

Welcome to the Event Tech Podcast where we explore the ever evolving world of event technology every week. This show is brought to you by Endless Events, the event AV company that doesn't suck. Now, let's talk tech.

Will Curran:

Sunday, Sunday, Sunday. Hello everyone and welcome back to another Event Tech podcast. That man over there is the spotless Brandt Krueger from Event Technology Consulting.

Brandt Krueger:

And that guy over there, he is the stupendous Will Curran of Endless Events.

Will Curran:

More like I feel like stupidtendous sometimes.

Brandt Krueger:

Stupidtendous.

Will Curran:

Stupidtendous. It's like stupidenitis, I guess. But people are probably wondering what's up with the weird Sunday, Sunday, Sunday intro and we got a pretty exciting topic, is about an event that just happened. You might have heard of it. Brandt, have you heard of this event before today?

Brandt Krueger:

Yes, I have and I'm not going to refer to it as the big game because this is, as far as I'm concerned, a news podcast and so therefore, I believe we are allowed to actually refer to it as the Superbowl. As opposed to when you see the commercials and things like that where they're not actually allowed to refer to it as the Superbowl, so they have to call it the big game.

Will Curran:

Well yeah, I'm definitely not going to call it the big game, this is definitely, I mean the event that we're reacting to is the event, the Superbowl.

Brandt Krueger:

Is the Superbowl that just happened.

Will Curran:

Superbowl live.

Brandt Krueger:

Superbowl live, exactly, exactly. So I wanted to take some time, this is kind of a fun thing that I used to do on one of my older podcasts where we would actually kind of break down some of the larger events that we have in our industry. Take some time and go through it and lessons

learned, things we liked, things we didn't like, get a little catty on things like the Grammy's and the Oscar's and the Superbowl. I mean, these are the biggest events that we have out there, so if we can't break those down and analyze them, what can we do?

Will Curran:

Absolutely. I'm excited about this because I'm not going to lie, I didn't watch the game at all. In fact, when you were like, "Hey, we should do this." I was like, "Oh yeah, I should definitely watch this-

Brandt Krueger:

I should probably watch that.

Will Curran:

... rewatch the halftime show to see..." Because I used to, every year, I'd sit there live and react and we'd be writing articles rightwards as well. But I figured it one of those things where so many people are doing that, I'm just going to slow it down a little bit. And this is going to be a little bit more fun conversation, especially from the tech point of view. So I'm guessing, are we primarily the... I'm sure there's some non-tech stuff that's going to slip in. But this is definitely from a technology perspective, is that right Brandt?

Brandt Krueger:

Yeah, yeah. I mean, I tried to look for things that were related to our industry, adjacent to our industry, takeaways. But also, sure, we can talk about some of the commercials and things like that that we got going on there.

Will Curran:

I will say, it was a very, very poor year for movie trailers. Usually, every year, when there's movie trailers, there's some big surprise that drops. Last year it was Cloverfield, now on Netflix and you're like, "What?" But this year, I was watching trailers and I said, "I already knew all these movies were coming and I have already seen trailers for them or whatnot." So I was really sad about that.

Brandt Krueger:

Yeah, it was Black Widow and maybe a couple other movies, that again-

Will Curran:

Yeah, which is already had three trailers already. Why do I even care?

Brandt Krueger:

We saw the 15 frames of the new Loki series on Disney+. Literally it was 15 frames, it was so fast.

Will Curran:

Yeah, two frames, yeah, yeah. But, there was but there was way more to-

Brandt Krueger:

That's what I call a teaser.

Will Curran:

Oh, that's true, super teaser. Should we dive into the show itself?

Brandt Krueger:

Yeah.

Will Curran:

If you had to give a rating from the top, just at the top, what would be your rating on this years Superbowl? A through F, plus or minus is allowed.

Brandt Krueger:

So there's things involved, so I think there's overall wow factor, I think there's execution, right? Did everything seem to go off very well? I mean it is, especially talking about the halftime show, it's ridiculous, right, how much they have to get on and off the field in an incredibly short amount of time. And so being able to do that effectively and have everything work perfectly, already right there, you get an A kind of for that because for sheer effort.

Brandt Krueger:

But I have to say, big picture, I was a little underwhelmed this year. Just think back though, I mean I don't know how big of a football fan you are, any of that kind of stuff, but I just remember going back in my head over the last few years. We've got drones, we've got Lady Gaga flying in on a line, we've got Madonna riding in on giant things and Katy Perry with left shark, right shark. I mean, just kind of going back, the big things of people are talking about the halftime show the next year. I though JLo and Shakira did an amazing job, it was a little weird to be sitting on the couch with my 12 year old daughter, basically watching-

Will Curran:

Oh my god, I felt uncomfortable watching it.

Brandt Krueger:

... 20 minutes of, yeah, it was 20 minutes of non-stop twerking and grinding, that was a little awkward. But that's part of their shtick, their performance is a lot of that-

Will Curran:

Her hips don't lie.

Brandt Krueger:

... Latin dancing, their hips don't lie baby, and did a phenomenal job. But taking a step back, so I guess I would give it, I would say it's an A for execution. It looked great, it sounded great as far as the mix and everything that I could tell. I didn't hear any major audio gaps in anything. And to be fair, I've also kind of taken a bunch of notes from the pre-game show. Which, by the way, do we need five hours of pre-game show? Because I was a little surprised. I thought maybe YouTube Music, or YouTube TV was just being extra careful to make sure that they got all of the coverage in there. No, no, it was five hours of pre-game show.

Will Curran:

I was going say, wasn't there an ad that said something like, "Oh hey, we got an ad because it's cheaper during the pre-show?" It was the SpongeBob Movie, they're like, "Oh, it's during the pre-show, it's going to be cheaper." I mean, they got to make their ad money somehow you know?

Brandt Krueger:

Yeah, yeah. So let's take a step back. That's my overall take.

Will Curran:

Wait, you don't want to hear my rating for it?

Brandt Krueger:

Okay, sorry, sorry. I was going to come back to the halftime show. I was going to come back.

Will Curran:

Oh, I though we were just talking about it in general. I mean, I only watched the halftime show, so my only rating is going to be for the halftime show.

Brandt Krueger:

What's your rating?

Will Curran:

Now you say it, I would probably agree. I think A+ on execution. But yeah, creativity, C-, nothing absolutely creative. I think we'll dive into a deep with the things that we liked and disliked on here.

Brandt Krueger:

Yeah, let's come back to that because I do want to hit a couple things from the pre-game show, and then also the night before, they had a music fest. So they had a Bud Light music fest, so that was fun. I mean especially, I could get super catty about some of the musical acts, but I did try to look at it-

Will Curran:

Stick to the tech, stick to the tech.

Brandt Krueger:

... though a technical eye, yup, through a technical eye. It was basically a giant kind of curved LED wall behind them. So they had a lot of content, a lot of pretty, pretty. But again, good execution, not particularly creative. There was nothing that, wow, it was just a big stage. Part of that, again, is the limitations of getting act, to act, to act, right? So you had to be able to move very quickly from a couple of rappers on stage, to a full band setup, they had Guns N' Roses played, Maroon 5 played. So being able to move very easily and seamlessly, you've got limitations on there. But again, it left me kind of, "Oh, okay." If you weren't really into any of the musical acts that were playing, there was no reason to really watch that show. It was kind of boring to be perfectly honest.

Will Curran:

Interesting.

Brandt Krueger:

One of the more interesting segments though is during the music fest, they actually did the big reveal for what the Madden NFL game predictions were for the Superbowl. They hammed it up with the big screen and calculating and lots of footage of Madden NFL game footage of the Chiefs and the 49er's squaring off and touchdown dances. And then it would go to a boot screen and be like, loading, and that kind of stuff. And then eventually it predicted the game. It did predict the game accurately, but not by as many points, so I thought that was interesting. So I did pick the Chief's to win, but only by about three points and that's probably the safe bet, right? You pick one of the teams to win by three points and then you don't look so bad if your wrong.

Will Curran:

By a field goal.

Brandt Krueger:

Right. You don't look bad if you're wrong because the other team won. It's like, "Well, we thought it was going to be close." So that was kind of fun. And they had people out of the stage pushing a giant button. But again, for the most part, it was just a large curved LED screen and band after band after band. What was a little bit more interesting, just to get a little nerdy on it, is I've started seeing this on some of the New Year's Eve programming where they'll have a little ticker on the side. You see it on Sports Center and stuff like that too, where they show you what's coming up. So it's like, "Okay, this is who's playing now." So it's Snoop Dog is playing now, and then up next is going to be somebody else. And then you see kind of the ticker of, okay, it's going to be maybe 40 minutes before Guns N' Roses is on, so I'll come back. An

Will Curran:

Oh, interesting.

Brandt Krueger:

And that's a very live TV oriented thing, right? That doesn't really matter. Although, as soon as I say that, I was using that to kind of fast-forward though to see some of the acts. So you could kind of see that in the corner and be like, "Oh, okay, it's coming up." So I thought that was kind of interesting because you'd be able to fast-forward to the acts that you want to see.

Will Curran:

I'm wondering if that affected client satisfaction too or view satisfaction? For example, I'm imagining my parents, they really don't care about JLo or Shakira and I can imagine them complaining about the performance. I mean it was so bad, blah, blah, blah. But I'm wondering, if they had the ability to skip. Obviously this is the TiVo mentality. I'm wondering, from a perspective too, it's almost like the festivalization of there's always an act to see, so everyone's always happy, versus one single concert, these are the only people you're going to see. I'm just wondering, the data science around it in a little way.

Brandt Krueger:

Well yeah, that would be fascination. But I can totally see, like you say, at a festival, if you had multiple stages, kind of a running ticker along the side of the jumbo tron, right, telling you, "Okay, it's 20 minutes to get to that stage over there to see these people." Or, "Here's whose coming up next." Using that real estate a little more effectively, rather than just blank or curly cues and psychedelic stuff in between bands.

Will Curran:

That's true, that's true.

Brandt Krueger:

All right, so that was my hot take on the music fest, which was a little under. So the next section that I had was the five hours of pre-game.

Will Curran:

I can't believe you watched it.

Brandt Krueger:

I didn't. I'm not going to lie, I kind of skimmed through and looked for the highlights and did a little searching around afterwards to see if I missed anything. But I did manage to actually land on a few kind of funny things and a few takeaways. So one is, starting right away in the pre-game, and this continued into the actually in stadium pre-game stuff too. I saw a lot of this kind of AR where the camera is moving, they've dubbed in graphics and things like that and it's reacting to the camera movements to look like it's physically in the space.

Brandt Krueger:

And again, not something that's terribly new, especially in football and sports, they've been kind of playing around with that kind of stuff for a while where they kind of dub in a jumbo tron in the middle of the field to show the player interviews and things like that. But I saw a lot of it right

away in that pre-game show of just as they're standing there, there's graphics kind of in the background that are reacting to as the camera moves. So it's kind of this motion tracking graphics. Maybe not what's traditionally AR, but it is AR in the sense that they're laying over stuff. And sports has always been way ahead of the game when it comes to-

Will Curran:

Oh, for sure.

Brandt Krueger:

... thing that aren't there over the sport.

Will Curran:

Just like the... Wow, football fans, don't kill me now, I'm trying to remember the line you cross in order to get the first down, first down line.

Brandt Krueger:

Yeah, the first down line. And the line of scrimmage, they'll dub that in and sometimes they'll throw in the red zone or the kickers where he went pass the 30.

Will Curran:

My favorite is when they highlight a player and then are able to continue the graphic, be like, "Oh, it's about to get past this guy." And they hover over, I'm like, "Whoa."

Brandt Krueger:

Right, right, it's like a video game because it's circled.

Will Curran:

Yeah, totally. Oh my gosh. Have you seen the movie Free Guy, is that what it's called? The Ryan Reynolds movie where it's... Spoiler alert, if you really don't watch trailers or anything like that. But it's the character living inside the video game and kind of show him putting on glasses and getting all this AR stuff around them. I'm like, "Oh man, I want that in my life."

Brandt Krueger:

Yeah, or Demon or Ready Player One or something along those line.

Will Curran:

Yeah, yeah, there you go, there you go.

Brandt Krueger:

So I thought that was kind of an interesting takeaway. And they were clearly trying to make elements that were almost realistic enough that you kind of go, "Oh wait, is that there?" And then especially, that carried through into the pre-game show, right there in the stadium. So they did kind of the NFL 100, the all 100, because it was 100 years of the NFL, so they did the all

100 team. And they had the guys down on the field wearing the sport jackets that they outfitted them all in. But then, hovering above them on the field, was the stats and the photos and the people and stuff like that. And so they used that as the shot, so it was a live camera shot of the dudes down on the field. And then again, it's kind of almost fictitious jumbo tron floating in the air above them, which I thought was an interesting way of doing it. And the camera's totally panning and moving and SkyCamming away and all of the stats and the figures and the photos and everything were tracking with it seamlessly.

Brandt Krueger:

And so it was a really interesting, again, kind of taking that AR to the next level. And it does kind of make you wonder, at what point are they just going to start dubbing in things that totally aren't there with the purpose of making it look they're there, and what happens when you start going down that road?

Will Curran:

Nice, I like it, I like it. Keep going, I'm hearing the news as it happens.

Brandt Krueger:

So just a few other things from the pre-game show that I noticed. There was a funny moment, again, from a totally nerdy AV standpoint where they had Jimmy Johnson, one of the Fox hosts, former coach, they had him up in a bucket lift over their set, an actual JLG bucket lift like we see on-site all the time. And he had his jacket and suit and stuff on and you could see the harnesses. So they had actually harnessed him even though he was only about 10 feet off the ground. And so I just thought that was kind of a funny, always wear your safety harness whenever you're on one of those bucket lifts.

Will Curran:

That's awesome.

Brandt Krueger:

There were Lego versions of the Fox hosts. That's tying in Fox is releasing a new... By the way, there was a lot of cross promotion for Fox.

Will Curran:

Oh really?

Brandt Krueger:

So they clearly took advantage of the fact that they were hosting the Superbowl. Because there was so much cross promotion for The Masked Singer, their new Lego Masters series, Fox News had its own little segment. They're apparently launching a new channel that's Fox Americana or something like that where it's all shows dedicated to...

Will Curran:

These are all owned by Disney technically now.

Brandt Krueger:

By Fox.

Will Curran:

Oh, by Fox.

Brandt Krueger:

Oh, that gets confusing.

Will Curran:

They only bought the movie studios? I don't remember what the purchase was.

Brandt Krueger:

I don't think they bought the news segment side of things. I can hear you looking it up.

Will Curran:

Yeah, you can hear my loud ass.

Brandt Krueger:

Yeah, yeah, yeah. But they were definitely promoting the other Fox television properties heavily during the show and repeatedly. But I did think that was a stop and think of that would be a lot of fun, if you actually got a Lego Master to do your CEO.

Will Curran:

Oh, for sure.

Brandt Krueger:

Or your keynote speaker or something along those lines. That would be a lot of fun to have them. We've seen the ones where they're doing the live drawing.

Will Curran:

Yeah, like x-wings and stuff.

Brandt Krueger:

Well, I'm just saying, they've done the live drawing of a live recording of sessions where people are drawing the session as it goes. What if you had someone in the back corner building a Lego face of your keynote speaker during the time. Can they get it done during the one hour speaking that they're doing, something along those lines.

Will Curran:

That's true. By the way, I looked it up, Fox Corp still exists independent from Disney. It will be primarily news and sports. So all the stuff that we're talking about, that's why they're promoting so hard, is that they realize that this is their only place they have revenue, so they're probably pushing it real hard since they just lost their movie division. Because basically all the movies, and a bunch of TV networks apparently went to Disney, but the sports and news stuff stays with Fox.

Brandt Krueger:

There you go. So yeah, they were definitely promoting those properties for sure.

Will Curran:

Interesting.

Brandt Krueger:

All right, other things that I saw in the pre-game show, they wound the SkyCam kind of through the palm trees. So it not only was doing kind of the front to back like we see on the football field, but it actually was kind of going almost in a curved zip line, which I thought was kind of cool as it went through. I was kind of like, "How did they do that? How does that even work?" Because it's got to be taught and be able to go from front to back and side to side. And I get how that works over a field, a wide open football field, but how do they get it to go through the trees? I couldn't quite... Maybe it was drone?

Will Curran:

Small compact cameras. I doubt it was a drone, but-

Brandt Krueger:

It was over people too.

Will Curran:

Yeah, it was probably a cable cam. But honestly, cameras are getting so small. I mean, if you look at 1917, the movie, which I know to everyone who knows me, knows I literally still won't shut up about this movie because I loved it so much. But Arri made a special camera just for that movie because it needed to be lightweight and small. Honestly, it's the size of... my computers bigger than it. And it can shoot 6K, all those sort of things like that. Before you talk too much about it, I think it's worth bringing up the huge technological advancement, I'm sure it's on your list to talk about at some point. But this was the first ever Superbowl, and I'm using air quotes, in 4K HDR.

Brandt Krueger:

Oh, you're literally two bullet points too early. I was-

Will Curran:

Dammit.

Brandt Krueger:

... working my way there, yeah.

Will Curran:

Man, all right, all right. So should I wait? Is there a beautiful transition or can we-

Brandt Krueger:

No, there's no beautiful transition, that's fine. The only thing I had left in the pre-game show, and I did try to, again, watch out for things that were adjacent to our industry is that there was clearly a promotion done by Norwegian Cruise Lines that also, again, tied into Fox Sports doing the Indy 500. So they had two dudes racing, one of the cruise ships actually has a mini go-kart race track on it. So they were out under the beautiful sun racing go-karts on the top of a Norwegian Cruise Line deck. And so I just threw that in there because it's, again, it's tourism industry, right? And so I thought it was an interesting multiple tie-in, not only to probably a lot of money to get that to happen, but then to tie it into the Indy 500 and all that was kind of creative.

Will Curran:

Totally, totally.

Brandt Krueger:

Then I said, Verizon 5G Ultra Wideband because they made a whole big stink about it, oh my goodness.

Will Curran:

Oh my god. So yeah, we haven't really talked about this show about... Have we talked about 5G very much since our new rant on it?

Brandt Krueger:

Not since the original episode that we did on 5G, but it's come up a few times since then.

Will Curran:

We've got an update episode coming your guy's way. And also, we've got an upcoming episode on event brew, talking about 5G as well and it's impact on the events industry. So a lot of 5G coming out of Brandt and I. The interesting thing is, not a lot 5G coming into us. So yeah, so stay tuned for that. But I think the short story of it, so Verizon was promoting that they have 5G now, I'm guessing? Is that their big thing?

Brandt Krueger:

Well, not only that, so the way that they kind of phrased it was that they implied that the stadium basically had been bathed in 5G. Great, so the four people in the stadium that have a 5G phone, were able to take advantage of it. And then I wrote this down, this ultrawide band thing because it was in the fine print, which I thought was interesting. That they bothered to even

have fine print on this little puff piece that they did at the beginning of the show. So clearly Verizon paid Fox a crap ton of money to have this little segment produced where they flew a drone cam or something like that up to the stadium as they explained that this was the first ever Superbowl to be, it wasn't broadcast in 5G because it's not broadcast, but basically to have 5G. Let's put it that way, I forget how they phrased it. And they installed it all over the stadium so they could have 5G.

Will Curran:

I found a really fascinating article. So I didn't even know about this, so thank god I Googled it. But I found a great article that, ironically, speedtest.net wrote, which dives into apparently they had a bunch of people from their team go on from all the different networks and test their speeds and latencies across all of them.

Brandt Krueger:

Please, do tell.

Will Curran:

I have to read this whole article. I skimmed it really, really fast. But what's interesting is based on this article, it seems like they actually were able to hit some 5G speeds of 646 Mbps on Verizon, T-Mobile is about half that, Sprint was about a third of that. The uploads speeds were still abysmal, because we know that obviously the 5G upload hasn't quite caught up with the download. However, the latencies were pretty crazy. I mean, 91 millisecond latencies on Verizon, which is slow for what it can do.

Will Curran:

But what's interesting as well is that they also compared it to their... Oh, this is compared to last year at the Mercedes Benz Stadium in Atlanta. This article's fascinating. I'm going to have to share this article. But they had over 24 TB of data on the stadium wifi on game day, averaging download speeds of 30 Mbps. So then, for the Hard Rock Stadium, they were seeing, interestingly enough, December 22, they would see speeds of 60 Mbps-ish, up and down, low latency. But then for the big game, as it says everywhere, it says 37 Mbps, 47 MB. I mean, pretty impressive. I mean, it looks like they saw only relatively slow slowdowns, but 37 Mbps on a gigantic stadium wifi is pretty solid. Man, there's a lot of data to unpack on this and maybe we need to do a separate episode talking about it. But I think we have to pour into this data a little bit more.

Brandt Krueger:

Yeah, we can do a 5G revisited. I did take note the number of times that 5G was mentioned, the number of times that I saw commercials for it. I think we're just at the beginning of what we're going to see for the rest of the year as far as commercials.

Will Curran:

So funny. So it says, they basically, obviously, they see the data not only where they collected it, but they obviously see the results when someone actually uses speedtest.net. They said fewer than 10 people tested their speeds during the game on 5G.

Brandt Krueger:

I don't know that it would be the first thing on my mind if I was at the Superbowl.

Will Curran:

Yeah, which is really interestingly enough. So not a lot of data on it for sure. Wow, really interesting article though. I think this was, I'm sure, a huge day for AT&T, T-Mobile, Sprint for testing the thing that we talked about, being one of the biggest things in 5G, which is just the ability to handle more devices. So I'm sure this was a great case study for them. Whether they were going to use this in advertising standpoint, they probably are using it as a case study more than anything to see how it was all going to work out.

Brandt Krueger:

Yeah, and then later on, they had an extended one that kind of bothered me. I called that a hero's ad, I don't know what it's actually being called, I'm trying to look it up as we go. But it was basically, we're not going to tell you that 5G is faster, we're not going to tell you this. And meanwhile, showing first responders and people... I don't want to get it wrong. But anyway, it just rubbed me the wrong way. It felt like it was trying to, well, make money off the backs of first responders is probably the easiest way that I can say that. And then just trying in 5G with no particular reason, you know what I mean?

Brandt Krueger:

It was just, let's make sure we throw the word 5G in there so that people know that we're 5G. And it just rubbed me the wrong way, especially because Verizon was one of the companies that got in trouble with the plans and first responders. I don't remember the details of it, but it was a kind of thing where I think they were on the California fires, not this last year, but the year before. And they got their phone's cut off because they'd reached the end of their minutes or something like that, it was something really, really-

Will Curran:

Oh yeah, I do remember.

Brandt Krueger:

... kind of disgusting. "Well, if you just upgrade your plan." It's like, "Okay, dude, I'm in the middle of a forest that's on fire." I don't know, it just felt a little tasteless to my eyes at the time.

Will Curran:

Well it makes sense too, most people though, they are probably like, "5G, oh my gosh this exciting to see 5G, 5G, 5G." So again, it's part riding that hype train, I think that people are starting to see more and more.

Brandt Krueger:

Yeah, yeah. And there was a funny one from T-Mobile. I had these kind of as a separate bullets, but since we're in 5G land, we might as well do it. Where the guy's mom kept calling him saying, "It works from here. It works from here." And it just kept going and it just kept going. It's worth watching. I also felt like the commercials weren't fantastic this year. So this one definitely has stuck out in my mind as one that was being funny and it also emphasis the two things that you and I have talked about when we do talk about 5G. Which is that Verizon seems to be building out their network for the speed in public places, and T-Mobile seems to be building out their network for the coverage, and that's a trade-off.

Brandt Krueger:

So T-Mobile is not going to be as fast because they're using the low and mid-band stuff. Go back and listen to our discussion on 5G and come and listen to our upcoming discussions on 5G to find out more about what that means. But the long and the short of it is, I thought it was interesting that clearly T-Mobile is touting coverage whereas Verizon is touting speed.

Will Curran:

Yeah, that's for sure. And this report basically kind of echos that too, that that's the results they're seeing as well.

Brandt Krueger:

And the fine print of the T-Mobile ad also was very specific to say this had nothing to do with upload speeds. Uploads speeds may differ, that kind of thing.

Will Curran:

It's funny, because, yeah, you look at these average download speeds in the Hard Rock Stadium, it was like, download 646 megabits per second on Verizon, upload speeds, 9 megabits per second. Oh my god, wow, I think my 4G upload speed might be faster than that.

Brandt Krueger:

Yeah, yeah. Let's see, what else did we have in there?

Will Curran:

Do we get to talk about 4K?

Brandt Krueger:

Yeah, we probably should. So it's not the first. Was last years Superbowl in 4K?

Will Curran:

No, no, that's the big thing, this one's... Actually, I think the last one was in 4K, but it wasn't HDR. And the thing about this was 4K HDR. And honestly too, I have to look it up real quick, I have to look it up.

Brandt Krueger:

I can tell you what I was watching on my YouTube TV recording was definitely not 4K.

Will Curran:

Oh no, for sure.

Brandt Krueger:

It was 1080 at best and YouTube, as YouTube does, if you try and lock it into HD tends to start stuttering and buffering and things like that.

Will Curran:

Yeah, and yeah, this was the first one it was done in 4K. I think the interesting thing for people to know, I kind of teased it a little bit, is that it wasn't real 4K. I think that's the interesting part. If you Google 4K, it even pops up the first thing you search if you search Superbowl 4K. Again, the hype train was so hard, but the thing what's interesting about it for you to know is that it was a 1080p, normal HD signal, that's called upscaled, which is kind of a fancy version of they stretched it and fixed a bunch of things so it looks like it's 4K.

Will Curran:

But I think the thing that was impressive is that it was in high dynamic range, HDR. Which, in my opinion, HDR probably has a better effect and more impressing looking effect than 4K does, in my opinion. So if anything, the bigger upgrade, I think is the HDR. I'm not sure what you thought. Did you notice any difference in quality while you were watching it?

Brandt Krueger:

No, and again, maybe it's just where I was watching it. I didn't think to try and compare it to what you would see on the Fox streaming apps that were available. Because I know that was available on Roku and I flipped over to it after it went to the post-game show and it looked like it was no longer in 4K. It just looked like a really nice... it was pretty crisp HD signal, so I did not witness it in it's 4K glory unfortunately.

Will Curran:

Well maybe next year we'll see it in true 4K, cinematic 4K-

Brandt Krueger:

True 4K.

Will Curran:

... and it'll be fantastic. I mean, it goes to show too, it's funny how, literally, I think 4K's now actually pretty standard across most people's TV's. Black Friday, having 4K TV's for \$600 really shows that it's coming. But there's still a lot of work to be done when it comes to it. I have a lot of comments when it comes to the halftime show as far as some of the camera work. And actually,

I'll have to re-watch. I think I was only watching it in 1080p, 60 frames per second too, but I'll be really curious to see next year when they do true 4K.

Will Curran:

But it's funny, I'll make sure we link in the article. I read an interview and was talking about it. They basically decided to upscale it because it was just way too expensive for them to do all the hardware and all the things, downstream, to be able to keep it in 4K. And it's so funny because how many times clients to us and say, "Hey, let's do it 4K." Or like, "Hey, we want to do our livestream in 4K." And I'm like, "You realize this is going to be really expensive and really hard to do." And this just goes to show you, the Superbowl's not doing it in 4K, let's be honest, you probably don't need to either.

Brandt Krueger:

Right, right. Excellent point. So I've got a few more things that I want to sneak in and then we can dive into the halftime show, if that works for you?

Will Curran:

That works for me.

Brandt Krueger:

All right. So I was entertained by the Jason Momoa commercial, I don't know if you had a chance to see it in any of your-

Will Curran:

Was it Aquaman?

Brandt Krueger:

No, and that's the funny thing, is I couldn't tell you who it was for. I think it was a home... I couldn't even tell you, like I said. But it was him coming home, the point was home is your sanctuary. But then he starts ripping off his big manly chest and pulling off his arms like sleeves and underneath it all, he's a scrawny little balding dude with this face. It was a really well-done CGI of mapping his face onto a scrawny little balding dude. So he kind of slowly de-pumps as he gets comfortable in his house and pulls off the wig and pulls off the pecks and pulls off the giant biceps and stuff. And it's still the same tattoos and everything, but it's on a scrawny guy. So just further amazing things that we can do with CGI these days.

Brandt Krueger:

Let's see. Also, was entertained by the Smaht Pakh Hyundai, that's also worth looking at if you get a chance. It's basically showing off Hyundai's new smart parking features where you get out of the car and press a button and let it park in between... So if you're parking in between two cars and you're not going to have room to get your doors open.

Will Curran:

I thought you were joking when you were pronouncing it that way.

Brandt Krueger:

No.

Will Curran:

But no, it's literally Smaht Pahk, smaht pahk.

Brandt Krueger:

That's because it was all-

Will Curran:

S-M-A-H-T P-A-H-K.

Brandt Krueger:

So it was Chris Evens and, what's his name from The Office and from the new Jack Ryan series and they're all doing thick Boston accents of like, "You're not going to get the car in there. You can't get that car in there." "Oh, I can get that car in there." And then using the smaht pahk feature to get the car in. So it was just kind of funny and cute, but also showing off some pretty amazing, that's really cool technology. Just hop out of our car, press a button and it actually will squeeze itself in. Of course, it's not going to change the fact that the other people are going to ding your car as they get in and out of the door.

Will Curran:

That's when you get to the robots taking over the world where it's going to shoot you because someone dinged your car.

Brandt Krueger:

So Hyundai, that's great, but let me know when you've got smart ding technology to pop out the dents-

Will Curran:

Some metal pops out.

Brandt Krueger:

... that come from trying to squeeze your into that small of a space. Good for you that you can do it, but got to get the smart ding technology. Okay, here we go into the halftime show. I believe it was right before the halftime show. So this is another industry tie-in. They had a whole Michael Bay filmed segment of chasing a thief that stole her water bottle out of her hotel room. It wound up being an ad for the Hard Rock Hotel in Miami, the big giant guitar shaped hotel. And it was ludicrous. I was like, "What am I watching right now?" Because it was this Micheal Bay directed thing, so people are doing zip lines out of a hotel room-

Will Curran:
Tons of lens flair.

Brandt Krueger:
... and lens flair. And yeah, it was ridiculous. And so, interesting again to me that we're seeing these destinations and these tourism based things spending the millions of dollars. Now maybe they got a deal because it's the Hard Rock Stadium, but in my limited understanding of how this all works, everything involves paying when it comes to the Superbowl, it involves money, money, money, money. So I just thought that was interesting, the amount of money that had to go into doing that just to promote that hotel, the Hard Rock Hotel there in Miami.

Will Curran:
Nice.

Brandt Krueger:
And then, into the thing. All right, I've talked a lot. Now, into the part that you actually saw.

Will Curran:
Yeah, I know, I actually get to talk because that's the thing I actually saw. So do you want me to just lead off with my more positive, I guess, review?

Brandt Krueger:
Yeah, I'll chime in with my things as we go.

Will Curran:
All right, so yeah, I watched it on YouTube on 1080p, 60 frames per second, and I listened to it, yeah, on these headphones that I use to record, so pretty good sounding headphones. I think that was the first thing that I immediately noticed was it sounded really good. For years we've been plagued with really bad audio and them really struggle to, I think, capture it in the right way. And I even went to last years performance and was like, "How did it differ?" And it sounded just... It was almost like I thought it was lip synced. I'm not sure if you noticed the same way, but I was listening to it and I was like, "Wow, this sounds really, really good." And I'm not sure if the live broadcast was different than the recorded one that I pulled off of YouTube, maybe they mastered it afterwards. And you let me know, as you were watching it live.

Brandt Krueger:
No, I agree, it sounded very good. I did notice that as well.

Will Curran:
I disbelieved it and I'm literally looking at their lips so hard. The lips did not lie, I must make that pun. But the only reason I knew it was live, honestly, I would've just said it was lip synced if it wasn't for the fact that was a couple times where they tap the mic on accident. There was a part where JLo clapped and she accidentally hit the top of the mic and I was like... You could

immediately hear it. And I feel so bad for the audio engineer who was not at all prepared for that to happen in sort of way and there's nothing you can really do. I think there was another point where Shakira I think hit the mic on the ground when she was dancing or something like that. I noticed a couple mic taps along the way. But it sounded really, really good. Every rapper sounded good, their singing sounded really good.

Will Curran:

And then also, one thing I think I was most impressed with, and we talked about this in livestream portion is feeding a little bit of the room back, the stadium sounded really good with it. It didn't sound like there was mic right next to one person screaming, it didn't sound like... I don't know where the heck they placed that mic, but it sounded perfect for it to sound live. I think this was one of the best live concert sounding records I've ever heard. So yeah, that was one of the first things I think I noticed. Anything related to sound? I kind of did this like a normal production. Let's start with sound, then we'll go to video, then we'll go to lighting.

Brandt Krueger:

All the mics were bedazzled, I noticed.

Will Curran:

Oh yeah. I was weirded out by that one rapper guy, he had a yellow neon one. I was like, "That doesn't quite fit in." But yeah, the bedazzled mics was absolutely fantastic, yeah, totally, totally. Cool, so yeah, on to video at work. I mean even the guitar sounded really good, I was really surprised when Shakira busted out a guitar. I thought that sounded really, really good. But on the video side of things, I think this is the one part where they get 100% A for execution. And I feel like they focused, and my general thoughts was I think they focused on the TV audience rather than the arena audience. I went back to watch a couple past ones, it feels like this is the first time where they went 100% in on TV audience and almost to the point where it almost feels like it would've been awkward to watch in person, because the camera work was just incredible.

Will Curran:

I think there was a really shining moment where I think it was during Shakira's performance. She's signing into the camera and I think she did it first where she taps the camera and the camera spins around back to the rapper and it's really close in his face and his rapping into it and really making love to the camera. And then he taps the camera and kind of slaps it out of the way and it spins right back to Shakira. Obviously all this stuff was heavily rehearsed, but I thought it was really incredible, really sharp in focus. It kept my attention. And the camera cutting was great too. There was a couple times where fireworks were going off to the beat of the music and they cut perfectly to the camera, the fireworks exploding and the back and forth.

Will Curran:

I mean the camerawork and the camera cutting was just next level good. And I thought that it was fantastic. I knew only a couple Shakira songs and maybe two JLo songs and I don't consider myself a fan, but I remember kind of being like, "Oh, this is pretty good." It got my

attention, it was everything like that. So I thought the video work was really just next level fantastic.

Brandt Krueger:

Yeah, not going to disagree, it was quality, quality stuff. Again, just to be clear, my original take was that it was an A for execution, so just so we're clear.

Will Curran:

Yeah, and I think that's where it probably starts to, I think, deteriorate a little bit for me is when we move on to kind of lighting areas. I thought the lighting was really good, it was executed really, really well. Every year, there's always some new lights that gets released and we're going to link down below, a live design online releases the lighting plots that list every single light and where they were placed and what they did and everything like that. And they're always a lighting dude's nerd dream. But even look at this fixture list, there's nothing that I'm not like, "Oh yeah, I haven't seen that before. What was that?" I remember when the Clay Paky B-Eye, for example, this getting really nerdy for lighting guys. When that was released at the Superbowl and I saw it for the first time, it was moving mechanical LED fixture, I remember being, "What is that? I want one, on my gosh." And it was the hottest light all year long. You couldn't get one to save your life.

Will Curran:

This one, it was a lot of beams, it was a lot of... Again, the spot operating work was fantastic. The spot operators, they get listed in this live design article. The spot operators should get huge, huge props because they just track them so well and did such a good job. But it just didn't have this thing where I was like, "Whoa, this is so incredible." Maybe the lasers at the end with JLo when they're shooting vertically, but it's not something we haven't seen before. But it just looked really good, it just looked good.

Brandt Krueger:

Yeah, it looked good. Yeah, it looked fine. Anybody though that went to PCMA and saw Maroon 5 at the Chase Center, it looked phenomenal, right? Because that's what happens when you throw all the moving lights in Southern California into one room. And so to me, it felt a little bit like that where, yeah, you get a good lighting designer and you give them all the moving lights in the world, you're going to put together a spectacular show. But nothing new, nothing blew my mind like, "Oh wow." It wasn't Prince's silhouette on a giant sheet being blown by air, that kind of thing that we've seen in the past.

Brandt Krueger:

It wasn't, like I said, drones in the air lighting things out, it wasn't Lady Gaga zip lining in. It was really great show. But because every year they set the bar so high and they try something new and they do something big, I think that's why it feels, to me, a little underwhelming. It was a great show and that's all you can say about it as opposed to holy crap man, did you see when they did the... And that's what I mean. It didn't have that water cooler factor of the next day.

Other than, oh man, Shakira and JLo knocked it out of the park, they were fantastic. And that's, in fact, what all the news articles say is how good they were.

Will Curran:

I'm wondering, and this is where I think my general thought process with this was that maybe that's what it needed. Maybe it was turn away of let's try to do something crazy new and instead, let's just do it really, really well. Because I mean, I feel like halftime performances always get slammed either way like, "They're historic, they're amazing, but they sounded crappy." There's always a but with it. But this was one of those things we're like, "Let's be honest, does a normal attendee give a crap about the Clay Paky B-Eye showing up?" Probably not. They probably seen the beams and laser and they thought that was cool and then they could see the person give a good performance and it was on color, it looked fantastic. Maybe that's what people want now. That it's not about just, oh my gosh, throw the newest fixture at it anymore.

Brandt Krueger:

So a couple more things that I noticed, where again, it's like, "Okay, that's nice." All the LED bracelets were out there right?

Will Curran:

Oh yeah, shout out to Pixmob.

Brandt Krueger:

Yeah, all the people with the LED bracelets on there and then it looked like everyone in the stadium had an LED bracelet.

Will Curran:

Yeah, do you want to hear how many there were?

Brandt Krueger:

I'm going to 67,000.

Will Curran:

So this is cool, recycled-

Brandt Krueger:

I don't know, I completely made that number up.

Will Curran:

So people don't know this, but Pixmob who makes the bracelets, they actually, for most of their clients, they offer them a cheaper price if they return them to them because they recycle them and use them for the next show and everything like that. So 70,000 wrist bands that were recycled was for the crowd, 11,000 for the fans on the field. There was 11,000 people on the field?

Brandt Krueger:

Wow.

Will Curran:

That's crazy. And then 32,000 to light the "Pods" which I don't know what the pods are, I haven't looked quite into the lighting plot 100%. But yeah, almost-

Brandt Krueger:

I'm assuming those are the kind of the... there was the weird little circular things that the kids were in.

Will Curran:

Yeah, that's probably what it was, yeah, yeah, yeah.

Brandt Krueger:

I think those are the pods.

Will Curran:

Yeah. But that's a ton of wristbands.

Brandt Krueger:

It is.

Will Curran:

So much that the bracelets has its own LD, lighting director, which is crazy.

Brandt Krueger:

I don't know who that person is, and I don't need to talk about them, but I'm going to ask you this question, do you feel like those were effectively used?

Will Curran:

I mean, I wasn't in the audience though. So was it really even for me? I remember the first time I saw it, which is at the Olympics, they did such a good job because they dimmed all the lights and they mapped them to specific areas. But I'm wondering if it's more so for the audience in person.

Brandt Krueger:

I think again, that's where I know what those wristbands are capable of, and so I was like, "Oh cool." I remembered, I noticed, "Oh sweet, they're all wearing LED wristbands, I bet there going to do something cool with that."

Will Curran:

Right?

Brandt Krueger:

And then nothing. In the background, it looked like people were just holding up their phones, but I realized later, it was the LED wristbands. So I didn't see any big color sweeps or spelling anything out or anything like that, that you're theoretically capable of doing. So again, I just felt like, "Oh, that's kind of cool."

Will Curran:

Oh, I will say, this is really interesting actually, I kind of misspoke. I'm reading an article about it right now. That the X2 wristbands that they used were, for the first time ever used on the show. Make sure I'm reading this right. The first event in which... Blah, blah, blah. Using the new wristbands, they wanted sustainability were LDI 2019 for the recycling program so that the entire wristband is 100% recyclable. So now only are they having them return and they try to use them again, this is 100% made of recycled material as well. So huge on the sustainability especially for something that's \$80,000 or 80,00+, way more than that dollars, but 80,000 units, which is crazy.

Brandt Krueger:

That's cool.

Will Curran:

You never see these things, right?

Brandt Krueger:

Right.

Will Curran:

Yeah, really interesting. Again, nothing we haven't seen before, but good shout outs to Pixmob, which a fantastic company in it's right, but for them to be focused on sustainability. And that's probably why they had them. Honestly, I don't remember if last year even had them, but they probably pushed hard for them to be used at this show.

Brandt Krueger:

Yeah. All right, a couple more things on my list. One I was impressed by and also, again, a little awkward moment with daughter, watching the light-up stripper poles that were up there. Good on you with the LED stripper poles.

Will Curran:

Speaking of the poles, there was one point where I had a big wow moment, which was when that pole goes and start spinning and JLo's going up and it and she's holding herself up and it's spinning. But I thought, not the pole and the spinning part was cool to me, but the dancer that were around them, that pile of people and it was shaping and moving. I got to rewatch it again,

but I remember being like, "Whoa." Shout out to the dancers on that one, it looked really, really cool and it was kind of a wow moment on that too.

Brandt Krueger:

There was incredible dancing going on. I mean it was unbelievable the choreography that went into that thing for sure.

Will Curran:

For sure.

Brandt Krueger:

So the last thing I want to talk about was the stage, as far as my notes go. So what was curious to me was, again, one of these moments of, oh, okay. So at first I thought they were leaning into the fact of that there were bezels, right, to almost give that kind of old 70s dance floor look, because you could very clearly see the edges of the tiles. And initially, they were doing mainly kind of light up things and patterns and swirls and colors and all that kind of stuff. So I was like, "Oh, cool, they're leaning into the bezels." It probably makes them easier to put together, it makes them probably sturdier. I was like, "Okay, they just lean into it." So if we're going to have bezels, we might as well make them noticeable from space and go for it. But then, in the later sections of the show, they did more projection mapping style effects where the floor falls through and all that kind of stuff. And it's like, well, okay.

Brandt Krueger:

What took away from that, for me, was these giant black bezels around each of the panels of the flooring. So it was kind of like, well, it felt to me that they were going to lean into it and the somebody said, "No, we need to make it cooler." And so they quick came up with, okay, we'll have the floor fall away and then in this segment, the people will be spinning around. And the bottom, it'll look like it's deeper than it is and it's spinning around. So it again, felt like, well, that's cool, I guess.

Brandt Krueger:

But had they actually just done projection mapping, which we've seen done incredibly well at the Superbowl in the past where the field flips and flops and falls away and there's holes and all that kind of stuff. Looks phenomenal, looks amazing and doesn't have these big thick bezels on each of the tiles. So I was really kind of thrown by that and it was like why they decided to go down that road of trying to do projection mapping style effects with these panels that were clearly panels as opposed to a seamless floor.

Will Curran:

I think you're bringing up a really... I mean, I didn't really notice it until you brought up and I'm looking at pictures of it. It could be way better done. But I'm curious to know to, I'm trying to Google articles to see if anyone's talking about it, but not finding anything so far. But I am curious to see, you said maybe sturdiness, I'm wondering if there's something related to how

they were dancing on it or the number of people dancing on it that had an effect. And obviously, there was a couple points where the stage deck rose at different levels and things like that. So I'm wondering if that had to do with it as well.

Brandt Krueger:

I totally understand all that and would be like, "Oh, yeah. So this why we've got to do, so let's lean into it." They could've done even more the kind of 70s disco floor type stuff, especially with that dance number that they're doing, that would've looked phenomenal. And so that's why it threw me to then go into the more traditional projection mapping style effects.

Will Curran:

Right, I agree, I agree.

Brandt Krueger:

All right, any other points that you want to bring up with this? I can't over emphasize the fact that it's an A for execution. Like you said, the sound quality was great, the dancing was great, the camerawork was great. But for some reason, I think just because we're so used to these big amazing new technology's and things like that, I was just kind of like, oh, well, that was good, that was nice.

Will Curran:

I do think that one of the things that made this really special for me, and I'm not a fan and not really that big of a Shakira, JLo, I want to reiterate that. It's just that it made it special for me though, is just I felt really a part of the show through that camerawork and the focus on the TV audience. And I think it goes to show that sometimes, if you want to address your live audience, it's not a matter of just, "Oh, hey live audience. Hey all the millions of people watching," and now I'm just going to do my normal thing. But it was a matter of really just working with the camera crew to build out shots.

Will Curran:

I mean, just that shot of, again, that spin move with the camera. Shout outs to the camera operator because I'm sure he was really doing some crazy footwork, but it really made me be like, "Whoa, cool. I don't even know who this guy is and I'm really enjoying this performance." Yeah, I liked it. But yeah, definitely agree with you on that one. But yeah, there you go. That's all the stuff I knew about because that's the only thing I watched of the Superbowl.

Brandt Krueger:

All right, well wrap this baby up. I mean, of course all of you out there, if there's anybody who was there in the stadium that could tell us what it looked like, we'd love to know what did it look like in person compared to what it looked like on television? That's always something that's always curious to me as well with your doing these big live numbers. What if you're on the other side of the stage? What does it look like looking from behind?

Will Curran:
Definitely.

Brandt Krueger:
Because, again, yeah, they're orienting toward one direction and they're orienting towards the television cameras.

Will Curran:
That's true. And I included a ton of resource links that we'll include in the blog post too, things like lighting plots, I found some additional articles that talked about the cameras that they used, how they rigged up the sky cam, a couple things that we didn't even get a chance to really talk about, that I was just kind of picking through that get a little bit more nerdy. So if you want a little more about the Superbowl and kind how they pulled off all the tech from the video, the lightening and audio, across the board, go check out those links in the blog post and on your usual spot eventtechpodcast.com, that's the place to be.

Brandt Krueger:
And reach out, reach out via the socials, reach out via the email. Let me know, dude, you're so wrong, you're to picky, you're jaded. This was an amazing performance and you're an idiot. Please do let me know. Hey, I want to do actually let folks know, we actually did get some feedback. Let me bring that up quick. From someone, Will, you and I met at PCMA, he was one of the techs there. So Marty shot me an email talking about the livestream show that you did with Scott.

Brandt Krueger:
So he was talking about the.... you guys were talking about points of failure, having single points of failure. And he mentioned how many times that you're at a venue and you're asking for two different cables going two different ways with two different VLANs on different providers and then it all goes back to some cabinet in the back into a single switcher, single switch in the back. And so just being sure to really follow up so that if you are getting separate lines, making sure that they're going out on redundant internet connections and not just winding up at the same dusty switch in the back hall somewhere.

Brandt Krueger:
Scott had talked about having redundant power and having everything on UPS and Marty was a big fan of talking about the fact that we try and get everything on a backup so that the soundboard goes down, it doesn't crash everything if power goes out and things like that. So putting things on UPS, battery backups, as much as possible. We had a nice back and forth, a couple emails back forth, so thanks for listening Marty and thanks for chatting with me via email.

Brandt Krueger:
He also brought up a fantastic point about your Surface review. And that brought up the question of, what about AutoCAD? So do you think your Surface X would be able to handle

AutoCAD? I didn't even consider that as being an option, I'll be honest with you. I figure these things are so lightweight and I didn't even think that it would possibly run AutoCAD, but that's a great question to...

Will Curran:

Yeah, I'm searching it real quick. Will it run on... So the term you always want to look for is, does it run ARM64 or is it ARM64 compiled is the thing I'm looking for.

Will Curran:

It says right now it was not designed to work on arm processors, you'll need a 64 bit. Let's see, blah, blah, blah. Yeah, it says there's a 32 bit version of it but I bet it would be a little sluggish. I know people whose big gaming laptops who struggle sometimes running AutoCAD so it probably wouldn't run it really well. However, I will tell you, if, similarly, if Adobe decides to move on and do it's Photoshop ARM64 compiled, I bet you a lot of people follow suit and you'll see it happen very, very fast. But I mean just continued... I think I had it for a week when we record that interview.

Brandt Krueger:

Yeah.

Will Curran:

It's a couple weeks later now, still loving the thing and happier than ever. So heck yeah.

Brandt Krueger:

And did he say that there's a free viewer for Windows machines that even really old machines are still capable of running the viewer. So that's a possibility as well that maybe there's a viewer out there that'll work, even in perhaps an emulation. And then he did say that AutoCAD apparently doesn't like Macs so you have to use an online viewer in order to be able to do something like that. So I just thought it was an interesting point, that we did forget it, that's a huge part of a lot of people's workflow is working with AutoCADs.

Will Curran:

Yeah, good point. I think one thing too is just always keep in mind, the key thing I've learned with it is, for example, one of the software's I use is my phone system and it didn't work for it. And it'd go, well, all you have to do is go to the web version of the same app and it works totally fine and then using Edge, you can install it as an app and it becomes its own little window and its own app and it's all web based. And since it's 4G connected, your printers on wifi when your using your computer anyways, the thing I always look for now and having my head reframed in some ways is there a web version of this tool and if it is, then I can probably use that too. Good stuff.

Brandt Krueger:

There you go. Yeah, so good stuff Marty. Thanks so much for listening, really appreciate it. We want you folks out there, send that feedback to, where do we do this, Event Tech Podcast at-

Will Curran:
Event Tech.

Brandt Krueger:
We also want to make sure that also use a hashtag Event Tech Podcast as well, and that's the best way to get us that feedback. So yeah, let us know what you think about this... what you thought about the halftime show. Was it a knockout or was it a little-

Will Curran:
Knockdown.

Brandt Krueger:
Knockdown, knockout. Maybe it was a knockout punch, it was so good it just knocked you down.

Will Curran:
Knock in. What's the opposite of knockout? Knock in?

Brandt Krueger:
I don't know. All right, well, thanks so much for joining me. I really appreciate you helping me out with this one as always.

Will Curran:
Absolutely, thanks for always having me Brandt.

Brandt Krueger:
Fantastic, and thank you all for listening, really appreciate it. Of course, check things out at eventtechpodcast.com. You're going to see all the show notes, the links to all the resources, all the stuff that Will was just teasing about, how they actually pulled off all the tech at the Superbowl halftime show. You're going to find the links to subscribe in your favorite podcast app whether that's Spotify, Apple Podcast, Pocket Cast, Google Cast all the casts and all the podcasts and all the pods. So be sure and let us know all of that stuff. And so, thank you all for listening. We really appreciate it. We'll see you next time on the Event Tech Podcast.

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