PRESENTER: No pressure. I said I was going to do it like this is an intro class for new and part-time users. And there's like 150 years of Max experience standing on that wall right over there. No pressure. So let's get started.

So Template-Based Workflows for New and Part-Time Users-- really long title. But this is the welcome to Max. The assumption here that I made-- it's an assumption-- is that you're all involved in computer graphics. If you're at Autodesk University, if you made the trip, if you came to Vegas, you're obviously involved in some way or another in this industry. And hopefully if you're in this room, you're interested in adding 3ds Max to that pipeline.

This summary is really just to talk about workflows, to speed things up. These workflows require a lot less technical knowledge and effort than those found in other packages. This isn't unique to Max, but 3ds Max has a lot of different workflows-- and they've been at it for many, many years in different releases-- for things to automate things and speed things up. And that's what I wanted to expose people to. The other thing about this, these tools can often alleviate artists from needing technical, director, or custom development.

That's to say that you don't necessarily have to be a computer programmer or scripter to use these tools. These are artist-friendly tools. I have a fine art degree. Admittedly I'm a pretty big nerd and I've been doing this for a long time. I don't just sit around and paint with acrylics or anything, but I'm not a programmer.

I don't come from that background at all. And that's one of the reasons why 3ds Max has been my bread and butter since the beginning. A little bit more about this. So this is targeted-- again, I hope I've driven this point home-- to new and part-time users. Welcome.

So nobody knows it all and that's OK. Not everybody needs to become a guru at this product and that's OK. It's going to be OK, that was kind of my point here. So this is aimed at individuals and teams, whether that be you're a one-man shopper or one-woman shop, all the way on up to teams of 50 or 100 people looking to do a lot of different things. And again, there's a bit of an assumption here that you're already involved with computer graphics.

You're probably using other tools, especially for doing things like modeling and so on. So Max being where you might want to bring it in for doing things where it excels, like animation and rendering. And this session, there's never enough time for me to do as much as I want to

cover in these sessions. So this is mostly about raising awareness. And I'm going to show you different workflows and materials and lighting and so on that what I would call Template-Based Workflows.

But it's really just about awareness. A little bit about me-- so I've been doing this a while. I had my own business in Orlando, Florida, going back to like 1992, was using 3D Studio Dos back in the day and did a lot of different things. Along the way, I was very honored. In 2007, I was given an award by the user community.

And at that same SIGGRAPH, I actually became part of the board. So I took this role as a technical specialist. So now I just travel constantly and this is what I do. And then, on a social note, I like water sports and barbecue. So if anybody wants to talk to me about barbecue at any time.

And I recently did this thing, I don't know why. Anyway, I damn near killed myself. But I like water stuff. I'm going to put this slide up again later, at the end of the session.

But there's an additional takeaway. I'm an Autodesk employee, so I'm going to be around a lot this week. In addition to this session, immediately following this, you can come to the AMD booth. And that's my three hour Q&A with beer and wine. So if you want to follow me from this session over to the AMD booth. And then again, I'll put this information up for the rest of it.

The other thing I wanted to make you aware of is for my first of many shameless plugs for my blog. On the area website, the area.autodesk.com website-- hopefully you know about the area, but if you don't I'm just going to show you my blog real quick. I do periodic blogs, it's not like every Friday I'm posting a blog or anything like that. But I do a lot of different blog posts about a lot of different things, some of these are really long 45 minutes to an hour to 90 minute lectures and all kinds of different stuff.

One of the things that I'll mention, back to the PowerPoint here, is I'm actually starting or planning-- there's talk with a couple of the people around to start this new series called The New York Minutes. And they're really just going to be really quick, fast tutorials, literally aimed at like a minute or two or something. But the point of the blog-- and the reason I bring it up is there's a lot of things that I won't have time to get to that I will be posting there. And I want to continue to maintain that and encourage you to ask for requests. I'll take requests and so on. This last little bullet point about living documents-- there's free stuff and features by Version.

The free stuff one is right here. If you go to free tools for 3ds Max. I've got this virus in my browser. I'll do this to see if the living document works. So this is the free stuff one.

This is just a Google Docs and it's something that I maintain and I continue to update it constantly. The ones right here are the ones that most Max people hopefully know of-- ScriptSpot, Max plug-ins, the Learning Channel and so on. I'll talk a little bit more about the Learning Channel in a second. Neil talked in the previous session about his SoulburnScripts, so those are right there. A lot of different resources that are out there.

Resources is the key of this session-- there's a lot of stuff out there, inside of Max and external to Max. The other thing that I maintain is this living document that's a PDF of all the features of 3ds Max going back to 2008. So you can download this document if you're using Max 2011 or something like that. And you're like, I wonder what's happened since then.

For my own job, this was really handy to have around when I'm talking to different customers, like, oh what version are you on? And so on. But it's proven to be something that people ask me for a lot. So I formalized it and prettied it up and made it available to people, just to mention that.

The other thing is the Learning Channel. This is a very big plug and an important thing for the new and part-time user. Not necessarily a thing about templates, but when I say Autodesk content here, this is multiple people's full-time job at the company. So I know you've all heard of YouTube.

There's a lot of quality on YouTube, there's a lot of range of quality on YouTube. Let's just put it that way. So we love the kid in his basement doing tutorials on Max or Mudbox and Maya or whatever. We love that kid. He's a customer, hopefully.

The Autodesk Learning Channel is official training, it's totally free. It's geared at new users, visual effects artist, motion graphics-- and then there's also specific things like workflows. If you're interested in just materials and not modeling, because maybe you're modeling in some other package or something. I really want to point you guys to the Learning Channel. If you forget the name, just Autodesk Learning Channel, 3ds Max Learning Channel.

You can also see that there's a lot of others, things like Mudbox and Maya and so on. This is the Safe Harbor, I just like throwing this up there as an Autodesk employee to stay employed. I may say something during this presentation.

Let's just let that linger for a second and move on. So this is not a show of hands, it's a rhetorical question. When we talk about who's using 3ds Max, this is a good and bad thing-- it's everyone. We mostly focus at Autodesk about these top three bullet points but it's all over the place. Globally, we've seen recent data that there's 17 million monthly users using the software.

And if we look at this data again-- this came across my desk recently. At Autodesk, we don't really mess with AutoCAD. If you're at Autodesk, you don't mess with AutoCAD. But as a Max guy, I'm really cool with like, we're number two. So seeing Max and Max Design being number two at the company-- to be very clear about what you're looking at here, this is not seats, this is not how many seats have been sold.

This is number of people around the world that double-click the Max icon in a month. So 17 million people are using and launching 3ds Max in a month. So it's the second most used application of the company. Eddie also recently told me that it's the second most downloaded for the education market, also behind AutoCAD. So we don't mess with AutoCAD, we're very happy to be number two-- we're number two!

So Template-based Workflows-- what they are is time savers. They automate things, they speed things up, and they're in-app prompted workflow suggestions. You'll see a little bit more about that. What they're not is clip art. This isn't going to be like the Make Art button, this isn't Max for Dummies, this is not dumbing down the product in any way.

It's the full blown deal, but it's just things to speed things up for new users. OK, I hope that makes sense. Who benefits from them? Basically everybody. So I keep using this new and part-time users-- the people that don't want to spend 40, 50, 60 hours a week in Max.

They don't need to, they never want to. You just want to bring in a model and your boss says, I need a pretty rendering of this by Friday at 5:00 o'clock. That's all they need to do. They don't need to do *Lord Of The Rings*. So that's the point here.

Now, if you are some guru guy or girl and have been around the block for a little while, there's also tools in the product that you can use that are template-based workflows that are good for you to just get things done quickly. So there's something for everybody here. Happy to announce today-- this is by no coincidence that I'm doing this class. And today we announced 3ds Max Extension 2. You're all busy fighting hangovers and whatever or staying hydrated and

whatever in Las Vegas, but we announced today, globally, Extension 2.

And this ties in very well with the design visualization community. I won't handhold you read through every one of those bullet points there, but the top two are very specific to this topic of Template-based Workflows. The new Design Workspace and the Template System with manager. Also some other things there are specific to design visualization, bringing in data from other places. A nonlinear camera sequencer is not touched on in this class, but if you want to see that stuff later-- like I said, I'll be around a lot this week.

I wanted to just show you a little bit about how this stuff works by launching into Max 2015 with Extension 2. So the two first bullet points there are the new Design Workspace and the new Template System. So these are brand new, we announced them today. And I wanted to just start Max and you'll see what this is. So there's a new welcome screen, there's a new splash screen that's a part of this Template system.

So as Max kicks up here, you can see we've got startup templates. I'm not going to read through all of these, but this one says Classic Startup, Architectural Outdoor 3:00 PM, HDRI, Outdoor Courtyard, Underwater, Studio Scene-- and you see there's a little bit more information about this. The display units is in centimeters, the renderer is set to mental ray, the resolution is so and so and so on. And then what you can also do is open up this thing called the Template Manager and what this does is it allows you to build templates.

So at Autodesk we're shipping with the ones that you can see here-- one, two, three, four, five of them. But the point of this is to encourage users around the world to hopefully share them. If you don't want to share, that's OK. We won't hunt you down. Internally to your studio or just working alone, you can build up templates as a starting point.

So this is a great time saver, instead of just reinventing the wheel every time you want to do a product shot or something like that or an outdoor architectural rendering or whatever. That's the point, is that these templates-- we're shipping with some example ones, but you can build up your own. So you can set the defaults, you can set the resolution, you can set the workspace-- which I'll talk about next-- and so on. So templates, we're very happy to announce templates. So I'm going to just kick into Max here.

And so this is 2015. And what I can also do is load this other feature, which is the design ribbon. You might be familiar with the ribbon from other Autodesk applications, it's been in Max for a number of years, but this one's a little bit different. It's basically a task-based workflow.

And this is going to be a great thing.

I'm not going to go through every single button here. There would not be enough time to even remotely do that. But I just wanted to highlight some of this and I'll be using it throughout the rest of the presentation. So it's task-based.

The only tab over here called Populate is the feature specific to Max. And I'll be showing that later. But the rest of these are just workflows. So it says Getting Started. This is where you're going to bring stuff in or start creating.

So it's customizing your scene. Again, I'll get to that in a second. New open linking, file linking with Revit and other applications, x-referencing other things in and out of Max. If I move over to Object Inspection, it's got hiding and un-hiding and things like that. Basic Modeling, you have your 2D shapes and your 3D shapes. And let's just create our friend the teapot here real quick.

Once you've got an object, then you've got commonly-used modifiers right there. So it's a workflow that just alleviates a lot of the learning curve for new people. This isn't doing anything new-- and I'll immediately repeat that-- this ribbon isn't doing anything new. There's not new features, but the ribbon itself is a new feature in that it gets you to these tools much quicker and much easier without this learning curve. Again, to just continue down the line here-- materials, I could say if I want to add a material, it brings up the Material Editor.

You don't even have to know where the Material Editor is. It's right there, but you don't have to know that. You could just come over into object placement. There's spacing, alignment, object painting, and so on. Populate-- again, I'll talk to in a second.

View Port Controls for top, front, left, right, and all that good stuff. And then Lighting and Rendering. So these are just common things that people are going to use, especially geared toward the design visualization market. But even Mr. Guy from Autodesk up here that's been using it for 20 years. I've really taken to this ribbon for certain tasks.

I don't use it for everything. And I've only been using it, admittedly, for a couple of weeks. The cut that I'm using is actually still beta. It's been stable and there's no six one way, half-dozen the other there. But it's new, so it's new to me too.

So that's a little bit about the design ribbon itself. Moving along here, so where these

workflows exist. They're all throughout the application. And I'm going to talk a little bit about this set up and interoperability stuff in the beginning here. The one that I have there in brackets is modeling.

I'll just briefly mention now-- modeling is probably the one place where there aren't actual Template Workflows, or what I'm calling Template Workflows. But the good news there is-- and again, I'm assuming this-- but the assumption is most of you are probably using other packages like AutoCAD or Revit or SketchUp or Pro/E or CATIA or SOLIDWORKS, or whatever and you want to come to Max to do what it does well, is make a pretty picture, maybe integrate it into a game engine or something like that. So the modeling part, it's not like a big caveat there of, oh, there's no templates for modeling. And I'll talk a little bit more about that.

But the rest of it is pretty much throughout the application, whether you want to do animation for effects and so on, there's all this. And this last category of Custom Ninja Dev or freebies 3rd party, it's my own internal term. I use it around my own office. Custom Ninja Dev just means-- like I said earlier, I'm not a programmer but I know people that are. Like I know the Neils and the Pauls and all the guys.

If I need a script, I can talk to them. The Max community is notoriously wonderful about giving away resources. So Custom Ninja Dev is maybe things that aren't inside native to 3ds Max, but I want you to be aware of them. I can't even remotely begin to tell you about all of them, but I want you to be aware of them so that you can hunt them down for your specific project. So moving along.

So Set Up and Preferences. This one's just starting into the application for the first time. There's a thing inside of Max called the Customized UI and Default Switcher and most people don't know about it. Obviously there's preferences and there's things in every piece of software. You can set up the preferences, whether you want the light UI or the dark UI and if you want to work in centimeters and all that good stuff.

But if I just reset Max for a second, I just want to talk about this other thing called the Customized UI and Default Switcher. Actually, one more thing I want to show in the PowerPoint. This series of images that are coming up here is a lot of different features in the application. It's materials, it's lights, it's rendering, it's all these settings. And if you're not comfortable with the software, what all those panels that just flew up there is a lot to take in.

You might know about lighting in general-- in computer graphics, you need lights. And there's materials, but where are they? Where are those buttons? How do I default? What rendering engine do I use?

And all these questions that new users often ask themselves. So there's a thing in here under Customize. I can say, instead of customizing the interface or preferences, there's a thing here this says Custom Defaults Switcher. And what this does is it gives you the option-- and I'm not going to read every one of these. But this one here says, Max.mentalray.

If you want to start working in a mental ray sort of workflow, you can see all these different settings or defaults are set. It says the Material Editor is going to be the arch and design material, which is aimed for people using mental ray. Lights are going to default to raytrace shadows rather than shadow maps and so on. The daylight system is going to use the mental ray sky, on and on and on. So you don't have to know about this stuff, you can just say, you know what?

I want to work with design vis and the scanline renderer. Maybe that's how you want to work. So you're doing something with like architectural workflows, maybe Revit interop and that kind of thing. So you could work that way, however you want to work. So these are awesome.

I wouldn't say it's a one-time, set it and forget it thing. But for most people it is that. It's like, well, I want to work in a design vis, mental ray workflow that's like AutoCAD and Revit a little bit. And then be familiar with those tools and continue to work along that path in Max. Does that make sense?

Very simple-- simple, simple, simple, this is all good stuff. Interop-- so the thing about interop is we use a big fancy, $0.25 term here-- the aggregation of data. That just means that currently, Max supports more file formats than any product in the company. Which, again, we're very happy and proud of. There's a lot of different ways to bring in that data.

The first three here, open merge and x-referencing are all specific to the M-A-X file format, native Max files. But as you can see with this list on the right here, there's a lot of other ways to bring in stuff from other places. And that's this aggregation of data. And this slide might most accurately be what I keep saying about this I'm assuming people are using other stuff. If your software of choice is capable of saving or exporting out one of these file formats-- which is a nice, big, long list and we continue to grow that list every release-- then Max is a really good option to make a pretty picture and go home by 5 o'clock on Friday.

So the interoperability is a really important thing with that. The other thing, there's not so much a template-based workflow about interop, but I would recommend-- let me go back a slide. I would recommend, if you're using different file formats and especially if you're maybe using different versions of different softwares, which we all are, there's no silver bullet. There's no, always do it this way. But I would say try a lot of different tests.

If you import something-- and I'll do that in a second here when we start establishing real-world scale. Also very important when you're bringing in data from other applications is working in real-world scale. When you're bringing in data from other places, that can be confusing. And the bottom line there is testing, testing, testing. But the one thing I would say-- and my little tip and trick here is working in a system unit-- I don't want to say the term "system unit", because that's a specific feature in Max-- working in a method that makes sense to your brain.

So I'm an American, I think in feet and inches. So I think in terms like, oh, that's a six foot tall man. That six foot cube right there is the US standard. If you're from somewhere else, you might want to work in metric and so on. But working in a real-world scale isn't just handy to type in four inches and make this thing be four inches tall or I'm 6'2" or whatever.

It's going to be sometimes critical for things like photometric lighting, which is a template-based workflow we're going to be talking about, for doing things like the physics engine, and so on. So a lot of these template-based workflows rely on real-world scale. So I did want to take a second to just show you-- this is a Max 101 thing. I'm using the new design standard ribbon.

It's saying, Get Started. Unit set up. So this is where you can work in system units. And I don't want to take too much time on this, but the default of one unit equals 1 inch. And you can work in meters and kilometers and all these different measurements.

I typically leave this alone, because I might be modeling something like this and at other times, I might be modeling like a city block or something. So the default of one unit equals 1 inch is pretty good for me, it works. But more importantly is display units. So right now, like I said, I think in terms of feet and inches. And if I just go make a native box, a cube, this box-- it might be hard to read there, but it says, this is 3'8" by 1' one and six-eighth inches wide and it's 5'8" and three-eighths inches tall.

You can punch in numbers-- one foot length, two feet wide, six feet tall. That's approximately the size of a man, of me. If you start to bring in data though, and say like, now let's go ahead-- and I'm using it again, the design ribbon. I'll say, let's import data from somewhere else. In this case, a DWG file.

If I bring this in, here's a dialogue that many of you are probably familiar with coming from something like AutoCAD or DWG. My point here isn't specific to the DWG file format as it is if you're bringing in data from other places, this dialogue will look different depending on the file format that you're using. And when I say you do a lot of tests, you might be using an older version of AutoCAD and a new version of Max or vice versa and depending on what you need to do, these settings, there is no right or wrong. There is no silver bullet. So this is where you just try to test things.

The one I wanted to point out here was about this scale. And again, in this particular example, this is AutoCAD. So if I said, let's bring in this and just use the defaults here and just say, OK. And it's going to bring in a building. And I say, oh, that's cool.

I got a building, that's awesome. I don't have to learn how to model that building in Max. Now let's just make it pretty and render it. But my very important tip and trick here would be to say, let's now look and use a native box. In this case, I'm just using a cube as like a yardstick.

And if I come over here and make that box approximately the size of that doorway-- I'm ball-parking it. And then I come over and I look, that is 183 feet tall. That cube is 183 feet tall. So you go, oh, wow, that's not good. And let's just grab that and scale it-- no, don't do that.

Delete. So if I say, import this data. And again, using the same example of a DWG. If I say, well, this particular file format-- forget that it's a DWG-- this particular file format has a tool here that says rescale. And it says, the resulting model imported will be 99 feet by 115 feet by 26 feet tall.

You all just saw what the building coming in looks like. That sounds about right, so let's do that. OK, before we start lighting and doing materials and all that stuff, I'm just going to do my little tip and trick there again-- just make a box.

That's six feet tall, that's correct. It's a common sense thing. I think in terms of feet and inches because I'm American. So if you want to work in others, you can go back into your units and say, work in metric. And now I didn't change anything in Max but that cube is reading as 1.9

meters.

So it's all making sense. But it's critical that you have these units correct. So that's my little tip and trick there about establishing units. Another one that I do actually is I have that six foot man laying around. So I can say, let's merge in a Max file of this six foot man.

I've had this model for I don't even know how many years. And this guy has been very helpful along the way. So you can merge that into a scene just to check on something. Yeah, that looks good, easy. More often than not, I use a cube, make it six feet tall, just to check something real quick-- delete it.

But to do some tests and have the sixth foot man. And you'll see the six foot man again later tonight. So reset. So that's just a little bit about setting up the units. So I mentioned modeling.

There are things in Max that are template-based-- there's obviously primitives and extended primitives. But there's a lot of other things in Max-- there's doors and windows, there's trees, there's these fences, stairs. I do not have time to show all these, so I did the fancy little PowerPoint little wipe there that Eddie taught me. Like that, Eddie? My rotate-y PowerPoint skills.

There's a lot of other things. If you're modeling something elsewhere, just knowing about that these things exist. The doors are parametric to the walls, as are the windows. So you could put a window in a wall and you don't have to Boolean a hole in the wall at the door. The wall is aware of the door, it automatically makes that hole.

These are things that speed things up. There's also material libraries for these that you could just drag and drop. And now all the materials are set up on these doors. There's a material library for the doors, for the windows, and so on. Don't have time to show that but I just wanted to mention, make you aware of it.

Pro Boolean is a tool just to be aware of. It's Booleans but it's called Pro Boolean in Max. There's Booleans and Pro Booleans, you want to use the Pro ones. That's not to say they're more difficult, they're just better. They're newer and there's more development happening around those to come.

Shapes-- the term in Max for splines. Real bullet point there, just shapes in Max are splines in other packages-- Bezier curves and so on. The Placement tool from 2015-- this is one that I want to show you very quickly. This was actually created in tandem with a company called Ikea

you may have heard of. And just as a sidebar there, Ikea's catalogue at this point is over 75% fake, the photographs there in the catalogue.

It's the most printed piece of printed material on Earth, more than the Bible. And over 75% of that thing is rendered in 3ds Max. So little sidebar there about Ikea. So we worked with Ikea not on this file right here but this tool that I'm about to show you called the Placement tool. So you've all heard of Move, Rotate, and Scale, I hope.

Those are not going away. But we have a new one right up there under the Transform-- so Move, Rotate, Scale, and Placement. What Placement does-- and it has very few options-- is it gives you the ability to quite literally place things in your scene. So again, Move, Rotate, Scale-- not going away. Things like snaps are not going away.

But with the Placement tool, I can just come through and it's often called magnetic modeling. You can see that I can just drag this in my scene and it's following the contours or the surface normals of this object. And so it's really easy to just place things in your scene. This tool is very cool for new users. This is a very cool tool for seasoned, veteran, guru people.

It's just quick and it's easy and you don't have to do all this hotkey stuff with Move, Rotate, and turning on all your snaps and bringing up snap vertex and all that stuff. Those are valuable tools to learn, they're not going away. I would suggest learning them but this Placement tool-- you bring something in, you put forks and plates on a table, you put the table in the kitchen, you put the kitchen model on the fifth floor of this building, you take that whole building and put it in the city block. You're click, click, click. And it's very, very easy to do without tons of work.

So again, just a new little tool in 2015 I wanted to show you there for modeling. Seek-- I'll just mention these next three. I have links to these but for time's sake, I'm just going to mention them. Seek, 3D Warehouse-- or it used to be called Google Warehouse-- and TurboSquid are all just awesome resources. Now this isn't technically a template-based workflow, but these are resources to go get models.

The first two are actually free. I will click on one of them just to show you. Autodesk Seek is a website. It's Autodesk-- this one, there's over, I think 1,000 trees that we give away.

I would assume there might be some architectural people in the room. You don't want to model a tree. You want to focus on lighting and rendering and building your environment or whatever, so why not just go download a bunch of free trees? Knowing these resources are

out there is the point there. 3D Warehouse are all SketchUp models. SketchUp models come in using this material library that I'll be talking about very shortly.

So a lot of this workflow. The takeaway here, I would say, is if you're going to start a project-- and I don't know, you're going to make a ski resort. You're going to model a ski resort. I would get on these different websites and do things like, chair lift. Do a search.

Why model a chair lift when you can download for free in 30 seconds? And drag and drop it in and all the materials are already there? That kind of thing, it's free. You have legal rights to do this. Nothing hocus pocus on the sly about that.

And the last one that I'm going to show you as an example-- this is probably the one that is not a template-based workflow. But assuming that a lot of people in the room here are bringing in data from other places, Pro Optimizer is something that I want you all to be aware of. Pro Optimizer, what it does is decimation. So if you have big, big 3D models coming from Revit or somewhere-- big, gigantic models and you're like, man, these scenes are gigantic. And it takes me too long to render them and on and on.

We've all said that before. What I've got here is a simple model. And I'll just show you a couple of tips and tricks about how Pro Optimizer works. And one of the things not specific to Pro Optimizer is, I've got this little cube over here. It's bent and it's twisted.

And you probably know that you can turn modifiers on and off. That's not anything crazy or new, I hope. But there's something that not as many people are aware of, is that you can turn on and off modifiers at the view point or at render time. So if I say, let's take, for example, the bend modifier and I say, it's off at render time. Clearly this object is bent right now.

But if I render it, it's going to be straight up. It's still twisted because the twist modifier is active at all times, but the bend modifier is turned off at render time. Does that make sense? OK, so keep that in your head. I'm going to delete the cube. Now we're going to talk about this guy.

So this could have come from CAD or it could have come from anywhere. And it's not the most dense model in the world, but just as an example I wanted to use this. And I'm going to say, let's throw a Pro Optimizer on this. Pro Optimizer. Now this is a really simple tool to use for decimation and it's awesome.

I'll just say, Calculate. What this does is it stores a second copy of the model in memory and

now you can just dial back the resolution on it. So one little tip and trick here that I'll show you is if I have a second-- whoops, let me turn off my snaps. If I have a second version of this model and I'm going to instance it. For demonstration purposes, I'm going to do it this way and I'll explain why-- is, if I have this one selected but I turn off edged faces, I could be working on this model.

But see the profile of this one instance? So they're both doing the decimation-- see how I've completely decimated it down to 300 polygons? But if I start going up here, I would say, I'm drawing your attention to the one closer that I don't have selected but I'm showing you the behind the scenes of what's really happening on the model by using this instance. It's a tip and trick that you don't have to necessarily use in production, but I often use this. The reason I use this is I'm not really interested so much about what percentage is over here as I am in the profile of the model.

What I mean by that is, I want to keep my eye on the profile of this thing. Way down here, it's going to start to get all chunky and nasty. But if I just start rocking this slider back and forth, I don't necessarily care what the value is over there. I want to watch that profile and just get to a point where it's like, OK, that looks pretty good. And now I can look over here-- it's at 14%.

Let's see, let's dial it back to 10% of the original model. And if I hit Render, it's going to actually be a little bit decimated. But it still looks pretty darn good for being 10%. It's 90% faster at render time. That's pretty cool.

So that's the first tip and trick about Pro Optimizer is if you're bringing in massive data sets, Pro Optimize them. Now the other thing that you could do is if you say, well, I want to decimate this thing down really, really bad. And maybe I used one of those tree models that I got from Autodesk Seek. And I put the tree model out there and I'm working on the design of this building and everything, but I've got 10 trees. Well, those 10 trees might be 10 million polygons.

Having 10 trees and 10 million polygons-- it might be smarter to work with hiding and un-hiding with layers and things like that. But the nice tip and trick there is you could say let's Pro Optimize them down to this. Again, this is a motorcycle, not a tree. But let's Pro Optimize them way down so that they're just efficient in the view port. But I could say, let's have this off at render time.

So if I decimate this model down to just ca-ca, it's terrible. But when I hit Render, it's going to

be the full resolution tree, or the motorcycle or whatever-- the oil rig or whatever. So this is a really nice little one that I use a lot and I have for many years. Pro Optimizer's not new, but this is a great way to efficiently work and have your video card be very lightweight and things are very quick, but optionally have them on at render time. So it is the full resolution scene for mental ray or Iray or V-Ray or whatever-- scanline or whatever renderer you're using. So that's my little Pro Optimizer tip and trick, especially geared for people bringing in dense geometry from other applications.

This is an aside-- I'm putting on my Autodesk sales guy cap for a second. There's no Make Motorcycle button in Max-- not yet, we're working on it. That's a joke. But I wanted to mention a thing called ReCap-- Reality Capture, is an initiative at the company. 123D Catch is something-- I would ask you to wait until the presentation's over, but you can download this for your Android or your iPhone right now, for free.

123D Catch is a free application that allows you to do what's called photogrammetry. So in this example, I took a bunch of pictures. And these are the exact pictures that I took of this clay sculpture. I come from the entertainment space, but if you're an architect, just imagine doing this clay. And this is fun-- roll up your sleeves, take out some clay, and get your hands dirty-- get back to art.

Build a landscape for your environment. Just with clay, it can be really coarse, it can be really crude, whatever. Take a bunch of pictures of it with your phone. And within minutes, you get back this. I didn't do any modeling in this.

This took 40 photographs and I'll keep rewinding this video here for a second. But there is the Pro Optimized version in Max. This whole project, including the little fancy rotating animation that I did here, took about three hours. I did this at like 9:00 AM and then by lunch I had this animation for my demos. It was like, let's start with a bunch of photographs of something and have a textured 3D model finished, high resolution thing like this-- 130,000 triangles.

And then optionally, this second version here, you can see I used the Pro Optimizer down to 10%. Decimated the thing in a split second down to 10%. And then this last one, sales guy cap for Autodesk-- Mudbox is really cool for doing retopology too, if you want to check that out. Especially useful for generating quads. Pro Optimizer is going to generate triangles, which are just fine for about everything except characters.

If you're doing character work, if you're doing ReCap and want to do retopology and get quads

for deforming meshes like characters, then you might want to check out something like Mudbox. So now I'll take the sales guy cap off. So be aware of these other ways to get models. You don't have to click and build every polygon, whether it's in Max or in Inventor or whatever. There's other resources to get models in.

Material-- so this is the biggie. The Autodesk material library is phenomenal. It's a common library between AutoCAD, Inventor, Revit, and 3ds Max. And it also works with SketchUp models. So I mentioned earlier about that Google Warehouse where you can go download models.

If you bring those in with an import in Max, those materials will be converted to this material library. And you can see here it's materials, there's over 1,300 of them. And I'll start to get into Max and show you those. But they're very common things, like cement and glass and concrete and so on. 1,300 of them.

I'll be the first to admit, when they first were introduced into Max, I dismissed them as Material Editor for Dummies. And I'm Mr. Big Shot and I know how to do arch and design shader and I know mental ray and I dismissed these things is toys. And that was a very wrong thing to have done. So learn from my mistake, these are amazing, they're physically-based and they're photometrically-accurate. What that means is, they don't just look like concrete, they actually have the physical properties and the reflectance and refraction and so on of the actual material that they represent.

So it's not just, hey, that looks like concrete. It's a photometrically-accurate concrete, or glass or paint or carpet-- there's 1,300 of them. So these are really worth knowing about. The way that I always play around with these-- let me get to my cheat sheet here for a second-- is with these shader balls or shader objects. This thing right here is an object that you can get online.

There's a website, I think it's Mental Ray Materials. It's a common thing that you'll see out there. And if I just hit Render, this scene is set up for mental ray. It's not even specific so much to this dialogue that I'm talking about-- these materials, this Autodesk material library, isn't specific to mental ray. And while that renders, I'll just go back to this slide here and point out here, this material library is for use with three of the four native rendering engines that come in Max.

So it's everything except the scanline renderer. So if you're using Quicksilver, which is a GPU

renderer-- last year, I did a whole lecture on all the four rendering engines in Max and if you want to hear all talk about mental ray and Iray and all that good stuff, I'll be available this week. Like I said, I love talking about rendering.

It's one of my passions, strangely enough. But this material library works with all of the renderers in Max except the scanline renderer. That's not to say that the scanline renderer sucks or shouldn't be considered for things, but this material library is very, very cool. So if I go back now. So I've got a cool-looking shader ball.

This object, by the way-- let me do my quick double-check here with the cube and just make a cube that's as big as that. So that's 20 inches by 20 inches by 11 inches tall-- perfect. It's about this big. Again, thinking in terms of units and real-world scale, these materials are dependent on that real-world scale. So if I go into the Material Editor and say, let's get a new material, I've made it nice and shiny red there.

It doesn't default to that way, but I just wanted to point out. So you've got Materials, Maps, and the Autodesk Material Library. This Material Library, like I said, it's 1,300. And the categories, let me roll up some of these here. Ceramic, concrete, fabric, finish, flooring, glass, liquid, masonry-- liquid, that's pretty cool.

Let's check out liquid. Display group as medium icons. Well, that's cool. Look at that swimming pool. I double-click it there, I drag and drop it on here, I hit Render.

I've got a photometrically-accurate water that's a swimming pool. Well, it looks a little weird. There's a big black spot. Before I've even finished rendering it, you can see that it's doing some funkiness there. One of the other template-based workflows-- and this is where, in this part of the session, I'm going to bounce around a little bit between materials, lighting, and rendering, because they're so tied together.

But when we're using the mental ray rendering engine-- of all the rendering engines in Max, mental ray is the hardest. I'll be quite blunt with that. That's not to say that you can't use it if you're a new user. Mental ray is extremely good on render farms. It's a very efficient-- I mean, as I'm rendering here, if I show you the CPU meter, if I can get to it.

Task Manager-- I can guarantee you without looking that I've pegged my laptop. It's at 100%. Mental ray will peg every core in your machine without question. So I'm going to stop this render, because I can see that I've got all this black-- something's wrong with my pool water.

Well, mental ray, for a number of years, has had these sliders under what we call the frame buffer.

So this is the rendered window here. If I bring up the render dialogue and go into renderer for mental ray, here's all kinds of stuff, man. If I'm a new user, it's like, what in the hell is all this? It's a lot of stuff.

What's BSP? What's trace depth? And what's all that? And oh my god. So don't look at it.

You've got these controls over here. It's good to learn that. And actually, let me bring it back. I say that tongue-in-cheek, but let me just show you what's happening. At these controls over here, let's just say processing doesn't have to be this hard.

So we've made it a little easier. This final gather thing-- if I rock this slider down to draft, you can see these changes over here taking place. And this is a great way for new users to learn. I can use these presets here to just say, let's go to draft quality. Oh, what's that doing?

Well, over here, it's changing the initial final gather point density to 0.8. I don't know what that means, but let's draft. OK, let's rock it up to very high. Four-- OK, point a is draft, four is high. I'm learning.

Let's just keep it to draft. Down here, maximum reflections. OK, things-- light bouncing, I think we all can manage to comprehend what's going on there. So you say, let's increase the light bounces and let's try to render that out. Now I've got more ray tracing happening in my scene.

It's going to take a little bit longer to render, but I didn't have to know a tremendous amount about mental ray rendering or whatever. I just came down here and said, you know what? My glass looks weird, let's increase its quality. Let's increase the amount of rate tracing in this scene. And it's that simple.

And meanwhile, while I did those connections, while I did that adjustment, I'm learning in the other interface. Now admittedly, I knew to open that dialogue and where to point to say, look, as I do this it, changes over here. A new user might not know that, but they don't necessarily have to. That's the point of this session. So moving along here.

I'll just stop these. Just to flip-flop real quick. I've been using mental ray for a second here. I'm going to switch renderers and talk about Iray for a second, just because. So Iray is a very, very easy renderer to use.

And maybe this is Autodesk, this is our fault-- most people think to use Iray, you need some really high-end graphics card. You don't. If you have a really high-end graphics card with Iray, it's awesome, it helps. It's GPU-accelerated and it does a lot faster things. But if I just hit Render on this scene now, one of the cool things about Iray is you don't have to know anything about rendering with Iray. We call it a point-and-shoot rendering engine, much like a Polaroid camera just spits out an image.

You don't have to learn much about rendering at all to make pretty pictures with Iray. And while that one's rendering, I want to show you a couple of these stills. These are all Iray renderings. I'm just going to fly through a bunch of these.

There's a common thread here of realism. Iray does nothing but make photo realism and that's all it was designed to do. It's like a dragster-- you don't drive the dragster through the drive-in at Wendy's to get a burger. You drive it down the road fast to go fast and win a race. Iray is a dragster for photo-realism.

And that's all it does. It doesn't do cartoon rendering, it doesn't do hidden line rendering, it doesn't do any of that stuff. It's for photo-realism. Some interesting effects here, I'll just point and stop on this one. See that depth of field effect that's happening, much like a real-world camera?

Most rendering engines out there, that would cost in time to get that effect. With Iray, you just enable depth of field and it doesn't cost you any more rendering time. And it badass, it looks real. It makes a realistic image. So if your boss or your client or whatever says, make it look real, Iray is a really good option.

And another thing that I'll mention about Iray, if I open up the dialogue for Iray-- this is just a thing called String Options, there's nothing really in there to discuss, I can close that. This is everything about the entire renderer-- Motion Blur, you know what motion blur is. I'll close that down. This one says, Hardware Resources-- number of CPUs that I want to allocate and do I have-- in this case, my laptop has a NVIDIA Quadro K5000M.

That is a graphics card that is recognized by Iray. Now I'm getting a little bit techy or whatever. And this would be worth Googling-- Iray fundamentals and that kind of thing. I've got a lot of stuff on my blog about Iray and so on. But just to keep going through this dialogue here, that's it.

There's no bidirectional reflection distribution functions and physics engine, you've got to have a degree-- it's like, I want to render 800 by 600 and I want it to take 30 seconds. Go. This render's going to go for 30 seconds and then I'll have something after 30 seconds. Now it's rendering.

You'll notice that Iray, the way it works is called progressive refinement. You don't need to write that down or know what that means, but it's very cool because you get an instant idea of what this is going to look like. Now 30 seconds on this laptop for this image, it's not going to be perfect. And I know that because I've done Iray renderings. It's going to still have this grainy effect to it. But with Iray, the fact that you get an image immediately is very cool.

And it's an extremely efficient, time-saving thing. It's not like you hit the Render button and you walk out the door and go have a coffee and be like, I don't how long it's going to take. Best guess is an hour, maybe 10 minutes, maybe three days. That part isn't the point.

But it's not so much about the time that we're guessing. It's that you don't have to guess. As soon as I hit Render on this, saying, do I know it's too dark? Or too light? Or the glass is too green?

Even on a laptop, I know right now. I don't have to even stop, like, the camera's too something, whatever. I can adjust the lights, let's move on.

So Iray's really cool about that. Another feature that I can show you that's another workflow template thing-- and I was going to use another way to get it, but I'm going to go back to the design ribbon. The new, announced-today. We have a thing, if I could find it here-- now this is where I'm going to have show I'm new to this tool, under rendering here.

So lighting and rendering. We have a thing called the Print Size Assistant. This has been in Max for a number of years, but if you're doing static imagery, if you're doing product shots or you want to do a poster render or something, you don't have to go into Photoshop to figure this out. I can say, bring up the Print Size Wizard and I want an 8 1/2 by 11 at 300 DPI. That's it.

I don't have to think about how many pixels is that and all this stuff. I can just be like, let's make an 11 by 17 at 72 DPI and rendering it with Iray, go. Now this is set up to do an 11 by 17 in 10 seconds. Will it look that photorealistic? No, it's going to be grainy and my laptop won't do a perfect job.

But I get a really good idea of what it's going to look like very, very quickly. And I will stop this just for the demonstration. But in production, the way that you can do this is to say, you can use this aspect of Iray where it progressively refines. And instead of defining a 30 second render, you could say, let's just do unlimited. I've already set this up and I will dial it down a little bit.

I'll say 8 1/2 by 11 at 72 DPI. So a piece of paper at low res for print. And I'll say, go ahead and render it. Now what I've done, though, is I've set this thing up to just continually go and go and go and go. So now I could go out to lunch or get a coffee or home for the night or whatever.

And I just let my computer just keep rendering. It'll keep rendering until I stop it. And this depends on your scene-- if it's a trillion polygons and if you're on a 486 laptop, then it's not going to-- get a new laptop. But you don't need a render farm, you don't have to know all that render farm stuff or whatever. You can be a one-man shop and say, I need a pretty picture.

Let's do the best we can get with the hardware resources that we have by 5 o'clock. My boss needs a print by 5 o'clock. Well, let's just let this thing render until five. And my laptop's chugging away on this thing and it's doing a nice 8 1/2 by 11 300 DPI, whatever, and it's just going to keep getting better and better. And there's a point where you just hit Escape or you stop it.

It's done 17 iterations, that's a little bit nerdy, geeky Iray stuff there. But 17 iterations is pretty low. You'd want to let it run a little longer. A little sidebar here-- these are all Max, by the way. This is Autodesk stuff, very cool.

I just had those handy to show people. Those are all Max and a combination of mental ray and V-Ray. Not a lot of people know those are Max, so I just wanted to throw that out there. But these stills, let me get to these. I have something on Iray stills.

Let me go to time. To give you an idea of time, this is one minute. I forget which laptop this was, but you'll get an idea. So this is one minute and this is-- let me get the names-- 40 minutes. So that's a minute.

That's 39 minutes later. Is it perfect? No, there's still a little grain in there or whatever. But just to give you an idea of time. So I'm going to go through a one minute, 30 minute, 60 minutes.

OK, so one minute, 30 minutes, 60 minutes, an hour. Now let me go back to the 60 minutes. The projector might not be doing the best-- watch the smooth area of the wall there. So that's an hour-long render.

That's half the render time. One hour, half the render time right there. And I put this question to you-- and there's no right or wrong answer-- this is 30 minutes. Is that twice as good as that? And there is no right or wrong answer.

Your boss may be like, what's with the grain? Your client might call it out. Or you could be like, oh, I added that in Photoshop. That's a Noise effect or whatever. Ooh-- I added-- whatever-- that's terrible.

AUDIENCE: [INAUDIBLE].

PRESENTER: Yeah, well I meant that. So here's some more with depth of field. One minute-- and to point out, it's hard to see. But it's in focus right here and it's blurry back there. So depth of field, one minute.

Depth of field, 60 minutes. So 60 minutes, 30 minutes. I'll go again again, 60 minutes, 30 minutes. 60, 30.

The depth of field doesn't add any render time, though, which is really cool with Iray. So again, Iray is a pretty cool little tool for photo realism and I just wanted to point that out. Time permitting, I'll come back to talk a little bit about Iray. Never enough time to talk about this stuff.

One thing I wanted to mention here is this tool. It's a third party tool and you do have to buy this. I'll bring up their website. It's called the Autodesk Material Converter, for the people that are interested in doing things like-- you might bring it in Inventor model into Max where you want to do it. And maybe you're a fan of V-Ray.

I've been talking a lot about Iray and mental ray. Those are my go-to rendering engines. They've been in Max, they're free, I like them. As an Autodesk guy, they're in every cut of Max. Everywhere I sit down, it's going to have Iray and mental ray.

I don't have to pay extra. Whoops, my internet might be down. But anyway, this is available. I think it's like $80 or something. And when you think about time is money-- if you're doing this conversion from an Inventor model, bring it into Max, and now I want to render it with V-Ray,

but it came in with all these wonderful Autodesk materials. What this tool does with a single click is converts them all to V-Ray.

It can also do the opposite. If you're working with a team of people or somebody around the world or you buy a model on TurboSquid and it has V-Ray materials but you want to use metal ray or Iray, this is a one-click to just convert those instead of manually remapping every diffuse texture and so on. The other thing that's important about this and this will become more important, I think, in the future-- wink, wink-- is the old school standard material for the scanline renderer in Max isn't something to be ignored.

And I am talking a lot about mental ray and Iray and these arch and design shaders and these templates of the Autodesk Material Library, the standard shader is what you need to go out to a game engine. So whether you're making shoot-em-up video games or you're doing architectural walkthroughs with something like Unity-- or Autodesk recently announced that we bought a game engine and our elves in the North Pole are working on a new product that will be coming out soon, or a couple of them. These standard materials will be very important to that workflow. So this is a cool little thing to know about, this Autodesk Material Converter. Again, I don't get paid, it's not my company-- but it's a third-party plug-in that you can get and it's very quick.

Lighting and Rendering-- I talked about the mental ray presets and when I talked about materials, lighting, and rendering, I knew I was going to be bouncing around. The next thing I want to talk very quickly about is what are called IES Profiles. IES Profiles are a lighting set up where you can work with template-based lights. So if I just open up this very simple scene, it's using what are called photometric lights. And you can immediately see-- and I looked at these sconces that are on the wall over there-- you can really see that nice cone of the shape of the light.

If I select this light-- let me turn off that-- even in the view port, you can really see what's going on with this light before I even hit Render. That's not just this omni-glow of a ball of light, it's very realistic. And you can see that this one's got this funky heart-shaped thing on it. So let's talk a little bit about IES lights for a second. I'm going to go out to my desktop. What an IES file is-- I forget, Eddie, what's the acronym stand for?

International Energy, something? Google IES. IES lights, what they are are these files that you can get. And I can go to a lighting manufacturer, like I could go to the General Electric website

for that bulb and I can download the IES file. Lighting manufacturers give these things away.

So this is a free little application out there-- I just found it the other day-- called IES Viewer. It's free. But you can see that lighting profile down here. And the shape represents the actual distribution of the light. And these files can load into Max very simply.

So if I just go into Max and I say, for this light-- but before I use IES lights, I'll just show you a couple of preset templates. Here's 40-watt bulb. It dramatically changed what the thing looks like in the view port and at render time. Here's 250-watt wall wash. If I just go through here and just use my arrow keys, I can just arrow through and see all these different shapes of lights-- that's pretty cool.

Or I could say, let's use one called photometric web, which is really just saying, I need to go load one of those IES. And I could load in a stadium. So there's a very bright stadium light. Up here, you've got presets here for halogen, fluorescent, mercury, phosphor-mercury-- these are all types of light.

So I could say, yeah, fluorescent warm. That's cool. I don't have to know anything about light other than living in the real world. Let's put a 40-watt bulb in there. You just put a 40-watt bulb in there and it's going to be photometrically-accurate. You can do lighting analysis with this product and do this LEED-certified, photometric, accurate lighting.

It doesn't just look cool, it's photometrically-accurate. So this is a great combination of tools, this lighting with Iray and with mental ray, for that matter. But very simple to use. Let me bounce around here a little bit, back to PowerPoint. So just to mention those profiles.

Rigging and Animation, there's no way to talk about all this. So what I did was put together a simple file-- not a simple file, but it shows the four empty-scene, four character systems. Not empty. There's four types of character systems in Max and that's a lot. But the good news here is three of them are template-based workflows.

I've got our old friend here, the Dancing Baby. You may or may not have heard of Character Studio or Biped. Biped is what the *Ally McBeal* Dancing Baby was done in, back in the day. And I've been reviving the Dancing Baby in my presentations lately for just nostalgic purposes. But if I turn off the Baby and focus in on this rig here, that's a template system for doing a character.

You don't have to know anything about character rigging, you just click and drag out a Biped.

And in this case, this little guy over here has a motion capture file on him of running. And this guy over here is using what's called footstep-driven animation. So very much like those dancing templates, where you say, let's do the samba and here's the footsteps to do on the floor or whatever, you just draw out the footsteps of where you want a character to walk and that's where they're going to walk. Very simple. So that's character studio.

Another one, just moving along here, is Populate. Whoops, my view port is being a little bit weird here. I'll come back to Populate, because that's one I wanted to highlight. This is one called CAT, which is the Character Animation Toolkit. Not to be confused with that this is a feline creature, but CAT in Max stands for Character Animation Toolkit. And this, I just wanted to point out, is a muscle system.

So you don't even have to know any procedural rigging of any kind. That this is a very cool system. So again, to just show you, there's the bone rigs and there's the muscle system that you don't have to know anything about, And that's a pretty complex system to do complicated character stuff, undulating muscles. And you don't have to really know much about rigging.

Some people in the room might hate hearing that. These are all the presets that come with the Character Animation Toolkit and I'll just point out a couple of them here. Way in the back, we've got a centipede. That's not two arms and two legs, that's not a guy. Over here is a dragon with wings, there's a crab, lots of different types of humanoids, obviously-- there's a spider.

The point about CAT and why I made this file is two things-- one is to show that CAT is very flexible. This Character Animation Toolkit is extremely flexible for doing all different types of crazy creatures and whatever, anything that you can think of. But these are specific examples that are on screen are presets that ship with Max. So if you want to do a spider, boom. I can just go over to CAT and say, let's go to CAT, let's create one of these templates.

Here's a spider, click and drag out a spider. That spider is currently not animated, but I could just say, let's use CAT motion, which is a templated motion animation system. So that spider that I just created with a single click is a walking, rigged spider that there's no motion capture, I didn't do any demo guy cooking show stuff there. I just created that rig and animated it in seconds. So CAT is really worth knowing about if you want to go to that advanced character animation stuff, it's pretty cool.

Moving along here, let's talk about Populate. So Populate-- we call it Populate 2.0, which isn't its formal name in Max 2015. But what Populate is is a system for doing what I call-- my big, fancy name for it is Autonomous Pedestrians. That's sounds cool. What I mean by that is that it's not a crowd system.

There's other softwares out there that do crowds. One of them is called Massive, it's not an Autodesk product. And it's very expensive, it's very high-end. It's for orcs running with battle axes over hills and all that kind of stuff.

This is Populate, right here. Populate is not meant to do orcs running over hills with battle axes and all that stuff. It's meant to say, I've got these different geometric shapes in here and I can just run this simulation. And the first time you run it, it is admittedly going to take a little bit of time, because what it's doing-- and down at the bottom there, it says it's loading repertoires. It's basically loading motion-capture, it's loading models, it's loading textures, and it's doing them for this long arcing thing right here is what we call a flow.

So that's going to be moving characters. Right here, this one here in this odd-shaped, amoeba-looking thing back there are called idle areas. And then I've put down all these little gray cubes in a bleacher pattern and a few of them around here like the lobby bar, so there we go. I just created however many characters, procedurally, using Populate. They're walking, they're interacting with one another.

Very, very, very simple to use. And as I get down in here and I look at some of these, you can see that I've got a lot of interaction between these characters. Populate is very, very cool. Another thing that I would love to spend more time-- like tonight, if you want to come by and check it out. If I just select a character here, I can use something called the appearance generator.

This is new in 2015. So I can sort of randomize the look of a particular character. I can change the resolution, high or low and so on. I've got some examples here that were rendered out using the Populate engine. Where is me feature renders? So these were done with Populate and they're simple tests that we did internally.

But the point of this might be, you're an architect. You want to highlight this cafeteria model, but I don't want to take the time to model a bunch of characters and animate them and through. Is this *Lord Of The Rings*? No, it's not meant to be *Lord Of The Rings*, but it populates your scene-- hence the name-- it populates your scene with these characters or

these pedestrians that are very simple to create and get activity and life and scale into your scene.

Populate is another system inside of Max that is a template-based workflow and it's very easy and automatic for new users. And it also is dependent on real-world scale. I mention I keep going back to real-world scale for materials, for those IES lights. Real-world scale, real-world scale, real-world scale. Simple, simple, simple. Effect and dynamics-- this last one, time permitting, I'll see how I go.

I know I'm a little bit over. The particle flow presets, I actually heard somebody talking about particles here. Particles are hard, they're not easy. But they don't have to be difficult to learn. So what we did in Max 2015-- in previous versions of Max, there was something called the Particle Flow Presets.

I'm going to bring up a video to play while I talk about the particle flow presets. So I'm going to leave this video up. It's a lot of eye candy over there on the left. And I'm going to just reduce Max down to a little bit over here. So while I'm talking for the next couple of minutes here, check out all these presets.

These now ship with Max so you get these for free. These are template-based workflows for particles. And they're broken down into air, earth, fire, water, and logo. So for the motion graphics people, there's that fifth, wild card category of logo.

But you can see-- air, earth, fire, water, logo. So if I were to say, let's create a particle flow source, particle flow is not super easy. That's what I'm saying-- like, to a new user, you open up Particle Flow and you're like, oh my god. What's all that? That's all these data operators and all these things and you've got to drag and drop and wire them together and you've got to know what you're doing.

A great way to take advantage of these presets is to just say, load the preset. Oh, and here's this list-- air, earth, fire, water, logo. Well, let's just do a preset called Air Dandelions and I hit OK. You can see that Particle Flow got populated with a bunch of stuff. Here's the view port happening.

If I minimize it and just look at Max, there's a whole bunch of dandelions blowing around in the wind now. Do I have to know anything about Particle Flow to get dandelions blowing around the wind? No, I just need to know that. Now, you might be saying, well, I don't need

dandelions. But it's a great way to learn.

So if I look at this and say, let's take a look at this. And without turning this into a huge Particle Flow thing, these are what are called events. And you could just look at this and say, well, this one says Position Object, Pop Ground-- the ground. OK, that has something to do with the ground. Shape instance-- I should rename this for my next demo.

I'll probably rename this. It shouldn't be called Cylinder, but there you go, Demo Guy. If I made a teapot and just said, well, instead of a cylinder, let's use the teapot. Oh, there's a bunch of teapots out there. Let's look over here-- shape, cylinder. Let's use the teapot.

So in a matter of seconds, I've changed it from being dandelions to being teapots. Teapots, because it's a Max demo and you've got to have teapots blowing around in the wind. But if you went to Seek, download a leaf, click on the leaf or drag and drop it in. It's got Autodesk materials on it, you drag and drop the thing-- now I've got leaves blowing in the wind. I don't have to be visual effects artist with 20 years of experience or anything like that to get leaves blowing in the wind.

And all these things on the left ship as presets. So it's simple. It's really simple and it's a great way to reverse engineer learn Particle Flow. I am No Particle Flow guru and I've been using it for many years. I've learned most of what I know by reverse engineering stuff that other people that are better at it did.

And that's how I learn. So now with these presets, it's pretty cool. So teapots blowing in the wind. It wouldn't be a Max demo without teapots. I don't have time to show these.

Fractures weren't always a third-party thing. You can break up objects into chunks like this very quickly and then use the Max physics engine to just make buildings collapsing and all that kind of destruction stuff, fun stuff. Hair and fur presets-- again, not enough time to show them, but there's presets for doing things like using the hair and fur system for grass. You used the hair system but use a template or preset for grass.

That's pretty cool, you don't have to do anything. custom Ninja Development and then to wrap it up, I mentioned my blog and the free tools. Max has the largest user base of any product within the media and entertainment group. And also, as I mentioned, it goes very far outside of the media and entertainment space.

So it's not just games, it's architecture-- I mean, you all know this. That's why you're here. But

the community is huge. Globally, Max has been known for almost 20 years.

People just give away stuff for free like crazy. So the freebies list, I'll remind you to go back to that. I wanted to show you and then to wrap, I want to show you one freebie just to give you an idea of the stuff that's out there. This is done by a kid in Paris, called Building Generator-- free. Like, free-free.

Let me get over to Installers, Max, Scripts. So this is free, if I didn't mention that already. I'm going to drag and drop this script called Building Generator into Max and it's going to run. This is free. Building Generator-- and I'm going to say, Randomize Building Settings, Generate Random Building.

Now ILM is using this. This is a really cool free thing that this is just one example I wanted to show of countless stuff that's out there as far as this third-party thing. I've mentioned, I'm not a Max scripter. For as long as I've been using Max, I'm not a scripter. Random building.

You want to generate a whole bunch of stuff. So here, just to look at the Material Editor, it's got interior walls. I know you probably can't read that, but it says Wood, Metal, Concrete. Well, guess what would be great there? You could just say, let's go get the Autodesk Material Library and go concrete.

Let's drag and drop this photometrically-accurate concrete where it needs concrete-- boom. And now I could drag and drop and this would be a photometrically, real-world-scale-accurate, blah, blah, blah, building like I was talking about. So simple stuff. So takeaways from the class-- everyone can benefit from these workflows.

This is tip of the iceberg stuff. The main thing was, like I said in the beginning, awareness that these things exist. Max has tools that most other competing products don't have for this. And new and part-time users as well as seasoned veterans, start to finish, can make it easier. And it is something for everyone, this is not just stuff for architects or product designers or game developers.

There's tools and workflows that can be used at the beginner level all the way up to experts in every industry and all that good stuff. Knowing that these exist is half the learning curve. So just be aware that these tools are out there. And I do thank you for your time. I'm going to leave this slide up as we wrap up.

And I do really want to thank you for your time. But if you want to come down, come on by. Those are my other times. I'll leave this up. Follow my blog, thank you for your time, I appreciate it.