Photography courtesy of: *Pixelgun Studio*

"It's going to happen because we've got a bunch of stands in a not-very-large volume and somebody is going to kick a stand at some point. But an individual camera could say, 'I got bumped' and in about two minutes we are able to recover that camera and carry on."

Shōgun is also an important tool. On a technical level, it reduces Pixelgun's workload. The sync tool is useful for marrying audio and mocap data gathered in different sessions, while the software's processing power keeps the amount of resolving that the team needs to do to a minimum.

Mauricio Baiocchi, Pixelgun's 'head guru' who worked in animation for years, has said he can barely tell whether data has been post-processed. "I think that speaks to the power of Shōgun in its resolving capabilities."

A recent update that enables calibration within a defined volume without having to send people out of the room has also been a big help.

Meanwhile, being able to do visualization on set helps Pixelgun engage nervous athletes. "We'll put a Vicon skin on them and let them see what they're doing," says Bill. "That usually breaks the ice pretty quick, because you see a player out there moving and grooving and he's like, 'That's me!' That's a never-fail instant connection."

The end result of all these different factors is something Pixelgun is very proud of - data that is indistinguishable from that captured by 2K's in-house, bespoke studio, despite having been gathered in a mobile studio under challenging conditions.

THE END GOAL

Both the consumer applications and the professional functions of the technology boil down to one thing for Bill: immersion. As motion capture evolves, he hopes that more affordable versions of the technology will find their way into homes to draw players deeper into 2K's games. On the production side of the equation, he envisions one day adding outdoor markerless tracking

to Pixelgun's mobile studio so that he can quickly capture more data on the road, enabling games developers to create greater volumes of realistic content.

The end goal, however, is the same: "We're just trying to break down that barrier and get the fans closer to the game than they could any other way."
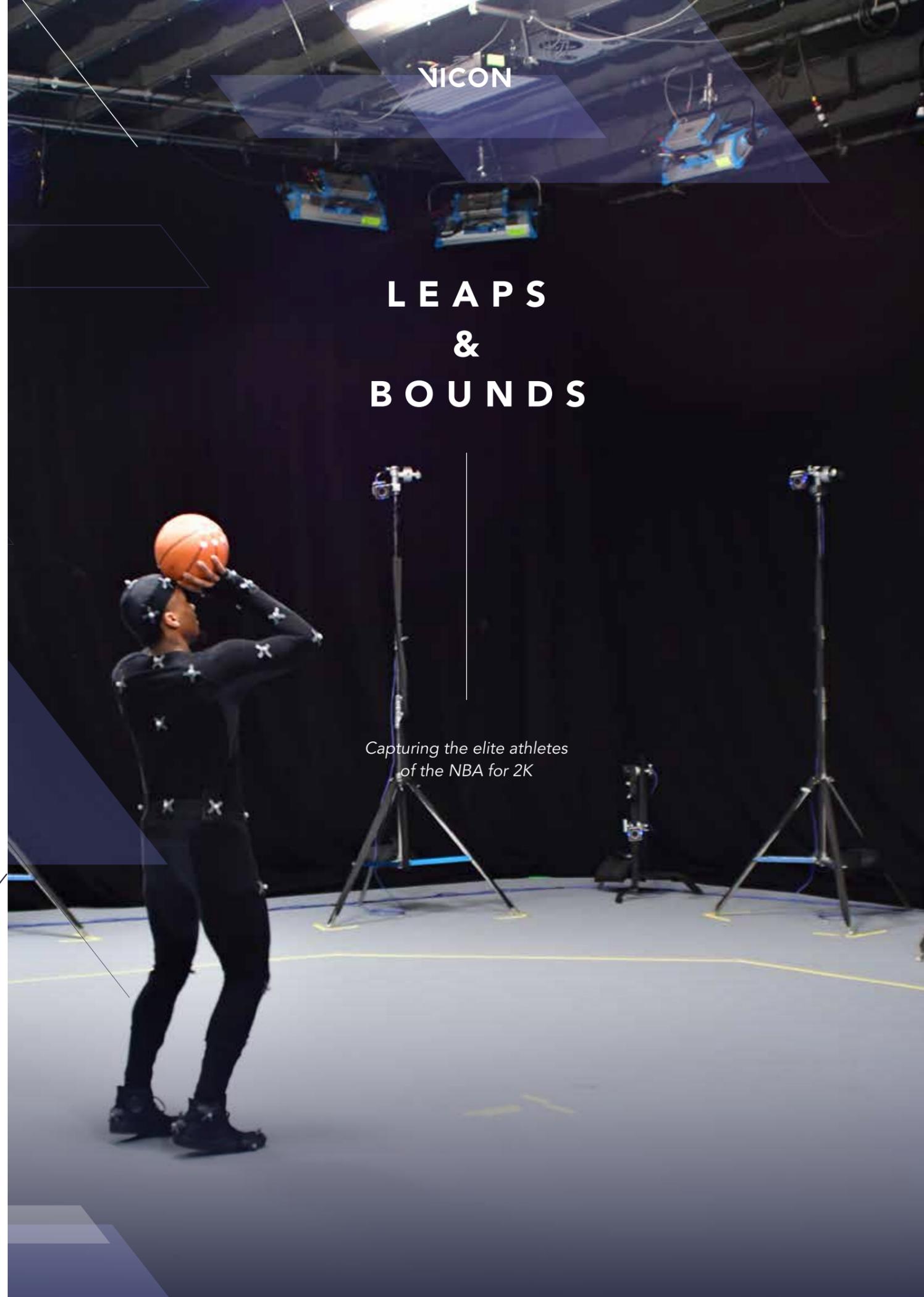
LEAPS & BOUNDS

Capturing the elite athletes of the NBA for 2K

VICON

f y in v

Pixelgun Studio has flourished in an unusual niche - it specializes in photogrammetry, vocal recording and motion capture of elite athletes and high profile actors in highly compressed timeframes.

**BRIAN COPENHAGEN**
Mocap Lead
Pixelgun

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MAYBE A PLAYER COMES IN SPORTS GOGGLES, AND WE'VE GOT TO DEAL WITH HOW THE INFRARED IS GONNA REFLECT OFF OF THOSE. THERE'S ALWAYS SOMETHING."

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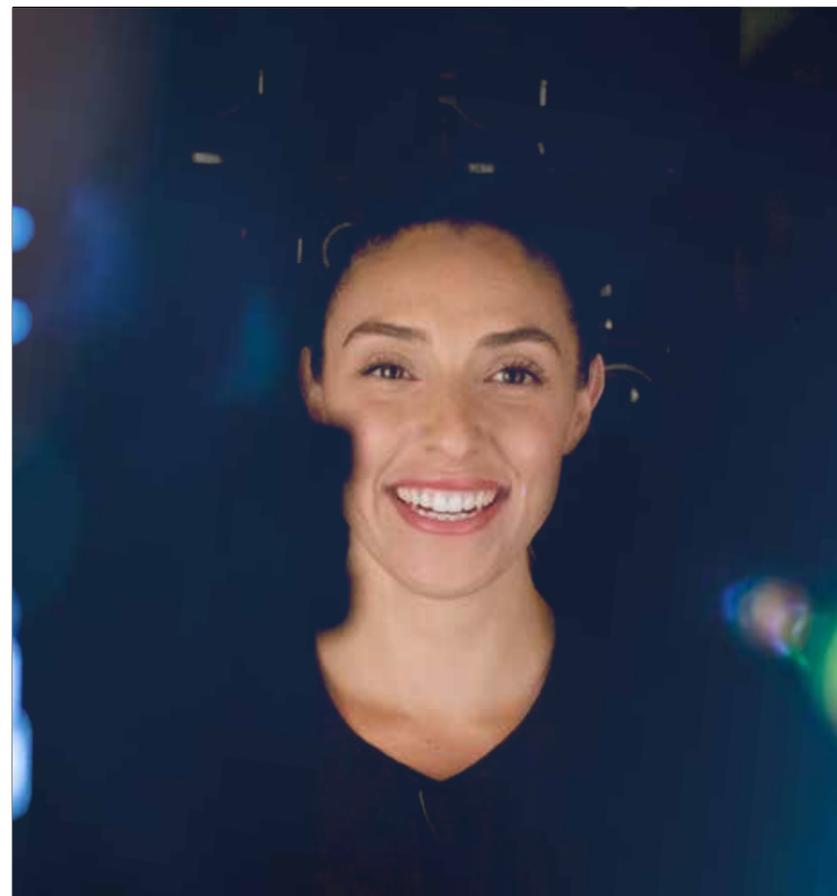
PIXELGUN'S SOLUTION FOR PHOTOGRAMMETRY AND AUDIO, DEVELOPED OVER A NUMBER OF YEARS, IS A MOBILE STUDIO"

Working for the likes of the NBA 2K and WWE 2K video game series, Epic Games, Telltale Games and Facebook, the studio has fine-tuned the process of capturing the movements of time-starved athletes.

The studio was formed eight years ago when 2K was looking for a company that could capture extremely high-fidelity 3D imagery of basketball players, to improve the graphics in its NBA 2K series. "Before, they'd been basically modeling and texturing by hand, as other video games do," says Bill Gale, Supervising Producer for Pixelgun. Now, they were looking for the next step towards realism.

2K deals with elite athletes on very demanding schedules, and therefore needed a team that could do the specialized work very quickly. Pixelgun's solution for photogrammetry and audio, developed over a number of years, is a mobile studio ("People compare it to what Darth Vader lives in," jokes Bill) that tours the United States and can have athletes in and out in seven minutes.

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WE'RE JUST TRYING TO BREAK DOWN THAT BARRIER AND GET THE FANS CLOSER TO THE GAME THAN THEY COULD ANY OTHER WAY."

BILL GALE
Supervising Producer
Pixelgun
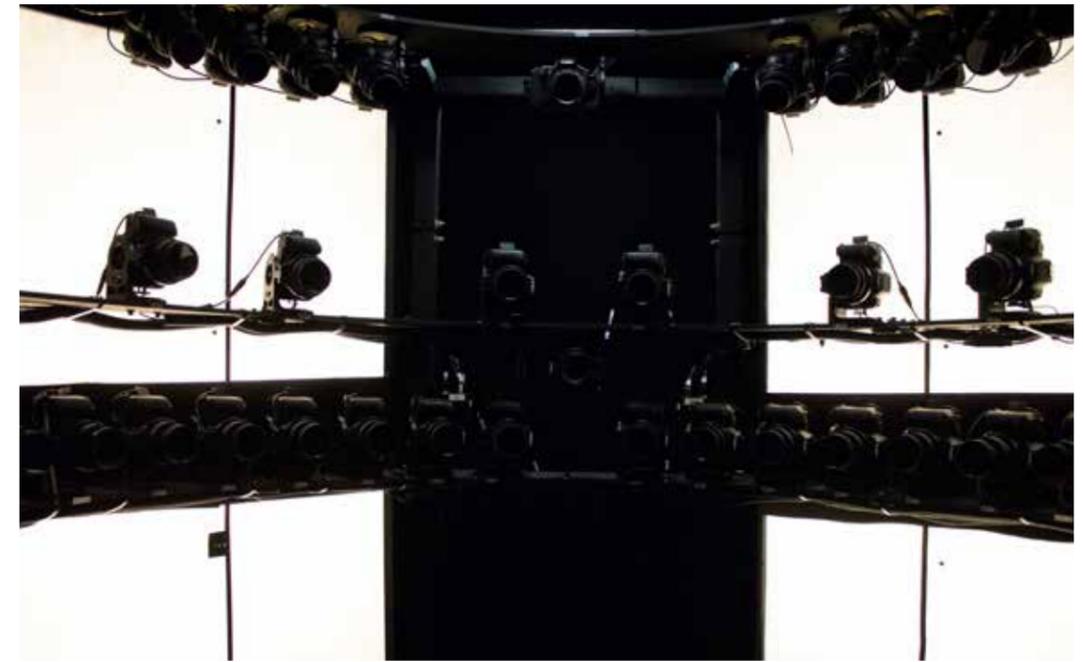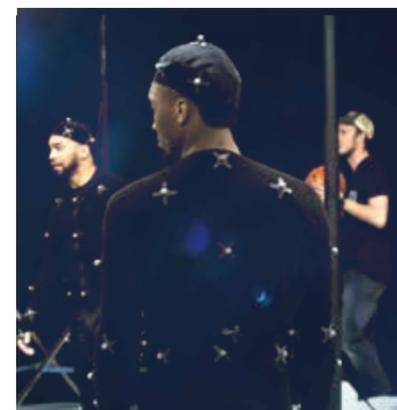
MORE MOVING PARTS

Over the years, 2K has evolved its games to include sophisticated story modes with extended cutscenes. Photogrammetry and audio are no longer enough, and Pixelgun has expanded its offering to include motion capture. Mocap is, by its nature, a lengthier process than photogrammetry, but Pixelgun still has to work in very tight capture sessions.

Brian Copenhagen, Mocap Lead for Pixelgun, says that a shoot would normally involve a four-day round trip by air, including time to get their bearings, set up, pack away and get home. In the middle of that is just a single two- to three-hour session to capture everything they need from a player, and it happens very much on the player's terms.

"The timing is really set by them," says Brian. They might show up with just a manager, or they might have a whole entourage in tow. They might be excited about being shot for a videogame they've been playing for years or they might be unnerved by being fitted into the capture suit and having markers placed all over their body.

"You better have your act together," says Brian, because shoots are unpredictable. "Maybe a player comes in sports goggles, and we've got to deal with how the infrared is gonna reflect off of those. There's always something."

That means there are two main criteria Vicon's motion capture technology has to meet: it needs to be portable and extremely reliable so that the team can remain laser-focused on getting the data they need.

"Veros came out and we knew that that would probably be a good option for us because they're so compact. Many of the other cameras that are built into stages are twice the size, easily, and you can't call it a mobile rig if you're going to haul 20 cases of gear around," says Brian.

MOVE FAST, DON'T BREAK THINGS

Speed is an important factor both before and during a session, too. "One of the things about the Veros which made the difference is being able to do the quick setup," says Brian. "We put it up on stands, and because they have the motion-sensing capability to tell us when they've been bumped, that gave us the opportunity to have the mobile stage