ALONSO RODRIGUEZ: Might as well get started at least, a nice little warm-up. You guys, I'm Alonzo, this is Rob.

ROB TERRY: Good to See everybody, thanks for coming.

ALONSO RODRIGUEZ: I really appreciate you guys here this is our first class here at AU, so hopefully if you don't learn anything from us at least will entertain you for about an hour.

ROB TERRY: We'll try. At least he will.

ALONSO RODRIGUEZ: And keep you awake.

ROB TERRY: Yeah, hopefully. Yes, it's kind of interesting from this side from this side of the table. But again, glad to be here in our class maximizing your Revit model for better design visualizations. I'm a max guy and Alonzo's is a Revit guy, so you know, we always have these conversations about why use Max, because Revit can do a lot of the things that Max can do in terms of rendering an output and VR and all these kinds of things. But one of the things are going to try to do is give you guys a little example of some of the things that we do and how we incorporate 3ds Max into our workflow and how it works for us, so.

ALONSO RODRIGUEZ: Quick show of hands, everybody's background who's the Revit side, yes. We always win.

ROB TERRY: You won me over.

ALONSO RODRIGUEZ: And the Max side? All right, a few double hands, that's good.

ROB TERRY: Cool.

ALONSO RODRIGUEZ: This is the smart people who are going to call us out on things, huh?

ROB TERRY: Yep. You definitely won me over on that one though.

ALONSO I know, I know. You guys, what's the over under on questions?

RODRIGUEZ:

ROB TERRY: Four.

ALONSO RODRIGUEZ: Four? I'll take over.

ROB TERRY: OK.

ALONSO RODRIGUEZ: I'll take you over?

ROB TERRY: What's your runner on finishing on time?

ALONSO RODRIGUEZ: What's that? I'm definitely taking [INAUDIBLE].

ROB TERRY: Everybody got the handout. Realize it was kind of an ambitious set of things, so hopefully we'll do our best to try to get through everything. But again, if you have any questions, let us know. So it's about the time, so let's go ahead.

ALONSO RODRIGUEZ: Let's get going. So first of all, thank you guys. Like it we said, we're very excited to be here. It's our first shot at this, so please be gentle. You guys, just so you get a little bit of knowledge. You guys are coming from about five or six different countries, all over the United States.

I think we saw a guy from MIT in here. So you might be able to help us out with some equations. And then we have a few people from Stan Tech and the NWH, our extended family. Where are you guys at? Anybody? Anybody? Must be at the craps table. So we'll be all right.

So the-- we're all really here to get inspired, right? So if you received the handout ahead of time, you know what our class outline's going to be. You know how to get this video afterwards. You have something to present to the office, if you like it.

Whenever we come to these conventions, what we really like to do is try to get inspired to just do a couple of things when we get back to the office. So make sure you have fun along the way, right? If this was all about work, then we wouldn't really be here. We wouldn't be enjoying what we're doing. So a couple of things, and Rob hasn't seen all these slides just yet.

But a couple of ways we like to have fun is, how do you instill in your teams this kind of

feeling?

[VIDEO PLAYBACK]

- [SCREAMING]

ALONSO RODRIGUEZ: Typical day in the Terry household.

- [INAUDIBLE]

- [SCREAMING]

[END PLAYBACK]

ALONSO RODRIGUEZ: There's an easy way to throw the clothes in the hamper, right? And then there's the fun way of throwing your clothes in the hamper.

ROB TERRY: And it seems kind of silly to show this, but the reality is, we push software pretty hard. And we come up with roadblocks, and we find these walls, redefine ways to climb over those walls. And there are times when we've figured something out, and we really get that excited and high fives across the board.

So you know, when we run up to those situations, we can't forget to take that hard shot.

ALONSO RODRIGUEZ: Can't be scared to fail. Can't be scared to get small little leaps. And you know what? When we get them, we deserve to celebrate. Always remind your teams.

ROB TERRY: Have fun along the way.

ALONSO RODRIGUEZ: Right? And there's a lot of challenges we deal with. We don't really have to go too much into those. But it's always whenever you hit that tough moment, take a couple of steps back and look at the positive aspect of things, right? What did we do right? What did we learn from this example? What can we do better next time?

This is a good one just a post at the office.

ROB TERRY: How many of your plans actually ever go the way of the one on top? Yeah. No, it rarely ever does. And you know, I think we've found ways that we anticipate those. And if we're able to adapt to those changes beforehand, we're going to be in a better position to succeed as we go

down the road.

ALONSO RODRIGUEZ: So who is Zack right? We've got a really smart team, young team. Very talented guys. But I've got one guy, Zack, who always tends to-- we got a couple laughs over there. You know Zach?

ROB TERRY: Yep. Everybody has a Zachary. Zack is a coworker. He sits right next to us. And a really smart kid. But I tell you, I've been hearing him say so many times in the past couple years, I need to learn Max. I need to learn Max.

He's in Revit all the time, and he complains about all sorts of things. So I think there's a little bit of Zack in everybody. And one of the things that Zack tends to do is he'll take some shortcuts, because as we all do, we have deadlines. And we have our boss yelling. And all these kind of things that we need to take care of. So sometimes we have to take shortcuts, but we need to make sure that we take the right shortcuts.

ALONSO RODRIGUEZ: And there's nothing wrong with shortcuts. It's just a matter of thinking all the way through your plan when you take them. Is it really a short cut, or are we going to find ourselves in trouble later?

ROB TERRY: Yeah.

ALONSO RODRIGUEZ: Just another quick, inspiring quote. So when we talk about this, we've really adjusted what we do to define a idea, right? Innovate, design, educate, achieve. Whenever we start a project, we know that we're always going to hit a brick wall. We're always going to have to find a better, faster, quicker way. That's why we're here this week alone.

But rarely do we actually say to our teammates, I need you to innovate a better way of doing this. I need to educate your team, your consultants, your client, right? And rarely do we say, hey, great job doing this. Let's achieve this. How do we know we're doing a great job? We get another contract from a client. We get a, hey, great job, team, on pushing that one for the video.

All very important. We often-- we concentrate too much on design and not enough on the other aspects.

ROB TERRY: And the education part of IDEA is a huge part, so again, why we're here.

ALONSO So we're going to walk through our design-enhance present program, and it really aligns with

RODRIGUEZ: Revit Max to render.

ROB TERRY: Kind of why we use Max. How it benefits us. So the innovation of integration. I'm kind of an analogies guy. A lot of my knowledge, when it comes down to a hardware, I usually talk about cars and engines and that kind of stuff. But when it comes to workflows, I find myself talking about recipes and food. So being a pioneer of our own workflow, it kind of comes down to, what's that recipe that's going to work for you?

You know sometimes it's a software, it's a skill set, it's just a technique. So these little ingredients-- however you find them or rediscover them-- you know, it's whatever works for your particular recipe, to get that final product to work for you the best.

ALONSO RODRIGUEZ: And with technology advancing as fast as it is, I mean, we just had the software keynote today, everybody on our team pioneers their own way, right? And the more you can get them to think that they're the next Magellan-- got that one in there-- the better off we're going to be as a team. We're going to take small steps to get us to bigger leaps.

And that's a little bit about the mentality.

ROB TERRY: Yeah, it's a philosophy. You know, so if we get all of our teams-- you know, we work with multidisciplinary firms-- so to get the architecture team, the interior design team, the landscape and hardscape team, all together into Revit. We know how hard it was to transfer over to Revit from AutoCAD as it is. Trying to get all of those disciplines come together is pretty tough too. But when that happens, great things happen.

ALONSO RODRIGUEZ: And the examples that we're pulling from today, they're coming from small 2,000-square-foot retail projects all the way up to 500,000-square-foot redevelopments. So it really does hit a wide range. It's about getting that mentality. Sorry, I skipped one there. And the last thing we'll say on that is, no more faking it, right?

ROB TERRY: No, clients are becoming-- they're pretty well aware of the capabilities of what we can do. So if we're going through, we want to be able to show them, during a design review, an accurate representation of the model as it's happening. So we don't want to fake it anymore. They don't want to see a rendering that's not going to look anything what they are buying. And that happens too often.

ALONSO RODRIGUEZ: And the industry has completely sold them on what we can do and how we can do it. Now we just have to produce, so--

ROB TERRY: Yes, this is just a quick image of a hospital that we worked on. This is a lobby, so we had the architecture team and the design team pick the materials. We can show this to a client year or so before it's built. And the next is an actual photo of this hotel lobby, sorry, it's a hospital lobby. That was just finished earlier this year. And so it's a pretty close representation of it. So we're not faking it to the client. We're actually building what we've sold them. So I think that's important part.

ALONSO RODRIGUEZ: And the value of these is a year ahead of time. In this case, it was a maternity ward. And so they need to sell the spaces before they build the hospital. And to do that, they need to know what this is going to look like. So a very nice project to share for that one.

We'll go key learning objectives. Again, you saw those in the handout.

ROB TERRY: Just why we use Max. How you can-- there again, I think one of Zack's biggest problems of jumping into Max is he was intimidated. It takes time to learn new programs, so he would take shortcuts. But some of these things we're going to show you, just simple examples of how you can make things a little bit more interesting, a little bit more fun. And just examine and explore and experiment with new things within Max and just kind of give you an idea that it's really not as hard as you might think.

ALONSO RODRIGUEZ: So design. When we're out with Revit, majority of the room has that same background. You know, one team, one dream. We've talked about it. This is an example again. Seventeen design partners, three-year project, 500,000 square feet. Same theories that we're using, we use in small retail projects.

It's all about a thought process. Can we all work together? Be leaders in our own environment, and everybody pioneer their own areas of expertise.

ROB TERRY: It's not just the pretty picture. You know, it's collaborating with that client along the way. And we're having an accurate representation of his model throughout the whole process.

ALONSO RODRIGUEZ: This right here is the most beautiful thing I've ever seen right. We did great. The contractor loved the model. The drawings look great. We made money on the project. But you know what, it just doesn't have that same wow factor. But do you ever think I would even come close to modeling this in Revit? I hope not.

ROB TERRY: Zack would try.

ALONSO RODRIGUEZ: Exactly.

ROB TERRY: Zack might try. No, but the reality again--

ALONSO RODRIGUEZ: You should have seen his T-shirt.

ROB TERRY: So the right tool for the job. I mean, use Revit to create the architecture. I let the architects architect. And I will help build the context within their design. And a lot of times you don't need this for construction documents, but we need this to sell the client that, you know, hey, there's going to be a lot of retail in your store. So people will buy it.

ALONSO RODRIGUEZ: And it makes it easier to get buy off, right? I think we've all probably struggled with buy off on the drawings. But when I show a client that, there's a lot of room for adjustment. When I show him that, it's a dream come true, and they believe everything we say.

So best practices in design. If by now you guys aren't federating your models in Revit, you're really not taking advantage of your own workflows. Whether it's a large project or small projects, we like to do a link by FBX and set the groups by material but per our own process.

So for example, in this scenario we had ancient [INAUDIBLE] style that actually would bog down our Revit models. And once we had locked the buildings in place, there's really no reason that we're looking at them. So we're able to export them, get them out of our way. And it's one less thing we can worry about.

So then while we continue to design, Rob has the opportunity to start working on the [INAUDIBLE] and looking at materials.

ROB TERRY: Yeah, we bring it in to 3D Studio and into Max, and we can hide things that we don't need. So if that's part of this whole giant model, then we can't turn it off. So it's a strategic thought process of which models to separate out, and it makes things a lot easier.

ALONSO RODRIGUEZ: We talked about multidisciplinary. One of the big pushes that we make is our area development team is in Revit with us. We believe in creating spaces people enjoy. And to do that, we're going to have to collaborate from the outdoors to the structure to the indoor space.

So a lot of-- a few of the examples that we'll pull out is how we have to adjust Revit for our

design team and how have Max enhance the process.

Ah, generic materials. Everybody have fun with generic materials? Right?

ROB TERRY: I don't. I don't. So we export by-- or I will import a Revit model by materials, and it's just a easy way to organize the model. And when one material changes-- because the materials are going to change-- it's easier to modify just the material one time, instead of having to do it several times over several different objects that are the same material.

ALONSO RODRIGUEZ: So a couple of ways that we try to track those before we do an export is very simple. Multicategory filters. Apply your favorite color-- hot pink.

ROB TERRY: Generic materials kill our side of things.

ALONSO RODRIGUEZ: So they kill us on Tuesday, but they save us on Fridays.

ROB TERRY: It's our version of the swear jar. So if you export a model with the generic materials, you have to put a dollar in here. And it's going to escalate up to a finger pretty soon if Zack doesn't get off the--

ALONSO RODRIGUEZ: Couple of quick examples. We jumped ahead on that FBX export. Everything we have sometimes are just placeholders in Revit, right? Think about the lanterns. Think about the furniture that hasn't been picked out. If we don't have a precise model with that's low in detail, we'll have placeholders. We can export. And you will see how we locate those in Max in a bit.

ROB TERRY: Now on the Max side of things, just a good reminder that organization is key. So there's a little button up there. You press that for your new scene, and it's going to organize all these folder, structure for you.

And you know, just a reminder, for unit set up, just make sure that the units you're importing equal what you what you want and what you're exporting. Otherwise you'll have some issues. And again, we link to an FBX file. We don't link to an actual Revit model. You can do that, but we've found that linking to an FBX file is much better. There's a lot more files that we actually end up linking. But it's much easier to re-link one section of a model that we've federated properly instead of the whole entire model when just one minor thing has changed.

ALONSO So when you link to a Revit model, it's actually bringing parametric information. And every time

RODRIGUEZ: you reload, it gives it a chance to crash. It gives it a chance to bring too much. By going to an FBX, we're simplifying these models. We're reducing the sizes. And we're keeping ourselves flexible.

ROB TERRY: Yep, again we combine my Revit material. There's a couple of different options, but Revit material works best for us. And because the architects, you know we start this process early. So day one, we're getting a model, a Revit model. It's very basic. But at that point we can start working on the context of our design, and again, let the architects do their thing. And we're already starting with all the lighting and all the entourage and all those kind of things.

So when the model changes, and it's going to, and it should. So when it does--

ALONSO RODRIGUEZ: All I'm trying to do is buy you some time with the wrong information, and then take my time to adjust it as I need to.

ROB TERRY: Yeah, and when he saves over it, it will alert me that there has been a change, so I can just reload that portion of the model and keep going. So we've got the Max Revit. How we're preparing. Now we're going to start enhancing that model. This is why we're in Max now.

ALONSO RODRIGUEZ: So we're going to cover a few different categories, and take a couple deep dives into what this is. Real quick. Another example of not over-inflating the Revit model. This is a great project. Very simple structure. Very heavy theming. Zack could have spent a lifetime and still not gotten to where we got to on this.

ROB TERRY: This is another right tools for the job thing. You know, we need to-- buy offs are-- you know you can see the Revit geometry in the background. But we're just adding on top of-- we're augmenting the Revit model with additional theme and elements and materials and textures. Just because they serve two different purposes. But the actual design of the model stays the same.

ALONSO RODRIGUEZ: So we do a good amount of theme work, but this works for a lot of different sectors. One good example is themed archways, right? In Revit, we need a location. We need size. We're really going to have a theme contractor plaster over this thing, and really get the job done. But in order to get the visualization right, we need to have something for Rob to work on.

ROB TERRY: yeah, so this is kind of just like a template for me to build over. Because our client wants to see the actual cracks and the aged and the deterioration of these stones for this particular themed element. So I'll just build up on that.

And one of the best parts about Max and how you model in Max is the use of the modifier stack. So you match people-- you know that. I mean, it's beautiful. So we can start with a very simple generic object, and we can just add modifiers. We can add changes to it that build it up and give it whatever texture--

ALONSO RODRIGUEZ: Whatever crazy thing we can come up with.

ROB TERRY: So we're just adding a modifier. So each one has its own function. And you can rearrange them and turn them on and off. And you can just design really parametrically really quickly using a bunch of these tools. And there's thousands of them. And it's great.

ALONSO RODRIGUEZ: So one way of doing that is off of basic cube, off of cylinder. I set a location and let them go at it.

ROB TERRY: Yeah, but one of my favorite-- I love starting with a spline. Spline modeling, I love it. You know, curbs for landscape. But it's the same idea. You can add modifiers to it and create really amazing shapes by using a modifier. So using one shape to drive another. Kind of a simple example of a star and a path. You create this, and just combine them together, and you get an interesting shape. And this shape doesn't really mean anything, but it could be anything.

ALONSO RODRIGUEZ: And if you think about the amount of time you might invest in Revit in order to come up with the same shape, it doesn't make sense to do it when you can have the same specialty in Max.

ROB TERRY: So here's an example, a real-world example of a chandelier that we had to build. This was a couple of years ago. Interior designer said we need this chandelier. Very detailed.

ALONSO RODRIGUEZ: Really made the space. A gorgeous lobby. But I think they spent 20 grand on the chandelier, and it's going to sit right there.

ROB TERRY: Yeah, glass, you know. You can see it. You know, the floral shapes and all that kind of stuff. So she gives me a picture of it from this catalog, and she asked me to model it. So I did. And the next morning she came in, and I showed her this rendering here on the left.

ALONSO RODRIGUEZ: Oh, so you got the file from the manufacturer?

ROB TERRY: Yeah, yeah. So she said, no, that's what I actually need you to model. And I said, that is the rendering. That's the model of it. So of course I showed her the wireframe version of it, just to prove that it was the model. And then I opened up my big mouth and said, Yeah, you know what's kind of fun is all these parameters you can add to these splines to build this. They're all animatable. So I could actually animate this thing growing.

So there's another thing. We say, don't be like Zack, don't be like Rob, and ruin your weekend.

[INTERPOSING VOICES]

ROB TERRY: I had to prove that I could. So that was my weekend.

ALONSO RODRIGUEZ: It's been worse. I think we've shown this one about 1,000 times.

ROB TERRY: Yeah, that's kind of fun. But you know, just again, that's just taking a simple example and just taking it a step further and all the things that you can actually do with just some simple shapes and simple objects.

ALONSO RODRIGUEZ: So you know, you know what the worst part of this presentation? We've done it a couple of times on smaller scales. And all of my images, as soon as he overlays his, nobody wants to go back to mine.

ROB TERRY: And this is one of his or--

ALONSO RODRIGUEZ: Yeah, no, take a guess? Who did which one? So the hotel room project. You know, 400 times this room. We need the sample room. We felt great about it. It's a new space plan.

ROB TERRY: It looks great in plan too.

ALONSO RODRIGUEZ: Til the client says to you, that pillow doesn't look very comfortable. And it's like what--

ROB TERRY: Yeah.

ALONSO RODRIGUEZ: You know, great.

ROB TERRY: And it really doesn't.

ALONSO RODRIGUEZ: And it really ruins your entire day after that. But so, same overlay. Same rooms. Basic geometry.

ROB TERRY: Yeah, again using the Revit backbone and just overlaying more comfortable materials and more comfortable geometry. Just adding whatever we need to do to tell that story, we can do that a little bit more easily in Max than obviously in Revit.

ALONSO RODRIGUEZ: And we want to walk through these-- a couple of examples. We're going to look at the pillows, we're going to look at the drapes. Drapes? Clothes?

ROB TERRY: It works for drapes.

ALONSO RODRIGUEZ: Same thing.

ROB TERRY: Yeah, it's awesome. It's called the cloth modifier. You know, just imagine just being able to make something look like a cloth. So this is awesome. It's one of my favorite modifiers. It's also a good introduction to the simulation tools found within Max. So in this particular instance, we're just selecting a table-- or I create a plane. And make sure it has a ton of segments. The more segments you have, the better off it's going to look when it actually drops.

So we're going to select that plane. Select our tabletop, which is going to be the collision object. Apply a cloth modifier to it, and let gravity take over.

ALONSO RODRIGUEZ: Has anybody ever attempted this try to do this in Revit?

ROB TERRY: I just hit--

ALONSO RODRIGUEZ: A little bit of Zack in all of us, right?

ROB TERRY: But anybody here have to design a restaurant? Yeah, I mean tablecloths. I mean this isn't just tablecloths. I mean this is for bedspreads. It's for putting a blanket over a couch or who knows? Like drapes.

ALONSO RODRIGUEZ: Very simple example. Rotate it. Looks like a completely different one, completely changes rendering in a matter of minutes.

ROB TERRY: Yeah, so another cool use of the cloth modifer is you know the pillow. You know that issue before when the client didn't think it looked very comfortable. So same idea. Instead of a plane, we're actually using a box, so this box does have some depth to it. Again it needs to have lots of segments. The only difference is in the settings, you go back one real quick?

ALONSO RODRIGUEZ: Sure.

ROB TERRY: The only difference between this one is there's a-- you forgot how to go back.

ALONSO RODRIGUEZ: We were doing so well. What do you want me to do?

ROB TERRY: So there's this little pressure area, parameter right here. And what that does is, as gravity is handling, pulling down this object, and those are our collision objects, it actually kind of starts to push the geometry outwards, as if it had an expanding gas in it. So go ahead, so I did a little--

ALONSO RODRIGUEZ: The more he talks, he turns into a physicist, by the way. Don't worry. It was funny. One day we were getting close, we're getting finished on a deadline, and it's all completely out of our court. And we look over the wall-- we sit right across from each other-- Rob, are you almost done with this one?

I mean, it's a little bit of off, so I head over to the other side and he's fluffing towels. I'm like, what are you doing fluffing towels?

ROB TERRY: No, I was draping towels over towel bar for a bathroom. It matters. So again. Just a simple-- all I'm doing, I'm hitting this. Select those two. Tell which one I want to be the collision object. How much gravity I want. See that pillow just kind of expands automatically like that. And depending upon the angle that you have it, it's going to bounce off of our collision objects or couch or whatever it may be. And it's going to fall however gravity dictates it.

Of course, it's fake gravity. But you can go in and manipulate it however you want after that. you

ALONSO RODRIGUEZ: And we have these videos up on YouTube.

ROB TERRY: Yep, yep.

ALONSO RODRIGUEZ: If you want to look at them closer, you can take a look at the tool bars.

ROB TERRY: Yep.

[INTERPOSING VOICES]

ROB TERRY: I wouldn't ever want to manually render that or model that in Max either, so-- fluff wealth modifier.

ALONSO RODRIGUEZ: We've talked about a little bit of how we enhance some stuff. We're now looking at just object placement. Object paint really gets a broad brush stroke. When you think about [INAUDIBLE] or bushes or trees. I need thousands, and I need them large quantities and variation. Awesome tool for that.

ROB TERRY: Yeah, that's found on the ribbon.

Staging items. It's either a-- it's that telescope in the window. It's the open book on the coffee table.

ALONSO RODRIGUEZ: We've got this one designer who can't sell space without green apples.

ROB TERRY: Got to have a basket of green apples. And they have to be green apples, for some reason. And you know, maybe it's her little Easter egg of everywhere. But so we talk about the mass placement of trees and what not. But how do we get those apples in the bowl? You know, we could manually place them and rotate them within there.

ALONSO RODRIGUEZ: Spend a couple of hours looking for them.

ROB TERRY: And you can usually tell when it's fake. So again, here's just another, using physics, let gravity do the work for you. Just drop them in there. And that's real time. You don't have to have a, of course a nice graphics card helps. But you don't need crazy equipment to do this. And it's really pretty easy just to select those apples. Select the collision object. And just let it happen. And it just looks a little bit more natural. Of course, you can manipulate them afterwards if you want to.

ALONSO RODRIGUEZ: On this, you know looking at-- a bowl is a great example. How are you going place this bowl in here?

ROB TERRY: Where does the bowl come from?

ALONSO RODRIGUEZ: Where does the bowl come from? Zack spent about an hour trying to find it on Autodesk seek, right? Which is a great tool by the way. Everybody has their 3-D library somewhere online, but at the time, Rob can do this in about two minutes? Three minutes?

ROB TERRY: Yeah, Zack, stop. You know and you get to pick and choose. Some models are going to be really highly detailed, and you have to make that decision. Am I going to have to spend a lot of money on this model that turbo squid has? Or for instance, to use in your project. Or is it something simple that we can model?

So I tell Zack I can model that bowl four different ways in five minutes. You know, just pick and choose what matters on where you're going to get your models from. But there's obviously a lot of resources.

ALONSO RODRIGUEZ: At the other extreme of this, we had a statue in the middle of a cultural project, and it had just kind of been a placeholder over time, placeholder over time. But it made its way to the final animation.

One thing Rob and I don't know is that statues and different poses have different meanings. Well, now we know that. And we needed a very specific soldier in a very specific pose. We did spend time looking. [? Autoseek ?] didn't have it. 1-2-3D Catch didn't have a complete model that we could go around.

Then we realized we could go one mile down the street. Buy a toy, and take pictures around it, and we had the exact same thing. The toy was about $10. About 20 minutes of taking because we messed up the first time. And there you go, and you have a model that you need for work.

ROB TERRY: So statue, as you know, we talked about. The statue was originally there for scale. Speaking of scale, Entourage-- people, clients always want to see people in their scenes. And it makes sense because it does help for scale. It helps for the space. It helps tell the story. You know, the type of people that are there. Why they might be there.

So the populate tool is a really quick and easy way to add people to your scene. Here's just a

quick little video of just how simple it is. A couple of clicks. So this is walking people. Parameters. You can tell it how many people you want. The density. Gender. The direction they're moving.

ALONSO RODRIGUEZ: And it's great to start with a baseline, right? If you're looking ahead of time and thinking of the composition in your rendering, it's great to start with people instead of no people.

ROB TERRY: And idle people. And then again, all you have to do is hit that simulate button, and it'll kind of take care of it. And again, this might be sped up about maybe 50%. But it took probably 15 seconds just to get people walking around in your scene. And it certainly helps. But the reality is, I mean that works, these are kind of genetic material.

You can go in and change their preset animation and their clothes to some degree. But we work in a lot of projects where--

[INTERPOSING VOICES]

ROB TERRY: Very specific people, you know. Or what they're wearing that indicate, you know. A hospital. We need nurses. We need doctors. We work on a military barracks, and they're very specific about the color of the camouflage that these soldiers that are going to be there could wear. So Autodesk has what's called the Autodesk character generator. It's free to use. You just need an Autodesk ID to sign in there. And you can customize your own people, from body type and shape to hair color, eye color, facial expressions. What they're wearing. All sorts of stuff.

Then you can download them to your scene, and that's really pretty helpful. So you can see we've made a couple of here. You might recognize--

ALONSO RODRIGUEZ: You can always improve haircuts whenever you need to.

ROB TERRY: Yep.

ALONSO RODRIGUEZ: There's never enough bald guys in the videos.

ROB TERRY: So one of the beauties.

ALONSO RODRIGUEZ: Veronica has her green apples.

ROB TERRY: So we're testing the download.

ALONSO RODRIGUEZ: Don't walk that way.

ROB TERRY: Well this was about a week after he got his license for architecture. So he cracked a beer. And I think Joe--

ALONSO RODRIGUEZ: This might have been taken last night. I don't even know.

ROB TERRY: But so those characters come downloaded with the script. We can easily just string a bunch of two- or three-second animations in there. He's pretty happy. He doesn't know it yet, but there is humility somehow in there. So pretty-- again, it's having fun in what we do. We know we're going to need to have these people in our projects. So we have find a way to test it out. And this was just kind of a fun way to--

ALONSO RODRIGUEZ: That first dance was custom. He was able to put a script together. Those last three he was able to pull offline and join them together.

ROB TERRY: There's tons of them out there. [? Autodesk ?] knowledge center. You just do a search for the animations for [? biped, ?] and you get a ton of this kind of stuff. That's a good kind of transition into animation. So animation this is such a huge part of Max, and we can't even begin to touch on all of it. So we're going to kind of just like a small example of what you can do with Max.

ALONSO RODRIGUEZ: And a lot of these, by the way, we're pulling right from manufacturer sites. We give Rob a solid starting point. This was the actual fan we used in the project. But it needed a little bit more.

ROB TERRY: Yeah, so basic steps for here. We know that we have to keep it simple with animation. Animation can be anything, from a camera path to-- you know, again, even if it's a still image the illusion or the appearance of motion with motion blur. That can really help in an image too. So I can't stress enough how much we use it.

ALONSO RODRIGUEZ: So we're going to take a deep dive on this one. This is all one part, just one motion on one fan, right? All of the blades and the head are moving together.

ROB TERRY: So just keep your-- you know, we want to keep it simple. So the area where we can add

keyframes to it, just step-- where the ceiling fan is, that's step one. And then a little bit further down the road, where it is, this is where we had keyframes here, on this timeline here. It's about 30 seconds later or 30 frames later, about a second later, we're just with the autokey on here, we're just rotating the ceiling fan to where we want it to be one second later. And it will automatically create that animation.

So we want to get a little bit further into those key frames, have a little more control. We open up the track view, which you can still see those keyframes. And you can see that angle there. That's indicating a ceiling fan that rotates around once and then stops. And that might be cool if your animation is one second long, but usually it isn't.

So you can keyframes. Range You can do a whole bunch of different things to get it to continue to rotate. One of the cool things is an out-of-range type controller. So it's just selecting that, adding out-of-range, and there's a bunch of different ones you can use. In this case the one that works best is relative repeat, so you just have that ceiling fan spinning around at that particular speed for as long as your animation is. It doesn't matter.

But even more, even better than that, is what's called expression controllers. So instead of using keyframes at all, we're actually just using a mathematical equation that's driving our force here.

ALONSO RODRIGUEZ: So keyframe works great when you're doing one fan, one motion. Maybe two. But if we think about six moving parts or a dozen or two dozen in animation, keyframes gets pretty rough to keep track of, especially when you want to stay flexible and make changes.

ROB TERRY: Yeah, and simplifying it certainly helps. And I know this doesn't sound like simplifying when the expression is s times speed times 360--

ALONSO RODRIGUEZ: There goes the physicist.

ROB TERRY: divided by pi times 180. Wherever that is. But you know, it definitely helps a lot of things. And speaking of control, you know when I'm sitting on the couch, I love to have that remote control for my ceiling fan or TV. And if I have to get up somewhere else to pick it up, it kind of annoys me. So again taking this one step further, we kind of made up a little virtual remote control for our ceiling fan using that same expression controller. But instead of giving it a constant speed, we assign it to another controller, which we can vary the speed of it just by a couple of clicks.

So here is that kind of that in motion. And again, all these videos that are kind of, I'm describing, how to set this up are online.

VIDEO NARRATION: We have remote fan speed set to zero. We hit play. Now, by click of a button, fan speed. Backwards. Forwards. Very fast.

ROB TERRY: And you see, there's no keyframes.

VIDEO NARRATION: Very cool.

ROB TERRY: It is very cool too.

ALONSO RODRIGUEZ: Yeah, he gets excited when he's by himself too.

ROB TERRY: Expression controllers.

ALONSO RODRIGUEZ: So that's one look. Should we talk about this squid?

ROB TERRY: Yep, yep, yep.

ALONSO RODRIGUEZ: So clients always have the final say, no matter what we think is good. And with class we've been working a long time with, we know what their tendencies tend to be. With animations we need to be sure that we can get the right image for the product

ROB TERRY: Yeah, so we're just basically taking a simple concept like animating a ceiling fan and then adding it to a little bit more complex structure here.

VIDEO NARRATION: So as I click on play, nothing happens because everything is kind of set to a default of zero. But as I click on things, you'll see things start to change. Obviously our swing is probably going to rise up--

[INTERPOSING VOICES]

VIDEO NARRATION: Might tilt a little bit there. You never know. And of course, the faster we go, that centrifugal force is going to become greater and greater and greater. So this is a kind of a fake centrifugal force using an IK solution, but certainly a lot more realistic than that one--

[INTERPOSING VOICES]

VIDEO NARRATION: As you can see, I'm changing things on the fly. The speed, the height, we can even go backwards if we want to. So anything that I think my client, and they will change almost everything, so if you can anticipate those changes beforehand and save yourself--

ALONSO RODRIGUEZ: Look at that.

ROB TERRY: We don't to worry about our team going back and kayframing all these things. We're just using those expression controllers to drive all of that dynamics. And you know, we'll call the ride manufacturer, and they'll tell us that ride needs to go this-- or this ride goes this fast. And it has these particular dynamics. So we'll animate those.

ALONSO RODRIGUEZ: But if it doesn't tell the story, Brian wants to speed it up.

ROB TERRY: We'll say, hey that looks like it's going too fast. Or Grandma looks like she will die on that ride, so we've got to slow it down. It doesn't matter. Doesn't matter if the ride is spinning as much as it can, but we always have to make it right for the client. I can change. He says make it go slower or faster, I can, again, just a click of a button. You know, just a little bit of pre-planning to account for those?

ALONSO RODRIGUEZ: You think a squid-- if you think a squid is going to throw Brian off his game, imagine what would happen when he looks at the materials, right?

ROB TERRY: But actually, that was a jellyfish. But--

ALONSO RODRIGUEZ: That's a squid.

ROB TERRY: No, it was jellyfish. But you're not a marine biologist, so we'll let it slide. So another great reason why we use Max is materials, bad materials.

ALONSO RODRIGUEZ: So if you've gone from Revit right to a rendering engine, you'll notice that the materials don't translate just the way you had thought of initially. This is one of the better examples of why we use Max as a conduit to go through.

ROB TERRY: Nothing ruins a good, well-modeled object than a bad material. And this comes in a lot where

you have bricks in it. And it might not be that extreme. It just might be shifted up a little bit, and those joints just don't match up very well.

So of course, in Max, a simple object like this, we can just add a UVW matte modifier to it. You know box mapping, planner mapping, usually handles a situation for a simple object like this. But in reality, they're usually not just a box. So we use another tool--

ALONSO RODRIGUEZ: And it's not just another reactive tool. It's actually a proactive, right? So a lot of times in the past we used to use Photoshop to apply graphics or a rendering to it.

ROB TERRY: Do it in post.

ALONSO RODRIGUEZ: A little post-action. Zack loves to do things in Photoshop at the end. But when our clients come in and say I need you to adjust the shot by 4 degrees, we just ruined an entire rendering that we've done before. By using the UVW modifier earlier in the process, we're actually painting these graphics on the walls and they're living in the animation.

ROB TERRY: We're basically unwrapping 3D objects into a 2D space to give us an easier way to map. And you can see here, you know, the dirt on the ground. And oh, this is one of my biggest pet peeves, and I guarantee you it's our main landscape designers as well. But you know, you spend all this time on materials and design this whole hardscape section. And look how that curve comes in. It just looks terrible.

ALONSO RODRIGUEZ: And heaven forbid, somebody gets these guys a ruler, and they draw one straight line or one straight material. That would be great.

ROB TERRY: But within that same modifier, we can actually draw a spline on top of the object and map the material to that particular spline, and it will just follow it perfectly. We use it all the time. So there's a little bit of even another example of unwrapping a 3D object to 2D space.

ALONSO RODRIGUEZ: So we talked about placeholders earlier in Revit. Lanterns or market lights are a great example. In this scenario, I could have hundreds of these Bozo noses sitting in my file that I've put the spacing and the counts--

ROB TERRY: Low polygon placeholders for the lights.

ALONSO RODRIGUEZ: Yeah, Bozos.

ROB TERRY: Yeah Bozo noses, sure. So within that modifier, we can unwrap the 3D object, and we generate a template here. Bring that into Photoshop. And then we're just painting on top of those lines as a guide. We save that material back out, and it's going to automatically, magically, wrap itself around appropriately to our object.

And again, when we're using-- in that particular scene, there were literally I think 700 something of these red lanterns here. So again, you don't want that to hog down your scene with all that geometry. So we can use a low poly object, and use the material to actually drive the detail of it.

ALONSO RODRIGUEZ: So we've had a chance to model. We've added our entourage. We've had people located. We're finally getting to a point where we're looking at our presentation. And we're at a conference now where they're showing you 15 new things we didn't know about last year.

ROB TERRY: Yes, so this is tough. I mean it's an exciting time. Because you know, there's all these options out here. And we're all trying to scramble and figure out what's the best way to do it. You know, there's so many. It's kind of crazy.

ALONSO RODRIGUEZ: So the key is to stay flexible.

ROB TERRY: I did not come up with this equation either.

ALONSO RODRIGUEZ: But no matter what we do in the modeling phase, no matter how we can fix it in materials, bad lighting is going to ruin everything.

ROB TERRY: Yeah. It's pretty old, but it basically talks about how everything is about light and how light bounces and reflects and diffuses and all these kind of things. So it's a pretty interesting equation. I just put up there so you all would think I was smart.

ALONSO RODRIGUEZ: He thinks he's a physicist.

ROB TERRY: You know, all of those new terms and options, they create some problems of their own. And matter of fact, we had an issue just recently. Three-day deadline.

ALONSO RODRIGUEZ: Three-day deadline. It's not uncommon that we would have renderings in animation for the same deliverable. But because we keep changing things, we need a way of being able to

produce very quickly. And because we're using animations with sometimes lower resolution stuff in order to render faster, we ended up having to use multiple materials.

ROB TERRY: Yeah, or I would need a ray-traced pretty still image, the marketing perspective for the client. But at the same time, they also want a three-minute walkaround of the whole thing. So we might export to a game engine, just so we can get-- sacrifice a little quality, but we're going to that speed, and they're going to get what they want. But unfortunately, a lot of times we need different materials for both of those different output options.

So you know, one of the things that we use-- and this is great for a lot of different reasons, not just materials. But we can save different properties of certain aspects of the scene without having to create several different versions of the same scene with different material for this one, different lighting set up for that one. So managing scene states is a pretty cool thing. It just saves a little subset of some characteristics that you have within your scene.

ALONSO RODRIGUEZ: And lets you stay very flexible throughout the way.

ROB TERRY: Yeah, you can keep modeling. And then, hey, I want to go back to that nighttime lighting set up. And it reloads just those qualities. And data management, when you're going-- you know, files coming in and out, you know things can get confusing pretty quickly.

So one of the things, as we imported FBX file into Max, it automatically creates its own layer, which is great. But in certain circumstances, when we have those placeholder lights, for example, that comes in on the layer. But don't want to actually export those lights. I'm going to build my own lights. Or whatever we augment and add to that scene, we're going to export that separately.

So I create a selection set, which definitely helps keep things in order.

ALONSO RODRIGUEZ: And that helps us take it into other platforms, other rendering engines. Autodesk has also provided a better answer that I'm sure you guys have heard of.

ROB TERRY: Yeah.

ALONSO RODRIGUEZ: But what this does is gives us all the flexibility we had before in Revit to Max to any other rendering engine to Revit Max Stingray.

ROB TERRY: We've actually been using the Autodesk design live idea for a few years, but we just hadn't been using Stingray because it wasn't really out yet. So it was Revit to Max to insert game engine here for that real-time interactive stuff.

But those are when the problems happen, you know, where you're having to split up your model or your materials for those different reasons. But Stingray, fortunately, alleviates most of those problems, and that's bidirectional within Max, and even has a little send to Stingray button in here. So the interoperability between the two softwares is definitely a big step for us.

Some of the game engine software that we used before it didn't have collision detection, so you could just like fly right through the floor or whatnot. And it didn't have the interactive--

ALONSO RODRIGUEZ: Which is a different kind of ride, apparently. Yeah not always what you're looking for.

ROB TERRY: So here's just a quick example of what it looks like in Stingray. So we're going to be pushing that in our workflow more and more as we go forward. And the beauty of it, again, it's back to the one material, multiple output option. So if we want that perfect perspective image that I can render overnight, and we can still also export that out to Stingray and generate that real-time walk through really quickly without having to separate anything out.

And another issue-- big issue-- we're working with so many clients, so many contractors and subcontractors, we get models in from everywhere. So it's a Sketch it model, it's a model for Rhino,

ALONSO RODRIGUEZ: [? Rhino, ?] [? Maya. ?]

ROB TERRY: And yeah, and we're getting material, a Max model, but maybe it would have V-ray materials on it. So it can present problems, but with, I think it's the latest version of Max, it comes with the scene converter, so It kind of takes-- we used to use a script all the time that would convert.

Because the materials that come in with Revit, I always change them. I always change them. I put what was my favorite material, was the Menta ray arc and design material. So I would convert everything to that with a script that we had to pay for.

So now with the scene converter, we don't have to spend extra money. Not that $15 was that

much, but it did save us a lot of time. But this will convert everything, lighting solutions, everything, to what you need.

And that material happens to be the Autodesk physical material. It's based on, I think, the Arc and Design material. A lot of the settings are similar. It's physically accurate. And it's just a couple settings here.

ALONSO RODRIGUEZ: Very simple interface, which is nice. So we're finally time to set up the scene. We're ready to go. We've done a lot of work. We've done modeling material enhancements. We've looked at our rendering options. But at the end of the day, we like to keep it in-house as much as we can.

It keeps us flexible to accept changes. Gives us more control, and it lets us keep going without faking. It. But as we start looking at those, we talked about the importance of light. It's important to look at what the natural light environment does to the scene, in addition to artificial light. It lets you get the ambient shadows that are coming in properly.

ROB TERRY: So this kind of shows an example of both. Obviously it's an interior scene, but I always like to have a little bit of natural light that comes in. So we have some sunlight, we have some environmental light that's going to come in and help illuminate that scene. But there's obviously interior lights in there as well.

Again lighting to me is key. And you know, setting up a camera is really easy. We're in a perspective view right now. We just go open to the Create tab, drop down to cameras, and we'll create a physical camera from that particular view so you can spend your time navigating around until you find a view that you think is close. Create a camera out of it.

Some of the settings you'll see, pretty common, if you're a photographer, you recognize most of these terms. Depth of field, all of these different things that are really going to help you out.

ALONSO RODRIGUEZ: And one nice adjustment that they have in Max, I know is a pet peeve of mine in Revit, if you look at the skew in the walls, it really helps really bring in the composition to the drawing.

ROB TERRY: Yeah, so you know, auto tilt correction. You can mess with all of these settings all you want. But it's a good opportunity to remind everybody about composition of your piece. And you know, it's an art form in and of itself. We're not going to go into it too much, but just remember certain techniques. The rule of thirds. And angles. And you know just, it's a pretty subjective thing, but composition is key.

So with the camera, it's easy to set up a camera path. Again, this is kind of going back to the animation part of it. But here's a quick way. Select your camera, and we'll just create that spline that you think looks like it might be a good camera path, and just put a path constraint controller on it. Just a couple of clicks, and you can see down here. This is what the camera is actually seeing. And again--

ALONSO RODRIGUEZ: Gives everybody the chance to be the producer right at the end, right?

ROB TERRY: Yeah, yeah. Everybody likes that. And one of the beauties of this, is not keyframing a camera. It's being guided along a path, so you can go in and change that path. And you can fine tune your composition. You can fine tune however you want things to go. And really get a nice shot for your client. And it's really pretty simple.

Cameras have exposure like our eyes. When we walk into a dark room from being outside, you know our eyes have to adjust for a little bit. So we want to just make sure that our camera exposure settings are right, otherwise it will be blown out. The renders are physically accurate, so we just need to keep that in mind.

ALONSO RODRIGUEZ: So lights, camera, action.

ROB TERRY: Action is what we're going to see.

ALONSO RODRIGUEZ: Boo.

ROB TERRY: And within the new version of 3S Max is a new art renderer. It's a ray tracer. It's physically accurate. It's CPU based. Very simple to use. I mean, it is just only literally a few settings that you really need to worry about beyond some of these, which might be obvious. You know, the scene size and whatnot.

But it comes down to render quality. How good do you want it to look? And so what it's going to do, as it starts to render, it's going to give you a pretty good example of what the final image is going to look like. And it's just going to refine itself for as long as you let it.

And Active Shade. If you haven't heard of Active Shade, this is so helpful. You're actually

launching the final render within a window, and it's starting to refine itself in what the final rendering is going to look like. So this is actually real time, moving, manipulating objects. So you can play with light settings. You can play with material settings. Obviously camera.

ALONSO RODRIGUEZ: Huge time saver. We used to spend hours rendering. Just kidding.

ROB TERRY: It takes the guesswork out so much because we're actually seeing a early version of what the final rendering is going to look like. And that's just going to keep refining itself for as long as you let it. So you can say, hey, I want it to render for 10 minutes. Or I want it to render to a specific level of, they call it DBs, decibel levels of noise. So when you're done, when you set that up and you have your perfect rendering, are you actually done?

ALONSO RODRIGUEZ: We still have a little work to do in Photoshop sometimes, right? Even if it's a couple of minutes, we get a chance to add filters. We get a chance to phase things in and out.

ROB TERRY: Yeah, I'll always bring it in-- not always, but most of the time I'll bring it into Photoshop and do some color correcting. It's your opportunity too, as the artist, to just add your artistic flair to it. You know, it's the image, whatever you need to help tell that story, sell that image to your client, that's your opportunity to go in there and fine tune it a little bit more.

ALONSO RODRIGUEZ: So we've talked about how we structure things. We've talked about how we use Max as a conduit for more options in the rendering process. We've enhanced our designs through people, staging, animations, and material benefits.

ROB TERRY: Hopefully we've given you an idea of obviously what Max is capable of. A lot of you probably were, but maybe were nervous to get into it. But you know, so the attempt of this class was to show you a couple of things. And they're really pretty simple. Most of them are really fun. Adds a lot to our workflow. And it helps keep that parallel path of our design model and our presentation model are literally in line the whole time, and we're just using Max to augment it and get a little bit more out of it.

ALONSO RODRIGUEZ: So just say to yourself and the members your teams? Don't be like Zack. Thank you very much.

ROB TERRY: Yeah, that's it. Thanks everybody.

[APPLAUSE]

ALONSO RODRIGUEZ: We have some time, so if anybody has any questions, please let us know. Yes?

AUDIENCE: [INAUDIBLE]

ROB TERRY: They will stay. There a couple caveats to that.

ALONSO RODRIGUEZ: So there's-- go ahead.

ROB TERRY: One of the things that we'll-- let's say we import a FBX of a wall, and I put some modifiers on that wall, which I often wouldn't want to change the geometry of that particular piece. I would want the architect to actually do that. And it would re-link that particular piece in. And we might build on top of that.

But the idea is we let them make the changes within Revit, and then we reload it within Max. But if there's something-- like for instance, on the themed archway example, where it's kind of like the bare bones of it, and we'll model on top of that. So it kind of alleviates the issues that we might have on a reload when we've changed the topology of the underlying geometry.

AUDIENCE: [INAUDIBLE]

ROB TERRY: Sure. Sure, yeah. Yep, that's, for sure we can do that.

ALONSO RODRIGUEZ: So two different workflows that we go there. One is a dead stop and start, right? So I've located these lights. I know where the connection points are. Rob, I need you to take over this thing.

And then there's the, hey, I've got these doorways here, but I'm still space planning. We might be adjusting. We might be moving these around.

So it's important to delineate between the two.

ROB TERRY: We can actually even add modifiers that hide certain elements of that particular object that we've imported from Revit. As long as you don't add or subtract to the geometry that comes in from that Revit file, all the internal [? NAF ?] that is related to that object is going to stay there.

ALONSO RODRIGUEZ: So so keep in mind the element IDs and when you're doing a floor pattern or an object change, how you see the different line segments. This is one of those points where you might

adjust the line as opposed to deleting and redrawing. And that cause-- saves some background errors that you'll see. Good question though. Anything else? Yes?

AUDIENCE: [INAUDIBLE]

ALONSO RODRIGUEZ: So the FBX export, it's great. It really reduces our Revit file size down by-- and don't quote these numbers, but about 10% to 50% of the file. We actually find ourselves going more at geometry intensity and those, right? So there's an example of rivets that are all over this one structure that we were doing, which were pretty important for the design and the presentation. But on an export, we're talking about 30,000 rivets that need to be recreated in Max.

ROB TERRY: Talk about crashing your machine just trying to load it. Because what it does, you know, exporting from Revit to Max, does a conversion process. So some of the tools that you might-- like a. What's it called in Revit, I forget, where it's nice--

ALONSO RODRIGUEZ: Anything that's round in Revit is no longer round in Max. They don't--

[INTERPOSING VOICES]

ROB TERRY: So there's some issues with it.

AUDIENCE: [INAUDIBLE]

ALONSO RODRIGUEZ: Yeah, so that's really more what guides us from where we go from one to the other.

ROB TERRY: But typically, the additions that we add to the Revit file and the Max file, those don't necessarily stay with the Revit file for the final output to the client for the design documents.

ALONSO RODRIGUEZ: On different scenarios, we've had design files come in from Maya, for example, or a very detailed Max. We actually have to reverse engineer and pro- optimize a file to bring it in Revit at a reasonable size. But that's a whole other class on its own to be talking how we flip the other way.

AUDIENCE: [INAUDIBLE]

ROB TERRY: Right. It's not that round objects in particular don't translate well. Certain ones, for instance,

there was a product we had where there was really intense crown molding around, and there was chair rail. And all these things were based on a shape that you kind of swept. And as it comes into Max, it just kind of gets this weird-- and again, it's just the translation of one type of object into a geometry that Max can read.

And it's definitely gotten better since then. But sometimes, it just kind of has this faceted look, so oftentimes it's so simple for me just to draw a spline and use that shape that he was using and loft it around or sweep it around within Max. So we're keeping the same data. But that's kind of one little thing that we keep in mind.

ALONSO RODRIGUEZ: Yeah, and on that one, what we're focusing on is high quantities of the same thing, right? That's where we need to find a better route that what we're pushing it on.

AUDIENCE: [INAUDIBLE]

ROB TERRY: Yeah, we've had a couple of different trials and errors with certain things. And there's a couple of work arounds that we've used.

ALONSO RODRIGUEZ: Yeah.

ROB TERRY: I forget which one actually works the best, but--

ALONSO RODRIGUEZ: So, for the example of the one object that's overly detailed, we'll actually in Max pro optimized back to a CAD, which was mentioned. But on the example of a lot of the exact same ones, it's almost like we do a select and replace in Max. And that way, we're just using a placeholder at the time. Yes?

AUDIENCE: [INAUDIBLE]

ROB TERRY: Sure. The question was how we look at materials more specifically from Revit to Max. Basically, when you're creating a material in Revit, from what I understand, you're giving it a certain attributes and parameters. And if you attach a texture to it, whether it's a brick texture or a wallpaper texture, if you do that, it comes out as an Autodesk material. And although Autodesk materials are fine, and they kind of cross-platform, and they work in a lot of different circumstances, for me it doesn't have enough options for me to dig in there and push it a little bit further.

ALONSO RODRIGUEZ: So if you've ever played with the texture and lighting and all the other settings in Revit version, it's not nearly as user friendly as it would be in Max. You're actually adjusting the same settings, but the speed is so much quicker that you're able to adjust it better.

ROB TERRY: Yeah.

AUDIENCE: [INAUDIBLE]

[INTERPOSING VOICES]

AUDIENCE: [INAUDIBLE]

ALONSO RODRIGUEZ: Yes.

ROB TERRY: Yes. We will definitely utilize the-- we would definitely use that same-- if that custom material was made in Photoshop, that will definitely come in. I'm just kind of-- I change, not the material necessarily as much as the shader that we use to kind of display that information. Just because it gives me a little bit more room to tweak, you know, maybe how the bump map or the transparency, shininess, reflectance, all that kind of stuff.

ALONSO RODRIGUEZ: And wherever we can, we would still use that opportunity. So its finding the right material, getting the right size. But then stopping for rendering sake, do that in Max

AUDIENCE: [INAUDIBLE]

ROB TERRY: It'll come right-- and that's the beauty of the FBX. The FBX itself retains all those parameters within that particular material. A lot of the geometry things, even exporting from Max the FBX file in itself is a really good kind of envelope for all that geometry in that file format.

AUDIENCE: [INAUDIBLE]

ROB TERRY: Yes and no. Again, in-- I think there was-- basically what we would do is again, that just Autodesk material comes in. I would just either use that scene converter and just mass change everything. All the attributes that are associated with that particular material, whether it's a diffuse map, whether it's a specularity map, all those things. Those properties will migrate up to the material shader that I give it. So you don't have to go back and find that brick material or that rug material and then redirect it and relink it to everything. All it's doing is kind of changing

the overall shader.

ALONSO RODRIGUEZ: A good example of this, is we look at the area development example. We did that in Rev, and we plugged in a similar stone type. But he was able to use that same textured image, I don't know what slide I just went to.

ROB TERRY: Yeah, where it actually shows the slate editor. I think it's back.

ALONSO RODRIGUEZ: Yeah.

ROB TERRY: But, yeah, again, it's not painful at all. I mean, it's basically, we're just kind of changing the wrapper, the envelope, that actually displays that information. But it's the same information, for the most part. It just gives me a little bit more flexibility in how I want it to display.

ALONSO RODRIGUEZ: Yes?

AUDIENCE: [INAUDIBLE]

ALONSO RODRIGUEZ: So that's an awesome question, because that's actually very important to look at.

[INTERPOSING VOICES]

ALONSO RODRIGUEZ: Depends on the team size. It gives us the ability, if we have good skill set or better users in Revit, we can absolutely spend the time to--

AUDIENCE: [INAUDIBLE]

ROB TERRY: Personally, I definitely think there is. For me, it's kind of a best practice anyway. Because you're in Revit, you're designing this particular element, whatever material that is. If it's a brick material, it's nice at least to put that on there. Because at least it's one step, I mean, it's all about communication, and we need to kind of understand what that material is. You know, it might be named with a bunch of numbers or whatever.

ALONSO RODRIGUEZ: And you'd be surprised-- we sit right across from each other-- how little information we get when it gets time to throw the file over the fence.

ROB TERRY: So I think it's a best practice. It doesn't necessarily have to be that specific brick material that we're ultimately going to use, but at least it kind of gives us a heads up. You know, hey, this is a brick material and not a wrought iron material.

AUDIENCE: [INAUDIBLE]

ROB TERRY: Sure.

AUDIENCE: [INAUDIBLE]

ALONSO RODRIGUEZ: She's describing Tuesday.

ROB TERRY: Yeah.

AUDIENCE: [INAUDIBLE]

ROB TERRY: Yeah.

ALONSO RODRIGUEZ: Sure.

ROB TERRY: Yeah, that just an industry, and it happens, you know, every project. I mean, clients change. So inevitably, what we do is we've been talking about what's called this parallel path. So we start-- I'll import his geometry, his Revit geometry, even from this conceptual little outline of walls, and I'll bring it in there.

And I can start building things up. And a lot of the things that we were showing you, they're kind of-- they're more parametric in nature, where you don't have to necessarily-- if I'm spending an hour and a half manually placing all these trees around where, at the time, that landscape was supposed to be. And then it changes.

ALONSO RODRIGUEZ: If you think historically, where our CDs and our renderings would start to kind of split this path, and inevitably our CDs don't match the presentation. We work as hard as we can to keep those a parallel path. So what that does is, when we get that kind of change. It's because it's already built into our files.

We already have a subset of 8 FBX, or 10 FBX, or 20 FBX, and we can adjust one at a time. So instead of it being a linear process, where he needs me to stop at some point and

continue, I'm able to adjust. Hey, Rob, what if I give you the hardscape today? You give me another day on the doors? You give me another day on this. And--

AUDIENCE: [INAUDIBLE]

ROB TERRY: And that's the beauty of what we call this parallel path. So again, as we start this process early on, and it's not like, hey, we're giving him that marketing image right at the beginning. Because that's where it's most valuable, right? You know, but how often does that really stay that way? It changes quite a bit.

ALONSO RODRIGUEZ: There's a nice-- one of the polls that they're doing here at the conference is, do you see yourself selling more services than you do products now? And if you think about that, that's what we're offering to our clients, right?

We're giving them a better service earlier in the process. We're letting them know, here's the transparency of how we do it. And then it makes it easier, actually, to make those changes. Hey, look, we've showed you the overhead that we have. We need an additional fee for this.

ROB TERRY: So we keep up our model throughout the whole design process.

AUDIENCE: [INAUDIBLE]

ROB TERRY: So it's this parallel path where, throughout the whole-- for design reviews, we're using the actual Revit geometry with our augmented Max frills in it. And it's going to change. But if we keep them along in the process, and we keep this path going, we adapted those changes almost immediately. So client says, hey, we need this to change. He makes his change in Revit. I save it down. I reload. And the next day, we can produce that pretty picture for him again.

AUDIENCE: [INAUDIBLE]

ALONSO RODRIGUEZ: Well and that fundamentally falls back to communication, right?

AUDIENCE: [INAUDIBLE]

ROB TERRY: Well, I guess that's part of what our process is. We're not just, hey, we're handed off to the

rendering team, and then let them go at it. We're part of that whole entire process from the conceptual stage until the very end of the project.

AUDIENCE: [INAUDIBLE]

ALONSO RODRIGUEZ: There's something wrong with that equation.

AUDIENCE: [INAUDIBLE]

ROB TERRY: Sure

AUDIENCE: [INAUDIBLE]

ROB TERRY: Zack, Zack.

AUDIENCE: [INAUDIBLE]

ROB TERRY: But that's not bad. That's fine. No, no, that's why I say, I let the architects architect. And you know, he designed it. No, no, by all means. No, as long as you save over that original FBX, when I reload, it'll reload it to what you want the design to look like. And that's the whole beauty of it. I don't want to have to modify those walls. I want you to modify those walls.

And then you tell me where that-- if I have to move that chair back to fit that wall now, then that's fine. Because the design is intact.

ALONSO RODRIGUEZ: The key on that one is linking FBX by material, right? So I'm assuming that your walls are all still going to be wall material one?

AUDIENCE: [INAUDIBLE]

ALONSO RODRIGUEZ: So, what would happen in that scenario-- happens all the time-- is if you think about the modifier stack that we talked about. He can reapply the-- I'm sorry-- add the walls that were not there in group one, to that same group, and then the stack occurs. Does that makes sense?

AUDIENCE: [INAUDIBLE]

ALONSO RODRIGUEZ: OK.

AUDIENCE: [INAUDIBLE]

ROB TERRY: Do you feel better about using Max?

AUDIENCE: [INAUDIBLE]

ROB TERRY: Awesome. Yeah, that's the goal. Win. It's a wine.

ALONSO RODRIGUEZ: We got one. Going to hit the tables tonight. Yes, sir?

AUDIENCE: [INAUDIBLE]

ROB TERRY: That's a good question. We initially started this because we thought it was a best practices kind of way to do it, to get all of the team aligned with that one vision. I mean, our industry is so visual. To have those--

ALONSO RODRIGUEZ: We talk about that importance about a year ahead before construction. I mean the best time that a rendering is useful is when you have nothing, right? We actually have a gentleman in the back row that worked with us for three years that might know about that. He has a good haircut too.

So in order to do that, the client and different departments on their end, can see the value of that, right? Now if you told them, I'll get you this rendering, but it's going to come with 100& CDs. , Then for, them, what's the point? You've already forced them into these decisions. You've already forced me to stay to what I wanted.

By doing it ahead, we have a lot of risk that we've talked about, but

[INTERPOSING VOICES]

ROB TERRY: But we in essence alleviate a lot of the questioning because we're keeping the client informed a lot more along the way. So again, we're going to run into that always, but at least if we can taper that down some, bring that back some, it's beneficial for everybody.

AUDIENCE: [INAUDIBLE]

ROB TERRY: Sure.

AUDIENCE: [INAUDIBLE]

ROB TERRY: Right. It's per project. I mean every project has its own needs. I'm not saying that every project should go through this Max conduit that we use, but on almost every circumstance, we've found a way that Max has enhanced the design.

AUDIENCE: [INAUDIBLE]

ROB TERRY: Yeah, yeah, Yeah.

ALONSO RODRIGUEZ: And that's where you want to focus, is energy in the right direction, right?

ROB TERRY: Initially, a side note, a little anecdote about the whole Zack story, he was the main inspiration for this class initially because he said often, so many times, I've got to learn Max, I want to learn Max. And I was like--

ALONSO RODRIGUEZ: 2015, 2016--

ROB TERRY: And he never did. So when I told them that we were going to use his kind of reluctance to jump into Max-- plus it was the intern who learned Max in like a week.

ALONSO RODRIGUEZ: Put an intern, puts so much pressure on everybody else.

ROB TERRY: But you know, so we kind of started going through this, and we were working on this class. And there's a lot of information to it, but wanted to kind of show those simple concepts that we can use to add to your [INAUDIBLE]. So he started working in Max, and I almost decided to change the class name to, don't be like Zack, to you can be like Zack.

ALONSO RODRIGUEZ: Yeah,

[INTERPOSING VOICES]

ROB TERRY: Don't be like Zack made a much better story.

ALONSO RODRIGUEZ: Be like us.

ROB TERRY: Yeah

AUDIENCE: [INAUDIBLE]

ROB TERRY: Zack is one of those people, no question.

ALONSO RODRIGUEZ: That's a different battle on its own. So we find ways to work with it. But--

AUDIENCE: [INAUDIBLE]

ROB TERRY: So you know, and again, there's the Zacks, they're scared of the interface. It just looks weird. It looks intimidating. And I guess, to a lot of people, it might be. So this just, hey, it's not that scary.

ALONSO RODRIGUEZ: Every now and then--

[INTERPOSING VOICES]

ROB TERRY: The reality is I just love dropping tablecloths and stuff like that.

AUDIENCE: [INAUDIBLE]

ALONSO RODRIGUEZ: Yeah, we'd love to.

ROB TERRY: By all means.

ALONSO RODRIGUEZ: If you guys could rate us, review us.

ROB TERRY: Yeah, Yeah. Yeah, please.

AUDIENCE: [INAUDIBLE]

ROB TERRY: Sure, sure.

ALONSO RODRIGUEZ: Absolutely.

ROB TERRY: Yeah and again, this was our first time doing this. If you guys, you know, thank you, I appreciate that. But the surveys, let us know, good, bad. We'd like to get better at this. So we certainly would appreciate if you do that for us, and enjoy the rest of your AU, good luck.

ALONSO RODRIGUEZ: And I'll see you at table 7.