JEFF SMITH: I'm going to go for it. So welcome to-- I'm not going to read off the number, but this is a Fusion 360 and Sketchbook as teammates. How many of you guys saw me last year? Nobody? Maybe one? Good. Good. That's good. All right, because I'm evolving from that, but last year I submitted a class idea for CAD and Sketchbook as teammates, and how they work together. That's something that's been important in my life and my career. And I talked about a lot of foundation and a lot different things.

But for this class, I wanted to open the veil a little bit and say, look, we're going to do it live for you guys, hence the two monitor. So let me introduce ourselves really quick to get moving. So next slide you'll learn-- So I'm Jeff Smith, I'm an IDSA member. I'm an industrial designer. I work at Autodesk. I work on the education management team, which means I become a resource for colleges and universities in the United States.

I go out. I give away software. I give away knowledge. I give away resources. And I help build bridges and I help make connections. So Autodesk and amongst schools themselves, if you guys are educators, or if you've been involved in education, you'll notice that schools mimic corporations and they build silos. So how can I help people break down those silos, both on the corporate side and the education side?

I went to RIT in Rochester, New York. I graduated 1993. I worked about 20 some years as a consultant, building a lot of stuff in the Unites States, building stuff in Asia, traveling around the world to do different projects for different customers. I taught for about 8 and 1/2 years as an adjunct faculty. Full disclosure, I was a SOLIDWORKS user from '97 to 2000 and 14 or 15. I taught SOLIDWORKS for eight years, and now I'm driving Fusion. I've been a sketchbook user since it came out, and Sketchbook has been one of the most powerful tools for me, and the first Autodesk product I actually use. So that's my background. If you go to the next page, Yolegmma.

I'm a drawer by nature. I'm an old school designer. So what that means is, when I went to school, I went-- everything I did was analog. Everything was on paper. It was blue line. It was hard models. So now that I really work as a tool to help other people design better, faster, stronger, I don't do as much as I work myself anymore, so I keep drawing as a passionate tool for me.

So I post on Instagram a lot. That's my Instagram handle. It motivates me to do more things. I see other people's work. And I put more and my own work out there. So drawing is passionate to me. It's an exploration. It's a visual tool for me. OK, next.

Hector Silva. I'm going to let Hector introduce himself really quickly. I met Hector probably through [INAUDIBLE] actually back in the day, but go ahead, Hector.

HECTOR SILVA: My name is Hector Silva. And I am an assistant professor at the University of Illinois in Chicago in industrial design, and pretty much associated with Autodesk. And I'm also part of the IDSA, which is an industrial design organization.

JEFF SMITH: How many of you guys are ID? OK. Engineering? OK, what else? How interesting. Architecture? OK. Anything else?

AUDIENCE: Theatrical design.

Uh, theatrical design. OK, cool. Good diverse group. I like it. Usually ID and ME are the two. It's nice to have more. OK, go ahead. OK. Antonio's next. Go ahead, Antonio.

ANTONIO ISLAS: Hi, everybody. I'm Antonio Islas. I am an assistant professor at the University of Cincinnati, at the College of Design, Architecture, Art and Planning. And I met Jeff through Autodesk, but I wonder how we hadn't connected before, because we share a lot of our passion for sketching. And, well, he's one of the reasons that I use Fusion today, which has been really useful. And Autodesk Academy is going to release a course in automotive design regionalization using sketching and 3D modeling as teammates, similar to what we'll do today. So hopefully you guys can check it out in a few days when it comes out.

JEFF SMITH: OK. Some of Antonio's work, he does a lot of automotive stuff as well. Like me, he's analog and digital. So he's got both sides of that coin. OK. Yolegmma I met Yolegmma two years ago at RIT where you were a Fulbright scholar. And so now you're living in--

YOLEGMMA MARQUEZ: Argentina. I'm from Venezuela, but live in Argentina. I spent 3 years at Rochester Institute of Technology. [INAUDIBLE] program in industrial design. And we met over there. And we have different experiences, from the medical design to everything related with industrial design. And Autodesk was one of the sponsors of the program. That's why I'm here.

JEFF SMITH: And we continue to sponsor that program, the student I-30 program. Yeah. It's fun for me, because I'm-- I mean, I'm a little biased. I'm alumni from the school she was at. So ups, I

support them a little bit. OK, next slide.

OK, so last year, as I mentioned, I gave a talk on Sketching and CAD as teammates. A lot of people understand that there is a workflow that talks about drawing first, and then building in CAD. And in my old world, I had to do it that way. Fusion on the other hand, begs the question, do I have to draw first? Fusion is a very powerful, iterative tool that-- it pains me to say that, sometimes-- you know, do I have to draw? Fusion says no, you don't have to, I'm fast enough.

But should you? And I think you should. And I think it's a two way street. So whether you start withdrawing first and go to CAD, or use drawing as a tool to augment CAD, it's a two way street. And if I convince you guys this is a two way street today, I win. OK. And not a one win. OK, next, Yolegmma.

So I am a visual person. I'm a drawer by nature. Being an industrial designer, sketching and putting down form and visual communication of my thoughts is where I'm centered. So I always think of drawing first. Even though I've been a super CAD user for a long period of time, drawing comes to me first. I was trained analog. That's the way I work. Next one, Yolegmma.

So when I work, when I iterate, I have a common language, I have a common thread on the visuals. I use lines, and I use words and numbers combined. OK, Yolegmma. So where that sits as a merger is when you use the two together, when you take a CAD image and you modify it with a drawing. OK, this specific image was done years ago, but it begs the point of you use CAD for reality proportioning, you use drawing to explore and iterate and adjust, quickly and faster than you would just doing it in CAD.

OK, one more. And more drawing. One more, Yolegmma. Thank you. OK. So I showed this drawing last year. And I had just done it before AU. And I'm going to use it as sort of like the set up for where we're going to go today. If you do a drawing first, and you put together a nice communicative, old school marker rendering, great, no problem. What if I had done the CAD file first? Great, no problem. These two form a symbiotic relationship. The more you draw, the better your CAD skills. The more you build CAD, the better your drawing skills. Because you're learning more about 3-D elements, and you're learning about how they interact. So how you can utilize those together? Maybe I was doing the CAD file to adjust the drawing. Maybe I was doing the drawing to adjust the CAD file.

OK last one, Yolegmma. So my point, and the group we've worked with together here, we

want to open the door to you, guys, and we want to do it live. This is supposed to be a panel discussion, but we've turned it into like a panel demo. So it's going to be very open, asking questions, talking. No one has to be quiet and just watch. But what we're going to do is develop for you live.

Yolegmma is going to drive fusion. And she's going to put together-- go one more slide for me, Yolegmma. She's going to put together some concepts for some hairdryers, live. We are doing this all off the cuff. She'll use fusion as an integrative tool and iterative tool. Antonio is going to do the same thing in sketchbook. That's why we need two monitors.

Antonio will be here. Yolegmma will be here, just putting out ideas, putting our thoughts down digitally. And then we're going to switch. She's going to work off of his designs, and he's going to work off of her designs, without changing software. So he'll stay in sketchbook. She'll stay in fusion, to see how that cycle works and how you collaborate.

OK. So I'm going to set my timer. If you guys want to open your programs, just so I don't run over time, then I can keep facilitating the discussion. And Hector is going to help me with that. And then we'll ask Hector to help on the second side as well. So as a team we sat down. And did we lose you-- no, we've got no signal, Antonio. Won't come out.

ANTONIO ISLAS: Give me another adapter.

JEFF SMITH: We had it.

ANTONIO ISLAS: Should be up now.

JEFF SMITH: OK. We're on now. Technology works. OK, so we as a group had a discussion. We talked about what we wanted to do. And we just kind of picked hairdryers as something fun. So Yolegmma right now is just laying out some information. She must have grabbed a couple different. Did you grab some images you want to use as a reference point?

YOLEGMMA MARQUEZ: Yeah

JEFF SMITH: So she's doing it for scale. She's putting information in there, and just going to use as a reference point. How many guys have used fusion? So are you comfortable with the sculpt tool? Yes? OK. As a SOLIDWORKS modeler, I was not. I came across, and all I wanted to do was make hard fast dimensions and make everything right. You have to change your mindset

slightly, and you have to use it as an iterative tool that you define and pull through.

So for me, I've come through. And I've learned that mindset. You're also to throw away the baggage you don't need to keep the baggage is valuable. One of our goals for this year was to contrast the two. So please do not be afraid to raise your hand. Please do not be afraid to ask questions. These are two different worlds that live together. OK? And I'm showing to you what-- we are showing to you separate right now, because one is analog-- I'm sorry, one is drawing, one is CAD, but the point is they're both iterative.

So if I-- how many guys are Sketchbook users? OK. How many are not? How many are drawers but not Sketchbook users? OK, why not? Sketchbook is a wonderful tool. OK. I refer to Sketchbook as digital paper with layers. OK. It's all the tools you would use in the long run that you would if you were drawing, but there is no mess, and you have layers.

One of the most important things I like to use there-- and you see Antonio do it-- is he's turning the paper. For my drawers in the room, who turns the paper? Why do you turn the paper?

AUDIENCE: For your arm movement.

JEFF SMITH: Arm movement, right? So the fact that Antonio and myself we can do it digitally, that's a wonderful tool argument, and a wonderful way to work. It's natural. It's explorative. And I have that feeling of what's going on. So Yolegmma has already built the bottom half in Fusion for this concept, and what she's thinking about.

I didn't set my timer that I said I was going to set. So if you use fusion to use drawing as a tool, I'm just asking you guys, who uses the two together? You [? used ?] [? together ?] two of you, who's never thought about these two as teammates before? OK. For those of you guys who have used the two together, does this seem logical? Have you worked both ways before? Going from Sketchbook to Fusion, or Fusion back to Sketchbook?

There you go. So the world comes full circle for you then. And what's funny is Sketchbook, as you know, is a result of Alias. Right. That's where the origination of Sketchbook came from. Sketchbook is going to work its way around to help support Fusion now too. So this is going to build a full circle bridge between the two.

AUDIENCE: [INAUDIBLE].

JEFF SMITH: Yeah, I think it was just part of Alias.

AUDIENCE: Yeah, before that it was [INAUDIBLE].

JEFF SMITH: OK. I remember when it came out in Alias. That was my point. So Yolegmma, are you working with symmetry?

YOLEGMMA MARQUEZ: Yes.

JEFF SMITH: OK. So if you look at Antonio's for a second, you saw him starting out in elevation. Does everyone know what an elevation view is? OK. Can you show me anything in this room that's actually elevation? Is anything in this room actually in elevation view?

AUDIENCE: [INAUDIBLE].

JEFF SMITH: No, everything in this room is in perspective, to be more precise, three point perspective. We live in a three point perspective world. So, as useful as elevation views are-- and you could see Antonio has made that shift. He started to do some elevation views to block in his ideas. And now he's coming over to three point perspective views because that's what we see. That's what our world and that's what our eyes are used to seeing.

So if you look, Yolegmma is mirroring that action. She's got a side view where she's sculpting and adjusting this piece. And how those two pull together and how you utilize both of those is a valuable asset. The 3D allows you to bounce back between the two a little bit quicker than a drawing. But the principle is there.

So to me what Yolegmma just did there, by copying and pasting that form, is the real reason why Fusion says-- or at least asks the question-- do you need to draw anymore? The fact that I can iterate like that and change off of the same idea-- if I was drawing in that methodology, what would I do? I'd take out a fresh piece of paper, I'd put it over the other one, and I'd trace it. I'd create an underlay. You could do the same thing very quickly in Sketchbook. It's valid. But Fusion then begs that question of wow! I could-- I did that faster than I could ever conceivably draw it.

And now you're using that as an iteration tool. So when I said, does Fusion ask the question do I still need to draw? It does. Fusion is so fast and allows you to explore shape in a rapid manner that it does ask that question. But as I alluded to earlier, should you? OK.

I am a big proponent of leveraging the right tool at the right time and using complimentary tools. So Fusion asks you, can move that fast? I say you should draw two because drawing is different. How many of you guys learned to write and not print? OK. Are we all writers? Does anyone still write in cursive? No, most you still probably type. OK.

My kids right now are young enough that they're still learning cursive, but the question begs, do you teach someone cursive when you're going to spend your world typing? And then, if you're a designer like me, when you go through college you learn how to write everything in caps, and squish the letters. And you train yourself for four years to write that way. And now I almost can't remember how to write in cursive because I forced myself to print in that regards. But you should because it makes your minds think differently.

Does anyone have questions? What's he drawing on? The hardware?

AUDIENCE: Yeah.

JEFF SMITH: Antonio is running the same hardware that I run, which is a Wacom Companion 2. It's a full Wacom Cintiq But it's a full Windows 10 computer. Because you know, Wacom makes those, the monitors. But he's got the computer version as well. It's a 13 inch, I think. Yes, it's with a stylus, and it's a Cintiq touch. His is touch and capacitive pen. So it's not it's not a touch base piece for drawing. He's using actual stylus. But how many pressure points, Antonio?

ANTONIO ISLAS: This one I think it's got 2,000?

JEFF SMITH: Yeah. Now, if you don't know about their products, Wacom them makes good products that complement our world really well as designers, engineers, and makers. Their newest product comes with a 3D scanner as well. So I'll be getting that because then I can put a third round into this world as quickly 3D scan something, and then bring it into either one I need.

And you can see, if you look at when Antonio is doing now, he's just using airbrush technique. If you're an old school drawer or Illustrator, that's what you learned. OK. That's how you worked. And like I like I mentioned earlier, Sketchbook is a lot of old school tools brought into this new digital world that allows you to use all these tools that you wouldn't using normally because of the mess.

I haven't work out in airbrush in a long time, but I use it all the time in Sketchbook.

Yolegmma, did you get really other one is just hide it?

YOLEGMMA MARQUEZ: No, I had it.

JEFF SMITH: Got it.

YOLEGMMA MARQUEZ: I just wanted you to write different concepts [INAUDIBLE]

JEFF SMITH: Yep.

YOLEGMMA MARQUEZ: Because [? ideally ?] you switch to the basics.

JEFF SMITH: So how many of you guys, again, were Fusion users? A handful of you. So one of the things we're going to touch on quickly as well is that Fusion is not just a modeling piece of software. It's a networking tool. And the fact that all of your data is stored in the cloud, and you can collaborate off of it. Antonio is going to upload his information to the cloud. And then he's got access to this folder already, so he can access her files right away, pull down into Fusion, look at it, adjust it. And we're going to do not only these two different methodologies, but we're going to exploit the collaborative nature of the software as well.

OK. So these guys have like five minutes left to iterate these forms. Does anybody want to throw a wrench at them? Come on. Somebody is going to want to throw a wrench. Give us an idea. Give us a question. Throw a variable at us. We're designers. We can handle these adjustments.

ANTONIO ISLAS: We can. I hope.

AUDIENCE: [INAUDIBLE]

JEFF SMITH: There's a what?

AUDIENCE: [INAUDIBLE]

JEFF SMITH: I was thinking more, you know, verbal wrench, or maybe, you know, throw it directly at him from here.

ANTONIO ISLAS: Not with your [INAUDIBLE] wrench would be better.

AUDIENCE: Put some flames on the hairdryers.

JEFF SMITH: Uh.

ANTONIO ISLAS: Flames, all right, let's see.

JEFF SMITH: Now, I know what Antonio is going to do. But Yolegmma, how are you going to put a flame on one of yours? Let's see. Sorry.

Now, to your question about hardware, who has the hardware question? Was that you? So Sketchbook works exceptionally well on a full computer, whether you're driving it on a Wacom product like that, or a Windows product with a pen enabled screen. It works really well. Sketchbook also has different levels that run on different mobile devices. They're not the full computer version. They're app versions. They work really well.

A few years ago, they weren't quite as good. But they've made really good progress in exploiting each piece of hardware for the right tool sets. So I know I have it on my phone. And I have it on my iPad as well. So it's a lot of fun to play with it and bounce back in between those platforms. Now, granted, drawing on my phone is not the world's most precise drawing tool. But if I'm on an airplane, or if I'm sitting in a meeting and I want to quickly put an idea down, it's a wonderful way to use a digital tool to sketch. So I encourage you to go get Sketchbook and drive it on different devices.

AUDIENCE: [INAUDIBLE]

JEFF SMITH: On these? Or on that? The default is space bar, is the rotation tool.

AUDIENCE: Space bar?

JEFF SMITH: Correct. So you can set it up that way. I've got my Wacom set up that one of the express keys quickly accesses, and also one of the buttons on the stylus. So you touch--

AUDIENCE: [INAUDIBLE]

JEFF SMITH: Correct. Correct. Or I touch the front button and the tool comes up, and then I adjust it. You'll see when that little puck comes up. Whenever you rotates the page, there will be a puck. That's it right there. So he just quickly touches it. And it's very natural. You could leave touch on and do it with your finger as well. But inadvertently, I always tend to hit mine. I leave a little mark here and there. So I just turn touch off and use the puck. But everyone's workflow's a

little different. Nice, nice flames, Antonio.

ANTONIO ISLAS: There we go. Right. Should we start saving files now?

JEFF SMITH: Yeah, go ahead and save files. We got about two minutes left. So what Antonio is going to do, he's going to export his files here. And he's going to export them. Yolegmma, you can just keep working because he's going to have access to yours as is.

ANTONIO ISLAS: Just save. That would be cool.

JEFF SMITH: Come on, Yolegmma, just put-- go get a flame decal off the internet and put it on there, a little decal for me.

ANTONIO ISLAS: Let me help you get in this guys--

[INTERPOSING VOICES]

JEFF SMITH: No, sorry, pixel based, pixel based.

[INAUDIBLE].

JEFF SMITH: You mean mapping the decal in Fusion?

AUDIENCE: It's just importing it.

JEFF SMITH: Yeah, it'll be effective. This one will be. So a PNG or a JPEG or something. And you can import a DXF as well. So you can bring that in. It could be a background or it could be to a sketch. So if you brought it in DXF, it would recognize all the close profiles. And you could immediately extrude lost-- off of those. Yeah, it's very convenient, actually.

I'm doing a little work with interior design faculty, where we're doing a section of a room to see if they can drive it in Fusion quickly. Design-- what we're going to use a floor plant to extrude off of, and then build custom stuff to populate Revit from Fusion to Revit. Another interesting workflow that we're sparing with now. You got it, Yolegmma?

ANTONIO ISLAS: We're having a technical glitch with the internet.

JEFF SMITH: Is the internet issue?

ANTONIO ISLAS: I think so. Well, it's good, because that gives me time to finish saving. Otherwise, something

will be lost. It's why I didn't plan it.

JEFF SMITH: Well, she couldn't import it, yeah. But we want to use the networking aspect of it.

AUDIENCE: So we can-- so that's a Fusion 360 storage. Isn't it?

JEFF SMITH: Yes. Fusion 360 defaults to cloud storage. And so we created a group folder that everyone has access to. So when she saves that file to the A 360 network, Antonio goes to open it. It really doesn't matter where he is. Yes, technically, he's in his room, and she could hand him the file. But if he was in San Francisco, he could just open it immediately.

AUDIENCE: [INAUDIBLE]

JEFF SMITH: Correct.

AUDIENCE: [INAUDIBLE]

JEFF SMITH: There is collaboration, yes, because on A360 you can add notes and details, and it will ping the other person. So it will let you know what's happened. And it shares the notes. If I was still in the consulting world, I would make my clients join A360 with me. And I would make them do the note documentation on it, so I'd always had proof. Because it time stamps it and it gives information. You know, I say, hey, Client B, here's your information, pop up. And then they look at it. And then they take notes on it, and put the notes back into A360. It's recorded on the file with the file. So you have a nice full group communication.

You're good, Yolegmma?

YOLEGMMA MARQUEZ: No.

JEFF SMITH: Is it the internet?

YOLEGMMA MARQUEZ: Yes.

JEFF SMITH: Are you on there?

YOLEGMMA MARQUEZ: Yeah. [INAUDIBLE] I also have access to internet, but for some reason, there's no connection to the software.

JEFF SMITH: Maybe just reboot Fusion really quick, just to make sure. Save it locally. Save a download file. OK. Antonio, you mind just opening and prep it?

ANTONIO ISLAS: Yeah.

JEFF SMITH: So while Yolegmma is making sure she has internet connection, what Antonio is going to do is we're going to switch over now. And the whole point of this switch is to leave the person operating that specific software deriving that software. So Antonio is going to stay in Sketchbook. And what he's going to do is he's going up load his designs to the A360 drive.

So now they're up there. He's put them there. And as soon as Yolegmma has hers up there, he's going to grab that information, open the 3-D file, pull a couple of JPEGS off of it, and use those underlays to draw off and iterate. The whole point that we want to do here is that we want to have the other person work off the other person's work. A, to show collaboration. B, to show the two directions. You can use these two pieces of software.

So Antonio is going to draw based on the Fusion files, and Yolegmma. is going to model based on the Sketchbook files that Antonio drew. And she's going to work towards one of his designs to build that. And I'm going to ask Hector to represent old school like me. And I'm going to ask him from visual to draw analog, and take one of those designs and iterate off of either one of them.

And I'll use my phone to show you some images of him as well. So Hector, you can do that. You've got it, Yolegmma?

ANTONIO ISLAS: I think where we're having some technicality here as well.

JEFF SMITH: Is it no transferring?

ANTONIO ISLAS: It's not connecting. I think she's-- it's her internet from the beginning.

JEFF SMITH: Just export a file for backup, and then just reboot it again.

YOLEGMMA MARQUEZ: [INAUDIBLE]

JEFF SMITH: Have you rebooted Fusion since you had internet connection? Yeah. Just reboot Fusion one more time. If not, you can always export a JPEG for Antonio. Does anyone have any questions

for me while they are sorting out the last second technical detail there?

AUDIENCE: [INAUDIBLE]

JEFF SMITH: In Fusion? Do you want to bring it in as a environment, or do you want to bring in it as a reference point to show it?

AUDIENCE: As a reference.

JEFF SMITH: As a reference point. You would use a canvas. And that's what Yolegmma is going to do with Antonio's sketch. So you say, insert canvas. And then you put in the image. And then what's really nice to be able to do is to calibrate that canvas. So you can make that canvas by right clicking on the name. Go to calibrate. You can pick two points. And it drives it to that size. So your sketch is at least in the world of proportions and set up.

ANTONIO ISLAS: So what I could do too. Right now we're just waiting for that file to reach. But she will have access to the same folder I'm working on right now at the moment. And she could very easily bring it to Fusion.

JEFF SMITH: OK.

[INAUDIBLE]

JEFF SMITH: Oh. Yeah. Oh, OK, same issue. Yeah. Yeah. Yeah. So yes, some technical issues. It might not be you, Yolegmma. It might not be your computer, Yolegmma. It's the Fusion. It's a cloud issue.

YOLEGMMA MARQUEZ: Yeah, I have the same problem.

JEFF SMITH: Yeah, it's a cloud issue then. So let's do this. Can you download that file?

ANTONIO ISLAS: We're just waiting for--

JEFF SMITH: Save it local, and give Antonio as an archive file. He can upload it. OK.

ANTONIO ISLAS: Getting there.

JEFF SMITH: Fusion 360 drives to the cloud. That's its goal. OK. If you're offline, it will cache it locally. So she's got it on her computer. Because it's having an internet connection issue, it knows that--

that's life. Sometimes that happens. It's not sunk. It will cache locally. It will save on her drive. And as soon as it gets good access, it will drive to it again, automatically.

OK, so what I'm going to do here is on a switch to four. I should give you me. And make sure I'm the right way. And so what I'm going to do is I'm going to show you inside our background world, right? And so Hector's drawing analog here. OK. I asked him to do this for us, to show both sides of the coin, right?

So if you're a drawer by nature, and if you draw and work in this realm, it doesn't matter. OK. Now I'm going to put it on the spot a little bit, right? And say, Hector have you used Fusion yet?

HECTOR SILVA: Very little.

JEFF SMITH: Very little, right. But what did you tell me when you came to Autodesk the other month and you told me about what you should have done?

HECTOR SILVA: I should have learned it a long time ago.

JEFF SMITH: I went and visited Hector at UIC probably a year ago, maybe a little bit more than that, and did a Sketching workshop and a Fusion workshop with his students. And you know, I showed them Fusion then. And then, when he came out a month or two ago at Autodesk, and he came up to me afterwards, said, oh, my gosh, Jeff. I should've listened to you and done Fusion then.

But the whole point is analog skill sets translate across. OK. And this world of drawing on paper is still critical to us. And being able to sketch and communicate aids you in so many different ways. It's been my foray into almost every opportunity that I've fallen into. And I mean that in a positive way.

Being able to communicate on paper has led me to be able to be the person in the room pulling things together, pulling information across, organizing thoughts, driving directions. But that also translates into being able to work in CAD, and build CAD form. But also then draw digitally, and sketch digitally in Sketchbook.

And Hector teaches drawing at UIC as well. And I believe Antonio, you do at DAP, right?

ANTONIO ISLAS: Yeah.

JEFF SMITH: Do you have the Fusion file over there?

ANTONIO ISLAS: I don't. I don't know if it save it. Where do you find those files?

YOLEGMMA MARQUEZ: It was supposed to be in the recent date, but I closed it and when I opened it at the end--

ANTONIO ISLAS: No, let's That's something. You can work with my sketch files that I have.

JEFF SMITH: Yeah.

ANTONIO ISLAS: I'm gonna quickly create a template here, which I do all the time when I work with Fusion. And we're going to show you the same kind of like workflow.

JEFF SMITH: And then, Yolegmma, if you want to open one of his elevations and drop it in, you can start to build off of it. Are you breaking our markers?

HECTOR SILVA: Yeah, a couple. So this type of sketching is something-- this is really rough. But this takes years of just mistakes and doing over and over again. Now, I can easily do a rough one and scan it, put it in a sketchbook, and really refine it. Another way another thing I can do is scan it, take it into Fusion, and really fix the perspective. If I'm not a very confident sketcher, take it into Sketchbook, and then overlay that.

What I'm doing right now is a very slow version of what Sketchbook could do. Right? I have overlays here. And this could be done very quickly on Sketchbook Pro. But if you're not a very competent sketcher, you can do something that's already in perspective in Fusion, and then work backwards like that. And I actually encourage my junior and my senior level students who-- sketching for them is still a little uphill battle, to start with Fusion and then kind of reverse engineering.

Because, whether you're in design or whether you're in another architecture engineer, the first thing you're going to notice is a perspective-- no matter of who you are, if I show you something, and you can tell that it's off-- that something is off-- it's most likely the perspective.

JEFF SMITH: So to translate slightly, what Hector is also saying is Fusion, if you're using it as a CAD file first, there is no reason why you can't use Fusion to build an underlay to draw over analog. So it's not just fusion in Sketchbook. It's also fusion in analog drawing. So you can pull that information across if you're not comfortable, and you've not mastered that perspective scale.

OK, and you can see Antonio's also pulled together an underlay for himself here. Going off our technical issue and building it here, he's going to pull that together and drop in the Sketchbook in a second. And wow, this marker smells good. Man.

HECTOR SILVA: You're wondering where designers get all their ideas?

JEFF SMITH: Do you have any AD markers in there?

HECTOR SILVA: I do.

JEFF SMITH: Oh, man, don't open that thing. We'll have to clear the room out.

AUDIENCE: Is he running Fusion on the--

JEFF SMITH: Yes, he's running Fusion on the Wacom. I run the same computer. It's a companion to. It's I7 processor with I think it's 256 solid state drive. I run Fusion on it. I tun Sketchbook. And you'll see him. He's already bouncing to Sketchbook from Fusion, and driven out that concept. So when I talk about time, and I talk about time savings, that's what we're talking about here. That's-- I mean, you can really leverage the two together.

Now, if you print it out and do a hand drawing, so what? It's the same same idea. Sketchbook is a great tool and a wonderful tool to utilize. But it's still the core elements of drawing. It just happens to be digital.

AUDIENCE: [INAUDIBLE]

JEFF SMITH: For his? On the companion 2, he's got six express keys, and then the four rocker keys with the center, and then the two on the stylus itself, right? What most people don't know is that the big walk on the 27, it comes with an express key remote. You can buy that remote separately and it'll work with that. So you'll have 28 keys that you can customize as needed.

OK, Yolegmma, do you have his up?

YOLEGMMA MARQUEZ: Yep.

JEFF SMITH: OK, I'm going to come back to Hector in a second.

ANTONIO ISLAS: So, while they do that change, what I'm doing right now is I'm just kind of like using the template that I created, which is a very-- something took me like four minutes. And the cool

thing is that I can explore all these different iterations, where I can get all this difference-- I can show where my buttons are going to be. And I don't have to fight this perspective.

In the same way that I got this one, I can pretty much rotate and take a picture on this angle. I can take a picture on that angle. I can close and do some details. And then we can go back.

JEFF SMITH: And to build on what Antonio is saying there, it's-- you're utilizing Fusion as a custom underlay tool then. If you're not adept at pulling three point perspective of the cuff, it's a wonderful way to do it. And you can see he's added some color and shadow in there too. But it's a way to pull information for renderings as well. If you're not good at predicting glass, or predicting reflections, you can utilize the 3D tool to help steer you in the right direction. Because the rendering aspect of it is all in the 3D tool, you can leverage it in that regards.

AUDIENCE: You guys use the perspective [? doing Sketchbook? ?]

JEFF SMITH: Have I, yes?

AUDIENCE: Is it helpful?

JEFF SMITH: It is exceptionally helpful, but it's straight lines only. So it's great to pull out information and do underlays, and anything that's perfectly straight. In those regards, it worked really well. You could set it up to do 1 point, 2 point, 3 point perspective. And then those are all technically not cheating, they're just really fast. The only one that is cheating is the fisheye one. You can't do that any other way. There's just no way-- that's completely cheating. But all the other ones, 3 point, 2 point, 1 point, is not cheating, because I could use a ruler and do the same thing. It's just eight times as fast.

And so Yolegmma. has Antonio's sketch put in as a canvas. She's got it scaled to the size she wants. And she's using sculped tool to build out and build around that, and as a guide point.

So the key element to this talk today, or panel discussion, is to understand that A, drawing is important, drawing is vital. B, CAD is exceptionally important and exceptionally a vital tool. But when you can use both of them at the same time to help each other, you become even more of a diverse designer, engineer, builder, maker, that you can drive both sides of that coin to speed up your team, and to speed up your iteration process and your development process.

So Antonio, are you just doing lines over that to use the shadows and information just to fill, or use it as a guide?

ANTONIO ISLAS: Well, I-- this one I just know that this is going to be [? a material break, ?] but I didn't like my whole kind of like silhouette. So what I'm doing is am color picking from the background so that I can kind of massage the shape. For example, I don't really like kind like this area that got a little bit fat. So I'm just kind of like creating that.

JEFF SMITH: What he's doing there, if you're not familiar with the techniques he's mentioning, he's using the colors to pull in colors from that are on the image. And he's basically manipulating digitally the image that was rendered out of Fusion, or the screenshot that he built. So he's leveraging the drawing tool digitally to do something faster than he could actually-- faster than he could do it in Fusion, to iterate his idea there.

AUDIENCE: [INAUDIBLE]

JEFF SMITH: OK. OK. Your question is valid. So are you architectural and background?

AUDIENCE: Yes, yeah.

JEFF SMITH: So your question of taking scenes from real life and then drawing over them is the same. It's the same. OK. It's the exact same principle. So slightly different workflow or scale. But the principle is the same. You're using something to pull through to another one, whether using Fusion as a quick iterative tool to draw off of.

For example, if you're going to do it for buildings, you could quickly knock together some buildings and have that image customized, pick the view, and then use it as a tool that underlay over. That's the whole point of what we're trying to do here. And what I'm trying to show you, guys, it is the same.

OK, a few more minutes, guys, and then I have to open up for questions. But I'm gonna take it from Yolegmma for one second and come back to Hector, and see where he is. So he's moved on to a whole other view. And he's doing side elevation. Is that wood?

HECTOR SILVA: Yeah. And as you can see, when I sketch on tracing paper, I sketch on both sides. And a lot of these tricks are things that you need to do and really learn to get really good at sketching analog. But once you start using these other tools to really-- as an aid, it really helps with efficiency, with your time, and with really teaching, and kind of learning all this.

As an educator, you're trying to teach your students how to be efficient. And I highly

encourage them using these tools such as an aid, but also to be efficient. And I always tell them to cheat, though this isn't really cheating. But you know, tracing paper, like I said, this is a very analog version of the streamlining of what Autodesk has done.

When I was in school, I used to use Photoshop a lot to sketch. And I really hated it because you have to be like, you have to know-- you have to kind of learn the language. There's a huge learning curve of using Photoshop. Autodesk really, as soon as-- if you've never used Sketchbook in your life and you open it, it's like using an iPhone. You immediately know how to use it. You don't need a user manual to tell you how to do something.

So they really just made it for sketchers only. And it's extremely-- it's great because, as a designer, as an engineer, as an architect, if you're a set designer or whatever your are, our common language is communication. So if I can communicate this and then an engineer can pick it up and really know what I'm trying to say, then I have done my job.

JEFF SMITH: OK come back.

ANTONIO ISLAS: So I can keep just ideating this. I can think about probably some different interesting part lines that I could work on this. One we didn't get to show you before because of the technical issue that we had is-- and I don't think the model has come up yet-- but once I get a model up here in the A360-- I'm going to show you real quick with a different project-- if this was the hairdryer that Yolegmma was working on, I could just see it here. I would-- right now is not going to be a hairdryer, but let's say this kind of have carved bodies.

I would be able to log in even if I don't have Fusion in my machine. And I can enter a preview that this person can be my boss, this person can be a person in a different location. And it's opening this preview where I can rotate, I can zoom in, zoom out. And I can take my screenshots from this area. And all my layers are turned off in a different way.

And they're starting to load as you can see. But this is what I was going to do with Yolegmma's geometry on her thing. And then that I can bring to Sketchbook, and I can continue working and creating all these series of elements that of this point I'm kind of like modifying to then get ideas and probably go back to Fusion, and continue working.

JEFF SMITH: What happened to the flames?

ANTONIO ISLAS: That flames--

JEFF SMITH: That was a joke. That was a joke. Yeah, that was joke. You don't have to have flames. You don't have to have flames.

ANTONIO ISLAS: We could get flames.

JEFF SMITH: No, no flames right now.

ANTONIO ISLAS: No flames, OK. I'm adding some different little details, but I can then explore. And I can also explore different forms if I need this thing to go like stick out. Probably getting this done in Fusion was not something that would be particularly difficult. Probably would take more time than do this. And I could quickly decide if this element that, right now, it's giving me a shade that probably does this, kind of like sticks out and softly turns and looks down. I could very easily, just with one motion, decide that.

JEFF SMITH: Where's my layer. Here it is.

ANTONIO ISLAS: That I want that to be a hard edge, right? So I can iterate, and get different kind of like close ups of the same tool, and get different ideas and quickly iterate them. It's going to merge everything.

JEFF SMITH: OK, guys, there's technically five minutes left, right? So I don't want to-- I don't want to get you guys stuck. I want to give you a few minutes for questions, and make sure you have enough time to get to your next class if you're going to. I'm going to let these guys work for a minute. But that's the whole nature of what we wanted to show you guys today, is that Sketchbook and Fusion can be used as teammates and collaborative tools to pull each other together, to iterate in a comfortable manner.

You can do it across people, same person, different information, different groups, and live we're showing you how fast you can do it, both 3D and technically 2D as a [? group. ?] So does anybody have any questions? We're happy to answer them. Or you can just watch for a few more minutes, and let us know. Yes.

AUDIENCE: What's the workflow like between Fusion and Revit?

JEFF SMITH: What's the workflow like between Fusion and Revit is the question. I'm not sure. I'm working on it right now. I'm working with a group at Auburn University in the interior design department. And they've been using [? Sketup ?] to Revit. And I'm working with them to train them in Fusion because there's just a quality to it, where they can say, OK, I'm going to design a chair,

right? And I can do iterations of this chair. And I can do a nice chair that its [? own ?] piece.

And then how do I populate that chair into Revit? So I'm literally-- and there's a couple people who have done it, but I'm working through that step right now.

AUDIENCE: This collaboration is very interesting, and very [INAUDIBLE].

JEFF SMITH: Sure. It's very valuable to you. Are you architecture based?

AUDIENCE: Yes.

JEFF SMITH: OK, Yes, very valuable. What Antonio touched on there was this can also be applicable on a more final stage here as well. Like, you've had a final CAD file. You don't want to just quickly adjust things there. You want to test it first in a 2D environment that's fast to say, do I want to invest the time in that change? So almost the same point that you're making in that technical drawing standpoint. So, yes, your point is very valid and applies here too.

AUDIENCE: So Sketchbook [INAUDIBLE] so the Fusion [INAUDIBLE]

JEFF SMITH: Yes.

AUDIENCE: [INAUDIBLE]

JEFF SMITH: There's rumors that there might be points of Sketchbook that come in to Fusion, like inserting a canvas directly, popping things out, maybe being able to draw and there later. Nothing is official yet. But there's words and motions going that way. And that's why I mentioned full circle about Alias and original. So yes, those elements are working through, and are very apparent. Because this workflow and this idea that we talk about is well received in Autodesk.

So they're they're trying to integrate that step further. One of the program managers for Fusion is usually on the sketchbook team. And he's spearheading that.

AUDIENCE: Does Fusion have a [INAUDIBLE] where you can take a 3D model and it automatically generates front views, top view, side views--

JEFF SMITH: Yes. So-- yes, the question then is, does Fusion generate standard elevation views? So you'd be creating a drawing, right? And Fusion does create drawings. And you can export those as a DXF. Yes. And it will update. So you can create your top, front, side, isometric section view, AA, right? And then you can drive that out, draw over it.

Yes. Guess. Under the one mode there, it should go down, and go-- she's in the middle of doing a drawing there, but you'd come down to create drawing.

AUDIENCE: What I wonder is if you brought it to the [INAUDIBLE] and then sketch it, there's a tool in Fusion that could eventually save the best sketch. [INAUDIBLE]

JEFF SMITH: It-- yes, I understand what you're saying. You want to create a tangible link between the 3D and the 2D to go back and forth. It's a good idea, but I don't think you can do that yet. What you can do, though, is if you have a DXF, you can bring the DXF in, and Fusion will read that as a vector based sketch. So you can leverage anything you've done previously in any other product, and you could put it in. And it will recognize the closed profiles that you can then utilize to extrude or to sketch or to whatever you want to do from them.

AUDIENCE: [INAUDIBLE]

JEFF SMITH: Correct

AUDIENCE: [INAUDIBLE]

JEFF SMITH: Correct. It's OK. Oh, he, hey. I will put it out there blatantly because Sketchbook it's one of the most powerful things I can say, is you can save this as a PSD document native in Sketchbook. And the Sketchbook team has done a really good job by adding the layer sets. So you can work on a file in Sketchbook, go over to Photoshop, do what you want to do, come right back and all the continuity is there.

So kudos to those two companies that allowed that to happen. I don't know who is the person that did that, or if it was them or us, or whatever. But it is seamless now. And that's wonderful. OK, guys, is 1 o'clock. So if you want to stay, we'll hang out, ask some questions. But I don't want to hold you guys up. Thanks for coming.

[APPLAUSE]