GeoDesign Editing Tools, Processes, and Workflows

Eric Wittner and Matthew Baker demonstrate how ArcGIS 10 can be utilized to support GeoDesign workflows.

http://video.esri.com/watch/652/geodesign-editing-tools_comma_-processes_comma_-and-workflows

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Video Transcription

00:01 I want to welcome you to GeoDesign Editing Tools, Processes, and Workflows.

00:06 My name's Eric Wittner. I'm...and there's quite an echo.

00:12 Is that better? The same.

00:17 I'm...was a product engineer on the 3D team, but I'm now a solutions engineer with Professional Services...

00:22 ...working on the GeoDesign team.

00:24 I'm here with Matthew Baker who's a product engineer on the editing team.

00:27 And we want to show you some of the tools available for doing GeoDesign in both 2D and 3D.

00:42 It's not letting me get near my computer.

00:51 So what I want to do is start by telling you a little story of GeoDesign in 3D.

00:59 What we're looking at here is the city of Philadelphia.

01:04 This is the area around what's called Logan Circle.

01:09 And the City of Philadelphia has decided that this area is underutilized.

01:14 They think that it could have more economic potential than exists right now, and they want to do some redevelopment.

01:23 One of their first concerns though is that they don't violate their height limits for buildings as they do constructions.

01:30 So here we're looking at this kind of classic skyline looking back at Philly, the same one that was in the Rocky movie.

01:43 And here we're tilting up and we can see kind of the fan of that view in 3D.

01:50 And this is...they don't want to violate this because they don't want to change that skyline.

01:58 Hold on.

02:09 So here's our study area right here in the center.

02:12 This is the area right around Logan Circle.

02:15 This is the area that they've identified that they think is underutilized.

02:21 So, there's some existing commercial in this area.

02:25 There's some residential, but it's all generally low-density residential.

02:31 The commercial you can see is in red.

02:33 The residential is in orange.

02:34 There's some parks in green, some institutional in purple.

02:38 Overlaid on top of that we see parcel availability.

02:43 So the dark yellow ones are actually abandoned parcels.

02:46 The beige ones that are extruded up, those are parcels that the city has identified as underutilized.

02:52 There is also one tiny light rail system coming in here on the bottom left.

02:56 You can see a blue line.

02:59 So what we want to do is take those and combine those together into a suitability layer…

03:04 …to figure out where we have redevelopment potential.

03:07 So this area here on the bottom left you can see because it's close to that light rail system.

03:11 We have one tiny sliver of high redevelopment potential in that blue, some moderate, some green, some yellow.

03:20 And we realize that really there's not enough redevelopment potential without actually making some changes.

03:27 So what we're going to do is go in and sketch a light rail system in and then run a model to reassess the area…

03:37 …as if we built that light rail system and provided more accessibility to this area.

03:42 So here's the model on the bottom right. This is ModelBuilder running in stage…thank you.

03:50 And we can see we have much more suitability potential.

03:54 We can graph that to see, quantify exactly how many acres of redevelopment potential we have.

04:00 But we decided that that's insufficient.

04:03 What we didn't capture is this whole north end so we're going to resketch in a new transportation network…

04:10 …rerun this model, this redevelopment potential model, right, and we'll see the top here change and change pretty drastically.

04:25 So now we've created accessibility in that area.

04:27 So we have much more redevelopment potential on the north side.

04:31 So this is kind of the general configuration we've decided to go for, for our redevelopment area.

04:39 Now we want to do is actually go in and start sketching some simple massing models…

04:45 …of buildings we want to actually add to this development.

04:48 So we have a template here on the bottom right, and that template controls buildings of different heights.

04:53 So we sketch in and this is kind of the general form of the development we want to do.

04:58 And what we can do is we can take that surface we made earlier from that critical view…

05:03 …and make sure that none of our new proposed buildings violate that surface.

05:06 So we look underneath. Nothing's poking through the top.

05:10 We know that we're okay in doing that kind of development.

05:15 So the next question we have is do we want to do an elevated or do we want to do a subway transportation system.

05:23 So here we've just tilted underground.

05:24 We're looking back up at soils and you can see we've taken that line, we've applied some parametrics to it to smooth it…

05:32 …and now we're intersecting that line with our soils information to get a summary of what we would have to remove…

05:40 …in order to create this subway.

05:42 We can actually kind of fly down the tunnel, see the soils in 3D around the edges, can do an inspection.

05:49 But we decide, you know what, given the amount of sand in the soil, it's just going to be too complex and too expensive…

05:55 …to actually build a subway, so we're going to go with an elevated system that has stations and stops, that connect across multiple stories.

06:05 So here we have another…that's another simple little model that takes those building masses we have…

06:12 …and it splits them into floors and suites.

06:17 So these are theoretical spaces inside the buildings that we can then use to do analysis on.

06:24 So we're actually going to do analysis where the impact of things we place outside the buildings...

06:29 ...changes suitability inside the buildings.

06:34 What this model also did is brought in the context so it compared the models that we sketched, found the buildings that...

06:40 ...the preexisting buildings that were there and brought them in.

06:43 Here we're adding stations and stops in 3D along this line; so you can see the stations are the cylinders...

06:53 ...the stops are these little spheres.

06:56 And we're going to do suitability analysis, and what we're going to do is say...

06:59 ...the spaces that are closest in the buildings to these stations or stops...

07:03 ...have more potential for economic development, for retail development.

07:10 So we run a little model and we see these areas colored dark red to a beige where the darker red has more potential.

07:18 So here again a station, we add in a stop next to that building.

07:23 We run that analysis.

07:28 It runs, and we see instantly, bam, we've got more potential in those spaces.

07:33 So now we're actually going to carve down in 3D through that building, start editing...

07:38 ...and we're going to define a retail space on this first floor here.

07:43 And we do that for a whole series of buildings across the area.

07:47 So now we have a series of retail that exists in existing buildings, and we have retail in new buildings.

07:53 And that's going to be one of the components we're going to use to site residential later on.

07:58 Our next concern though is we want to assess every single one of these spaces based on the quality of view they have.

08:06 So we have several spots here that are critical for basically line-of-sight view.

08:12 We have the archdiocese, actually the Franklin Circle itself, the institute, and these two parks.

08:21 And we want to make sure that the spaces can see those...

08:24 ...and the spaces that have more views are more suitable for residential development.

08:29 So we're doing a view impact assessment into the spaces of buildings.

08:34 And this is that result.

08:35 It's this spider diagram, reaches back out to every single space, and you get dark green areas with high, a large number of views...

08:45 ...and these beige areas which actually have no views.

08:48 And in the back in this corner here we have this little divorced kind of four-story building that's got no views.

08:54 We want to make sure that every building has views.

08:56 So what we're going to do is we're going to start editing, go in, select that building, and actually delete it...

09:05 ...and then replace it with a taller building.

09:08 So we select that 10-story template that we had, same footprint we're going to use, just sketch on top of it, save the edits...

09:17 ...and then rerun that line-of-sight assessment.

09:26 So here's this...first thing we did is reran the data management model that split them into those floors...

09:31 ...and the suites at the corners and the sides and the center, rerun the line-of-sight model.

09:38 And then we see now we've got an area on the top.

09:40 That actually has views back to our critical spaces.

09:44 Now we're going to combine walking proximity to retail spaces with views to get residential suitability...

09:52 ...and go into a building and start carving out all the rest of the spaces inside this building...

09:58 ...so actually making a 3D space bubble diagram, so to speak, of the spaces inside this building.

10:06 So the first floor, we're going to...because it's close to a station stop, we're going to put retail on the first floor.

10:12 Second floor where we have connectivity to that station, we're going to put another retail space next to it on the opposite side.

10:21 It's not very good for residential, it doesn't have any views.

10:23 We're going to set that aside for office space.

10:27 Maybe we have an off-site parking requirement, so on the third floor we sketch in some elevated parking.

10:36 And then as we go up we can see we've got in this area, because we're close to retail and we've got good views...

10:44 ...we've got good residential potential on the side, so we're going to set aside this floor as a residential space.

10:51 And then, you know, quickly and easily we can duplicate what we draw multiple times...

10:57 ...so we're just going to duplicate it up to a six-story building.

11:00 And we can do that for a variety of buildings in this whole development, so just sketch them in.

11:07 So now we've got these simple forms of the interiors and the uses of those buildings, not just their exterior shells.

11:14 We can also grab the exterior shell.

11:16 This is the simple block, massing block that we had before, export it out into 3D format, bring it into whatever software you want.

11:26 In this case, we brought it into SketchUp, enhance it, select it, and then replace so that you get a kind of a better-looking 3D building.

11:40 And since all these buildings are, you know, the interiors of these buildings are sketched in GIS, right...

11:46 ...you can do a summary at the end and see based on your design on your program...

11:51 ...how many square feet of the different types of interior land uses you've developed...

11:57 ...and then use that in assessment to see whether you've met the requirements for your program...

12:02 ...and then since they're GIS features, compare against them to make sure that the design is solid.

12:09 So again what I wanted to kind of highlight here was sketching.

12:13 Sketching is not just 2D but you can also sketch in 3D now.

12:18 You can assess while you sketch, so I drew a route for a light rail system, I did an assessment, I didn't like it, I drew again...

12:27 ...I did another assessment.

12:28 You can keep doing that until you find the result you're looking for.

12:34 You can use...You can reach inside spaces from features outside of spaces.

12:43 So I did an assessment of interior space based on walking from outside of buildings.

12:48 Again, I did assessment of interior spaces based on how many features they could see outside the building, so viewshed.

12:56 And then you can actually do this creation of kind of interior form by editing in 3D.

13:02 And these are all kind of new things that happened at 10.0 and they're actually just getting

better at 10.1...

13:08 ...the editing tools are better at 10.1.

13:13 Do you mind if I just ask if there are any questions now?

13:16 Go for it. Are there any questions?

13:20 No. I'll hand it over to Matt.

13:26 Alright. Sure.

13:36 Hi everybody. Good morning. Okay.

13:40 Why not start off with a big diagram?

13:43 So if you're talking about GeoDesign, and we've been talking about GeoDesign now for a couple years...

13:47 ...and we heard about GeoDesign maybe a couple years ago at the User Conference.

13:50 Really what we're working on right now is how to apply GeoDesign and all of our tools to this diagram right here.

13:56 So this is the Steinitz Model of Landscape Change.

13:59 You might have seen a few different permutations of this diagram.

14:02 And really it's kind of set the workflow for how we're going to work with GeoDesign.

14:07 And there's a session here on Sunday that Carl did where he talked about this...

14:09 ...and he's talked about it at the GeoDesign Summit a few times.

14:13 And how do we gear all of our tools and our workflows towards this landscape change model?

14:19 And so for me right now, I'm working on the editing team.

14:23 I don't really have a city to develop, but I'm trying to get all these tools in order...

14:26 ...so that we can kind of plug them in at the various levels of this diagram.

14:30 And so having been through a couple urban planning conferences...

14:34 ...I started talking to a lady who works for the Centers for Disease Control in Atlanta, and she was really big on parks.

14:41 You know, where are there parks and where are the places that are underserved for parks in Atlanta, in the United States, wherever.

14:49 And so I thought, okay, well, let's take a look at what that might look at in Redlands.

14:53 And so I got all the parks for Redlands and I kind of gathered all the data from Redlands and, you know...

15:00 ...started to make a very simple map and said, well, here's all the parks and if we took our simple buffer tool, it's a one-mile buffer...

15:06 ...looks like Redlands has got some pretty, you know, pretty good access to parks.

15:13 But then I know that the buffer tool is only doing a straight line.

15:16 It doesn't care about the roads. It doesn't care about anything like that.

15:18 So I thought, well, why don't I do a little bit more analysis to try to figure out if there is really an access problem.

15:25 And so if you plug all those parks into a surface that describes, you know, can I walk here, can I walk there, can I walk there...

15:32 ...and that surface is built on the road network, and you'll end up with a much different picture of where there's actually parks.

15:38 So again, this is a simple example that I've come up with, but it could be anything, right?

15:42 The model for landscape change says, well we start off with...huh?

15:46 Hold on.

15:47 Yes? Just want to flip back to that view of the parks.

15:50 So the difference, the orange, the orange outside and the purple is the diff-...those are both the one-mile walking times.

15:58 [Simultaneous conversation]

16:00 Walking time? Who said at last year, the Plenary Session, that it's ridiculous to measure walking speed or something like that.

16:06 Everybody has a different stride.

16:07 That's it. So this thing, if you look at the legend on the left-hand side here, what I've got is the buffer for one mile...

16:13 ...and I've also got this kind of walkability surface.

16:15 You've got 500 feet from a park, quarter mile, half mile, one mile, over a mile is in red.

16:21 So to me, I know what a quarter mile is, how I can walk it.

16:25 Is that walkable to me? Yes.

16:27 Is it walkable to someone else? Maybe not.

16:29 But this is sort of again just an analysis that I've come up with just to see if there is a problem.

16:36 So we gathered some data.

16:37 We've analyzed and figured out that, yes, there is a problem.

16:40 So what do we do?

16:42 Well, we can do some suitability analysis, right?

16:45 So I can go in and I can say, well I have, you know, this, this, this, and this, and let's go over to ArcGIS, the Resource Center, right now.

16:55 There's a blog section under the desktop blogs, and I've published a blog here called Measuring Access to Parks.

17:02 And you can find this online right now.

17:04 And this goes through, you know, here's the one-mile buffer, here's the road network.

17:08 Let's strip out all the highways and make a walkable road network and let's measure the distance from all the roads...

17:14 ...and then let's go in and use some of the tools and create a surface that describes, you know, how to walk along those roads.

17:20 Let's take the parks, let's match them up to the parcels that they sit on top of.

17:24 Let's break the parcels out into points so that I can feed them into this road network.

17:28 And then I actually get back something that makes a lot more sense than a straight-line buffer.

17:32 And so when I put those all together, I end up pointing out certain places that, yeah, there's a big...there's a hole here.

17:38 If it's parks, if it's grocery stores, or whatever it might be, we use our GIS tools as we have for a number of years...

17:44 ...to figure out this problem.

17:46 But now we're inserting it into this model for landscape change and really we're doing GeoDesign...

17:50 ...because I'm going to design where to put a new park based on the answer to this question.

17:56 And so you can also create graphs and so on and so forth.

17:58 So the next step then is to actually use some suitability analysis to figure out where there might be a new place...

18:05 ...a good new place for a new park.

18:07 So the second post that went out, maybe just a week and a half ago, describes, okay, if I take all this data from the City of Redlands...

18:14 ...and here's sort of this table describing all of my criteria, my very simple criteria...

18:19 ...where then would be a park, a suitable location for a park?

18:23 So there's a little diagram here just to describe, you know, what my methodology is.

18:28 I want to find the good areas. I want to find the bad areas based on schools, bike lanes, trails.

18:33 My bad areas are based on existing parks because I don't want to put a park where there is one already...

18:38 ...and where there are roads that I can walk on or not walk on or at least where I don't want to put a park near a highway and so forth.

18:45 I erase the bad from the good and then I end up with a suitable area.

18:48 Talk about how to use ModelBuilder a little bit.

18:50 Here's the model that I actually used.

18:52 Here's a little note about taking that model that I came up with to measure park access.

18:58 Well, why can't I use that in another model to figure out a distance along the road network rather than just doing the straight buffers?

19:05 So there's a little section in there about embedding a model into another model and just plugging in your inputs and getting your outputs.

19:11 And that works pretty good because now I get this little results here.

19:16 Here's a little block, here's a little block.

19:17 I've got vacant parcels from the city so I know that I can actually do something on those.

19:21 And if I go back to my ArcMap document here real quick, what we're going to do is...

19:24 ...just zoom in and see exactly what this kind of looks like.

19:27 So my existing parks are in green and then I'm going to zoom in a little bit further and turn on the...

19:33 ...let's see, let's turn on these new park parcels, my suitable park locations.

19:37 And so there's this spot right here - I've turned my basemap off but I don't want to do that. Okay, so that spot over here.

19:45 And then later on we're actually going to jump into an editing session.

19:50 There's an editing tips and tricks session I'm going to do later on where we do a little sketching of this park right here...

19:55 ...and we can certainly do that right now because the next blog post I'm going to put out, well actually, before I start sketching...

20:01 ...how do I know that this is the place where anybody wants a park at all?

20:04 Alright, so we then want to figure out where, let's see, let's put all that into a web application, okay?

20:12 So I've made a little Flex application here to publish that walkability surface, the existing

parks...

20:18 ...and I've taken all those suitable park locations and I've just broken them down into little points here.

20:23 And the nice thing about this web application is you can click on any of these things and you get information about that park...

20:28 ...how big it is and anything else you want to put in the database, you can put it out in this web application...

20:33 ...and you click this little thumbs up here and then that actually goes into the database with my vote.

20:39 So I've sort of made a web application to gather comments, gather, you know, feedback or whatever about a popular park.

20:45 Twenty-three people like where this one is, five people like where this one is.

20:49 So, you know, the next blog post I will put out will describe how this was made and how the Flex application works...

20:55 ...and what ArcGIS Server is doing in the background to gather all these votes and put them in the database.

21:02 Alright. So, back in ArcMap then, if this is my favorite place to put a new park, maybe it is, maybe it's not...

21:08 ...I'm going to actually go out to ArcGIS Online here, and you can do this too because this is a public piece of data I put out here.

21:17 So I'm going to go to a park design template and I'll just search for that.

21:22 And so I put up this little template up here and this is a layer package.

21:26 So in ArcMap I've created a bunch of symbols and a bunch of layers that I want to use for park design...

21:32 ...and I'm going to go out and add that to my map.

21:34 And now when you import a layer package, you're really choosing a place where you want to start off a project.

21:40 And in this dialog box, there's this, if you're familiar with ArcGIS...

21:45 ...this is like the only place you'll find this button to create a new geodatabase.

21:49 And we're going to kind of wrap up our new park into this, right, whatever you want to call it...

21:56 ...and I'll just select that geodatabase and I'm going to put in my new park design in there and I'll hit OK.

22:02 And what it's doing is it's downloading that data, all those layers, all those symbols, extracting

it into that geodatabase...

22:08 ...and then what I'm going to end up with is a couple different layers than my ArcMap document here when it's done thinking about it.

22:15 Alright, so there we go. So up in the top left I have a couple different layers.

22:18 Now, I'll come back to what those layers are actually doing, but let's use them right now.

22:24 To use these layers, I'm going to start an edit session.

22:28 And then when we talk about tools for doing GeoDesign, while we discuss that we have all these modeling tools...

22:33 ...we have all these raster tools, and all this kind of stuff, but now we have these editing tools.

22:37 And the editing tools are where we actually start to do sketching.

22:40 And so we don't call it start a sketch, we call it start editing...

22:43 ...but I can certainly change any of these toolbars and any of these menus to say whatever I want...

22:47 ...because ArcMap's a nice customizable environment.

22:50 But I'm going to start a sketch. I'll come back to that thing.

22:54 And now I am going to do some park sketching.

22:57 And so at this scale, I've suppressed a couple of the more detailed layers that you're going to draw as you zoom in.

23:04 So maybe at this scale, and I'll turn off my suitability analysis here because I know where I am at this point.

23:10 But I do want that basemap. Let's bring that out.

23:14 Okay, there it is.

23:16 Okay, I know where I am. I know where my park's going to go.

23:18 And so I might start to designate things like open space, and I want to have...

23:21 ...well, I'm going to end up with a parking lot down in the bottom corner here and, you know, since we're here...

23:26 ...I might as well just kind of grab this. We have this nice walk and pen display set up here, so I might as well use it.

23:31 And, so there we go. And now, that was open space which I didn't really want.

23:35 So let me go in and just delete that real quick, grab my parking lot, and I'm going to draw in a little parking lot.

23:41 But I've messed up this template so it's going to give me some guff, and that's okay.

23:46 So anyway, here's my open space, and I'll just make the whole thing open space until I can fix that other thing. Okay?

23:52 But now, what's the next thing?

23:54 I want to actually zoom in and make something a little more meaningful.

23:57 So let me just go back where I have a mouse, and let's zoom in to reveal a few more templates here.

24:03 So as I've zoomed in, I now have, well I've got to fix a couple things in here but that's okay.

24:08 I've got a recreational space. I've got open space.

24:10 I've got, you know, different things that I can draw on here.

24:13 So if I want to put in a little athletic field, for example, then I can certainly go in here and just sketch all this stuff out.

24:19 Alright, so there's an athletic field.

24:21 And then if I want to put in like some kind of building, I can put in a building here.

24:24 And I'm just using all the cartographic tools of ArcGIS to just draw something, draw, sketch, whatever it might be.

24:31 And I'm using cartographic representations to make things look a little bit nicer...

24:34 ...and so I can sketch out these kinds of things.

24:37 I can use the pen display to make sure that my symbols are nice and free-flowing, so to speak.

24:43 And let's see if I can get this to draw.

24:45 So you can see that also, all these symbols here are getting really crunched in.

24:50 But what I would like to actually do is set a reference scale on this map...

24:54 ...and a reference scale just says draw all your symbols in reference to that scale.

24:58 So now I can make everything look really nice at this scale...

25:02 ...and I don't have to worry about all the symbols getting crunched in together and all that kind of stuff.

25:05 So this is just other stuff that's existed in ArcMap for a long time but now I'm just putting it into a new kind of workflow here.

25:11 And so what else can I do?

25:12 I have all these trails. Yep.

25:14 So with the reference scale, one of the things that Matt's doing that's very, very cool is the

symbols are referenced to their real-world scale.

25:23 Size. And you have an Excel doc. I don't know if you shared that Excel document...

25:27 ...but you have a way of calculating how to do the transformation based on different scales for different [Inaudible].

25:34 Yeah. So, you know, when we draw stuff in scale, we say that, you know, one inch equals this thousand feet on the...

25:39 ...you know, one inch on the map equals this many feet on the ground.

25:41 And I can say I have a tree that I want to put in that's, you know, 50 feet wide and I know it's 50 feet wide...

25:48 ...and then what does that mean on the map?

25:50 Well, if I have a scale of one to a thousand or whatever it is, there's just a little calculation that you can make...

25:55 ...to figure out what the point size in ArcMap is.

25:59 Alright. So you just set a reference scale, set your point size, and everything does draw to scale.

26:02 And that means when I draw in these giant trees, they're actually to scale when I put in my little multiuse path...

26:08 ...and I want to sketch it in in freehand or whatever, I can just draw that in and the size of that thing, sorry...aha...

26:18 ...the pen is the tricky part here but that's okay.

26:21 Alright. So the width of that trail is actually relative and true to scale to the size of that tree and anything else I put in here...

26:28 ...you know, I'm just kind of designating where I want little things here and there...

26:31 ...and where I want a sidewalk to go or whatever the case may be and all this stuff, again...

26:37 ...is true to scale now because I've set that reference scale.

26:41 So, maybe I broke ArcMap again. Oh, no, there it goes.

26:44 Okay, so, again, what am I doing here?

26:46 Taking layers that I've created in ArcMap, exported them to a layer package.

26:51 I don't get the data, but the data is only what I'm drawing right here.

26:54 You want the symbols, you want the layers, you want the representations that I'm using to do all this kind of stuff...

27:01 ...and, of course, because you've opened it up in ArcMap, you can use all these different

drawing tools...

27:06 ...so if you want to put in a pond here, you can choose do you want to draw a circle...

27:09 ...and then you just starting drawing a circle and then there's your pond.

27:12 Okay, and then you can move that around using the editing tools, you can rotate things.

27:16 You can do everything that ArcMap can do in an edit session, but you've got this nice symbology to work with...

27:22 ...and you've proven, using the analysis tools, that this is where the stuff should go.

27:28 Okay. So that's one, two, three, four blog posts that we'll be talking about.

27:33 And I suppose since we're here, let's go back to what Eric was talking about in terms of the transit-oriented development...

27:39 ...and let's talk about another example for Redlands.

27:41 So I'm going to close this down right now and move over to another ArcMap session.

27:46 And so, let's talk about another problem that exists in Redlands that someone's already kind of figured out...

27:52 ...you know, using all their methods.

27:54 So the whole first few steps of the Steinitz Model for Landscape Change have been figured out.

27:58 So I have an easy job.

28:00 I'm just going in and literally drawing in, in this case, where they've decided that light rail line is going to go in Redlands...

28:09 ...and I'm going to kind of hack at this for a second here, but that's okay, and then go in and draw...

28:14 ...using that same feature template, I can just sketch in where that light rail line would go.

28:18 Obviously it's not going to go exactly there, but that's the general plan.

28:22 And then when it gets into Redlands, it's going to do something a little more, let's get in here...

28:28 ...and it's going to follow this existing line and get downtown and then right over to the university.

28:32 Okay, and that's the plan for light rail in Redlands.

28:36 And so other cities that are doing planning for light rail right now are trying to figure out where the stops are going to go.

28:41 And so I decided that, okay, I'm going to figure out where they're going to go...

28:44 ...but I'm going to use that same method we used to figure out the park walkability...

28:48 ...putting the stops where they are going to go in Redlands, one by downtown, one by the university, one by Esri...

28:55 ...one out by the shopping center, and I think there's actually one out here but I can't remember if that's within the Redlands city limits.

29:00 So I've just dumped in a line and I've dumped in five points.

29:04 Now this toolbar up here, whenever I show this someone always says, how can I download this toolbar?

29:09 You can download this whole demo that I have.

29:11 It's on ArcGIS.com right now.

29:13 But there's nothing really too crazy to create.

29:17 All I've done is I've taken all the tools that I want to use and just made like a custom toolbar.

29:22 And I say custom, I don't mean code.

29:24 I mean you just kind of are dragging buttons from here and there onto a new toolbar.

29:29 And you can create new menus and you can put all these different analysis tools that you want to use onto that toolbar...

29:35 ...wherever you want to put them.

29:36 And so as we move towards, you know, getting GeoDesign software up and running...

29:41 ...the first thing we need to figure out is what is the workflow that everybody is trying to accomplish...

29:45 ...because I think everybody out there right now has something different that they want to do.

29:49 ArcMap can do all these different things.

29:51 How do we put them into one kind of package? I don't know yet.

29:55 But for me, I'm just going to get this going for myself right now.

29:59 So I've made a model and it's going to run a walkability analysis on those points that I just put on the map.

30:03 ...and I'm using it now to analyze the sort of distance along the road network of those light rail stops.

30:05 And I'm going to let this run and I've actually figured out a nice way to break ArcMap here...

30:11 ...and the development team is very interested to know how this works...

30:15 ...but everyone just kind of close your eyes or look the other way for a second and sing really

loud or whatever it is.

30:21 Okay, now it works. Now it's done. Wait a second. There it goes.

30:26 Pay no attention. That's fine.

30:28 So what did I do? I just was sketching and I hit a button to analyze my design and then I see the result.

30:35 That's the same model that I used to analyze the park location...

30:43 And so for me, it's a matter of, well, like I said in my case, it's a matter of just figuring out, is that the best place to put those stops?

30:50 Does that serve the community?

30:52 Does that give them, you know, the best access to those light rail stations?

30:56 And if I say yes, then the next step in my design here is to actually go in...

31:01 ...and find out a place to put some redevelopment based, like Eric mentioned, around transit.

31:06 So a transit-oriented development is the next stage in this particular model.

31:10 So here's the new light rail station...

31:13 ...and here's this big empty building that used to have a lot of products that you can buy called the Redlands Mall.

31:19 But it's completely empty now and so that means that I can take this thing and I can do a little copy and paste...

31:26 ...and I can put it into this layer that's going to tell me for a potential project area just how big that is.

31:32 And so I can see right away that the Redlands Mall is 11 acres, so that's cool.

31:35 Now what do I want to do with it?

31:37 Well, the first thing is I want to run a pedestrian-only street right across...

31:41 ...because I want to get the connectivity back into Redlands, especially in the downtown.

31:47 And some people have decided that they want to put in some kind of like mixed-use development.

31:51 Some people have just said put a park in there.

31:54 And, again, what do you want to do with it?

31:55 Well, let's just do some mixed-use development just to see what it would look like.

31:59 So I might put in some commercial.

32:01 Alright, I might put in a commercial polygon here, oops, well, let's use our editing tools to add

another vertex since we can do this.

32:11 We have the technology.

32:13 Alright, I'm just going to move this to size it a little bit better, and there we go.

32:16 So I've added another polygon there, and I can see right away that it's 1.69 acres, so what does that mean?

32:22 Let's go back to PowerPoint for a second and I'm going to talk about, well we did that already.

32:27 Let's go down here, okay?

32:29 So I've got one acre of anything, one acre of mixed used, one acre of commercial...

32:33 ...and I'm interested in these indicators, impervious surface, jobs, population, vehicle hours traveled, miles traveled, tons of CO_2...

32:42 ...and if you want to analyze any kind of landscape plan that you're doing, well, I recommend...

32:47 ...and I've had this discussion with a few other people, let's just break it down to like some kind of ratio by acreage, by area.

32:56 Alright. So I could say that for one acre, how much of any of this stuff do I have?

33:00 And I might say, here's my indicators, here's my values that I'm going to use.

33:05 And how do I build this into my tools now?

33:07 Well, I can use the editing tools to create a default attribute that goes in for any polygon that I draw in ArcMap.

33:17 And so for all these indicators, I've got fields in my attribute table to hold that ratio...

33:23 ...and then I'm actually going to analyze it on the fly.

33:25 So let's go back to ArcMap here and let's draw a few more things here...

33:29 ...and while I do it, I'm going to bring up this little charting engine here, and this window here is going to take a layer.

33:35 It might actually take two layers and it's going to allow me to draw some things on the map...

33:40 ...and, oh, the screen resolution is so small but that's okay. Okay?

33:43 So let's move my design there, and let's add some mixed-use area.

33:47 So I'm going to add mixed use here, and I'm going to drop that down on the map.

33:52 And you can see that the chart is going to look at the area, but I have all these things in here for jobs...

33:57 ...and I have other things in here for, what do we got here, total parking spaces for example.

34:03 And these are all indicators that I've plugged into my features that I'm drawing on the map...

34:07 ...so that when I actually add them to the map, there's a tool in there that's doing calculations.

34:12 It's saying, well, how many acres do you have and what is your ratio for that indicator that you put in...

34:17 ...and then what is that final value?

34:18 And you can switch how you want to chart these. Do you want to put them in a bar graph, do you want to put them in a pie graph?

34:23 And it's just listening for those edits that you made, and every time you add a feature...

34:27 ...it runs that calculation and then it puts the value into another field that this thing looks at.

34:32 Alright. So that's nice, I think.

34:34 Okay, now, you can keep going down and down and down, and I'm just going to save my edits here...

34:40 ...because I am in an edit session and I have another data frame within this map that's going to allow me to switch over...

34:48 ...and do some more of that scale design that we talked about earlier.

34:53 And so if I turn on that layer that I was looking at before, let me turn on my land use plan.

34:57 I can do that same kind of park design.

34:59 Here's the thing that I was drawing before, and I now I want to go in and use another set of templates to do buildings.

35:05 And this is where we start to figure out, can I go from 2D to 3D and what is really 2D versus 3D?

35:12 Well, if I were to draw, let's zoom in for a quick second here. Sorry. Let me get my tools in order.

35:23 Let's draw a little building footprint on top of this area here.

35:26 And so if I were to draw a building and it's going to look like, I can use the same symbols as the, you know...

35:33 ...as the topo map is using because there's such great cartography in there.

35:37 So I'm going to use that same kind of building footprint, have a little shadow attached to it and, you know...

35:42 ...whatever the shape of that building is, I'm putting it in the database but I'm also putting in the height...

35:47 ...because that's a default attribute. Looking very simply at the, sorry, the template properties, you know...

35:52 ...I can get into the database here and say, every time I add a building footprint...

35:56 ...I want to add, you know, there's a height per floor of 15 feet, and this one is a two-story building...

36:01 ...and it's only defined by the number 2 here, and then again I can calculate the total height on the fly...

36:06 ...by saying 2 times 15 equals what?

36:09 And sure enough when I go into my attributes window, it's calculated that this is a 30-foot-tall building.

36:15 And so now I have a polygon with a height assigned to it, and that means I can give it to ArcGlobe or ArcScene...

36:20 ...and I can put it in there and visualize it or, otherwise, give it to Eric. Right, Eric?

36:28 Okay, so, and that's kind of the scale that I go down here and then, of course...

36:32 ...here's all my park symbols that I was looking at earlier so if I wanted to designate, you know...

36:37 ...this bottom corner as a park then I can go ahead and do all of my sort of freehand sketching...

36:41 ...and put in my trails and all that kind of stuff, and the same thing exists that we were talking about earlier.

36:46 So that's all that stuff that I've been kind of working away with with ArcGIS in terms of design and planning and GeoDesign...

36:54 ...and all that kind of stuff. And let's see here for a second, there's one other thing that I can do...

36:59 ...just since we have time. Do we have time? What time is it? Okay.

37:03 Well, do I want to do it? I don't know.

37:05 There's different ways of drawing things like if you wanted to put in like a, what do they call those things again?

37:11 Why can't I think of a, it's not a, it's a roundabout.

37:15 Roundabout. Is that what it's called? Yeah. Okay.

37:17 So if I take that road and I say, yeah, you're going to have a road here and you're going to have a road that comes in here.

37:23 You know, why don't you just, let me just delete these real quick so that I can show you what I'm looking at.

37:28 Just having fun with these tools, how about that?

37:30 Take a road, draw it with a circle, plug it in the middle and now there's a roundabout.

37:36 So then I connect this here, right?

37:39 I connect to Redlands Road down there and down there. Alright?

37:42 And notice how the cartography here is allowing me to make sure that there's no lines in the middle of my street intersections there.

37:51 And, of course if I wanted to I could go ahead and say...

37:53 ...oh, I want to put in a park in the middle and I can draw it with a circle as well and make that a nice circle...

38:00 ...and then I can go in and just do some landscaping or whatever the case may be around that roundabout...

38:06 ...and put in, who knows, my nice flowerbeds and just kind of sketch this stuff out if I wanted to, alright?

38:12 And there's my roundabout. Okay.

38:17 Obviously you don't want to have anybody walking in there since they have to cross the road, but that's the general idea.

38:21 So, again, using all the symbols and representations and stuff that's built into ArcMap, you can do whatever you want...

38:27 ...to sketch your design, analyze where it has to go, and then, you know, report what you want to do with that. Okay?

38:34 And I guess since we're here, let's go back, one more thing.

38:38 Let's see if I can do this real quick.

38:40 Just to show you some of these reporting tools and just because the onus is on me to show some reporting tools...

38:47 ...because I have a session later on this afternoon about working with tables and reports.

38:51 And one of the nice things you can do is say, all this data that I've just drawn into this landscape plan, however minor it might be...

38:58 ...I can actually create a land-use report based on this.

39:02 And so, all I'm going to do is take a look at this little file that I've precreated.

39:06 It's a report template, and reports at ArcGIS 10 allow you to point to a dataset, make a report, and save that report layout...

39:13 ...and then you can go back and run that report every time you make a land-use plan.

39:19 And so what I've got here is the three land-use plans that are in my little diagram that I just made...

39:23 ...and then all the indicators that are in that attribute table are nicely summarized...

39:27 ...in one table that I can print off or put into a PDF or share online or whatever it is.

39:32 And all these numbers, you know, they work pretty good and they, you know...

39:36 ...they're based on the smart [Unintelligible] standards and some other things that we were looking at and so, yeah, they hold true.

39:42 So, that's how I've kind of built in some of that stuff into GeoDesign.

39:44 [Simultaneous conversation] Business Analyst first.

39:47 Oh, yeah. Let's take Business Analyst Online.

39:50 Let me see if I can get into this still.

39:52 So there's a Business Analyst add-in for ArcGIS that allows you to point a layer and in this case, I'm going to take the...

39:59 Well, let's zoom out a quick second here, and let's see what we got.

40:04 So, let's take the layer of the walkability polygons, because these are polygons, though I've used a raster tool to do the analysis.

40:12 I've just converted it out to a polygon just for ease of visualization and sharing and so on...

40:18 ...but there's an add-in, I've used two add-ins so far.

40:21 I've used a dynamic charting window.

40:22 I've used a little add-in to do the calculations in the background.

40:25 And then there's an add-in to use Business Analyst Online reports.

40:29 And this thing just loads into ArcMap.

40:30 It wants to know what layer you're trying to look at, and then I'm going to use this walkability layer...

40:35 ...and I'm going to say, oh, I want to have all these different pieces of information in a report from Business Analyst Online...

40:44 ...and then I'm going to call it a report, give it a title anyway, and run that.

40:49 Up to 20 features can be run.

40:50 The first 20 features will run now. You bet they will.

40:53 I don't know why that's there, but here it comes.

40:58 So this should come back.

40:59 It's going out to Business Analyst right now because my account's set up to use it...

41:06 ...over the old wireless Internet, so we're waiting, we're waiting, we're waiting.

41:10 It actually sent my polygons that I've designed in ArcMap through the Internet to Business Analyst Online.

41:18 It's running analysis on its demographic data and all that data back in the background.

41:25 I probably should have only chosen like one of those indicators, but, you know, the way it goes.

41:31 Let me switch over.

41:32 Eric's going to cut me off.

41:34 I just wanted to point to some resources very, very briefly.

41:41 For the temp-...thank you.

41:45 For most of the templates that Matt was showing you, you can go to resources.arcgis.com...

41:51 ...and search for those templates and download them to try them yourself.

41:55 Two of the tools he used in there were add-ins.

41:57 One was a dynamic charting tool which was developed by Application Prototype Lab.

42:03 So here's the, you can see the URL for that below if you're interested in downloading that tool and trying it.

42:11 And these slides will be available on the website for you to download so you'll actually have access to these slides.

42:15 I'll show where you where that is in a quick second. Okay.

42:17 And then also the other add-in he's using is the attribute assistant add-in, which does the derived calculations as you sketch.

42:30 Okay. So that actually, it came back okay so it did work.

42:33 It was just doing a lot of work.

42:34 So this is the summary panel that you get and so you can open up this thing now as a PDF...

42:40 ...and this just goes to a web-based PDF that you're going to get.

42:44 And here's your market profile loading, loading, loading one more time.

42:50 Okay, so that, those polygons that I just drew and those indicators...

42:54 ...this is all the information I can get back from Business Analyst, which is crazy.

42:59 It's a lot of stuff if you're interested in that.

43:01 So you can look through those and you can try to make some sense out of it, crunch some numbers, and so on.

43:06 Okay, let's go to ArcGIS.com real quick and let's actually go and look at how I got to this stuff.

43:13 So, for one thing, there is a group on ArcGIS.com that the blog posts will link to called Park Analysis and Design.

43:22 And this is where I've actually thrown up ZIP files with the park analysis tools...

43:28 ...so the model that I used to figure out how to take the road network, make a surface out of it...

43:32 ...and then run those points through is in that ZIP file.

43:35 And then the suitability analysis tool is that model with the embedded model in it that takes all the Redlands data...

43:40 ...that's in there as well.

43:42 And then that park design template, this is also available.

43:45 So this is that layer package that I brought into ArcMap to do that sketching, that's there as well.

43:50 And again, just starting off with some symbols and if anyone wants to custom or, you know, expand what symbols are in there...

43:56 ...change them or do anything like that, you can certainly do that.

44:00 And then the group that Eric was talking about, let's go to groups at ArcGIS.com again.

44:07 And let's search for just GeoDesign and ArcGIS.

44:11 Because there's a group on here called GeoDesign with ArcGIS.

44:14 And in this group, this is where I put in a couple other examples.

44:17 Here's the dynamic charting engine.

44:19 Here's that whole Redlands demo that I just showed you.

44:21 And then here's a little thing about attribute assistant which includes the add-in...

44:26 ...plus a small little tutorial in a Word document about how to actually use it and, yeah, that's it.

44:32 This group I believe is open, but you can ask to join it...

44:36 ...but all these tools are actually available outside of the group if you just search for them on ArcGIS.com as items.

44:43 So, yeah. That's that. Okay.