

Using ArcGIS on Smartphones and Tablets

Kris Bezdecny and Adam Pittman demonstrate the ways you can use ArcGIS on mobile devices to make decisions and collect information in the field.

<http://video.esri.com/watch/683/using-arcgis-on-smartphones-and-tablets>

Video Transcription

00:01 Morning, everyone. My name is Kris Bezdecny...

00:02 ...and I'm here with Adam Pittman this morning to do three 20-minute workshops.

00:08 Our intention is to go through the entire process by the end of the last workshop...

00:15 ...of going from your enterprise data to a smartphone device.

00:21 So we're going to begin by discussing how we can actually use ArcGIS for smartphones and tablets.

00:32 Now the main reason for using smartphones and tablets is to extend the reach of your data.

00:37 This could be to your field-workers who are collecting information; this could also be to citizens and other individuals.

00:45 It could be to anyone.

00:47 This is an opportunity for you to get your timely and accurate information out to the general public if you so choose.

00:57 It also allows you to improve the efficiency and accuracy of your data collection.

01:01 Efficient because you're not having to worry about translating information from a paper form or a laptop form...

01:09 ...back into your enterprise geodatabase. This will actually sync directly to your enterprise geodatabase in real time.

01:18 Which goes into the seamless data integration.

01:21 This allows you to use ArcGIS Server in order to have that connection with anybody using your maps.

01:28 It also allows you to make informed and timely decisions.

01:31 Because this is all occurring in real time, your data is going to be as up-to-date as possible.

01:36 If you're making a decision during an event, you need to know exactly what has been occurring and when.

01:43 This makes it a far easier process because you do have those real-time syncs.

01:49 As other people are collecting information as well, you have immediate access to that information.

01:55 And finally, it's replacing the paper-based workflows.

01:59 Even in our everyday lives, a lot of times we're still looking for directions or looking for information...

02:06 ...by going to someplace like Google Maps and printing out directions and using them as we go from place to place.

02:11 I realize this is just an everyday example, but think about how inefficient that is when in reality...

02:17 ...you could use a web map on your phone to help route you from place to place without needing those extra additional steps.

02:28 So currently we're working on...currently we have applications for iOS devices, which includes iPad, iPhone, and iPod touch.

02:38 We have applications for Windows Phone 7 devices, and we're working on applications for the Android device.

02:44 Now these are designed for our lovely touch screens. The idea is that we're using our devices one-handed.

02:52 So the applications have been designed for this use.

02:56 It's also a connected workflow.

03:00 It is expected that your users are either always connected or mostly connected through 3G or Wi-Fi.

03:06 The data is being streamed via ArcGIS Server to the devices.

03:10 If they lose connection, certain settings will be saved locally to the device, but they will not be able to update obviously.

03:18 So if you're working in a mostly disconnected environment, you may want to look at a custom solution.

03:25 And assisted GPS integration.

03:27 These are native applications to the devices, so we can use any of the native functionality on the devices, including the GPS.

03:38 Now I've mentioned geodatabases and ArcGIS Server, and we'll talk more about this in the later two sessions...

03:44 ...but ultimately, your users will not be seeing any of this in the field.

03:49 Your users are going to see something called a web map, and a web map is simply a mashup

of services.

03:56 Every web map is going to have at least one basemap, and then you're going to place operational layers...

04:01 ...on top of that basemap as a map sandwich.

04:06 Web maps can be authored in arcgis.com or using your ArcGIS mobile content server for enterprise web maps.

04:14 And again, we'll discuss authoring web maps in a later session...

04:17 ...but you need to realize that when users are looking to access your data, they're not accessing your services directly.

04:23 You have to provide them a web map for access.

04:30 And this is part of the overall workflow that we'll be discussing during these three sessions.

04:36 As you can see, we're talking about using smartphones and tablets, and, again, this requires the web map.

04:43 So the idea is, once your user gets...once your user arrives in the field, everything has been done for them.

04:51 It should be a very seamless, easy process for them to complete their tasks.

04:56 All the functionality should be available to them via the web map, and there should be few if any questions on how to proceed.

05:03 What that means is there's a considerable amount of processes that you have to perform in the back end...

05:10 ...in order to create this easy functionality for your users.

05:20 So there's many different things you can do with ArcGIS for the smartphones and tablets.

05:25 You can collect and navigate information. Collect and navigate information.

05:32 You can collect information; you can navigate in your map.

05:37 You can use bookmarks in the latest version of ArcGIS, which allows you to set custom extents that you can return to again and again...

05:45 ...and you can also search for information.

05:48 You can create custom, predefined searches for your users...

05:52 ...but you can also allow your users to search on the fly in the field as well.

06:00 So really quick, I'm going to go through one of the processes, and then enough talking about using.

06:05 Let's face it - if we're using the device, we want to see it in action, so we'll let Adam do a nice

lovely demo for us.

06:11 But first, one thing to consider is your users will need to become familiar with the collect data workflow.

06:18 This might seem a little complex at first. It's really not, but this is probably...

06:23 This and accessing data are the two things you'll probably need to walk users through the most before sending them out and about.

06:30 So in order to collect the information using ArcGIS, you'll need to open map tools and tap Collect.

06:36 Now here's the cool thing. If you're not using a feature service, you can't edit data.

06:41 Well, if you don't have a feature service in your web map, your users will not see Collect.

06:47 So it's a handy little way of allowing your users to know whether or not the functionality is available to them.

06:52 They're not going to sit there tapping Collect, going, Why can't I collect anything? What's wrong? It's broken.

06:58 It just won't be available for them in the first place.

07:02 Next your users are going to have to select something called a feature type.

07:07 Now this is defined by you either in the geodatabase or in the map.

07:11 And again, this is a way of creating an easier workflow for your users.

07:16 Your users can't just select anything they want; you're driving exactly what it is you want them to do.

07:22 In this case, your user only has three options.

07:25 It's either a general nuisance, it's important to resolve soon, or it's a critical issue.

07:34 So once the user gets used to the language that you've authored into your maps and web maps...

07:39 ...the data collection process will go faster and faster.

07:42 And I strongly encourage you to use language that your users are already familiar with.

07:47 Next they're going to collect the information. They're actually not going to see the map at first.

07:52 They're going to see a list of attributes, which are context driven...

07:56 ...meaning that if they're entering a date, they're going to see the date picker.

08:00 If they're entering in a number, they're going to see a number pad.

08:03 If it's a text field, they're going to see the soft keyboard.

08:08 Also, if you set any domains on your data, it's going to create a pick list of only those domain values...

08:14 ...to help improve accuracy and the speed of data collection.

08:18 And finally, your users will collect the location. They can do so using either GPS or by tapping on the map.

08:27 So let's go ahead and see Adam put this into action.

08:32 I used this same service; there we go. You guys said I was on the mic. Now I'm on the mic. Now I'm on the mic.

08:41 So I used this same service yesterday in one of the Demo Theater presentations...

08:45 ...so you can see all the people that have gone to town editing my data.

08:49 And we're going to talk about good practices and how I can manage all these crazy edits these folks have made from this device.

08:56 So using it, it's pretty intuitive. One of the great things about using these native applications...

09:03 ...whether they be for Windows Phone 7, your iOS devices, or Android, is that people are using that phone...

09:09 ...are already familiar with, you know, using gestures to operate and navigate around the map.

09:15 So you can see as I zoom in, it's just a matter of pinch zooming on the screen.

09:20 Alright. If you haven't downloaded or visited the App Store or got the update on your phone...

09:24 ...we just updated this application maybe four days ago and put that out on the App Store.

09:30 So a number of improvements have been made. A larger screen size...

09:33 Here I can tap the Information dialog here and see all the information on the map.

09:39 So I've got the table of contents of the features that I have; that's the legend.

09:45 I can click on the content. So I can turn these different layers on and off.

09:49 So whether or not I authored the map, maybe someone else made it for me, I don't want to see all the wells for this area...

09:54 ...or all the polygons or things that have been added.

09:58 I can also take a look at the details for this.

10:00 So you can see yesterday I didn't put any details about the map when I published it out...

10:06 ...but you're certainly going to want to do that so people understand what this map is all about.

10:11 If I click on the top corner, I can add this map to my favorites, I can e-mail this map to one of you...

10:18 ...so that you can just get a link and open up the map directly in the application.

10:22 And you can see all the other options here.

10:24 Text messaging it, put it out on Facebook if I was inclined to do that, or put it out as a Tweet or something.

10:32 So I'll go back to the map. If I was outdoors right now, or actually in Wyoming, I could use the GPS on the phone.

10:39 So you can see right next to the information window, right there in the bottom right corner...

10:44 ...we can activate the GPS, so I can actually GPS features from my device and collect them in that manner. Okay?

10:52 So at the very top up here, I hit the Tool dialog...

10:57 ...so you see the same...in real life, the screen shots that Kris had on her slides a moment ago.

11:03 So I can do things like measure distances. So if I come down here, it gives me a dialog.

11:07 Use the GPS to measure a distance, if you can't read that, or just tap to measure a point on the map.

11:14 So if I come across here, I can measure this line segment out. Maybe this is a pipeline.

11:21 If I click on the centimeters, I can change the measure of units here pretty easily and quickly...

11:26 ...so I can see that that's roughly 1700 feet. I cancel that.

11:31 There's also...I'll show you one more thing there.

11:34 Right down here in the bottom left corner was actually for using the GPS to maybe do a walking measurement...

11:39 ...if I was going to walk this pipeline or something along that line.

11:43 So here you've got a few other options too. So if I click on this one, snapping, right? Clear that. Cancel.

11:52 Go back to the tools. I can measure areas, so same thing. I'm just basically clicking; there's not...

11:57 It's pretty straightforward, intuitive. I'll just draw a box and here I can see about 15 acres that I just measured there.

12:04 And again, by clicking on the units, you can change that around. Pretty basic.

12:09 Also, because I have a feature service in the application, I have the ability to collect features.

12:15 So I'll pick the Collect dialog, and here I am presented with this legend.

12:21 So here is the template for all the things that we've set up in that map and published out.

12:25 Now this all originated from ArcMap and is powered by the geodatabase, which we'll talk about in the next session.

12:32 But as the user, I can just see the things that I would like to edit.

12:36 Maybe we're going to set up a perimeter in this area for setting off some explosions.

12:43 I'm presented with this dialog, so if I want to give an ID or some value, I'll simply just...

12:48 ...type what I want to type in there for the value, grab the date field - we'll use today. I can hit the pick list here.

12:58 So we already chose from our template that we were going to do explosives, but all this is powered from that geodatabase...

13:03 ...so I can change it if I needed to. But I'll leave it all as is, and I'll tap the point.

13:09 Now I could actually collect this using my GPS or just hand draw it on the map.

13:16 So it's actually giving me the measurement right there; you can see that, and I accept.

13:20 And just like that, if I wanted to make any changes, I could.

13:23 I finish, and I just actually collected a feature from my device. It's that simple, okay?

13:31 Other things that you probably would want to know about is you can create bookmarks.

13:34 So in this particular area of Wyoming, if I wanted to create a bookmark, I could have a whole list...

13:39 ...of maybe stops or areas of interest that I could just quickly navigate to. So we can add that.

13:46 And I've also got search capabilities.

13:48 Now in arcgis.com, I created a predefined query, a predefined search called Well Depth.

13:56 So I wanted the users to be able to open up my map and find all of the deep wells in this area.

14:02 So any well that was greater than or equal to 2500 feet.

14:06 So all they see is they click on the well depth and it runs and executes that query...

14:10 ...so they don't have to fish through trying to figure out how to isolate data in their map.

14:15 We can just predefine these queries and just, they ride along as part of the map. Okay?

14:20 So here you can see all the wells that meet that criterion, and I can click on that, and I'm centered on that well here in the field.

14:30 Okay? Pretty straightforward.

14:33 If I click on one of these devices, or one of these wells...I'll zoom in to an area a little bit tighter...

14:40 ...but people have edited my data so much, it's hard for me to recognize where I was going.

14:48 Let's see. I think this is the well I had set up.

14:51 I just touch the map, and here I can see this pop-up, and when I click, tap, touch the pop-up, here is all the information.

14:59 Now I configured pop-ups for these features, and I also embedded a media graphic here.

15:07 So here is actually a pie chart, and we'll show you how to do this in the next session.

15:12 I created - or the last session, I created a pie chart for production values.

15:16 So I click on this well, and I can see that over the history or the life cycle of this well, we've gotten these percentages...

15:24 ...38 percent gas... That doesn't sound right. ...75 percent oil. Okay?

15:32 So that's all been configured, and you can see we've kind of narrowed down the attributes that people can see here.

15:41 You can also from this pop-up add that bookmark.

15:43 So if I want to click up here and add that to my bookmark spots, I can come right back to that.

15:49 So you can store and keep these bookmarks and use them in your device.

15:53 So that was really kind of a quick tour of just using, this case, the ArcGIS for smartphone, for iOS application.

16:03 And it's pretty straightforward and intuitive.