SCOTT MIZSAK: Hope everyone had good classes so far. Hopefully you'll enjoy this class. This is going to talk about using map tools in Civil 3D. It's going to be, I don't want to call it a basic class, but it's going to be doing FDO connections, ODBCs, a lot of basic stuff that some people don't even know existed.

I've dealt with companies. I've worked with companies that, as a surveyor, they go, hey, do you know what a shape file is? And they go, no. Do you know what Esri is? No. Do you have Map 3D built into Civil 3D? What's Map 3D?

So there's a lot of companies that just don't know what GIS is or how they can actually use it when it comes to Civil 3D. And so I said, well, I'm going to teach a class on it. So how many of you have actually used Map 3D? How many of you used the basics of a map import, getting Civil 3D stuff out?

Well then, that's pretty much what this class is. So maybe there might be one or two things in there that I'll talk that it's worth attending this hour and a half. But if you fall asleep, I won't feel offended.

My name is Scott Mizsak. I work for CAD Technology Center. We are an Autodesk reseller out of Minneapolis, Minnesota. I received my GIS degree from the University of Minnesota back in 2010. Got it when I was a surveyor, because it was a lot easier to get that than travel two hours each way to get a four year surveying degree. Because at the time my goal was to become a registered land surveyor. Well, market crashed in 2008. And now I'm teaching instead of still doing surveying.

So, class summary, we're going to take a look at the tools in Map 3D in Civil 3D, in the planning and analysis workspace that you can use on the Civil side and then take it back to the GIS side. Some of the learning objectives today will be the DO connection. We'll look at just bringing something in, the benefits to it. ODBC connections, how many of you have actually done ODBCs? Not as many as I thought. Good, so maybe you guys will learn something on this.

Survey Data Store, any of you use the Survey Data Store for survey points? OK. Doing map import versus an FDO connection, creating object data, and then object data labels, and then

we'll look at exporting out standard lines, polylines out as an SDF file, as a shape file, and then take an SDF file and actually doing a bulk copy.

So why FDO connection? Well, everyone knows that in Civil 3D, once you bring something in, it's in that coordinates. I can't bring something in in a State Planes South Coordinate, meters and then say, oop, it should have been US Survey Foot. I can't change it. Once it's in, it's in.

So FDO connections, it's great because I can bring something in and Lat-long 83 and then say, ah, I changed my mind. I want it to be in the Scott County Coordinate System US Survey Foot. Oh, sorry, it's not Scott county. It's the county right next to it, which in my case would be Hennepin county.

So it allows me to do coordinate conversion really easy. So, this is Scott county. It's great. I live in Scott county, and I'm Scott. So that's my house right there. But bringing it in as an FDO connection, it's an lat-long 83 up at the top. But then it's in US Survey Foot for Scott county right there. And you can see the exaggeration just by how tight the County Coordinate System is versus Lat-long 83.

And so that is one reason why-- and I could jump back and forth between coordinates till I'm blue in the face. The next thing with FDO connections is to be able to style it. So this shape file came from the US Census it's the all lines from TIGERs 2009. And I came in and said, you know what? Style it based off of the MTFCC code. So all my highways, or the major highways, are red. Residential roads are green. My lakes and rivers are the blue shade that's in there.

So I'm able to style this. And I can do this over, and over, and over again , based off of a table column in my shape file. And then scale range, I have the ability to turn things off, depending on how far I'm zoomed in or zoomed out. So at 1:250,000, all my lakes and rivers are turned off. But as soon as I zoom in, under 150,000, because that's the range I set it at, all my lakes and rivers show up.

It's kind of like the level of detail in Civil 3D. You can turn it on. And when you're zoomed way out, you only see contours every 5 and 25. But the closer in you get, the more contours you see.

Same concept. It helps. Only show the detail that you need. I can get it set up that I don't see labels until I'm actually in. And I only see a city block. I don't need to see main street zoomed way out here. It's just going to clutter the drawing. Not to mention that when labels start to

overlap they disappear anyways.

How many of you use Query to Filter? OK, I love Query to Filter, because I can say pick on the feature layer, query to filter, pick the MTFCC code under Properties, set it to S1,200, and I get that same shaped file. And it only shows my major roads.

What this allows me to do is take a file that's got 83,000 entities in it, query it down to what I need, and then create another SDF file out of it. So I have a lot smaller file.

The seven metro county area for the Twin Cities has approximately 350,000 entities, if you use the All Roads from the US Census, from the 2009 data. An 8 gig processor doesn't like 350,000 entities.

This one right here, it's got 32 gigs of RAM in there. It handles it. But, if you don't have a good enough machine, having too much data in there is just going to slow it down. So doing survey to queries will help reduce the amount of information you need.

I just did a quick properties on there. But there is a location. So instead of Scott county, I could have just zoomed in on just one city within the county and then filtered everything else out. So instead of Scott county's got it 45,000 entities, I would have dropped down to maybe 1,000. So the Query to Filter I like, because it will, again, help reduce the amount of data.

ODBC, not many people have used ODBC. One requirement for the ODBC connection is you have to install the database engine before you install your Microsoft Office. And so if you have Excel on your machine right now, and you say, oh, I want to do ODBCs. Go to Microsoft.com. Download the ODBC engine. Uninstall your Excel. Install the engine, and then re-install your Excel.

If you put the engine in afterwards, it will not work. So you will beat your head and go, why is it not working? I downloaded it. I know I got the 64 bit. It should work. It won't work.

There are two types of insertions with ODBCs, one with coordinate systems, one with just X Y values. So I have two Excel files in here. The top one, big 10 schools. Graduating from the University of Minnesota, I said, this is well worth it.

So what I did was I took the football teams. And I have columns in there that show their overall record for the last six years, conference wins, and overall wins. But each one also has a latitude and longitude in there. What that allows me to do-- and that lat-long is at the 50 yard

line of the football field. Because I have coordinates on there, I'm able to bring that in and connect with those coordinate systems.

I created another one. I made that up a little bit. I just put a bunch of companies in there, because I had just book my flights. I said, oh, let's just put in airlines. And then, as you can see, I have Paul McCartney, John Lennon, Ringo Starr. I have the Beatles, Steven Tyler. So I just have a bunch of people. But there is no coordinates in there.

What I'm able to do with this is I'm able to bring that into my drawing and then join it with another shape file or an SDF file. Which will then allow me to make, instead of a table for the shape file and a table for the ODBC, I'll be able to combine the tables. And with the join, I would be able to say, hey, if that line in the shape file doesn't have a match in here, get rid of it. Another way to reduce your data.

We do this. Being a reseller, we put on events. And our marketing department says here, here is the list of everyone that showed up. Tell me where they came from. So I go through, and I do an ODBC connection. And I give them a map with a dot, down to the street level, of where everyone came from.

So when you do a join, it's not as-- who uses Esri? OK. I have a handful of joining capabilities in Map 3D, not as much as Esri does. But I can do a join. And I can say, keep all records on the left. Or keep only left side records with a match. So if it doesn't match, it gets rid of it.

And then the relationship, one to one, or one to many. So what that does is the one to one says, if I have a match-- I've got a road, Main Street. But I've got seven people that lived on Main Street. It's only going to take the top one. So it'll look like, instead of seven people showing up, I only had one person show up.

Or I have one to many, which means I got Main Street. And I had three people from Main Street. I still end up with three people. So depending on what you're trying to do, depends on which one you want to use. I always wanted to use one to many because I didn't want my attendees to go from 500 people down to 220. Because we had usually five, six people from each company show up.

And a quick example, I did one of one of the counties in Minnesota to that database with all the airlines and the Beatles. And it went from 44,000 entities down to 184. Again, it's a way to reduce your data with the joining.

With the ODBC connection, I showed a quick query on Scott county on the roads. I cannot run a query with any of the data that came from that ODBC until it's actually been exported out as an SDF and then brought back in. It's silly. you open up the table and you see everything. But it will not let you use the data until it's actually brought back in as an SDF or a shape file.

Survey data store, what is it? It's just a way to bring in survey points in ASCII file. It, as I wrote, it's kept in a dedicated SDF data store. Within a survey data store, survey points are organized into projects, surveys, point groups, and unclassified points. Before you import any survey data you must connect and create a survey data store.

It's nice. I don't use it that much because I have survey databases within Civil 3D. But if I know that what I shot in this ASCII file might be water valves. When I was in the surveying industry, a city paid us, our company, to go out and shoot every water valve in the city and every hydrant. If that's my data, I'd use the data store and when it comes in, it is automatically an SDF file. So I've already got my data plugged in as GIS.

If I'm out shooting a topo, and I'm shooting back a curb, and bit shots, and ground shots, data store is not really for you. But if you know you're going to take this to GIS right away, the survey data store works perfect for that.

So creation, you gotta create a store first. So you jump to the task pane, new survey data store, pops up, says, hey, what coordinate system do you want to use? It will take the drawing coordinates that you have in there. File location, you path to that. You give it a name. That's the SDF name that's going to jump into your drawing.

Create a new project. Give it a name. Create a new point group. Give it a name. And then right click, Import ASCII points. Insert your text file, CSV file, whichever file you have. And it will create a point SDF file.

So this is my office in Bloomington. Obviously the void in the middle is where the building's at. As a surveyor, that doesn't help me out much because everything is the same. I do have the ability just like a theming in an FDO connection. I can still theme everything. And I can say, hey, all my bit shots are green squares. All my back of curb shots are blue triangles. What I-- oop, I didn't put in there, so I'll just talk about it.

Use like. Don't use description equals BC, description equals BCCR. If you say descriptions like BC, it will find any code that has BC in it. They're right next to each other. I found that out

about six months ago. I literally, in the query, I said, is like this, or is like this, or is like this. And then I said, well, how about this? And then, I mean, my list was huge. And then I said, well, it's got to be greater than this but less than this. So it found everything from BC to BC with some descriptions at the end.

Then I found like. And it just made my life so much easier. And you can export out those queries and then import them out for using them over and over again.

Map Important, why? Because I don't want, if I'm a civil engineer, or I'm working on a project, I want to bring in a shape of all those roads I have, I don't want it to be a feature object. I want it to be a line, a polyline, a polygon. So what I have the ability to do is do a map import. And instead of it coming in as a shape file or an SDF file, it will then be converted into a polyline.

So bring SDF and shape files into AutoCAD as basic lines and polylines. Creation, click the map import. And up at the top you have coordinate conversion. I did this, took these screen caps with a blank drawing so there wasn't a coordinate system already assigned to the drawing. But if I had a coordinate system already assigned, it would take your shape file, it would take your SDF file, and do an automatic conversion.

So all my shape files from the census are in Lat-long 83, but my drawing is in Scott County US Survey Foot, it will automatically convert your line work from LL83 to Scott county. The spatial feature works really great when you only want to bring in a little piece. But you have to be in the right area. You already got to have some data in there. You can't just do it on a blank screen, because you don't know where you're at.

But there are three types, none, current display, or a window. Current display, like I said, if you know right where you're at, if you already had an aerial image in there, you can zoom in to just the area of the project that you need. Do that. Or if you had a polygon that represented what you need, you could do it that way.

So reducing the amount of data that comes in, spatial features. Anyone from Chicago? No. They have a shape file for all the building footprints of downtown Chicago. It's 185,000 lines, entities. It took five minutes on my machine to bring that in. If I only told it that I only need that half mile on Wacker Drive by the pier, it would have probably come in in 10 seconds, if not quicker.

So spatial features, drawing layers, right now it takes the name of the shape file. And then it

says, oh, I'm going to make that your drawing layer name. Go ahead, give it a new name. Call it Streets, call it Roads, or whatever you have as your default layer in Civil.

Data Column allows me to add object data. It will take the table, and bring it in, and attach it to the polyline. So if I click on the data, where it says none in that first dialog box, I get this one. And I have the ability to say, create object data and object data table to use. What it does is, it takes the name and it says, I'm going to call that your data table.

Then I click it, and it opens up. And it shows me every column in that table. And the 2009 TIGERs has about 45 columns. Well, there's about 40 of them that are useless. So I can come in, and I can say, hey, you know what? For roads the one thing I need is the full name, the MTFCC code, the left address from, the right address from, the left address to, and the right address to, and maybe the zip code for what I'm doing. I can uncheck everything else. And when it comes in, it only applies the columns that I have checked. Another way to reduce your data.

Another thing, anyone do map import and need to combine multiple map imports? Rename your data table. And then what it will do is it will allow you to say, oh, here's Data Table A. And here is all the columns you used. Here's Data Table B. Which columns do you want to match up?

I have had to go through and combine seven counties into one overall import. And I tried doing it. And I had object data, object data. And I ended up with five different object data tables. So when I tried to do an export to SDF, it says-- I always used object data-- it wouldn't combine the two. So I ended up having to do manual selection.

But if I were to come in here and actually assigned all five, all seven to the same data table, and then did the this column matches this column, it would have made my life a whole lot easier. And now I now know. So on the next time, I'm good to go.

So what happens? It comes in. There is Scott county. Oh no, sorry, that's Hennepin county. So right where the geo marker display is almost Minneapolis. But it comes in, and I clicked on a line. And it's a polyline. But it has an object data table assigned to it. And I see what county it belongs to, the MTFCC code, the full name, the address on the left side to and from, and then the zip code.

But it's polylines. Now, with it being a polyline, I have the ability to create an alignment out of it,

create a parcel line out of it, whatever I need to do.

Taking it to the next level, labeling an object. I have object data assigned to a polyline. I want to label it. Define a template. So on the Annotate tab, Define Template. Click New. Give it a name, old screen cap in there. And then, insert text. How many of you have been looking for the edit annotation text? Do you know that they removed it from the ribbon?

AUDIENCE: Yeah, you have to send an email

SCOTT MIZSAK: You have to go into the CUI. And you have to put it back into your ribbon. A couple of the export commands have been removed from the ribbon. So I'm like, why? So you have to actually go into your CUI, and you have to plug those icons back in.

So Edit Annotative Text, comes in, top screen, tag, I give it a name, Value. I click on the little hierarchy bar for value. And I then expand object data. And then I say, create a tag with the full name of the road. Click OK. Give it a text height, 0.2, usually not good for map, maybe 20 because I don't need something 2 1/2 inches tall when I'm looking at a city. I need something about 20 feet.

And then insert. And then I just came through and I picked three roads in there. And it assigned Three Points Boulevard, Jennings Road, and Woodland Road to there.

If I ever need to go back and update it, maybe I need to add, with full road, maybe I also need to add maybe the zip code, or maybe the address. I go back in. I edit my tags. And then I come in with my smaller icons. I call them toe tags. I hi Update or Refresh

Customizing display, handful in here, the Strcat combines multiple strings. So, if I'm dealing with a pipe, and I need to know the length of the pipe, and then I need to know the size of the pipe, I'll put in the Strcat.

Rtos converts a number to a string. You can't have multiple values in a single string. So you can't have a double with an integer with a string. So that converts everything into a string. And then the ASCII code 34 will actually display the inch symbol. Because you need the quote marks to represent text. So it's hard to do quote, quote, quote to say that's the inch symbol.

So here's a quick example of using that. If you did Strcat parentheses rtos. And then I went into my object data, and I said, size of sewer pipe. 2 puts it into decimal form. The 0 says zero decimal places. And then ASCII code 34 puts the inch symbol in there. So this will actually

display the size of my pipe with the inch symbol.

Object Data Tables, why? Because it makes it easier when you export out your lines and polylines. Because I can just say, give me everything in that object data table instead of manually picking everything. Because when you manually pick, face it. You're going to miss something. Or you're going to click something that you don't need. Unless you isolate everything that you need and then you just do a window pic.

But that takes too long to turn everything on and off. And usually the select similar, I always miss something. Because, oh, you picked a line. Now you need to pick a line, an arc, and a polygon.

So object data is attribute data that is attached to individual objects and stored in tables in the drawing. Object data tables store text and numerical information related to the object. That was exciting.

I can create my own table. So I created a table here called AU2015. And I added three variables in their, name, years, speaker. So what I did was I went into field name. I called it, at this case I didn't put the fourth one in yet. Its Favorite. I have four choices, integer, character, point, reel. Nine times out of 10, you're either going to use integer, or character, or reel.

Point, I haven't found a good use for Point yet. Anyone ever create a data table with Point? OK. Gave it a description, what's your favorite class? Default, this class. It's always the best.

The trick, or not really the trick, the requirements, your table name cannot have a space. Your field name cannot have a space. Put the underscore in if you want to separate words, but no spaces allowed in the table name or the field name.

Description, who cares? Put spaces in to your heart's content. Default value, what that would do is every time I attach object data to an object, it will put in the value CI 10, 0, or 10, 649 into that value.

So if you create one for pipe networks, sewer structures, sewer pipes, road data, parcel data. So if I come in and I'm building one for a pipe network, by default 18 inch pipe is the typical size in my city. I'm going to set my default to 18 inches. So when I attach my data everything comes in at 18 inches. Those are just the four common ones for object data table. Any time you want to add more information to an object, data tables are the way to go. I'm sure someone else in here has used a data table for something besides those four.

AUDIENCE: [INAUDIBLE]

AUDIENCE: Tree data? Perfect. Yes, and assign it to a point. And now I got species. I got diameter.

AUDIENCE: Condition.

SCOTT MIZSAK: Condition. Is it dead? Now that I've created the data table, I need to attach it. So up on the ribbon, I hit Attach-Detach. Then it's as simple as pick the table you want to use. And then hit Attach to Objects, or Detach from Objects.

And you can have multiple tables assigned to a single object. So if I had four tables in there, I could literally assign all four tables to one object. Why? Because I can.

So I went in and assigned some information to a line. And it spit out the data table when you click on the properties.

Civil to GIS, you have a Mapexport, Dwgtosdf, and then Add Geometry to Features. Those are the three big ones. Those are the ones I use the most.

Dwgtosdf creates an SDF file, which is funny because it gives you the list of all the options in there. Find a file location. Give it a name. Opens up the export.

You can select the filters by layers. So if you say, I need all storm pipes and all the storm pipes on a particular layer, I could pick that layer. I could come in and do star pipe star, and it will take any layer that has a pipe in its name.

Object Classes, if you put object classification in there, I could actually assign it by that. I haven't used object classes or classification. I know how to do it, but I haven't seen the benefit. It's more standard based, in my opinion.

Or I could select manually. So, isolate by layers or select manually. If I jump to the Feature Class tab, with SDFs, I have the ability to create a single class or a multiple class. So I can actually come in, and I can create one SDF file that will have points, lines, and polygons in there.

Shape files, one classification. I come in, and I will hit Select Attributes. Opens up the Attribute tab. I expand Object Data. And I pick on the data table that was assigned to my lines. And it will only take objects that have that data table assigned to it. I like object data tables just for

that reason. It makes it so much easier when you create your shape files or your SDF files.

And then on the Options, depending on what you're doing. If you're doing parcels, make sure you check Treat Closed Polylines as Polygons. The other thing on the Options is the coordinate conversion. Right now, these screen caps were taken in Hennepin county. If I know that I'm going to send this out to someone else in the state, and the state loves State Plane Coordinates, I quick do a coordinate conversion, and put it in State Plane South, state Plane Central for them. So it's already in the coordinates that they want.

The Mapexport, exact same steps. So I'm clicking through it quickly. The only difference is you do not get the multi-class option for shape files. So when I click the shape file, now under the data I do not get the ability to add multiple classes.

Adding Geometry to a Feature Line, so the last two I just talked about, the Mapexport Dwgtosdf, it will create a brand new shape file or a brand new SDF file from scratch. Adding Geometry to a Feature will actually allow me to add it to an already existing shape file or an SDF file. Because I would say that 95% of all your work already exists at one point.

I have all my lines. Well, my city just put in a brand new subdivision. I just need to add those 12 lines to the already existing road shape file. I don't want to create a brand new one. So let's just go ahead, put my lines in, which are so much easier to do and Civil 3D, because Civil 3D is still a CAD platform. Where Esri is an analytical platform.

How many have used Esri and actually had to put lines in from scratch? How many people pull their hair out when they have to put that data in? My last two classes with Esri, I'm going, this is stupid.

I draw lines and points. I put in coordinates. I put all my lines in. I just copy, paste right from Civil or AutoCAD. And I just come in, right click on my feature layer. And I say, Create, or I say New Feature from Geometry.

Create, I have to freehand them in. So I'll click at the end point of there, extend it out, go up. Or New Feature from Geometry, which allows me to pick data that's already in there and put it in.

The trick, or the thing to remember with this, is when I come in and I want to add these one, two, three, four, five lines, if I want them to be separate in my columns, in my table, I need to pick them one at a time. If I pick all five, they're going to treat all five as one entity in your

table.

It would be nice if I would be able to select them all, and if they were all lines, that Map 3D would come in and say, treat them as five separate entities. Now, if it's a polyline, and I've got two segments and there or three segments in that polyline, yeah, treat that as one. But if you're going to do add features, you have to pick them one at a time.

So, yes, as of now that would be somewhat time consuming if you're dealing with a brand new subdivision with 15, 20 roads in there or parcel lines. And so when you add it, it will actually come in and say null. And you have the ability to come in and edit all your information in there.

So I'm going to quickly jump into the software and basically just walk through everything that I've just covered.

So I've got a blank drawing. It's in coordinate system Lat-long 83. I'm just going to quickly assign a coordinate system. And I'm going to call it Scott County. Best thing I like about Map is, if I just type in the search, Scott, it will actually isolate it down to all the ones that have Scott in there.

Why can't Civil do this? You actually have to go through the filters. So here's Scott County US Survey Feet. It's now assigned it Scott county. Go to my data. Connect the data. Add a shape file.

There is my shape file. Connect. Comes in with the coordinate system. I'm going to add it to a map. And there is Scott county. If I switch my coordinates to LL83, you can see that it's now stretched and exaggerated. But I can jump back and forth all day long, and it's not going to make a difference.

Click on my line. Style it. Add a theme. I want to base it off of the MTFCC code. And I have 13 different codes in there. Style range, I'll leave it as is. Say, OK. Now all my lines are different colors.

I'll just quickly change the top two. Because those usually represent water features. So now all my lakes, all my streams and rivers are some shade of blue.

AUDIENCE: [INAUDIBLE]

SCOTT MIZSAK: What was that?

AUDIENCE: It doesn't look blue.

SCOTT MIZSAK: That doesn't look--

AUDIENCE: [INAUDIBLE]

AUDIENCE: Perhaps 004 is not water.

SCOTT MIZSAK: The P0004?

AUDIENCE: Yeah.

SCOTT MIZSAK: Let's just take a quick peak. Because that's water right there. There it is. Why can't they put the properties in the exact same spot every time? H30-10.

AUDIENCE: It's just to get you the user to use their tools.

SCOTT MIZSAK: I know it's--

AUDIENCE: [INAUDIBLE]

SCOTT MIZSAK: H 30-10, there's water. So we'll make that the same color. There, there is all my rivers and lakes.

What I can also do is I can say, let's hide. Let's hide the rivers and lakes until I get zoomed in pretty far. So I'm going to come in and add a new scale range. And I'm going to make this at 150,000, and then 150,000 here to infinity. And when I'm in 150,000 to infinity, if I come in and click on this one, and I say no color-- say apply, and then Close. No color, Apply, Close. Now, until I get in, they will disappear. Great way to only show data at the level that you need it at.

Survey to Query, click on your object. Create a filter. Like I did in the PowerPoint, I'm going to go off of MTFCC code equals, I know it's S1200, single quote, S1200. I usually do validate just to make sure that I did it right. And say, OK. And it's going to come in. And it's going to reduce all my data down to just S1200.

If I come in and get rid of that one-- delete and say, OK-- and now I do a rectangle-- come on, mouse-- and then do a Query to Filter, Location on Map, Touching Any Part or Inside, I'll do Select. Say, OK. It now reduces all the data inside. So I had 45,000 entities in there. Now I have 825. A lot easier to handle. A lot easier to manipulate.

ODBC, why ODBCs? I have brought in a map of the United States, queried it down to only show states that are near or have Big 10 schools in there. I've already gone through the database engine to create an ODBC. Does anyone need me to show them how to create an ODBC?

AUDIENCE: Yeah, that's the tricky part.

SCOTT MIZSAK: That's the tricky part. OK, so let's go ahead and do that.

AUDIENCE: That's where the pain is at.

SCOTT MIZSAK: That is where the pain is at, yep. So I'll actually jump back in. And I will open up Excel, Big 10 Football. First thing is you need to define the area. So you need to go to Formulas, Name Manager. And what I did was, I went in and I just, just like you do a print area, I said, take cell A1 all the way to S-- I think it might be T, T15. Oh, I'll just look right here-- V15. And only take that area. That way it won't try to bring in any other information.

So far, so good right in here. I grayed out Maryland and Rutgers because they just joined last year. Save it. I then jump into the ODBC engine. And there's two types, User DSN and System DSN.

I use user because I'm the only GIS guy in the office. So I'm the one that's ever going to touch this. If I did a system DSN, it puts it on the machine or on the network drive. But it doesn't matter who logs into the machine, they have access to it. As a user, only I can get to it. Because I'm the one that-- it's in my user folders. It's not located-- I don't want to call it locally, but only I can get to it because I'm the one logged in.

So what I want to do is, I want to say Add. I'm going to come down to Microsoft Excel driver, xls, xlsx. The top one only has the xls, so it's got the older version of Excel in there. I say Finish. And it says, give it a name. Well I'm just going to call it B10. And now I'm going to search for the workbook.

Switch to my D drive-- Conferences, AU2015, 649, should be in the uploads. There is the Big 10 Football Excel file. I say, OK. I say, OK. I say, OK. I've now created an ODBC.

I'm going to go ahead and now connect to that. Connect the data. We've already used it once as ODBC Connection. I'm going to give it a name. I'm just going to call it Schools. Again, your

connection name, no spaces. Source, click on the More icon. Here are my user ODBCs that I've created.

There is the one that I created a few nights ago. Here is the one that I just created. So I'll actually bring that one, say Select. I'm going to go ahead and say Test Connection. And it says log in. Why? I don't know. Because there is no log in information. So I just say log in.

I would believe that IT has the capability of possibly giving the login credentials to that. But out of the box, there is no username or password. So you just say, OK.

ID Property, this is, I would say, the trickiest part. Because your ID property, identity property, has to be unique. You cannot have any duplicates in there, or it will not work.

I helped a company out of Wisconsin. Their job was to shoot 2,000 to 3,000 power poles every year for four counties up in northern Wisconsin. If they had out of those say 2,500 power poles, if they actually had the same ID for two poles, it will not work. And it will just break.

So before you do the ODBC, know what column is going to be your identity and do a search for duplicates. If there is duplicates, rename it. Put an A at the end. Put a B at the end. Fix it.

If you're doing an ODBC for power poles, make sure that all the shots are good. They had 2000 shots on one year. And they had five shots that actually had a lat-long of zero. If you have any point in that file that comes in, and it falls outside your coordinate zone, the points will not come in.

So you have to make sure that everything that you shoot will fall inside that coordinate system. So, if I'm shooting in Scott county, and I have a couple of points that fall 10 miles, 15 miles outside of Scott county, because they might have been MnDOT control points, I could run into the issue of they won't work. The whole file won't come in.

AUDIENCE: Just those points?

SCOTT MIZSAK: All of them. So, I mean you have that false northing, false easting, and you usually have a bigger buffer. So as long as it's within a few miles, they usually come in. But if I have something in Las Vegas, but I have a point in San Diego. It's far enough away that it will say, oh, I'm not going bring in anything. Because it's all or nothing.

So my ID, I put in an extra column for ID, but I can actually use Team because of the 14

teams. There aren't two Minnesota's. There aren't two Michigan's. It's Michigan and Michigan State, or Minnesota and such.

So I say Team. Because I have lat-long in my data, I can come in and apply the longitude for X, the latitude, and say Connect. It gives me an unknown coordinate system. So I need to tell it what coordinate system is this.

So I'll quickly edit coordinates. Say Edit. And tell it that it is LL83. Say, OK. Add to Map. And there are the location of all the Big 10 schools at the 50 yard line of the football field. It's really great with the geo map command. Because I'll throw that in, and I'll zoom in. And you'll see the O in Ohio State right there when I was zoom in.

An ODBC that had coordinates assigned to it. The power poles, they all had lat-longs. They had northing-eastings of all their locations. I was able to do the exact same thing with the power poles, and they came in.

I have my shape file, or my Excel file, that just has attendees. It has a street address. It has their name. It has their company. So I'm going go ahead, and I'm going to create a new drawing. Actually, let me-- ODBC Join.

So this is Dakota county. This is the county just south of the Twin Cities. And I'm going to do the ODBC connection for this one. Let me delete that out. We'll just create a new one. Call it attendees.

And there is Attendee 2015. Say, Select, Test Connection, Log in.

Right there I'm done. I don't have to go any farther. Because the Excel file has now been connected. But I don't need to tell it where it's at, because I don't know the northing-eastings of these points. So I can just simply escape out.

I'll click on my feature layer and say, Create Join. I'll pick. Where is my-- did I get ahead of myself here? I got ahead of myself here. That's a 1, 2, 3, Test, Attendee, Select, Test Connection, Log in, Connect.

I forgot to say Connect. I got ahead of myself. I don't need to give it northing-easting here. So it's now in. Create Join, there is my sheet. I say give me based off of full name here, based off of street name from the Excel file. I want to keep only records on the left. So if I have-- I mean, I have a handful of streets in here. But I only had 10 people in my list. Odds are, they're not

going to match all the streets in here. So I only want to keep the ones on the left that have a match. But I do want to do a one to many.

So if I have three people from the same street, I want to be able to see all three and not just the first person. And say, OK. And it came in. And it reduced that file down from 45,000 entities to 184.

If I look at my table in the ODBC Connection, here are all the information that came from that shape file. As I scroll over a row-- all the way over-- here is the vertical bar ID, vertical bar company, vertical bar name, house number, street. Anything with the name in there, those are all part of that Excel file that came in.

So if I come in right now, because I have street name. I have house numbers. If I come in, and I try to do a query to filter, and I say Properties, I do not get the ability to put the attendee's name. Hey, only query it down to Delta Airlines as the company, or Ringo Starr. Until I actually click on my column-- let me cancel out-- click on it and actually say Export Data to SDF.

I export that out as an SDF. It takes that 104 entities, makes it an SDF file. I bring it back in. Now I have the capabilities of querying based off of all the stuff that was in the Excel file. Until I do that, it's useless. Any questions about ODBCs?

AUDIENCE: Is that the same for calculations? If you perform a calculation in the table, you have to export it out and bring it back in?

SCOTT MIZSAK: Yes. Yes, it will now allow you to pick anything from the Excel file in terms of calculations, or along that line. So, yeah, I can't say take the square footage of this parcel and add up all the ones that belong to Ringo Starr or something like that.

Survey store-- Survey, Data, New Survey Store, I've got to give it a location. My Desktop sounds like a good spot. And I'm going to call this AU2015. Say, OK.

Now let's go down one folder. Put it there. Why is it not saying? Come on.

AUDIENCE: [INAUDIBLE]

SCOTT MIZSAK: What was that?

[INTERPOSING VOICES]

SCOTT MIZSAK: Oh, what was I thinking? Oh, I must have hit-- must have been too quick on my mouse. So let's try this again. There we go.

And I'll use Dakota county in here. That's fine. New Project, AU2015. Technically, at this point, I could import ASCII data. But if I needed to break it down into multiple groups, I could come in and create a new group, AU2015. Import ASCII Points, Location, D drive, Conferences, AU2015, Class Uploads. There is my text file. US Survey Foot, PNEZD, Comma Delimited, say, OK. Zoom extents, where are they at? Why don't we just do a new drawing? Because technically, it was supposed to have been Hennepin county.

We'll go right there. AU, say, OK. Hennepin, US Survey Foot, say, OK. New Project, AU, New Group AU2, Import ASCII Points, Survey Text, PNEZD, Comma Delimited, US Survey Feet, I see everything looks right in the preview. Say, OK. There we go.

So, they all came in. This was just a survey that I did for my desk of our site. I literally just went into Google Maps and dropped in points, followed the shapes, and then took the surface from Infoworks, and said, move all my points to that surface. So, it's close, but it does its purpose.

But once I did that, it actually created an SDF file in there. So now I have a feature layer of SDF. So now I have the ability to come in and theme it.

So if I add a rule to this, I can actually come in and say Property, Description. And, like I said, I could come in and say, Get Value. And then for a value, say BC. But as you see, I have a handful of codes that have BC in it. I have a begin. I have begin one Back of Curb and another Back of Curb. I have horizontal offsets in there. So if I come in, instead of equals, if I come in and say I like, and then I put BC in there, Validate. There we go. Say, OK.

Let's change the color on that. And let's go fill. Let's make that red. Let's go blue, because the X's are red. Apply, now every shot that had BC in it now has a blue square.

So, everyone know how to make a symbol in Map? It's kind of like a block. But I could actually bring in a company logo and any type of image, and use it for a marker. So I could actually come in and bring my AutoCAD block that represents a hydrant, and actually, hey, anywhere that I see a TNH or an HYD, put in the symbol.

I show clients that I train, hey, put your company logo. Create a symbol out of that. And then take all your jobs that you've done in 2015 and put your logo on it. And then make a map of

the state that you work in, or everywhere that you work in. And you can see everywhere that you worked.

And you can say, hey, to a potential client. Hey, this is everywhere that we've worked. We worked, not only in our own local state, but you know what? We branch out to the surrounding seven, eight states around us.

I did it. I trained the Air Force, and I said, put a logo of the Air Force icon logo out on every Air Force Base in the United States. And then if you want to go out, because you can get that from their website, you can also get all the Army, and the Marine and the Navy bases. And you could actually come in and put their crest as the symbol in there so you can see what it is.

So that's the Survey Store. Again, yes?

AUDIENCE: We're using all the same code over and over again. Is there a way to export this out after you've done all of your styles? Or somehow link it up with you Key Manager inside Civil 3D to where you have all that set up?

SCOTT MIZSAK: Yep, I can come in, and once I get everything built, I can say Save Expression.

AUDIENCE: One by one, or can you save the whole list?

SCOTT MIZSAK: You got to save it one by one.

AUDIENCE: Can you create a drawing template that already has this in there?

SCOTT MIZSAK: That is actually one of the requests that I have made to our developers. Because we we make tools, and I am trying to get our developers to do just that. I have seven, eight expressions. And I want loaded every time. Or I want to list file that will actually load these once I bring it in.

AUDIENCE: If you already had this done in Civil 3D [INAUDIBLE].

SCOTT MIZSAK: Yep. Right.

AUDIENCE: [INAUDIBLE]

SCOTT MIZSAK: Yep. I'm trying to get our developers to be able to create your description key set from an Excel file instead of one at a time. So, that's what we're hoping for. So right now, no. But hopefully in the future.

So again, if this was an actual topo, would I actually do this as a survey store? No. I would bring this into Civil. I would use my description key set, use the survey database so I would have automatic line work in there. And it's going to come in a lot better. But if, like I said, if I'm shooting valves and hydrants, or I'm shooting all manholes and catch basins, and I know this is going into an overall plan. And I want it to be an SDF file, yes, that's what I want to do.

Map Import, I have everything in there already. So let me just do another new drawing. Say, Open, Insert, Map Import. I'm going to come through, Hennepin county. Coordinate system? Let me quickly assign a coordinate system in here. Library, Hennepin, US Survey Foot.

AUDIENCE: Is that set up to be a default for your templates?

SCOTT MIZSAK: Yeah, I'm just using the out of the box, but yeah. Map Import, no. It says Hennepin county. I can make a quick change if I want. I am going to bring everything in at once. I'm going to change the layer to be just Roads, which is really inaccurate. Because this also has lakes and streams. But Roads sounds good right now.

Import Coordinate System, it says, hey, I'm in LL83. So it will now convert everything to Hennepin county. I'm going to click on Data. This allows me to create object data for the software. Object Data, and I'm going to call it Roads here instead of the name of the shape file.

Select Fields. Like I said, there is a handful of columns in that shape file. And you know what? I don't need any of this information. So I'm going to get rid of that information. Say, OK. Say, OK.

Import Polygons as Closed Polylines, if I was dealing with polygons, parcels, I would want to make sure that's checked. I'm dealing with lines right now, so it won't matter. Go ahead and say, OK. And it is going to bring in approximately 83,000 entities as lines and polylines.

It only took 17 seconds. Not too bad. And there is everything.

So what I can do is, if I zoom in-- we'll just zoom in right here-- look at the properties of this. I see object data, the state ID, the county ID, the other ID information in here, the MTFCC code. And this is Wizetta Boulevard for the full name. So I want to label that.

So what I want to do is I want to come in, and I want to Define Attributes. Oops, no I don't.

Annotate, Define Template, give it a new template. And we're just going to call it--

AUDIENCE: Sorry, I didn't get that.

[LAUGHTER]

SCOTT MIZSAK: I'm going to define a template.

[LAUGHTER]

Say, OK. So now I have a template. And I have text in here. And I need to insert text. Well this is were Autodesk said, hey, guess what. We're not going to give you that icon right there. So this is where you had to go into your CUI and actually load it back in.

I'm going to come in and say, Edit Annotative Text. And down at the command line, it says Select Annotation or Press Enter to Create a New One. So if I already had text in here, I could just pick on it. I don't, so I'm just going to hit Enter to Create a New One.

I'm going to give it a tag. I'm going to call it name, the value. I'm going to go to Object Data. I'm going expand Roads. And I'm going to click on Full Name. I'm going to say, OK. I'm going to give it a height of 20 instead of 0.2, Rotation, 0. You do have the ability to actually rotate it about the same angle as your line. So you can have it read the angle of the line that it's attaching to.

I'm just going to leave it as is. So mine's just going to come out reading left to right, top to bottom. Justification, left sounds good to me. Say, OK.

It's going to ask you, where do you want to put it. Basically, the insertion point of the node, so I'm going to go 0 comma 0. And I'm on where to go. I do a Zoom Extents, Extents, and there it is. 0,0 is right there.

Close my Block Editor, Save Changes, say Apply and say, OK. Now I'm going to insert street onto whatever roads I want. And there is Wizetta a Boulevard there. There is-- oh, I clicked the railroad-- there . And there is, because I didn't rotate it, there is Old Crystal Bay Road, and it's not running along with the road. Because I didn't rotate it.

If I need to make edits to it, I just quickly go back and I define my template, Street say, OK. And click on it and go back. Whoops, I messed that up.

And then again, in the PowerPoint I showed the Str, the Rtcot that allows you to combine multiples. So if this was pipe networks, I would have the ability to put 18-inch RCP and then spit out the length. I would be able to combine three different texts in there.

I might make the first one left justified. But then I'll put the 18-inch as right justified. But then instead of the insertion point at 0, 0, it's going to be at minus 20, 0. With being right justified, it puts that little space in there. But everything lines up.

If you put that third one in there for length, that gets a little bit trickier. Because if it's RCP in one but then your next code is ductile iron, it's hard to get that spacing right. I haven't found a good way to say, put this in 20 feet from the end of the last one. It's basic, here's your insertion point. Go off of that.

Mapexport-- we're almost done. --Export. I have some shape files in here. I have some lines in here. I click. It's a map feature. This is, it's part of the shape file right here. So if I turn that off, they turn off.

My building footprints, on the other hand, are nothing more than polylines in here. And if I click on that one more time, it has object data assigned to it. I can come in and do a Map export. I am old school. I've been using AutoCAD software since R13. So I'm pushing about 23 years using it now. So I still do a lot of things with the command line.

I get new guys in the office, they go, what's the command line? They don't even have it turned on. And I'm going-- we do everything with the ribbon. I'm like, OK. So, the worst part was, six months ago I trained someone that was wasn't even born when R13 came out.

Anyone younger or were born after '91? OK, now don't feel too old.

So I'll come in, and I will create a shape file out of this one. Pick Esri shape file. I'm going to just drop it right on my desktop. Good place for it, because I'll definitely lose it. AU, SHP, say, OK.

Points, lines, polygons, I want polygons because they're building footprints. I could come in and go onto my layer and say pick whatever layer it's on. I could just say, on the layer building footprints. And it will find any entity that is on that layer. And it will add it.

But that takes all the fun out of things. So I'll leave layers as Any Layer Available. I'm not going to say Select Manually, because that's going to take too long. So I'm going to go to Data. And

as you notice, because I said shape file, I only have one class. And it's only giving me a single class possibility. When I do an SDF in a couple minutes, I'm going to be able to do single class or multiple class.

So I'm going to do Select Attributes, Expand, and I'm going to pick the data table Building Areas from 2009. I want to say, OK. Options, leave Convert Coordinates, because I want it to stay in Hennepin county, even though when I bring this in, it's going to say unknown coordinate system. Don't know why.

But I do need to treat closed polygons as polygons. Say, OK. And it did 8 objects in less than a second. So I'm going to just move that really quick. Connect the data, shape file, right there, Shape, Desktop. There is AU Shape, Connect. Even though I told it I was in Hennepin county coordinate system, it says unknown. It creates that projection file, but it can't read it. Don't know why.

AUDIENCE: [INAUDIBLE]

SCOTT MIZSAK: It's any time I've created a shape file, in all the data that I use, yes, coming from Minnesota, most of my stuff is in county coordinate systems. That could be it. I've never really tried to create something that was in LL83. But any time I've done an export to shape file, it always comes up with an unknown coordinate system.

Has anyone been able to export to a shape file and have it know its shape, its coordinate? Well then, I'm blaming it on County Coordinate Systems of Minnesota.

AUDIENCE: [INAUDIBLE]

SCOTT MIZSAK: OK. I blame Minnesota then. So for me, I have to quickly come in and do a quick override to tell it. So I usually, when I build this, I usually will put the coordinate system in the name. So instead of just AU whatever I called it, I would actually call it AU Shape, Space, Hennepin County, US Foot. Just so when I send it to someone, they know what coordinate system to use.

I say, OK, Add to Map. And now they didn't even pop in. Oh, it didn't take that one. It took these. So, there were some buildings in here. Oh, that's because those aren't buildings. Those are parking lots. My fault.

So there's my buildings. And you can see my yellow lines that are surrounding it. So, don't

show parking lots when you're talking about buildings.

So the other one is Dwgtosdf. So, Map Dwgtosdf basically take you to almost the same spot. I really haven't found the reason to type in Map Dwgtosdf when Mapexport takes you to the exact same spot. It's Autodesk giving you seven ways to do the same thing.

So I'm going to SDF this time. And now it's going to be called AU SDF, again, on my desktop. Say, OK. I'm going to do the same thing, but I'm going to do it for my sanitary pipe in here. Notice with SDF I have the ability to do single class or multiple class. So right now I can actually bring in a point line or polygon. And no matter what I pick, it will bring in all three at once.

I'm going to say Select Object, Object Data, Sanitary Main. Say, OK. Say, OK. We will Map Features, Sanitary Main should be my-- where is it? Is it my blue? Polyline should be my blue stuff here. So let me move that down a little bit. Insert the SDF, connect the data, SDF, Add. Oops, not that one. Desktop, AU SDF, because that's when I just connected. And it, for the SDFs, it remembers it. It just doesn't remember it with shape files for some reason in Hennepin county. Maybe I'll have to bug some of the Autodesk support guys.

AUDIENCE: I think that's because with shape files, when it exports that connection it doesn't export the [INAUDIBLE].

SCOTT MIZSAK: OK.

AUDIENCE: And that's all that Map is able to read.

SCOTT MIZSAK: Yep.

AUDIENCE: --is code. I believe it could read the entire project file like [INAUDIBLE] does.

SCOTT MIZSAK: Yeah, and it brought in the SDF file right in there. So now I have-- and then actually, because I did multiple class, it actually brought in all points, lines, and polygons as one. Even though it was all just lines.

AUDIENCE: And I think you're selecting your parking lot.

SCOTT MIZSAK: Did it? It did.

AUDIENCE: Yes.

SCOTT MIZSAK: Well that's just-- did I have that part of-- well, I screwed that data set up then.

Let me turn that off. Turn that off. All streets, there is all of Hennepin county. I did a Query to Filter and got it narrowed down to just that area right in there. I did it. And then I get an Export to SDF. And that's how I got this SDF as Query to Filter.

So, I need to take this to Esri. And as of two months ago, Esri cannot bring in an SDF file. It has to be a shape file. So I need to do an export to a shape file. So I need to make this a shape file. So I'm going to a bulk copy.

Anyone not do a bulk copy before? Anyone--

AUDIENCE: [INAUDIBLE]

SCOTT MIZSAK: OK, perfect. So what I'm going to do is I'm going to do a bulk copy. And I'm going to convert an SDF file to a shape file. So the first thing I need to do is I need to put a temporary location in. So I'm going to create a new folder, call it Temp, right there on my desktop. I'm going to go to my Map Explorer Tools, Bulk Copy.

Oops, sorry, getting ahead of myself. I need to connect the data first. And I need to connect to a shape file. Do not do the folder, so I don't bring everything. And I-- yes, actually do the folder. God, early morning.

Desktop, there is my Temp folder. Say, OK. Give it a name, AU2015-- AU2015. Go into my Temp folder. Right now, if there were shape files in there, as soon as I said connect, it would actually go through and load all those shape files into my drawing.

That's why I created a new folder, called it Temp. And there's nothing in there. As long as there's not a shape file in there, doing this will work. As soon as I said, Connect, I'm good to go. There is now a blank empty shape file in my drawing called AU2015.

So I'm now going to quickly go out. Now jump to Tools, In Map Explorer, Bulk Copy, Source. I have-- now I don't remember which one it was called. We'll go with SDF2. Looks right. From Source at SDF2, that is my queried one down, I hope.

And I'm going to target it to my shape file AU2015 that I just built that's blank. Again, I had the ability to only bring in certain columns of that SDF file. So before I had all this information, you know, I don't need that. I don't need that. I don't need this.

I can come through and get rid of the data that I don't need, that's useless to me. Why bring in stuff that you're not going to use? So that looks really good right now.

Ignore the following errors during copying. Well, I say ignore them all. I've always had good luck ignoring all the errors. Coordinate System, insert errors and then unmatch data. When I've said, tell me about coordinate system errors, even though I don't get any, I usually get bad luck when it comes in. So I just ignore all. Kind of like setting your UAC down to the lowest settings.

And I'll go ahead and say Copy Now, Continue Bulk Copy. 46 objects were copied. I now have, in that AU2015 shape file-- I'll turn that off, Bring In, Connect to Data, Shape File, Shape, Temp, Shape, Connect. It's Minnesota. It doesn't recognize it. Hennepin, [INAUDIBLE] OK, Add to Map.

It did not even add it in here. Weird. Wait a minute. Did I do--

AUDIENCE: [INAUDIBLE]

SCOTT MIZSAK: Shape File, Temp, AU SDF Shape File, that is it. It's right there. But it's just not displaying.

They're there. Wait a minute. What did it-- Oh, yeah, guess what. SDF2 is not my streets. It's my pipes. So there's my pipes. So that's a bulk copy. But now, instead of my SDF file for my pipes, now I have a shape file for my pipes. So, that's bulk copy.

The only thing I didn't show right now was showing from an existing. So in my last four minutes, I have some storm mainline pipe right in here. And that's these orange lines right in here. I can quickly-- New Feature from Geometry, click on that line, Enter, oops, Select Object, New Feature from Geometry, Select Object. I'll select that object, Enter, erase yes.

I've now added that line that represents a new piece of storm pipe. I have now added it to an existing shape file or an existing SDF file. So, a lot of cities, they have a shape file dedicated for all their underground utilities. Well, as we know, cities expand. Cities update their utilities.

By adding new features to an existing, it gives me the ability to add CAD data to an existing shape file. That's a lot easier than going to Esri and creating lines. I mean, I swear, it would have taken me about 10 minutes to create those five lines in Esri.

It's been five minutes since I've done it, or five years since I've done it. But it was a pain in the butt to add data to an existing shape file.

So those are the tools that a lot of Civil folks don't know about. Because they go, what's GIS? What's the planning and analysis workspace? They just don't know it. So, hopefully-- I know a lot of hands were raised at the beginning about using Map. Hopefully you did learn something here.

For the ones that didn't raise your hand, hopefully you're going, oh my god, that's what Bob in the other side of the building does. So, hopefully you'll be able to take this information and when you go back to your work, you're going to say, hey, now I don't have to reinvent the wheel because they already have that information for me. Or hey, I can give you this data. And I can put it into your shape file for you instead of you having to recreate the wheel all the time.

So I've got a couple minutes. Any questions?

AUDIENCE: ON exporting to AutoCAD, export to DWG, I want to coordinate all my data and then give the users a path [INAUDIBLE] where they can edit stuff. How does it handle the labels. Because the last guy wasn't using a computer. He said it could be done, but he couldn't do it for me. So I could, say like if I had all my parcels labeled [INAUDIBLE]. Would that just go into my [INAUDIBLE] in AutoCAD so that they can manipulate line work with our boundary survey and show [INAUDIBLE].

SCOTT MIZSAK: I've always just used the Map Import and then labeled it that way. It's been a few years since I've actually taken a FDF, labeled it, and then done an Out to DWG. I can play with it at the end. But I know labels are Map 3D's downfall.

AUDIENCE: You have to put you labels on [INAUDIBLE] in the [INAUDIBLE] feature clients, and export them all back out [INAUDIBLE].

SCOTT MIZSAK: I know I've had to do that where it's, oh, I need to show all my labels. So I actually have to turn them into Mtext. And then it's like, oh, now I want to change it. Oh, sorry, you got to delete it out. And now they're all gone and--

AUDIENCE: [INAUDIBLE]

SCOTT MIZSAK: Yep, yep. Any other questions? Thanks for coming.

[APPLAUSE]

Again, I was very impressed for the turnout for a first class after the beer bash.

[APPLAUSE]