EMILY DUNNE: Testing? There we go. OK, cool. All right. About me. We'll just look at this for a second. I'm technically an associate, I'm also a design technologist, which means that I help implement BIM workflows. I take on initiatives for data, and Dynamo, and virtual reality, at CBT Architects. CBT Architects is a roughly 230 person firm located in Boston, Massachusetts. We do things like workplace. We do multi-family residential design. We do office and urban planning. We have about eight different sectors within the firm, and we touch all sorts of stuff.

So, if you're thinking Emily Dunne, think Revit, Dynamo, FormIt, data analysis, workflow, and web development. I have a lot of degrees. I went to some schools. I really like Kanga Jumping, it's great exercise, and I have a beagle.

Why do I care so much about FormIt? Let me tell you. These three crises are near and dear to my heart, and I'm sure everyone in this room, at some point in time, has banged their head against a desk about this. The first crisis is the SD to DD crisis. It's a problem. You're in your architecture firm, somebody wants to design something, conceptually. They start using SketchUp. They start using Rhino. They start using Macs. Very, very, very, very rarely my favorite person on the planet starts using Revit, but that's highly unusual.

So I want a solution for this. I want a solution that when we start in schematic design, we're able to take that information, that geometry, that data and get it into the Revit application, easily. Like, we shouldn't even have to think about it. It should just be there. The second crisis, this is a contextual crisis. Is anyone else from Boston around here? No. All right, well, let me tell you.

In Boston we have this agency. It's called the BRA. Has anyone heard of the BRA before? No. All right. Does anyone know what it stands for or could venture a guess? Nope, great. It's the Boston Building Redevelopment Agency. It's actually transitioning to the BPDA. So that's the Building and Planning Development Agency.

In Boston we have this amazing, beautiful Boston Common. It's a park that's right in the middle of the city, and we have this problem where when we go to build new buildings, we have to be really careful about how much shadow we're adding to the common. There's a shadow bank. Has anyone had to deal with a shadow bank before? No? OK, well stay out of Boston. It's crazy.

We do have to deal with a shadow bank, and there's only like little teeny tiny amounts of shadow we can add, and the problem that we face is we get models from this agency, they come in as Rhino files, and we want to run efficient shadow studies in Revit. There's this unbelievable opportunity to be linking in different Revit models into the same base central file, with all of the same shadow settings over and over again, to create efficient studies. And the way that we get models from them, before FormIt there was no way to get the model files into Revit. Now with FormIt, there's this unbelievable converter opportunity, which is why I care so much. I'm so excited.

Third crisis. The third wave of BIM adoption crisis. So I made this up, but I think it's true. Here's the deal. We had early adopters for Revit and BIM. They were super excited about it. They jumped in and they started using reference plans, and making families, and building content. Then we had a second wave of adoption for Revit, and this is just sort of like the mass adoption. Everyone's like OK, the early adopters get it. They're teaching me, it's great. I'll try it. I'll use it. I'll get on board.

Now, in my opinion, we are into the third wave of BIM adoption. And this third wave of BIM adoption is a group of very powerful, very high level people who really don't want to touch Revit at all. And I get it, it's hard. It's not fun to go in and have to learn about reference plans, and parameters, and dealing with building families to go into the Revit environment, et cetera, et cetera.

So what I'm really hoping that FormIt will do for this third wave of crisis, is be able to easily on-board the hardest users that you have for Revit, and allow them to easily make content so that they can then put this content into their Revit environment for teams to start using. Sounds awesome, doesn't it? I think it does.

Let's see. About FormIt. I'm just going to run through the application a little bit. FormIt was initially created in 2012 as a conceptual modeler for the iPad. So the lead product developer is Tom Valero, and he designed this thing to go ahead and be usable with your iPad. This is a timeline of generally, what FormIt's been about since 2012. It's been about the conceptual modeling environment in iPad. It's been about developing quick napkin sketches. It's been about 3D printing, real time collaboration, which is pretty exciting.

And then in 2015 and 2016, this is what I get amped about. We have energy analysis integration with insight, and we also have this unbelievable workflow solution opportunity

where you can actually take files from SketchUp, to FormIt, to Revit. Whoa. You can take files from Revit to FormIt, back to Revit, and you can simply take FormIt files to Revit, which is the workflow that I really hope we'll see people start transitioning to.

I was saying earlier, I was talking to a couple of developers just yesterday in this whole workflow place, the Ideation Lab. And they were saying that the geometry from FormIt to Revit is like the best, purest, and most clean geometry translation process you can do. So it makes sense because that's what they're developing.

We're in this interesting era of the internet of things, and connectivity, and in my opinion, that's why FormIt is so important this year because FormIt is acting as this unbelievable connector between what were previous disparate applications for disparate uses. I want to just play this video for you guys. The FormIt team developed this video, and I just think it's really nice, and it explains the whole product really well. So we'll take a second to look at this.

[VIDEO PLAYBACK]

[MUSIC PLAYING]

[END PLAYBACK]

Cool. Just so you guys are aware, if you do want to use FormIt, or just even test it out, there is the FormIt website with the link in the PowerPoint, which is uploaded with all of the speaker information for this course. Can we hold the question until the end? Thank you. You guys can go to the FormIt website. You can create an account for the online application, and you can also go pro, which means that you would have a desktop application.

And as you saw in the video, there's a few different options and different opportunities for tools within the application if you do go pro. All right, let's see. This is a slide showing the difference between the web application and the pro desktop application. Really not a huge difference. There's maybe about five major tools that are missing from there. There's also a FormIt Primer.

So what I'm going to show you guys today, like I was saying to someone earlier, I want that if you are one of the BIM technology people in the room, that you could take this presentation, bring it back to your firm, and really quickly on board people for developing existing conditions in FormIt. And if you've never touched FormIt before, I'm hoping that you'll be able to quickly

get on boarded yourself with this information.

If you want a higher level understanding, maybe you're already kind of a SketchUp pro, and you can just do FormIt with your eyes closed, then great. You should check out the Primers. You can build the Farnsworth House, or you can check out the advanced computational workflow.

So we have a FormIt top five toolsets for existing conditions. I've tried to pick two top fives, one for the top five toolsets you should know, and the other for the top five updates to the FormIt application in 2016. So we have opening, saving, setting location, sketching and massing, basics of navigation in the application, setting your work planes, which is a little different than if you've been using Revit.

In Revit you're generally setting work planes to create your geometry, but in FormIt, you're doing something called set axes. I asked the developer, what's the deal with set axes? And he's like oh, the guy above me just said axes. So that's how it works, and that's what it's called. And then finally we'll go through a little bit about file exchange.

And I've tried to add in some tips on these slides that you can go back to. So after you've gone through these basic things, and you think you get it, take a look at advanced modeling tools, groups, materials and energy analysis. That would be the next group of things I would look at if it were me. And then there's the FormIt snippets videos on YouTube. Those are also really helpful.

So basically, if you want to open the FormIt application, I always recommend to open application by double clicking on an icon, saving your sketch. And so, FormIt gives you two options. It gives you the option to save locally or to save to A 360. How many of you actually utilize A 360, out of curiosity? One, two, tons of you. Great, OK, so hopefully you'll be able to use those. And you will generally want to set the location in FormIt, which is set through Google Earth integration.

So I have a short video that I will just play so that you guys can see. There we go. So you can see on the desktop I'm double clicking. I am launching the FormIt application. You get the splash screen that pops up. If you happen to be using a trial to test out FormIt, you'll get this pop up, and you can just say start FormIt 360 Pro from here. It should take about a second to pop up, and then you are brought into the FormIt 360 workplace, where you can go ahead and save your sketch, as I was saying. So it's pretty straightforward.

The FormIt file tape is a dot AXM. Just a little new. That's what you get. Let's see, so number two for existing conditions is sketching and massing. How many of you are really into SketchUp? One, two, three, four, OK. Only a handful. All right, cool. I've never used SketchUp, which might come as a shock to the SketchUp people. I've tried to avoid SketchUp my whole life. Just to give you guys like a quick background, we're going to derail and then re-rail.

So I started out as an artist. I started out with a fine arts degree at RISD, and I walked into an interior architecture course, and the professor said, all right everybody, you're going to draw a building by hand. And I said, no, I'm not. That's a lot of work. There's got to be an easier way. So I thought about CAD, and I was like really? I have to have different files that can't talk to each other? This is crazy.

At the time I was using Vector Works. Who's used Vector Works? Yeah, like one person. OK, so, Vector Works is like BIM without the BIM. It's just modeling. So back in the day, I used to model, and then I would try to slice through my model, and generate drawings, and then I heard about Revit and I was like, oh thank god. Finally, I don't have to do so much work. And so like I've said, I've never touched SketchUp my whole life. I've just been it Revit, Revit, Revit, Revit, BIM, BIM, BIM, BIM. Trying to use Revit for the DD phase, but it's always been this huge struggle. So this is exciting. This is Revit Light for DD, and it's a great SketchUp alternative. Now you know why I haven't touched SketchUp.

All right. So again, like I said, you can sketch, you can mess. If you've used SketchUp this will be familiar. If you haven't, here it is. For settings, you'll probably want to uncheck snapping to grid. And you can see here with the location that you've set, you can have an underlay and it's very simple. You just click the sketch tool, and you go ahead and trace. This is a less rigorous exercise then if you were able to link CAD and utilize CAD as an underlay.

I have been in discussions with Tom Valero about this, and how much I would really love if the next series of updates would be linking CAD into FormIt, because I think that would be pretty useful for everybody, and they do have that as an upcoming feature that they're going to look at. So for now, you're sticking with very basic sketching tools and this basic Google Earth underlay.

You'll notice that as you're sketching, once you've closed your chain of lines you get a surface that's automatically generated for you. And similar to SketchUp, you can actually select the surface, and push-pull to create extrusions. So anyone can do this. This is really exciting. You

can hand this off to nearly anybody in a firm, and they should be pretty cool with clicking a button, setting a location, setting up some perimeter lines, creating surfaces automatically, and then pushing and pulling this geometry up and down within the application. So that's that video, and let's move forward a little bit here.

So the number three important thing for existing conditions top five toolsets is just basics of navigation. I tried to pick out the most important navigation elements. I made a little video of that. So you guys can see here, you're in the plan view. You can middle click to scroll around. From there, if you click on this 3D view cube, you can middle click to pan in 3D, and then right-click to actually scroll around in space.

There's this little jet guy, and I didn't grow up playing video games, like my video game was SEGA, Sonic the Hedgehog. So this is a little challenging for me, but I do work with an excellent gamer at work named Lynn [INAUDIBLE] and she helps me out. So if we ever do have a need for presenting to a client, I'll probably have her take a look.

But this is similar to SketchUp, where you get this ground view, floating through space opportunity to show your work to a client live. So that's the basics of navigation. There's also this rotational view cube that allows you to rotate around the model in space. So if you're just getting started, those are your key things that you need to know.

Number four for existing conditions top five toolsets. I like to think I know my Revit, and I know my BIM, and I can figure out anything. But when I got into FormIt I was really frustrated because I was like, what the heck? There's no elevation view setting. I don't know if you guys just noticed that, but if we go back a slide or two-- see like up here, this stuff? No elevation view. That's challenging because a lot of the times we do want to work in elevation view, and we do want to be able to draw on something in an elevation view.

So the first thing I thought was, I have got to figure out how to set a work plane in elevation view or I'm in big trouble, and then I started looking for work planes in FormIt. But unfortunately, they're not called work planes, like I said. They're called axes, which was a slightly arbitrary choice, and it would be nice in the future if they did update it to work planes. To set axes, you're essentially going to thee edit tab. You're selecting Set Axes. You can choose vertex, face, or edge, and let me show you the power of setting axes. This is very exciting.

Here you go. Edit, set axes. So you're starting, in this example, with the corner of a plane. You're selecting the y-axis, then you're selecting the x-axis. And you can see this work plane just appears right there, and then you can actually utilize your drawing tools to go ahead and draw on the face of the plane, and push and pull in a similar way that you would in SketchUp. This is really, really good information, and it's not necessarily the most intuitive thing. So I think of all the technical things I say to you, remember this and tell the people.

Let's see, what else do we have? Number five for existing conditions top five toolsets. Get ready to be thrilled. So, not only does FormIt have this amazing converter that lets you go between these applications, it has incredible import-export opportunities. If you look at all of these different file types, we can take OBJ files, we can take SAT files, we can take STL, DWFs.

We can basically export all of these things from FormIt, and this is actually pretty handy if you have someone new to your office, or new to technology, and they're not sure what the heck is an OBJ file. Reference this later. This explains it pretty well, and I had to go to a few different places to find it. So we also have importing into FormIt, major opportunities for bringing and other AXM files, again, OBJ, SAT, STL, and SKP. So notice that you can bring in a SketchUp file into FormIt, which is neat.

And then we're getting into the converter functionality. So for the format converter, you have SketchUp to FormIt 360 workflow process. And let's see, we have, again, like I said, families to FormIt, back to families. And this is an interesting bi-directional process. You can actually take a family, work on it, you can bring it into FormIt, work on it again, and you can bring it back into Revit, and when it comes back into Revit it will update all of the instances of the family with the changes that you've actually developed in FormIt So that's kind of neat.

And then finally, the thing we've all been waiting for, FormIt to Revit. So you're seeing up here, some very important details if you are using FormIt in this converting process. You can see that sketch and extruded objects become mass families. OK. Grouped objects that are copied will be placed as instances of the mass family, and groups that are assigned a specific category within FormIt 360 will be placed as a family of that same category. That's pretty important information for heavy Revit users about how this geometry is going to function once it gets into your actual environment.

This is some more details about conversion properties. You guys can go back to read all of

this later. It's here as a reference for you. FormIt top five updates for existing conditions. So we just went through the basic toolsets that you basically need to get your existing conditions files ready. Recently, there was an update to the FormIt application, so I do want to run through the top five for existing conditions that would be helpful for you guys working, moving forward.

They just added in cut and paste in place functionality. Cool, that's great. They also added in holding Control while selecting and dragging to make a quick copy. Any SketchUp users? Is the a SketchUp thing? Can you do that? Yeah? Awesome. That's good. Select all elements within the model with Control-A, useful. Also group tree enhancement. So there's opportunities to group data within FormIt, I think in a similar way to SketchUp. I've heard you guys use grouping, or layers, or something to manage. OK.

So also, sun, and shadows, and solar analysis has been greatly improved in this most recent update. So someone earlier was asking me what is new in the application between last year and this year? This stuff and more. So we'll just run through this really quickly. I just want to show you guys a video if you've never used this before.

So here, we're basically just cutting and pasting in place. This is pretty straightforward. And in this instance, we are selecting all elements within the model with a Control-A . So I did it manually, now I'm doing it manually by typing Control-A. We have groups trees enhancement. So I can select elements. I can right-click and I get this really nifty rounded navigation and tool option pop up, and I'm able to group elements.

You can see I'm using the Groups tab, and I think I'm naming the group. And once you've created a group, you can go and you can edit the group. You can add things to groups. In this example, I think I go in and I edit the group. I hope. Let's see. Yup, I do edit the group. And then within the group, I can create more groups.

Open-ended question, and I don't know what happens if you do this, and then you bring the geometry into Revit. How many of you have had some serious headaches with groups within groups in Revit? Oh my gosh. I'm not surprised. I have too. It's frustrating. So, I haven't had time to test what happens between these conversion processes, but it's something to be aware of. Yes, you can make groups within groups, but if you're planning to bring this into a Revit environment, be careful. Test it.

Let's see. Sun and shadows, so this is pretty sweet. We have a very simple and basic sun and

shadow control ability. I think this video might be the littlest bit long, so I'm going to skip ahead. You can see I basically created a plane. I'm extruding the plane up. Working on a location here, and then here we go.

You can click on this little sun. When you click on the sun, you get this option to display shadows, and you have a toggle for the day of the year and the time of day, and a check box for daylight savings time. So within the FormIt application itself, you get some pretty intuitive and quick sun and shadow studies here. Skip ahead also.

So this is a video showing solar analysis. That's been improved with the addition of insight into the pro version of FormIt. In order to actually run an energy study, you do need to create levels in the FormIt environment. And the wicked awesome thing about levels in FormIt is that they also translate to Revit. Yay, that's new. You can see here I've created my levels, and I want to generate my insight into the geometry that we're seeing in the workspace here.

It does take a little while to generate these insights. I think when I ran this it took about five minutes. It might look fast, but that's because I cheated. What I did was I ran the insight before making the video. So essentially, the amount of time it takes is a little bit longer. But you can see you get really neat things like analysis of what's going on with walls, energy, costs, and things like that.

I'm not really a huge knowledge base for sustainability. I do have a lot of people that I work with that are. So I would love to hear-- I'm hoping towards the end of the presentation, your thoughts on insight, if anyone's used it. I think that would be helpful for the whole room. And so this just gives you kind of a sense of that.

So as far as sourcing existing conditions data goes, this is another thing that I would generally like us to talk about because it's never clear. It's never from a single place. So like I was mentioning to you guys earlier, in Boston we do utilize the Boston Planning and Development Agency for all over our shadow studies, and we get our 3D models from them. We also get our CAD drawings from them. They have an interactive map of neighborhoods.

And in looking at general data, we utilize Google Earth, Google Earth Pro. It's nice to be able to get building heights very quickly from that tool. So generally, we're using a lot of different sources for a lot of different things, depending on how accurate we want to get. My favorite new thing that I've been taking a look at is this little thing called Oliver, which is for finding mass GIS coordinates in the New England area.

It's a map that is highly, highly, highly specific, because it uses state plane coordinate meters. Has anyone worked with those for a model to get their data? I see one person nodding. Anyone else? Two. OK, so if you've never heard of state plane meter coordinates, they're awesome. They're very accurate. You have to do a little bit of a funny translation with them because they don't just to work with the normal coordinate systems that we use in Revit.

In my studies, when I'm just trying to work wicked fast and get things done, I'm using Google Maps to just get kind of general data about what's going on in the area. I'm using Oliver Mass GIS to get coordinate data. I'm using that to figure out where I'm putting a project to base point in Revit, where I'm putting a survey pointing in Revit. How are these things going to relate to a hard coded origin, and how did they relate to sea level in the real world.

I do look at USGS Topo for general landscape data. Sometimes I'll manually create topographic maps from there for just what I need. Google Earth Pro, I'll get the building heights. I use our local BBDA to get accurate footprints when required from an AutoCAD file. And FormIt brings in some site information for you to create quick sketches, which is helpful.

Let's see, conceptual existing conditions process diagram. So if you're trying to instruct someone in your firm to set up a just really quick existing conditions study, this is what I would tell them to do. I'd say just set your location, get your satellite image, sketch your base shapes, extrude things by height, create some groups, and then you're done. Go ahead, test out the shadows. Test out the insight capabilities.

And as far as converting FormIt geometry to Revit and linking to central, it's a little bit complicated. So I was speaking to the development team recently, and I was saying to them, hey guys, I've been trying to bring this FormIt geometry into Revit, but it's not exactly rotationally correct if I've already rotated my true north in the Revit environment. So be aware when you're using FormIt based geometry, and you do want to bring into Revit, they're still working on the perfect point coordination for rotation.

So my work around for that is when you're working in FormIt, you're going to want to put your FormIt geometry into a Revit site file, which is then linked into the central model file, and you can rotate the link within the central model file, and that should help straighten things out. So like I'm showing right down here, you're creating your forms, you're converting in Revit, and you're linking site model to the central model.

This was something that Tom Valero was recently working on with his team and he brought to my attention to share with you guys. It's a pretty high level process, but I want you to know that it is possible to take Revit topography to FormIt, using this thing called the flux straight-- tongue twister. A flux site extractor, and you can go from Revit to FormIt, SketchUp to FormIt, and Infraworks to FormIt.

So this link from the FormIt Friday YouTube video is where you can go later, from the uploader presentation, to find out more information about that. It's like a 45 minute long tutorial. So if you have that kind of time, you should definitely check it out.

My final thoughts, really, and we have maybe 25 more minutes left. So I would like to open this up to a discussion. I've already said hi to most of you, but I want to know more about what you guys are doing with your existing conditions, and your thoughts about connecting different applications and workflows. I'm also curious for the SketchUp in the room, what are your thoughts about FormIt as compared to SketchUp, and how might you use this?

My final thoughts are that I want an efficient workflow. I am obsessed with efficiency, and I want everybody working in the same tools, in a similar workflow, and getting more things done faster. Why would you use FormIt or why would you recommend to somebody to use FormIt? These are my personal thoughts. I think that it has a really simple user interface. Anyone can just waltz into FormIt and start modeling, creating masses, and create geometry. It's very, very easy to pick up, except maybe for the set axes things, but if that's the one issue, that's a great issue.

And it has a direct connection to Revit, which I love. There are several file exchange types. It's excellent for 3D printing, creating watertight massing. They can send out to somewhere to have 3D printed, or 3D print in-house if you do have your own set up. It has really great product support, and I've met a ton of the developers in working on this class, and they're really good people. So they will care about your issues if you have any.

And I think if someone had never touched another SD face tool, which interestingly, we have had that come up in the last two weeks, I would direct them first to FormIt over SketchUp because I like that it integrates with what the entire office is doing with BIM. So those are pretty much my final thoughts on FormIt. So I guess the first question that I would want to open up to you guys is as far as data goes, and I'm sure you're all from wildly different places, how are you coming up with data for your existing condition studies?

AUDIENCE: [INAUDIBLE] some resources. We have some access to some other [INAUDIBLE] When we can [INAUDIBLE] occasionally have [INAUDIBLE] So get your location set, match the timezones on the [INAUDIBLE] that you're working form the aerial, and then [INAUDIBLE] That's pretty much where we're going from. We can get [INAUDIBLE] otherwise, we're working on Google Earth [INAUDIBLE] where we can get some time stamps [INAUDIBLE]

EMILY DUNNE: Is that pretty much similar for what's going on with everyone else in the room? And is there anything in this process that stood out to you as unusual, as far as sourcing data? Is there a different type of process. I know that Infraworks is another tool that people are utilizing. Who actually utilizes Infraworks in here? And what are your thoughts about maybe Infraworks in this process? How could Infraworks be integrated into existing conditions modeling?

AUDIENCE: [INAUDIBLE] Infraworks already did what you just did from the USGS thing and then Type Topo, and all the existing building, and even with that shadow study there. But the thing is, it can cannot control the view on [INAUDIBLE] So the FormIt, it's better to modify the form you are work on, but Infraworks is better to grab all the information right away. Like you don't have to go to other place to pick it up. So that's how I use it.

EMILY DUNNE: I saw there was a question earlier. So the question from earlier.

AUDIENCE: This is a very basic one. It's been called FormIt, it's been called FormIt 360. What is 360? How many versions of FormIt are there?

EMILY DUNNE: There's technically, I guess you'd say two versions of FormIt. There's the online version and the desktop version. The desktop version's the pro version. The online version's the online version. I guess FormIt is the name of the application. FormIt 360 would mean to me the online application, and for the desktop icon, you're just seeing basically an F with a 360. So I guess that's a branding team question, more than a design technologist question. But I will ask them. Yeah.

AUDIENCE: [INAUDIBLE]

EMILY DUNNE: Oh, they're both 360. Thank You.

AUDIENCE: [INAUDIBLE] branding thing. I've even asked the team I've talked to [INAUDIBLE]

AUDIENCE: There is one product, FormIt 360. There's the pro version and the [INAUDIBLE]

AUDIENCE: [INAUDIBLE]

EMILY DUNNE: So for those of you who are running Revit 2017 and FormIt, I was hoping to show in the Revit 2017 environment under add-ins, you can see here that there's the FormIt 360 converter. So this is the actual user interface on what it looks like when you're trying to bring geometry in from FormIt to Revit. You have an option here of converting RFA to FormIt 360. You have convert SKP to FormIt 360. You have import FormIt 360 to Revit and reload families, and I think this does help answer that branding question.

Like everybody was saying, they are all FormIt 360. There's also this helpful about FormIt 360 here. So when you're in the actual FormIt application-- let's just run through the user interface quickly while you guys are here. So there's the typical operations under files, such as new sketch, open sketch, save sketch, and save as. There's the import, export options. You have the option to import images and also 3D models. And so from the 3D models dialog, this is where you're seeing all of these supported formats that I was listing earlier.

Also under edit, we have that set axes function here. So if I wanted to go to my plan view, and I wanted to create a simple piece of geometry-- take a look at that in 3D. We have a plane. I want to use a select function to push and pull, and now I have an element. And say I want to set the axes to this face that we're seeing in the foreground. I'm selecting Set axes, I'm going to the corner here, picking that corner, dragging this up, coming down, and without even connecting to the other corner, you can see that the axes has been set to the front.

The interesting thing about FormIt, is to reset the axes, I just come back over here. You can see there's short cuts for these things like SZ and RZ. If I were a power user, I'd be utilizing the shortcuts. I'm just going to quickly reset the axes, and you see that everything is coming back to its original location. There's more view opportunities listed under the view tab.

For creating elements, we have options of lines, splines, arcs, circles, and rectangles. We also have a series of out of the box solids that you can place, as well as a series of functions you can do on multiple solids, such as joining the geometry, cutting the geometry, creating sweep's, lofts. You can offset solids, and also do a fillet, which is something that in Revit, is very, very cumbersome and challenging to do as a basic and new user. So I think this is a good opportunity to be able to quickly create fillets in your model. So ta-da, a fillet. That's pretty cool.

The set location tool does work by allowing you to import satellite images, or simply set the

location for your solar studies without actually bringing in an image. So you can search anywhere, like Las Vegas, and select, and then you're here. And if I just want to import a satellite image, I have the opportunity to zoom in or out. I'm going to say cancel, and just that the location only. So now this model has a Las Vegas location setting.

Under settings, there's these options of snap to grid and show editable dimensions. I found that while I'm sketching in plan, and if I'm using an underlay, it's actually easier to not show the editable dimensions, and to not spa to grid. So I would generally recommend that if you are working on just any existing conditions function. Under collaboration, you can start collaboration sessions and join existing sessions, which is pretty cool if you're working on an iPad, and you have someone working remotely. You guys can both work in the same environment through A 360.

And over here, you have your properties palette for whatever element you are selecting. So if I'm putting these elements, there's not much coming up because they're disparate elements. If I go ahead and take a look at the materials, I have the opportunity to open up the material editor and create materials and add materials to the application.

AUDIENCE: [INAUDIBLE]

EMILY DUNNE: When what?

AUDIENCE: What happens when [INAUDIBLE] materials [INAUDIBLE]

EMILY DUNNE: Yeah, they come through. They carry through.

AUDIENCE: So you can use this to create [INAUDIBLE].

EMILY DUNNE: Yes, and the materials speak to each other, which is pretty exciting. You can create scenes in a similar way, that in SketchUp you could create a series of views. You can also work with different Visual Styles, such as wireframe and the environment material styles. There's group tree editor. So you can select multiple elements, and add them to groups, and manage your group trees there.

There is opportunity for Dynamo integration. I noticed with 2017 and with FormIt 360, that the Dynamo version, I believe that is out of the box. Let's check. If we go to Revit-- do you guys know the new thing about Dynamo in 2017 is that it's integrated into the application itself. It's no longer an add-in. So if we go to the manage tab, you can see you have Dynamo in the

operation itself. And I believe it's 0.9.1, but if somebody thinks it's 9.2, let me know. I think it's one of those two versions that gets automatically installed with your 2017 package.

AUDIENCE: [INAUDIBLE]

EMILY DUNNE: Yes, so there's opportunity to utilize Dynamo within FormIt, and also opportunity to utilize Dynamo within Revit.

AUDIENCE: [INAUDIBLE] this is the Dynamo that [INAUDIBLE] Then they're sort of basically the same [INAUDIBLE] actually save that [INAUDIBLE] into your published website, basically. And then [INAUDIBLE]

EMILY DUNNE: And just to continue going down to this tool pallet, so you guys are aware. You can create levels within FormIt. So it's a simple matter of adding levels. Interestingly, when you add a second level, it does name the level the same thing as the first level and, also really interestingly, when you double click on that, it automatically renames itself to level two. I don't know. Interesting.

So there's that fact, and when you go ahead and create level three, we're back at level one. But I double click again, and I get level three. So I think that there's a handful of things to still be worked out in the FormIt application like level naming when previous levels exist, but it's not too crazy to actually fix that. And there's a bunch of content-- the content between Revit and FormIt is bi-directional. So you can utilize that content in either environment.

This is kind of neat. I wish Revit had this. There's the undo manager, and you can see what you've been up to, what time you actually did that, and who it affects, which is fascinating. I haven't tested this live yet, but I'm very curious to. So, I don't know. There's about nine minutes left at this point. Does anybody have any major thoughts, questions? And let's just kind of all talk. I don't like being an authoritarian figure up here.

AUDIENCE: Version compatibility for FormIt 360 is not FormIt 2017.

EMILY DUNNE: True.

AUDIENCE: What does [INAUDIBLE]

EMILY DUNNE: That's a great question. I'm going to have to ask Tom Valero about that one because FormIt does get updated, seemingly annually, and I believe it should function-- it certainly does

function with 2016, 2017. I haven't tested with 2014. Has anybody done that yet? No.

AUDIENCE: [INAUDIBLE]

EMILY DUNNE: Are you a developer?

AUDIENCE: [INAUDIBLE] Is that the BIM program? [INAUDIBLE]

EMILY DUNNE: Yeah, hang on. She'll send you a microphone.

AUDIENCE: [INAUDIBLE] So this is a BIM program, you said? BIM? This is a BIM program format, did you say?

EMILY DUNNE: So I would say that FormIt itself, in my opinion, has not necessarily BIM, but it integrates with BIM. So Ben is kind of a buzz word-ish. BIM literally means Building Information Modeling, and it implies that the elements in your model file contain data, and they also are 3D geometry. I don't know, what do other people think about that? I would say it's integrated into a BIM workflow. It's not exactly BIM itself.

AUDIENCE: OK, well, what kind of modeler is it? Is it a surface, polygonal, solid modeler? What kind of modeler? I can't tell, really. It's a solid modeler? OK. Yeah, I know. It's very similar, but SketchUp is pure polygonal. This looks kind of solid with mesh abilities, mesh operations. So what do you consider it? A solid modeler with mesh operations capability?

EMILY DUNNE: I would say it's more of a solid modeler, and I think because of the integration with 3D printing, that's a helpful workflow process, having a solid modeler to the 3D printing output.

AUDIENCE: OK, thanks.

EMILY DUNNE: Any other questions? Someone in the back.

AUDIENCE: Just to the question of workflow, you mentioned the SD to DD crisis. Do you find with this, is there a point where you tell the design team to stop using FormIt? Is that when you hit DD? Or do you continue to use it through? I guess, when do you draw the cutoff line?

EMILY DUNNE: Yeah, that's a really good point. I personally would definitely draw the cutoff line at DD, and I would say that's the end of FormIt. It's been nice. It's been fun, but let's use Revit like we're supposed to. Anybody else?

AUDIENCE: [INAUDIBLE] all solids. Do you have non-water type surfaces in there? [INAUDIBLE]

EMILY DUNNE: Cool. Yeah, I didn't know that. That's great to know.

AUDIENCE: Yeah, they did it just recently. [INAUDIBLE]

AUDIENCE: So in my office, a lot of the designers are using SketchUp, and I think there's been a lot of discussion about trying to transition to FormIt. I think a lot of the drawbacks is a lot of our designers are kind of set in their ways in terms of visualization. A lot of the materials and using things like V-ray. Where do you see FormIt in that sense? Do you see it becoming easier to use as a visualization tool? I think it's easier on my end to make that case if things like V-ray, or things like the ease of material applications becomes more standardized with FormIt.

EMILY DUNNE: I think in that scenario, the best approach would be to suggest FormIt, at first, simply as a converter to be able to take what you're doing in SketchUp into Revit. And I would hope that once people realize it exists, and it is pretty good for converting things, maybe they would be themselves curious about what they can do in this FormIt application, and hopefully it would be a natural and organic process that people start transitioning from one to the other. Yeah.

AUDIENCE: As far as fully transitioning from SketchUp into FormIt, I think it's not even about just hangups or inertia of people knowing how to use SketchUp, but rather like it's hard to tell what the priorities of the FormIt team have been in the past because I tried to use it a year ago, and there's just very odd hangups like the not being able to copy move, not being able to group properly.

These are really basic functions that are really important just to lay out different designs, and if I can't design in FormIt, why would I try to keep using it if I don't know what other kind of hangups I'm going to run into? It's just a waste of time. It's just like how much are the design tools getting attention?

EMILY DUNNE: Right, I think you bring up a lot of good points. I think their updates this year have addressed a few of those, like the simple select geometry and copy duplicate easily, that was not previously available, was really critical. And I think that the FormIt team, from what I understand, has that as a target moving forward, how to just make this easier for a typical desktop user, and moving a little further away from the initial app development.

Any final thoughts or questions? Well, thank you guys so much for staying and coming, and it's been my first AU and my first course, so I really appreciate it. And any feedback you have, you

can email me as Architecture@EmilyDunney.com. So, thanks a lot.

[APPLAUSE]