a solution doesn't exist, we'll solve it on our own, but we're not looking to reinvent a solution that's already there.

We are incredibly lucky that we have a long-standing relationship with such an innovative company like Vicon. The absolute best thing I can say is that with Vicon I have a powerful performance capture system that just works."



Unleashing a new wave of creativity

With ILM's StageCraft virtual production technology, ILM and Vicon have realized many filmmakers' vision for creating fully digital worlds that are as close to reality as possible.

The Mandalorian is just the start of a new wave of creativity that will be unleashed as film directors explore new ways to take advantage of the virtual production techniques pioneered by ILM and Vicon.

As we have seen in recent projects, the possibilities within highly accurate virtual production pipelines are endless. Rose concludes,

"As excited as I am about what's been accomplished by our StageCraft team and the visionary filmmakers we have been fortunate to collaborate with, we've only just scratched the surface of what we believe the system is capable of. What's really exciting is where filmmakers will lead us next."

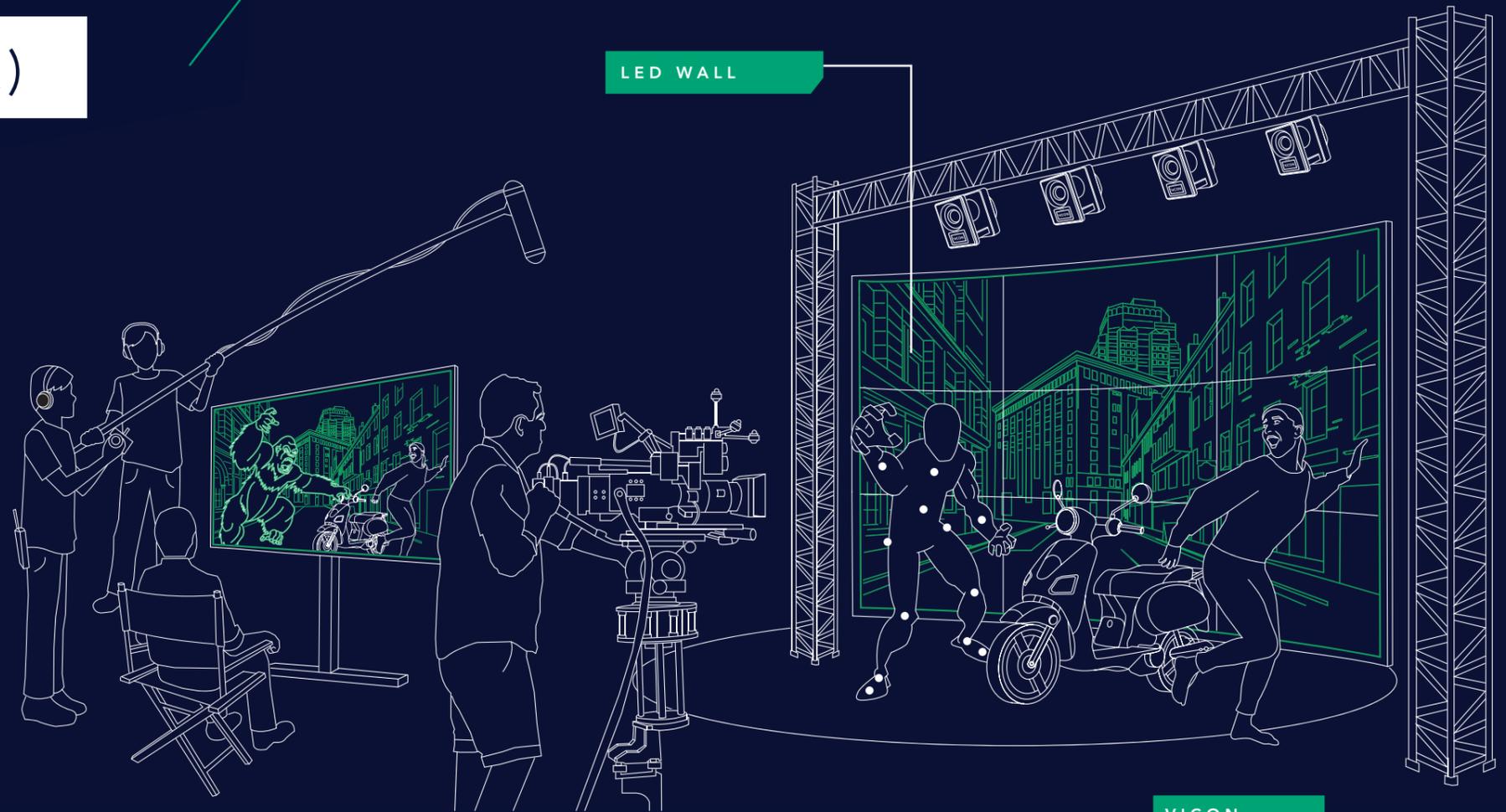
While the landscape of film and TV is constantly evolving, it is certain that whatever happens next, motion capture and virtual production will play a key role in innovation. High-quality tracking technology, offering ultimate precision, is central to enabling the advances that will allow creatives to make leaps and bounds forward and to continue to revolutionize the entertainment industry.



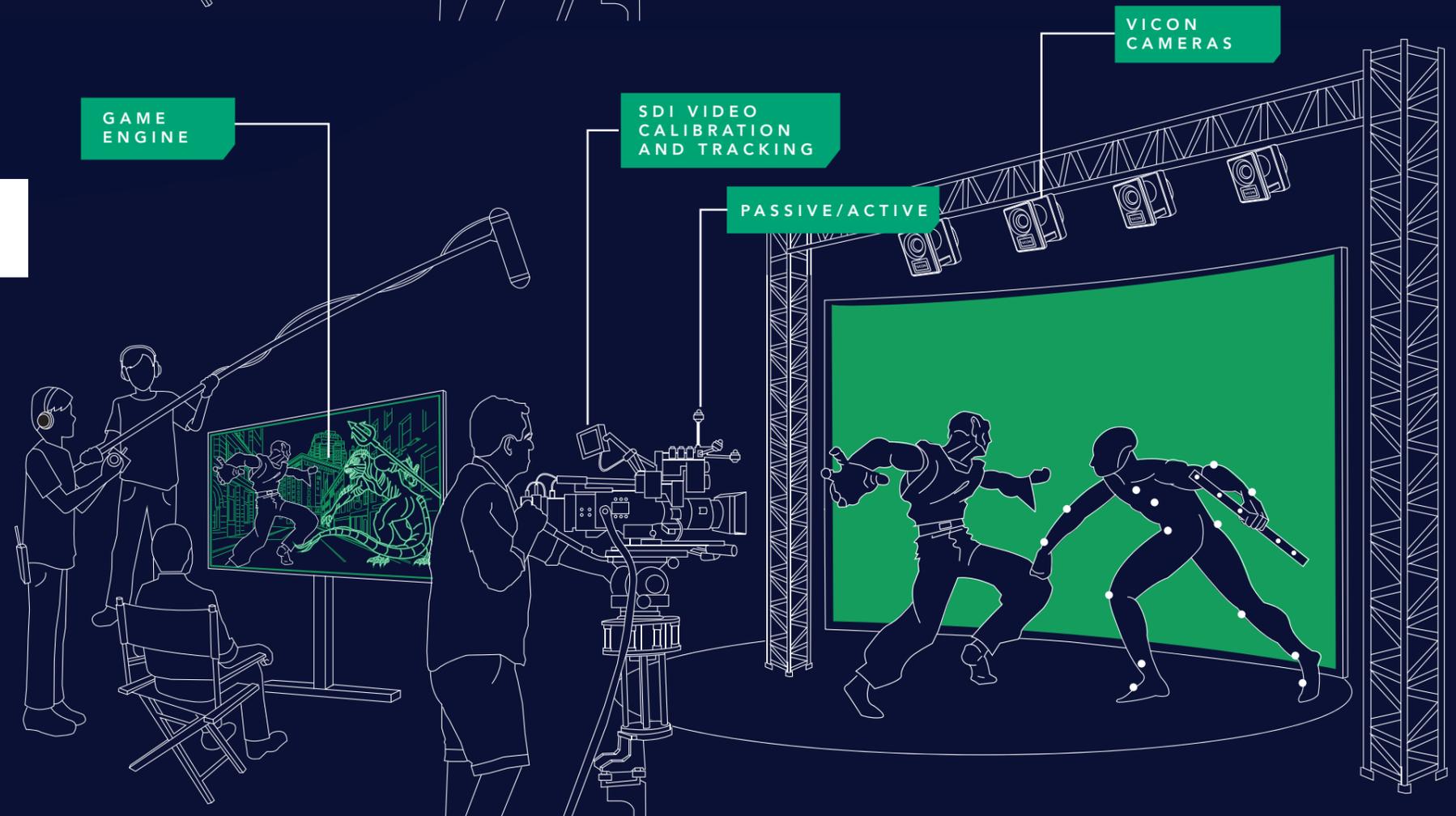
IN CAMERA VFX (ICVFX)

By enabling you to work with close-to-finished visuals on set, Vicon technology can save you time and resources in post-production while ensuring consistent visuals over multiple shoots.

Streamline production on set, reducing the number of people and cameras on a shoot, bringing down the number of builds and saving on travel costs. Our pipeline allows you to integrate LED walls and green screen technology, all tracked with low latency and unbeatable accuracy.



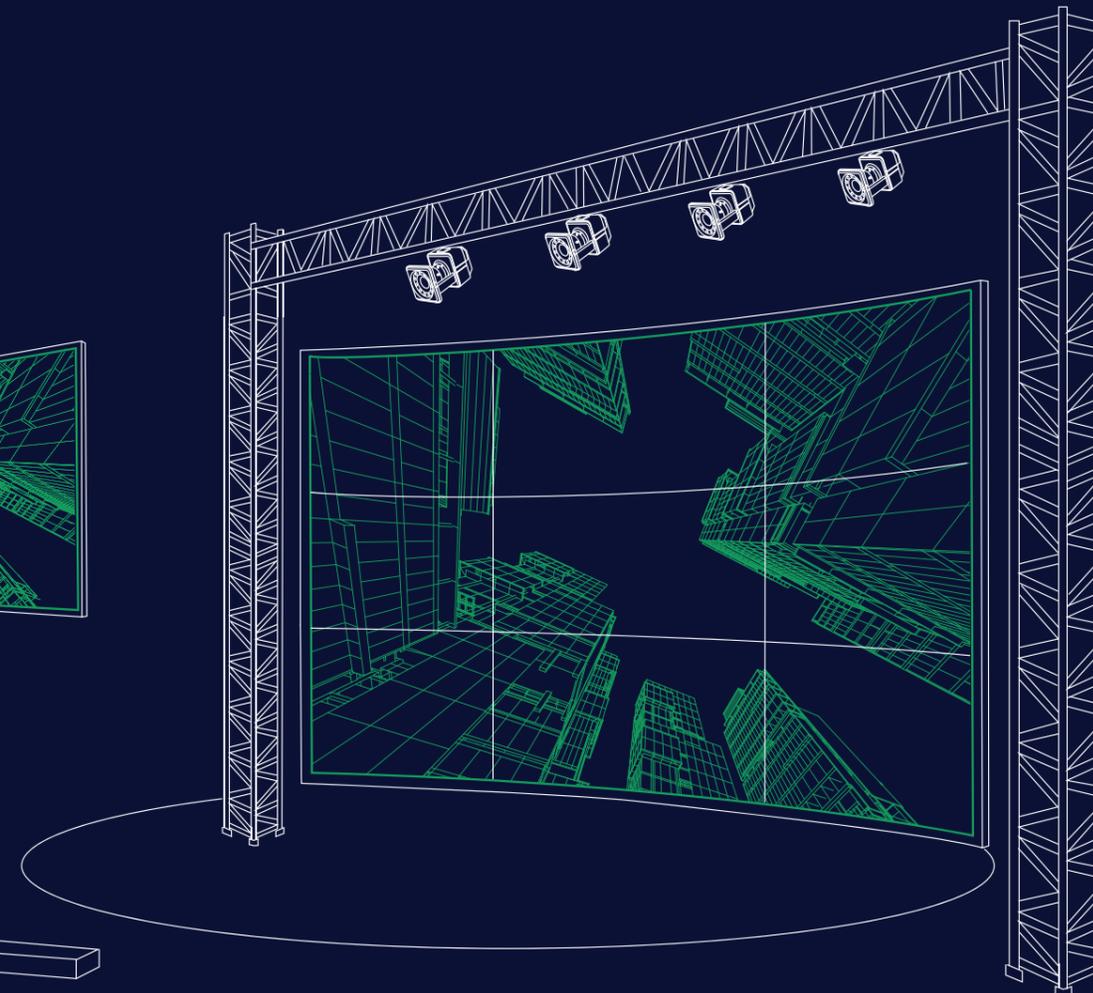
PARTNERS



VR SCOUTING

VR Scouting powered by Vicon tracking allows for remote working and collaboration. Review game engine sets within VR, we can track multiple HMCs within the same space.

Scouting and pre-production in VR enables agile, non-linear production to overcome scheduling blocks, delivers consistent production values over time and different locations, reduces the number of people needed on set, the amount of build and travel costs, as well as post production cost.



FULL BODY PERFORMANCE CAPTURE

Vicon Shōgun allows for both cameras and full body subjects to be tracked at the same time, making use of optimized tracking profiles for both. This includes high fidelity finger animation and robust occlusion fixing when capturing the most complex moves.

These characters can be re-targeted within Shōgun and streamed directly into the game engine. This supports the latest technology innovations, including EPIC's new Metahuman project.





Cloud, Square Enix™



Siren, Epic Games™

WHAT CAN YOU DO WITH SHŌGUN LIVE?

- Realtime retargeting direct into game engines without using 3rd party software
- High fidelity finger solver allowing complex hand gestures like sign language
- 4K SDI video camera calibration complete with overlay.

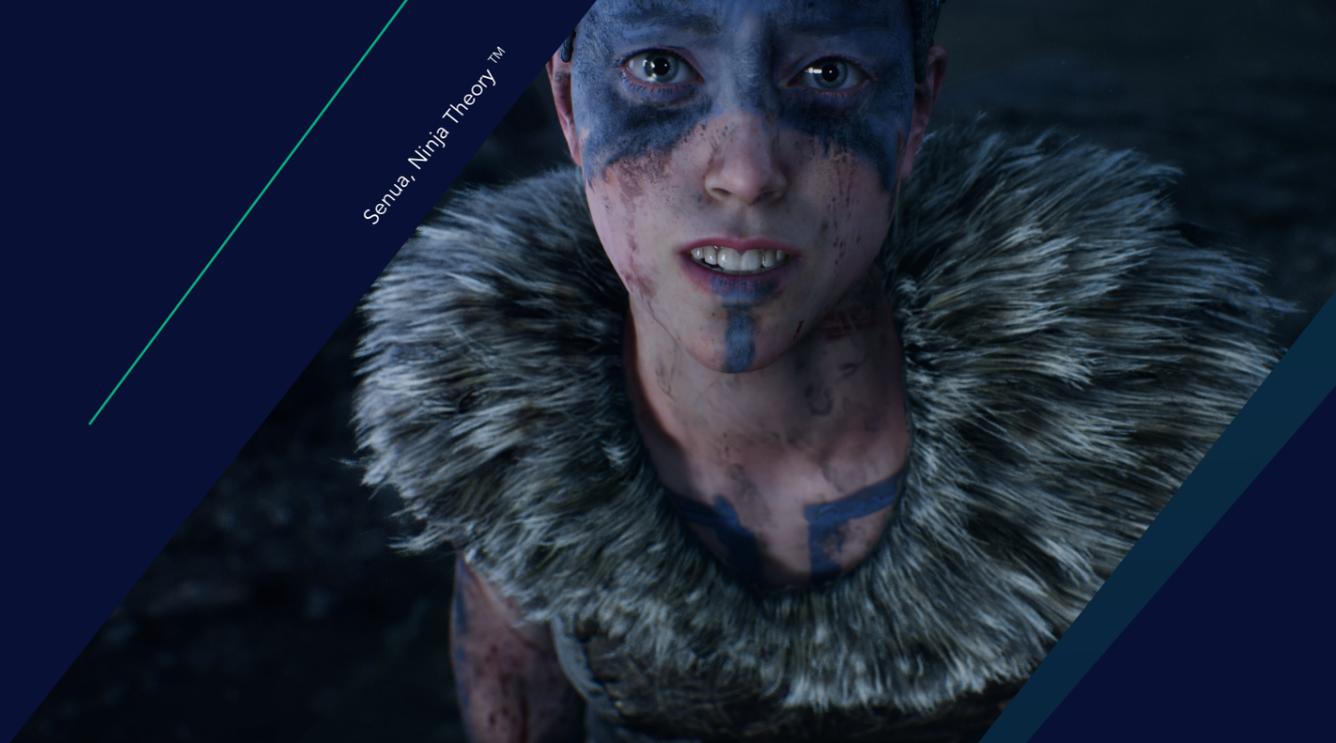
Kassandra, Ubisoft™



SHŌGUN LIVE VS

UNBREAKABLE REAL-TIME SOLVER THAT'S BEST IN CLASS

FASTEST TIME TO CAPTURE (INCLUDING CALIBRATION AND RECORDING OF 3D DATA DIRECT TO DISK)



Senua, Ninja Theory™

WHAT CAN YOU DO WITH SHŌGUN POST?



Incredible Hulk, Marvel™

- Automatic gap filling and data assessment including innovative gap list feature
- Full retargeting pipeline direct onto character fbx
- Add control with auto-skeleton
- Fully scriptable using Python or HSL.

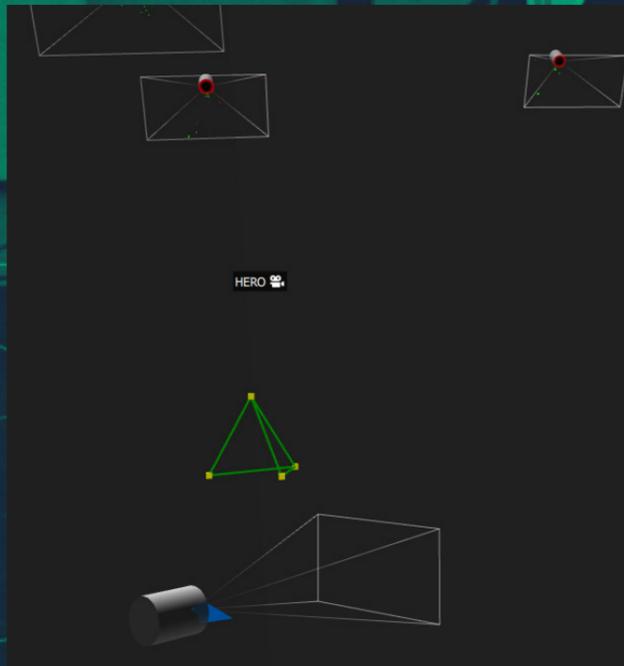
SHŌGUN POST VS

ONLY MOCAP PROVIDER TO SUPPORT USD EXPORT FOR VIEWING ANIMATION ON IOS DEVICES

Smoke, ILM™



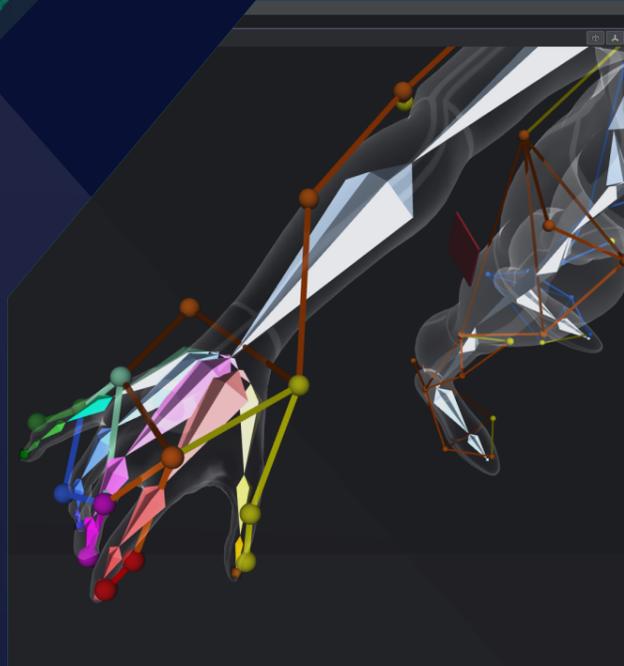
WHAT'S NEW IN 1.6



TRACK BOTH VIRTUAL AND FILM CAMERA

Easily calibrate any film camera that supports SDI along with timecode and sync. This calculates the center of the lens or nodal point so the perspective is correct when the camera moves. We have tested this with the Sony Venice, Blackmagic Ursa, Red Komodo and Arri Alexa Mini LF.

The Virtual Camera rig is designed to support a number of different configurations and allows the user to view the game engine using a tablet device. Bespoke 3d printed stalks allow for high quality object tracking all the way to the edges of the volume. It's lightweight and completely wireless, allowing you to frame shots and create creative camera moves either during the shoot or as an additional camera pass once the main shoot is complete.

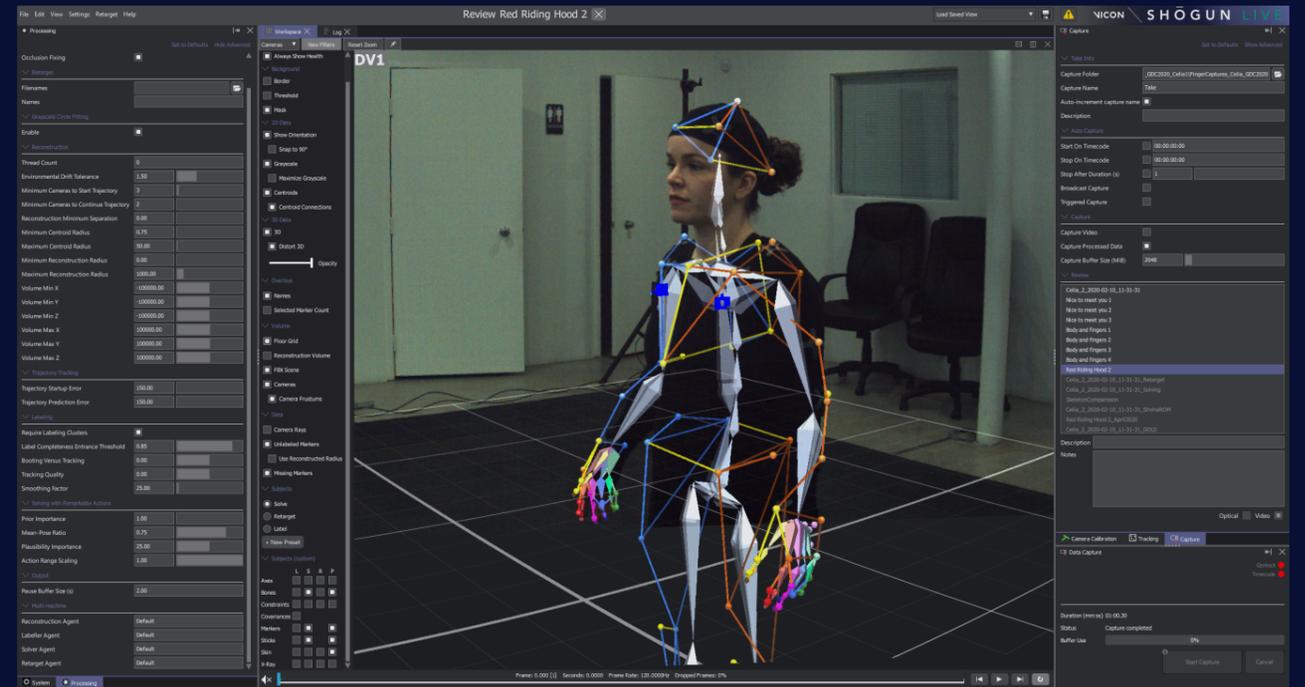


SUPPORT BOTH ACTIVE AND PASSIVE MARKERS

Shōgun 1.6 supports all Vicon cameras including active only cameras like the Viper and ViperX. You can also run Vantage and Vero cameras strobless. This allows for you to capture in complex environments filled with smoke and FX and even capture outside. Alongside traditional passive markers you can also use active markers like the Vicon Nova or solutions from Technoprops or Standard Deviation.

BEST IN CLASS LOW LATENCY OBJECT TRACKING

By placing tracking markers on the camera you can create a connection between the markers and the camera so that when you move the film camera the virtual camera moves with it. This allows for a sub pixel accurate overlay of the CG layer on top of the film plate. This overlay can be viewed in Shōgun or directly in the game engine.



LIVE 3D OVERLAY ENABLES AR / XR WORKFLOWS

The calibrated lens can be exported to the game engine as an ST map. This can then be used when compositing and allows for the overlay to be replicated in the virtual camera view. Multiple different lens points can be calculated allowing for changes in Focus, Iris and Zoom. These can then be linked in the engine and dynamically blended between using a separate lens encoder.

TRACK ACTORS FOR FULL PERFORMANCE CAPTURE

Shōgun 1.6 allows for both cameras and fullbody subjects to be tracked at the same time making use of optimized tracking profiles for both. This includes high fidelity finger animation and robust occlusion fixing when capturing the most complex moves. These characters can be retargeted within Shōgun and streamed directly into the game engine. This supports EPIC's new Metahuman project as an example.

CALIBRATE MULTIPLE SELECTED CAMERAS

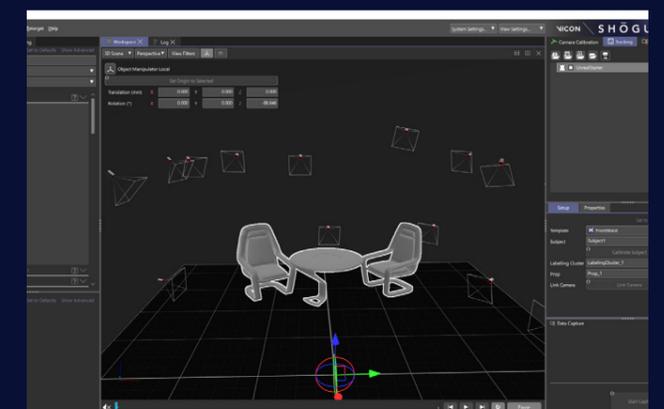
Expanding on the ability to quickly calibrate a single SDI camera if the intrinsic or tracking object has moved, the ability to calibrate or recalibrate multiple selected SDI or optical cameras has been introduced for a time-efficient and intrusion-free process on stage. Any cameras not selected are locked and the global co-ordinate system is maintained.

IMPORT FBX ENVIRONMENTS INTO SHOGUN

You can import any FBX scene into Shōgun and use it to align the rest of your environment. If you have a model of the LED wall you can import this in and position is correctly using survey markers places in the volume. These objects aren't tracked but their position is sent into the game engine. They can be moved around in Shōgun and you see them update in the engine.

AUTO SKELETON

Live calibration produces reliable results for accurate labeling and can produce a high quality solve ready for direct real-time previsualization or retargeting. Auto-Skeleton allows the user to intervene and have greater control over the solving subject as a post-processed alternative to the Live calibrated solve. The solving subject can be reimported into Shōgun Live so that you can use this for real-time and also capture of processed data.





For more information visit our website or contact us.

www.vicon.com/vfx

www.vicon.com/shogun



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