# uDig Walkthrough 2

Edit with uDig and WFS-T







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### I Introduction

In this workbook we are going to cover two major topics. The first is a tour of Web Feature Server functionality using a local GeoServer installation. We will use a WFS to edit both feature geometry and feature attributes. We will also show how to export information out of a WFS using both a local shape file and the system clip board.

As we went to The rest of the workbook is devoted to working with information. We will create a new Press GeoServer feature type by hand, and work with a range of feature creation and editing tools. Finally we 2.0.1 was tested will save the result to a new file. and working.

### 2 WMS and WFS Integration

In this section we will use uDig to display contents from our local Web Feature Server. We will also make use of some of the more interesting selection features.

1. Start uDig, under the File menu select New-> New Map to create a new map.

If you were unable to get GeoServer installed please ask the instructor for help, we may be able to provide a URL to a demo machine

- 2. Make sure your local GeoServer is started and ready to go. You can run GeoServer from the Start menu.
  - GeoServer 2.1.2 GeoServer Data Directory GeoServer Homepage GeoServer Web Admin Page Start GeoServer Stop GeoServer Uninstall
- 3. Navigate to that GeoServer **Welcome** page: <u>http://localhost:8080/geoserver/</u>
- 4. Drag and Drop the WMS 1.1.1 Capabilities link on to your Map.



IE9 and Opera do not support drag and drop.

If using a browser that doesn't support drag-and-drop copy the link, selecting the Catalog, Layer or Map view and Paste. 5. This will bring up a Wizard allowing you to choose which Layers you wish to see. Select **Tasmania state boundaries** and **Tasmania cities** and the press the **Finish** button.

S Add Data
Resource Selection Please select a resource.
View Local Web Map Service     View Local Web Map Service     Local Web Map Service Method Method     Locat Web Map Service     Local Web Map S
< Back Next > Einish Cancel

6. Move tasmania\_cities\_Type to the top of your layers view.

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Tasmania cities						
🔽 🔲 Tasmania state boundaries						

7. Drag and Drop the WFS 1.0.0 Capabilities link on to your Map.



We are using WFS 1.0 in order to have readwrite access to GeoServer. 8. This will bring up a Dialog allowing you to choose which Layers you wish to see. Select **Tasmania roads** and T**asmania water bodies** and press the **Finish** button.

Son Add Data	
Resource Selection	+
Please select a resource.	42
GeoServer Web Feature Service (WFS 1.0.0)     Manhattan (NY) landmarks     Manhattan (NY) points of interest     // Manhattan (NY) roads     Spearfish archeological sites     Spearfish roug locations     Spearfish restricted areas     // Spearfish roads     // Spearfish reams     Tasmania cities     // Tasmania roads	
<ul> <li>Tasmania state boundaries</li> <li>Tasmania water bodies</li> </ul>	-
Resources Selected: 2	
< <u>B</u> ack <u>N</u> ext > Finish	Cancel

9. Select the Map in the projects view and choose File->Rename menu item.



10. Rename to **Tasmania.** 

11. You can compare your map with what is shown by GeoServers layer preview for the Tasmania layer.



### 3 Editing Geometry with WFS

We will use the Edit Geometry tool to move the road around the lake.

1. Zoom into the road that is crossing the lake in the center of the country



2. Select tasmania\_roads\_Type in the Layers view.

🖫 Layers 🛛 🔲 AOI 💷 Bookm 🖓 🗖	
ት 🕂 😳 ⊿ 🗞	
🔽 🗾 Tasmania water bodies	
Tasmania roads	
Tasmania cities	
🔽 🔲 Tasmania state boundaries	

3. Change to the **Edit Geometry** tool from the tool palette (click the **Editing** drawer to see the available editing tools).

You can use the keyboard shortcut 'e' to choose the edit tool

4. Use the Edit Geometry tool to select the road crossing the lake.



5. The road will change color and develop "vertex handles".

6. Move the vertex handles so the road does not enter the water.

By default no snapping takes place. We will show how to turn on snapping later in this workbook.

You can cycle

available edit

tools by pressing

through the

"e".



- 7. Add new vertices by switching to the Add Vertex tool.
- 8. You can click any where on the road to add a new vertex.



9. You can use Undo and Redo in the Edit menu as required.

🎝 uDig							
File	Edit	Navigation	Layer	Мар			
1	ψu	Indo Action	Ctrl+	Z			
12	₩ R	edo Action	Ctrl+	Y			
	of c	Cut	Ctrl+	x			
	D)	Сору	Ctrl+	c			
	💼 P	aste	Ctrl+V				
	×	elete	Delet	e			
	S	elect All	Ctrl+	A			
	S	Selection					
Q-	C	Clear Selection					
4a-	All Operations						
	<b>₽</b> 0	Commit					
	R	ollback					

You may also

press Revert ( in the tool bar) to rollback any changes you have made. 10. Press the **Commit Changes** button in the tool bar to send your changes off to the Web Feature Server.

Commit Changes

11. Your line has now been moved.

12. You can now refresh your web page to confirm that your changes have been made.



13. You can edit many Features at once, from different layers, or from different sources of data. Pressing **Commit Changes** will send off all the changes made in the current map.

### 4 Working with Attributes

In this section you will learn how to edit an Attribute, along the way we will explore the use of styling.

To start out with lets figure out the name of that city:

- 1. Select Navigation > Show All from the menu bar.
- 2. Select the Tasmanian cities in the Layers View.



- 3. Select the Edit > Delete command from the menu bar
- 4. In the Catalog view expand the GeoServer Web Feature Service (WFS 1.0.0) entry and select Tasmania cities.



- 5. Right Click and select Add to Current Map.
- 6. Right click on Tasmania cities in the Layers view, and click on Change Style.



This opens the Style Editor dialog.

- 7. Define the point shape using style as follow:
- Select the **Points** page from the list on the left hand side of the **Style Editor**.
- Choose Simple Style to access the the built in shapes.

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/pe filter text he 👻	Points				¢	• <
Cache Filter Lines Points Polygons Simple Feature Theme XML	Preview, Groups and Rules	Simple Style ercte Style Properties General Border Rule name size rotation offset (x, y) maximum scale minimum scale	Fill Labels default rule Manual 6 0 0 0.0	Filter	Field based one -	
		De	efaults	Revert	Ap	ply

- Choose circle from the list of built in shapes.
- 8. Configure the style properties for labeling:
- Click on the Labels tab
- · Check the enable/disable labeling
- Choose CITY\_NAME for the label property.

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yle Prop	erties					
General	Border	Fill	Labels	Filter	r	
🗸 enabl	e/disable	labelling				
			Manual		Field b	ased
label		dum	my		CITY_NAM	/IE
opacity		100		×	- none -	
rotation		0		<b></b>	- none -	
font				set fo	ont	
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anchor		midd	le	•	center	
displace	ment	0.0		*	0.0	
Vendo	Options					
max dis	splaceme	nt pixels				
auto w	rap pixels					
snace a	round pis	els				

9. After making changes, hit the **Apply** button to update the map, you can experiment with the settings and press **Close** when you are finished.

- 10. Ensure that **Tasmania cities** is still selected in the layers view, and select the **Table** view.
- 11. The first time you use table view you will need to accept a warning that all the features will be loaded into memory.



12. The Table view shows all the features for the current layer.

📴 Catalog 🗖 Web Catalo	og 🛷 Search 🔲 Tab	le 🔀			🗆 🖧 😨 🗖 🗖
Any	▼ search				🗖 All
Features Selected: 0					
FID	CITY_NAME	ADMIN_NAME	CNTRY_NAME	STATUS	POP_CLASS
tasmania_cities.1	Hobart	Tasmania	Australia	Provincial capital	100,000 to 250,00
•		III			- F

13. Go ahead and rename the city after yourself. Change the CITY\_NAME attribute and you can watch the map update.



Not all aspects of a feature are editable. bounds are derived from the geometry, and ID is dictated the WFS.

14. Press the **Commit Changes** button, in the tool bar, to send your changes off to the Web Feature Server.

### 5 Exporting to Shape file

In addition to editing content from many sources, you can also export content to a shapefile.

- 1. With Tasmania roads selected, choose File > Export from the menu bar
- 2. Select the Resource to Shapefile and press Next

🖕 Export	- 0 ×
Select Export all the features in a layer/resource. The new layer is added to the catalog for later use.	2
Select an export destination:	
type filter text	
<ul> <li>▷ General</li> <li>▷ Other</li> <li>Export Project</li> <li>Export coverage to tiff or esri ascii</li> <li>Seport feature layer to kml</li> <li>Layer to Shapefile</li> <li>I Map to Image</li> <li>Q Resource to Shapefile</li> </ul>	
< <u>B</u> ack <u>Next &gt;</u> <u>Finish</u>	Cancel

3. Your Tasmania roads layer will be available for export, you can see that it is in the "WGS84" projection.

The projection	Steppert to Shapefil	e			
for your data is listed to the right. Click on this	Layer Selection Select one or more Click on the Project	resources to export tion to change desti	to shapefile. nation Projection.		SHP
value to transform your data into a	Destination folder: Resource List:	C:\Users\jodyg\Do	ocuments		Browse
different projection.	V Tasman	ia roads	EPSG:WGS 84		
		< <u>B</u> ack	Next >	<u>F</u> inish	Cancel

- **Exported files are** added to the catalog.
- 4. Press Finish to save the file to disk.

	📴 Catalog 🖂 🗖 Web 🛷 Search	🚵 🕱 🔽
GeoServer Web Map Service     GeoServer Web Feature Service (WFS 1.0.0)     GeoServer Web Feature Service (WFS 1.0.0)	Decoration	
Geoserver web reature service (wrs 1.0.0)	GeoServer Web Map Service     GeoServer Web Fosture Convice     (WES 1.0.0)	
	Geoserver web Feature Service (WFS 1.0.0)	

### 6 Take a Break!

Wow that was a lot of content, lets take a break and go over some ideas you can try at home.

- The OpenLayers application also include the ability to edit, see if you can edit something in the browser and get the change to show up in uDig.
- There are additional Web Feature Servers listed in the Web Catalog. Try downloading some content and seeing what you can learn.

Okay lets move on.

### 7 Creating Feature Type

We are going to create a new feature type to experiment with some of the more interesting edit tools.

- 1. Create a New Map
- 2. Rename the map to "New Tasmania"

😕 Projects 🔀	\$ ▽ □ □
a 😕 project	
New Tasmania	
👂 🛃 Tasmania	

- 3. Add the "tasmanian roads.shp" file you created previously. You can drag and drop the file onto the map, or use Layer > Add from the menu bar.
- 4. Select the Layer -> Create command from the menu bar.



5. Replace "New Feature Type" with "Lake".

If you have a shapefile selected you will see "the\_geom"; the default attributes are based on the current selection.



6. Change the type of the "the\_geom" attribute to MultiPolygon.

🔩 Crea	ate New Layer			23
Lake				
=0	Name	Туре		
	name	String		
	the_geom	MultiPolygon	-	EPSG:WGS 84
		Polygon Geometry MultiPoint MultiLineString MultiPolygon	•	
			ОК	Cancel

7. Click Add Attribute button.

de Create	New Layer		×
Lake			
=0	Name	Type	
Creat	e Attribute	String MultiPolygon	WGS84
	New Attribute0	String	
		ОК	Cancel

8. Select your new attribute and change the Type to "Integer" and the Name to "type"

Crea	ate New Layer		
Lake			
=0	Name	Туре	
	name	String	
	the_geom	MultiPolygon	EPSG:WGS 84
	type	Integer	
		OK	Cancel

- 9. Press OK button
- · Your layer has been added to the current map
- · Your data has been added to the Scratch area of the catalog



### 8 Copying Content

Now that we have created a new feature type, we can use cut and paste to grab geometry content from our WFS. This is different from the export we did earlier in that we are using our layer type.

- 1. Change to Tasmania map and select Navigation->Zoom AOI in the menu bar.
- 2. In the Layers view make sure that **tasmania\_water\_bodies\_Type** is selected as shown below.



- 3. Select **Box Selection** from the tool palette.
- Press "S" to use the select tool at any time.
- 4. Use the Box Selection tool to draw a box around all the lakes. The lakes will change color when selected.



5. Select **Edit->Copy** from Edit menu. These lakes will be placed onto the clipboard.



6. Switch over to the **New Tasmania** map. Ensure your select **Lake** layer is selected in the layer view, and right-click mouse button to select **Paste**.



7. Press **commit** to write these new features into your Scratch layer.

You can paste geometry into other applications as either GML or WKT.

#### 9 Hole Cutter

In this section we will cover how to create a hole in a polygon.

1. Open the New Tasmania map and zoom to lake shown below.

Additional editing tools supplied by the community are available.



2. Open the **Editing** drawer of the **Palette** to show all the edit geometry tools. Select the **Hole Cutter** tool from the tool palette.



You can use the keyboard shortcut 'e' to cycle between the edit tools. 3. Use the hole cutter to draw a polygon within the lake.



- You can press Esc to cancel
- 4. Press **Enter**, or click on the first vertex, to create the island.
- 5. Press the **Commit** button in the toolbar.
- your edit.

### **IOCreate Geometry**

The second category of tools involves creating geometry, we will cover line and polygon creation and "vertex snapping".

1. Select tasmanian roads in the layer view.

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♥					

Use the keyboard 2. Choose the Create Line Tool from the Create drawer of the Palette.

short-cut 'c' to	Create 👳
cycle between the	${}^{\bullet}_{b \rightarrow 0} \stackrel{\diamondsuit}{\to} Create Line Tool$
create tools.	Create Rectangle
	🕒 Create Ellipse

3. Draw a road on the northern part of the island, once again Enter to indicate that you are finished your line.



- 4. You have just created a new road, remember to press commit in the tool bar to write your change to the shape file.
- 5. Change to the Lake layer in the layer view.



- 6. Select the Create Polygon Tool.
  - Create  $\Leftrightarrow$ Create Polygon Tool Fill Area Create Rectangle Create Ellipse
- 7. Enable snapping by pressing CTRL+SHIFT+S until Snap to features in current layer is displayed in a dialog.



8. Draw a polygon, close to a feature, as you draw close to another polygon you can watch how snapping effects the drawing process.



If you watch closely the last vertex will expand closely when you are about to close the polygon.

If you go too far

pressing Control-Shift-S, it will cycle through all the snapping options.

just keep

- 9. You can complete your polygon by ending it on the vertex that started the polygon.
- 10. Please press the **commit button** in the toolbar.

## I I Changing Snapping Behavior

The snapping choices included with uDig are as follows:

No Snapping	Snapping is turned off by default.	
Selected Features	Snap to a vertex in a selected feature.	
Current Layer	Snap to a vertex in the current layer	
All Layers	Snap to a vertex in any layer	
Grid	Snap to the nearest grid intersection	

There are three different ways to change the snap behavior:

1. In the Edit Tool Preferences which can be found in the Window > Preferences menu.

Son Preferences		
type filter text	Edit Tool	
Catalog General Help Install/Update Project Rendering Tool Edit Tool Mouse WMS-C Tiles	Edit Tools general preferences Advanced Editing Select created feature Snap Radius No Snapping Selected Features Current Layer All Layers Grid Vertex Diameter Feedback Default Attribute Editor	30 4 Table View ▼ Restore Defaults Apply
		OK Cancel

- 2. While an edit tool is *active* press CTRL+SHIFT+S. This will cycle through the available snap behaviors. A small pop-up will display the new behavior.
- 3. You can see a short cut of the tool snapping options in the tool options along the bottom of the map.

### 12Delete Feature Tool

1. To delete the feature just created select the **Delete Feature Tool** in the tool palette.



2. Click on the newly created feature and it will be deleted.

### 13Fill Tool

The Fill tool fills spaces that are **not** occupied by existing features.

1. Select the Fill Area Tool.



2. Draw a Polygon that goes through some existing features.



3. Change to the select tool and click on the Polygon to select it. This is in-fact a multi polygon; a single feature made up of separate shapes on the map.



#### 14Save

We are now going to save the "Scratch" layer we have been working with.

- 1. Please press the Save button in the tool bar (or choose save from the File menu).
- 2. Ensure that your scratch layer Lake is selected and press Finish.

둸 Export to Shapefil	e	_ <b>D</b> X
Layer Selection		SHP
Click on the Project	resources to export to shapefile. ion to change destination Projection.	
Destination folder:	C:\Users\jodyg\Documents	Browse
Resource List:		
🔽 🗍 Lake	EPSG:WGS 84	
	< Back Next > Finish	Cancel

3. A new shapefile has been created in the directory indicated, you can see this file in your catalog.



4. Your map has been updated to use your new layer, you can verify this by right clicking on your Lake layer and checking its Properties.

🖫 Layers 🛛	) 💷 I	Bookmarks		' 🗖
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🔽 💋 Lak				
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	Ē	Paste		Ctrl+V
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	•	Change St	yle	
	🔗 Zoom to Layer			
		Rename		
		Operation	s	+
	4	Export		
		Properties		
	_			

#### I5What to Do Next

Where to go from here? Try out the following:

• You can use the **Reshape** operation reorder and rename attributes and even create new ones using simple formulas

Look at the "Common Query Language" in the online help for a complete function list.

Neshape Contents	x
the_geom=the_geom NAME=LONG_NAME AREA=area(the_geom)	× •
Add to Map	<b>•</b>
	OK Cancel

- Enable Advanced Editing Tools in **Windows > Preferences** and see what ideas the developers are considering. You will need to close and open your map for the settings to take effect.
- The uDig community site has additional editing tools. Try out the tools provided by Axios.