

**STEVEN ELLIS:** All right, let's get started. So, good afternoon, everyone. Thank you very much for coming along. I know it's the last presentation on the last day. Actually, you know, can I actually take a photo to prove to my colleagues that you all turned up on the last. They won't believe me, because they've all gone home already, most of them anyway. I can't even fit you all in. There goes that.

So thank you very much, again, I said, for coming along. So, we're going to get through my presentation on visualizing your InfraWorks 360 design models in a gaming environment with Stingray. So, my name's Steve Ellis. I'm the Australian-New Zealand Civil infrastructure tech specialist with Autodesk.

I've been with Autodesk a year, next week. But prior to that, I've had 16 years experience in the civil design engineering industry. I worked as a civil designer, predominantly, on [? Holo ?] projects, mostly in Australia, but also around the world. So I'm based in Sydney, Australia.

This work is really something that, as a designer, I would have really loved to have had when I was actually working live on projects. I just think when you're driving around now and looking at projects that I've built, I can just see things that are maybe I wish I'd done differently. I think if I'd had this tool and this capability, I probably would have picked up a few things as I was going through those designs earlier in my career.

So, keep going on. So, during the presentation we'll look at taking an InfraWorks 360 model, creating a game. We can draw around. I'll cover the workflow used to get the InfraWorks 360 models into 3ds Max. So we're going to be importing through 3ds Max. And then, following to Stingray, we'll create the game. So I'm also going to talk a little bit, first up as well, just about why I think the presenting your designs in this way is really going to be the future.

The key learning objectives, the technical workflows, is what I'm going to go through mainly. And I'll talk a little bit more, as well, about some of the limitations that I found just on a general designer-based computer. I haven't used any high spec computer to do this. And just also some of the workflow issues I came across. Just understand the controls and how Stingray works a little tiny bit, and in just about designing and visualizing in a different way.

So why bother doing it? I said before why I thought. But really, it's mostly just a way that

[INAUDIBLE] pretty much all of those computer gaming devices. And I think that's the norm. People are going to expect it. And, particularly, the next generation are really going to expect to be able to visualize and interact with their work in that sort of a way. And like I said before, it gets you the user perspective.

You can drive along, walk along a street, whatever you want to do. And get in and immerse yourself in the design. Not even taking into the whole VR stuff. It's just the design aspect of it. Where you can walk around and see things. It's fun. It's cool. Gets people wanting to come to work and keep looking at their designs everyday. Wireframe is not the most fun thing to look at. This certainly is.

All right, so let's move on to the actual workflows. InfraWorks is obviously where I'm taking the design from. This is a little model that I've had mocked up. It's near where I live in Sydney. And it's an intersection that I absolutely hate. It takes me about 20 minutes to get through it on my way to work, and takes forever. So I decided to change it all. And that's the model we're going to look at.

So what's in the model from InfraWorks that I've been working on? I trust the video is playing. Yes, excellent. So it's got the highest res [? being ?] aerial imagery that you can have in InfraWorks. There's a five minute [? DEM ?] for all of the terrain. It's not just the model builder terrain. Buildings. I'll show a Revit and a 3ds Max model. There's some sketch up stuff in there, as well. The roads. And the other buildings are always just basic InfraWorks things, as well.

All the roads to be seen to change are all component roads. Fairly detailed, I think, for in InfraWorks, sort of an interchange. Straight furniture, and things like that, it's mostly just InfraWorks. There's some 3ds Max stuff, as well. And, as you know, the trees are all from InfraWorks, as well, although I've had to tone that down.

So I did try and use really high res aerial imagery from [? neemap. ?] That But on this machine, and I'll go over the specs in a second, it just couldn't cope, going from 3ds Max. So InfraWorks to 3ds Max was fine. It was 3ds Max to Stingray, it just bogged down. It didn't do it for me. I think there's probably some knowledge that I lack, maybe, in the 3ds Max realm.

Because I'm a civil designer, that's not my core, sort of, product that I understand. So I do think there's some learning that I might need to do to just fix some of those things up. But this

workflow I couldn't do it. I think even just a better laptop would do the work. And we're just talking for about box machines, and [? MSI ?] machines, and things like that. And if you had one of those, I think you'd all right.

And I do have access to one but, again, I think this is a Ford designer's top of a workflow. All right, so let's look at the export process from InfraWorks. So, the first thing that I'll always do is just create another proposal. So a copy of my final sort of InfraWorks model, and then out of that, I take out the Revit models and the 3ds Max models. Any of the heavy outsourced models from it, they just don't go across from InfraWorks to 3ds Max properly.

The models come, but there's no textures. There's no materials. They're not mapping. And again, I'm not really exactly sure why that is. They're just not, so you get it in place in the game in 3ds Max. That's probably one of the bits of the workflow that I don't like so much, because say you had geo reference Revit models, and now we're dropping it in the right location, that's going to be a bit of a pain for you.

Then again, it's a gaming engine. It's not meant for necessarily engineered accuracy. So, you know, how much of an issue it is, I'm not sure. All right, so anyway the export is done under the settings and utilities tool and exporting the 3D model. I'll go through and use the export as a single file. You can do separate files. I've just seen this to be a bit of an easier workflow.

So, that's going to save that an FBX here. And I always turn on the export materials and textures and merge objects with the same textures. So, also note that you can do the entire model, the box polygon, or a complex polygon, to export that. And it's an FBX format that that's exporting.

So again, I'll just note a few more things here about the issues. [INAUDIBLE] My laptop that I've used is a Dell I 7. It's got [INAUDIBLE] on a solid state drive, 16 GB RAM and video k to 100m. It's a [? bog ?] standard machine. It's nothing fancy at all. I'm using a 5 square kilometer model. Sorry, I'm an Aussie. I could not have worked that out in other forms for you, sorry.

Like I said, it's heavy with that 5 minute DM. That's pretty heavy for Stingray. And, particularly, and I'll talk about that a little while ago, like on the water surfaces. It's still doing that really dense grid or vertices on the triangulation. And there are some workflows that I've only just discovered this week, having access to some product people to work that out. And I added it

into here although, it's not in my actual workflow that I used to get here.

So, yeah it's the same. There's some learning that I still need to do around this workflow. I couldn't also incorporate the highest res InfraWorks building setting. So you can get it that really high res setting in InfraWorks, and the buildings look really nice and they're are textured up. And they've got windows and all that. I couldn't get that to work.

I also ended up having to take out a lot of the trees that I've had in the model. Again, I wouldn't crunch across with this machine. The smaller model, as well, I've done really small models of just two or three straight. They come across with all that stuff. It was just the 5K square. And so it's quite a lot of information in it. With the buildings it just didn't do it.

All right, so that's really it for InfraWorks. Obviously, there's a lot of work beforehand you need to do to get a model to a certain point when you're happy with it. But let's move on now, and have a look at the 3ds Max workflows. So, again, let's just look at getting into the importing the InfraWorks 360 models. So, let's see just under your import settings there, you're going to go and find that FBX file we just kicked out from InfraWorks.

Keeping it here on that [INAUDIBLE] on entertainment setting and then just leaving all the defaults. I haven't played around with anything within that default there from InfraWorks.

So once that's imported, or you just group everything kind of in the very beginning, and I'm just going to move it to the 00 location. Obviously, it's coming in with coordinates from a real world coordinate system. We don't really need that anymore within here. Now [INAUDIBLE] just improves the performance when you do move it. So ungripping that now, now there's a little bit in here.

I have no idea why it was dropping this tile out for me. It's the only time it's ever done it. And again, this is my lack of knowledge with 3ds Max, and how to fix this properly. I dragged that image in, and it was all ran the wrong way. It was mirrored. I just mirrored it back and dragged and dropped it.

It seemed to work. I'm just showing because this is just the exact workflow I went through. I figured it happens to someone else, little nuances, you know. So when I drag that in there now, that's all good, and it all works fine. Just sort of better make sure everything was clear, what happened. I didn't want too many smoke and mirrors here.

I'm not doing it live either, though, so there's a little bit of smoke and mirrors there, right. [LAUGHTER] So, now I'm going to run a little script, because this has to change all of the names on all of the textures and materials that come from InfraWorks. It's a bit of a mess from InfraWorks. It comes where there's lots of full stops, and underscores, and all that stuff.

So again, this was from colleagues within Autodesk that provided me with this. I'd been doing it with a little rename utility beforehand. It was a nightmare. So, basically, you're just capturing all those names. Going to convert it. If you don't have access to the script, as well, I didn't put links. I just totally forgot about it.

Grab my card at the end. Come talk to me, give me yours. And I'll make sure you can get links to that stuff. It's all available to download. Not a problem at all there. So really, let's just go and rename them to nice and easy names that Stingray can handle. So it's the Stingray issue there. It just loses all those textures.

So that's pretty much it, the game for that import component.

All right, so now we're going to go and just look at how I'm just bringing in those models now into 3ds Max. So the Revits or any other FBX files you might have. So again, it's just in your normal import functions. I'm just going to grab and import the Revit model now.

Opening that up, one of the things I am doing here is I just merged them all together for the Revit model in the beginning. Again, I don't know if that's the right workflow. It's the one I use. I also just bring in materials. I don't bring any of the cameras or the lighting systems or anything like that. Again, I don't know if it makes any difference. It just seems messy inside the 3ds Max model to me.

Yeah, I guess this is sort of what I was saying before. This is the most annoying part, really. It would be nice if it would have just dropped in there. This is really double handling the work, now. So you could have just click it, rotate it around, move it all into place. That seems to be a bit irritating there. Particularly, I guess if you really want to get into a really detailed modeled and you're throwing people in there, and vehicles, and that sorts of stuff, it just seems like there's a lot of scaling needs to be done in here.

Again, I think you could probably get away with some of the car models from InfraWorks, and bringing those across. It just seems to be a little bit easier. But nonetheless, this is what I had

to do to get any of these two buildings that I was playing around with in this area. Not my house, I wish it was.

You got to put in the [INAUDIBLE] back from the beach. So here we are. So this is an FBX model now. So again, similarly, I'm just bringing in the materials. I'm turning off any of the cameras and lightings, or any of that sort of stuff. And bringing in, this one doesn't come merged, so the first thing I'm doing here when I'm bringing in additional models is just merging it all into a group as it's selected, initially. Just saying that it's a bit easier to handle and move around in the future.

It's like anything in here. It's all about keeping organized and naming things correctly. So it's not a big mess when it goes across into Stingray.

So it's taking forever to merge it all into place. And I guess that was what I wanted to be clear about, that it does take a period of time. If you had a lot of these models, that would get a bit tiring.

That's how it is, unfortunately.

So that's all I've done. Again, like I said, I couldn't get lots and lots of different models playing around in there. Because, again, this machine just didn't handle having too many Revit models. I tried to have a little like, an industrial area, and some high rise buildings over in another corner. But again, it just bogged it down with about eight or nine Revit models in there. It just killed it for me. So I just stopped with that.

So here's this thing that I learned this week, just about doing some surface optimization. And I think this is really only scratching the surface of what you can do with this part of it to really start to get the sizes down and making it all work a little bit neater. As you can see there, all of the how dense. So that's a little water area just right there. And really, there's no need for that many triangles.

So [INAUDIBLE] maybe not that easy to see. It's under the modifiers mesh editing. It's called ProOptimizer. Over here is this little calculate button, and that's going to tell you how many vertices, or, basically, the triangles that are in there. And then, you can strip that down by

percentages. You can tell it a new number that you want it to have. And you can see there that that's thinned it out a fair bit, although you can even go to town, really, with that.

I guess it comes down that it's coming across in tiles to me, so I think if you just selected all of the areas away from your design, the context part dumb all those down and, it's really going to get everything cranking a lot faster. And I really wish I'd known it whilst I was building the workflow for myself previously, because I think it probably would have been a lot better. And I could've had more data all around where I'm actually going to drive and play around with it in Stingray.

Anyway, that's what the guys that I was talking to. They're just influx. Optimize your surfaces, combine everything together into one. Don't have them all separate. There's still a lot that I need to learn with this. 3ds Max is such a massive program you really need some help with it if you not over it, because I certainly wasn't, as I found out I was like, aw yeah, I'll be right. I'll be right. But, no.

All right, so really that's it. I mean, it's still a pretty easy workflow. If you're not going to play around with getting lots of buildings and all that sorts of fancy stuff, and just want to drive around in your design, you probably only had to do four of those steps that I just showed you there. So I still think it is pretty easy to get us into a gaming environment.

All right, so let's jump into Stingray. I can't even read that properly. Hang on. So, 1.5.8, [INAUDIBLE]. I think that's the latest one. I'm not 100% sure. I think it's the last one that I had access to anyway. So really, the first thing we need to do is get a base template set up. Here I'm using the standard vehicle, because I want to drive in mine. You could use the character-based one.

We're just going to name our game, save it to some location that you need. You could put descriptions, whatever you needed. So, in here now, we're going to strip out all, or most, of the information that sits inside this template, vehicle 1. So we're going to take out everything except the reflection probe and the skydome, because, obviously, we want to retain those. But we don't need any other than that level information that's in there for going around and playing and testing out the game.

So, in this workflow, you do that first. And then, we go back into 3ds Max, and we're going to do the connection up then. So, it's really doing that stuff first, and 3ds, once you connected, it knows where the path is and it'll start dropping things.

I'm sorry? Go back? Sorry.

**AUDIENCE:** No worries. Thank you.

**STEVEN ELLIS:** No problem.

Do you want me to play the video again? All good?

All right, so we going to connecting into connect 3ds Max to Stingray. So up in the Stingray menu, we're going to go connect, and then we're going to go send all. As I said, because we'd set that base game up previously, the connections are now live and it's going to drop them into the right place. So, I save all my information under content levels, and then I create another folder. And that's where I'm going to drop all of my new model data into there.

So once this finishes off within 3ds Max on the crappy computer, I close 3ds Max, so that I can free up some resources on the machine before I do anything else. So, now we're going to go over here into [INAUDIBLE]. So, the settings to do here, materials, update materials, textures, update textures, create textures folder, combine meshes, and combine bond material. The items [INAUDIBLE]. I think that was on the screen before, so I'll go back to that.

All right, so once all of that content loads down in the bottom over in this area here is just your browser window now where you can find all that content. So you just drill down into those folders there, and you'll find your information. So here we are.

So, there's all the materials, and then this is the actual model itself. It shows up in a little preview panel. You can go and zoom on into it. Again, I was talking about, I believe in this is in settings you do to change all this fog stuff around, and some oddities like that. Or you just take a snapshot so I know what I'm looking at, drag it up and drop it into the actual level above.

So, a couple of things, where is this sort of 00, or insertion point location is, is critical. That's where your vehicle is going to drop into. We'll have a little bit talk about that in a minute. But that's now the InfraWorks model from 3ds Max, now sitting in Stingray.

And something else that I probably need to do a bit of learning on, I'll find the panning and navigation in Stingray odd to me. It doesn't work quite like it does looking a CAD engine, or even in InfraWorks. I'm not sure why. It's just probably some really simple setting that I

completely missed.

Right, so now, the most important part is adding all the physics to the model. So, I may never see that. [INAUDIBLE] to drive on the surface, crash into a building, people, trees, dogs, whatever you want. Obviously, you don't have to apply the physics to everything. If you want to have the people to be able to be driven through, you just don't turn them on. And again, I think on really big models this can take a little while. I have, again, . I don't want to be full of crap with you, I sped up some of the video bits here in terms of how long it took to actually process this information.

It did take quite some time to churn on it. So, to apply the physics actor now, we select the model and it's open, selected in unit editor. And again, I said you might need to wait quite some time here. I don't know if you can see the time on my computer, maybe, might give something away, I'm sure, if I was quick enough to make that disappear. I probably would. So, there's all the information. Again, in this fog, settings I can't actually end up seeing my models there for some reason. I think you can fix that though.

I'm going to control+A to select everything. You'll see it all captured. Up to create, and then physics actor, and it's going to go and apply all of that to your model there. But again, you just save all, and then you can close out of here. And that's it. The physics is now applied to that model, and the car will drive on the surface and impact all the different bits and places within that surface.

All right, another thing that's probably not really necessary in terms of the whole workflow, this is just if you're bringing across the trees from InfraWorks and, again, comes down to the whole texturing. Thing that the trees just look really dark, black, and they're not see through. They don't really look like trees at all. I'm not sure if you were bringing in 3ds Max trees, how that would go. I never tried it.

So I'm not sure if 3ds Max trees performed better. I'm not sure. So, basically, what you're going to go through is just browse through. Again, it's not the nicest workflow. You just got to browse through this list of materials on the bottom. Where your model, it's all located where your model data was inserted. OK, so there's some of the tree textures, so selecting that we need to--

Now, let's see [INAUDIBLE] and you use color, map alpha, and we're going to use roughness map. And then up to the make unique, open shade a graph. And I'm going to, once that opens, you're going to click on the last node here. Basically we're going to change the blend mode to transparent fade, and the face cutting to none double sided. And then just save that, and you'll see already how that is now see through.

Basically, on all of the leaves, and these ones up here are black. So you got to go through and do that to all of them. Again, it's a pain, but it just has to be done. Again, there's probably scripting that can be done for all this, but my pathetic knowledge of 3ds Max and that doesn't allow me to know how to do that. But you can see the difference there when we looked at the two trees are quite dark, and then it looked a lot a lot better.

So, and if you want those settings, they're there, because I probably went through that very quickly.

**AUDIENCE:** If you apply [INAUDIBLE]

So, I grab my card or come talk to me at the end, and I'll definitely get you a link for that. It's available. It's not mine, either. I didn't write those scripts. It was by other colleagues. They have blogs and web pages that have access to all that information as well.

And so the other thing we need to do, is we can actually drop the vehicle into the right place. The 00, or the insertion point, of this model is where that'll happen. You can set up in 3ds Max, or you can do it here. It works about the same. So really what we're just doing is we're just selecting the model, and then we're just using this navigation thing to move the little x to the spot we want to drop into the model. Now critical, if it's below the surface, the vehicle will just fall off into space.

So on top of a tree, it might look fun. On top of a person, whatever you want to do, you just got to get that right. Sometimes you have to play around with that a bit sometimes, some zooming in and just getting it exactly right so that the vehicle doesn't do some funny bounce off. Yeah, it's just a bit of playing around. I've found in the end, and didn't do it in this workflow, but I found it easier to just do that in 3ds Max. You can even rotate it around so the vehicle is pointing in whatever direction you want it to be.

But again, anything I found out this week, because I had access to lots of smarter people than me. So that's pretty much it. We're ready to play and test the game now. So again, some of

those steps, you probably don't need to use if you just want to get into it and drive around. You're probably not going to muck around with all that texturing stuff.

You could probably just let it drop you into the middle of the river that I had there, and it's not really going to matter. You don't fall through the river unless you make that the case. We can just drive on it, in this case. So really, to play the game, we're just going to get up to the little green play button, and it fires it straight up into the game environment now, where we can drive around.

That's it. You got a taxi. Again, I tried to get the taxi to a Mustang, but my abilities didn't allow me to do it. So that's it. You can drive along, and see it's following the surfaces. You know, the trees are all in there, the buildings are there, the roads all there, everything looks all right. I'm probably driving on the wrong side of the road for a lot of you, probably not all of you, though. There you go, I fixed that up. I remembered halfway along who I was presenting to mostly.

And I keep crashing into a tree there, so making sure that I've actually applied all of my physics properly. You see when you hit a curb-- Sorry?

**AUDIENCE:** You get a driver's [INAUDIBLE]?

**STEVEN ELLIS:** No, well again, you probably can in terms of playing around with Stingray, but no, I don't know exactly how you do that. I think I'm going to keep developing this all the time. So, again, if you want my card, I post things to YouTube channels regularly. So I'll be improving this all the time, if you want to follow that. To keep up with it all, definitely grab a card.

**AUDIENCE:** [INAUDIBLE]

**STEVEN ELLIS:** Yep I'll have a look at it in a minute, if you want. I've got a few funny things in the last video. Well, pathetic really, but it's funny for me anyway. So, to deploy the game and get the game going now, I open that bottom right panel, clicking the plus button and going to the deployer. It can get up to Windows, Android, ISO, PS4 and X-box. Now, I've only ever done the windows, and I definitely know from PS4 you've got to have some sort of developer licensing, with them almost. And you can jump through a lot of hoops to get that, so I've only done the Windows deploy.

OK, so naming it there and the configuration there was some different releases, I'm just using release, and we just got package project for Windows. That's going to go off now, create this XC file Again, that can take a little bit of time. So, smoke and mirrors a little bit there, and so

here's the XC file. So, not in Stingray, just firing off the XC file, and just making sure that that all works.

Here's the start menu. And you can change all that start menu around. It's just another level within InfraWorks. You can go and add things, change the text, whatever you want to do in there. So, there we are. So, that deployed now. So, let's actually drive around in the game and have a look at it. So this is just firing off that XC file now. And you see there I dropped it a little bit too high probably.

[INAUDIBLE] Sorry, I don't know which side of the rode I want to drive on at the moment. Hedging my bets there. So you're using the WADS keys to steer. Again, probably something you can change around there. And even I'd like to see getting and changing the how quick you turn. It seems like you jerk around a far bit. When you're driving, difficult to just get in that lane and stay in it. And don't bother about driving rules in here either. I did want to call this Grand Theft Autodesk, but I didn't.

[AUDIENCE LAUGHTER]

I thought about it, better not actually call that in the long run. So you see how you're getting the perspective. You can see, OK those, you know, those barriers just look horrible. Coming up to the bridge, if you're driving in that [INAUDIBLE] and now that [? headstock ?] there, so we can get right up to it have a look at it. See that really the design needs a fair bit of work there. So, I mean, you can see here as I drive up the curb, you are impacting the curb. And you're jumping up and it's moving the car around.

If you impact things, you impact them. So, a very thirsty car that, get some petrol. We go, keep driving. So, now I actually added a little [? rail ?] tunneling here into the model, just to see if it worked. And I was surprised, actually worked. You can just draw straight through the tunnel. You impact all the walls. Everything's OK, so even if you're doing a cut and cover, road project, or even if you wanted to do a rail, you can actually do it, and it will draw through the tunnel.

Everything worked out with the physics really nicely. I was quite surprised that it worked. It was really good to see that. It's very difficult to drive along those little rail lines. It's jumping all over the place. I had to cut this video about five times, because I kept impacting the wall, and going sideways, crashing upside down. And I couldn't find myself, because I was looking under the world. It's really my fault.

There we are. Atrocious job of getting that upgrade there. And you see, I'm struggling to stay in the lines a little bit there.

**AUDIENCE:** Does it have sound?

**STEVEN ELLIS:** Yeah, there is sound. It's just like you can hear the vehicle, accelerating, decelerating.

**AUDIENCE:** Tires [? squealing? ?]

When you crash, it makes a whole lot of noise. Yeah. So let's just drive it back across this interchange that I've got there. And then we'll go and have a look at jumping the car, basically, off a little jump. And how that actually does work, too. I think you can-- I was trying get some of the 3ds Max guys to give me some models of like a loop the loop. And see how that works. And I think it actually would work. Because it went through that tunnel. It's clearly capable of doing those sorts of like internal physics to a model.

So if you want to invest some time, I think you can have a lot of fun getting this done. As I said before, it just makes it more interesting to come to work to have a play around with this. So I've forgotten where I was going here. I couldn't remember which road I'd done the little jump thing on. So yeah, and this was just an InfraWorks road. I just put a ridiculous grade and a vertical curve into it. So you can jump from here over to this little island, and then keep going.

So it actually does do it. I just didn't time it or land it, and the car's not fast enough. And then, I tried to hook it, and flip it upside down, I couldn't even get it to flip upside down properly. But it does crash over the top. But it just rights itself straight away. So, I think, you see it is a fair bit of fun to just muck around with stuff that. You can put a few Easter eggs in there for your colleagues to see, if they can go and find it.

So really, that's it for that workflow and everything. Is there any questions? Do you want me to go back to any slides as well for workflow? In the back?

**AUDIENCE:** So if we needed [INAUDIBLE]

**STEVEN ELLIS:** I haven't even tried. I'm not sure. There are small things that I need to investigate. Is there any one in here that's played around with that? No? Other questions?

**AUDIENCE:** On your lakes, do you extract the lake geometry and then just cut break lines in your terrain at

all so you kind of limit the polygons in there? Do you look at those type of things and [INAUDIBLE] resurfaces [INAUDIBLE]

**STEVEN ELLIS:** I think if you're doing that in-- if you are going to get to [INAUDIBLE], you're probably in a real live design scenario, you probably would be doing that. I'm just taking dumb stuff out InfraWorks and going with it. Yeah I think you probably would. That optimizer anyway, you can strip that down to, like, one point on that anyway. But yes. That's just InfraWorks brings down the [INAUDIBLE], it just grids the whole lot. Yeah.

**AUDIENCE:** [INAUDIBLE]

**STEVEN ELLIS:** I mean that's why it bogged me down with the trees.

**AUDIENCE:** It's in the textures. I saw a couple workflows where they were able to-- I've done SketchUp models in InfraWorks, and it doesn't [INAUDIBLE] relocate them in the same [INAUDIBLE] SketchUp models show up. And some similar, because I saw with InfraWorks, and if you played with getting the textures out of InfraWorks, you can just do that in 3ds.

**STEVEN ELLIS:** No, see it's only InfraWorks by stuff in InfraWorks. It'll come across. And the trees obviously don't. So that's one that even doesn't work there. But 3ds Max, Revit, SketchUp models all into Max first up. I mean you have them sitting in InfraWorks because you need to visualize in there as well. And you're orbiting around just to do your animations and flythroughs in there. I mean you can even see from that very first video to, then, the production of that game, the InfraWorks is still a nice-looking render than Stingray.

But again, that's probably just down to my lack of understanding of how to get everything to work really, really smoothly through. In any game, if more effort in Max, you're going to get a much, much better product at the end. So, obviously, if you're going out to a client, and to maybe go out to the public, you'd want to spend a lot of time. But for just engineering, that's probably good enough to just drive around in for everyday sort of use. Yep?

**AUDIENCE:** Is the [INAUDIBLE] input just a standard game module in Stingray?

**STEVEN ELLIS:** Yes.

**AUDIENCE:** So that's something that Autodesk would allow you?

**STEVEN ELLIS:** Yep, so that's just there. So there's a couple of them, I think, that were in there, so you don't

have to just do the cars.

**AUDIENCE:** Is there a community where you can get other templates, or has it been on the market long enough to [INAUDIBLE]?

**STEVEN ELLIS:** I'm not sure. [? Cash ?] do you know that more? There is? So there is a Stingray person back there, might be evidence of that.

**AUDIENCE:** [INAUDIBLE]

**STEVEN ELLIS:** Thank you. Grab a card here. Thank you.

**AUDIENCE:** [INAUDIBLE]

**STEVEN ELLIS:** So that there, the different ones there. So there's VR. I can't even remember what they say. OK, yeah, I'll call this Oculus vehicle empty character in basic one.

**AUDIENCE:** And then the tab up top, the online template, that's what you're talking about? The third one over? OK. Cook, thank you.

**STEVEN ELLIS:** All right. Yeah, there's more cards at the very front if anyone wants one on your way out. Cool. Yeah?

**AUDIENCE:** Is the quality of [INAUDIBLE] is simply applying the surface?

**STEVEN ELLIS:** Sorry, say again?

**AUDIENCE:** The quality of the image in the [INAUDIBLE] the client can [INAUDIBLE]

**STEVEN ELLIS:** Yeah, that's just the modeling within InfraWorks. For works I probably just haven't I haven't done enough effort in InfraWorks to get it all the work. So, again, if you are in a detailed modeling in [? civil ?] 3D or something, there'd be probably better work for us to get that model out into an FBX format to come in here. Texturing wise though, again, you probably need to be looking at all your texturing coming out of civil 3D, how's all that mapping.

And there're workflows that I will eventually end up working on, I think, and coming to some sort of workflow around it. But, for the night, yeah, I think it would end up in the same sort of issues in terms of mapping the textures. I'd probably even be importing through InfraWorks, I imagine, bringing my civil 3D models back in InfraWorks. And again, that's just my first thought on how I would first try and tackle that.

Anything else? No? Cool. Thank you very much. Don't forget to fill out the survey form. I think there is something there you can do. So thank you very much. Again, thank you coming on the last day.