Your Geoportal F***ing Sucks!

lan Turton

all my own work

Introduction

Who is Ian?

- A well known trouble maker
- Academic Research Software Engineer
- FOSS4G developer
- Sometime teacher of students

Declaration of Conflict of Interest and Disclaimer

- I am a developer of GeoServer which can be used to provide GeoPortals.
- I once worked for a company that advised (local) governments on GeoPortals.
- And my boss knows nothing about this talk.

What does lan want from your portal?

- Spatial data
- and all the data at once
- in an easy to use open standard format

What annoys Ian?

- Having to request each "tile" separately
- Download limits
- Different results based on file type.



Are you running a Data Portal or a GeoPortal?

Find data published by central government, local authorities and public bodies to help you build products and services

Search data.gov.uk

Business and economy

Small businesses, industry, imports, exports and trade

Crime and justice

Courts, police, prison, offenders, borders and immigration

Defence

Armed forces, health and safety, search and rescue

Education

Students, training, qualifications and the National Curriculum

Environment

Weather, flooding, rivers, air quality, geology and agriculture

Government

Staff numbers and pay, local councillors and department business plans

Government spending

Includes all payments by government departments over £25,000

Health

Includes smoking, drugs, alcohol, medicine performance and hospitals

Mapping

Addresses, boundaries, land ownership, aerial photographs, seabed and land terrain

Society

Employment, benefits, household finances, poverty and population



Towns and cities

Includes housing, urban planning, leisure, waste and energy, consumption

Transport

Airports, roads, freight, electric vehicles, parking, buses and footpaths

Digital service performance

Cost, usage, completion rate, digital take-up, satisfaction

Government reference data

Trusted data that is referenced and shared across government departments

Why are you filtering on formats?

Search results

Search data.gov.uk		Q	
Filter by	705 results found		Sort by
Publisher	Neighbourhood Boundaries		Best match ~
•	Published by:	Plymouth City Council	
Topic	Last updated:	14 February 2016	
Mapping V	Data showing the neighbourhood boundaries in Plymouth.		
Format	Sheffield City	Centre Boundary	
GEOJSON 🗸	Published by:	Sheffield City Council	
	Last updated:	03 March 2020	
Open Government Licence (OGL) only	nce Pre Submission Proposals Map - City Centre Boundary		
	Trafford Council - Libraries		
Apply filters	Published by:	Trafford Council	
	Last updated:	14 November 2019	
Remove filters	Location of Local A	uthority and community run libraries ir	Trafford.

And why do different formats give different results?

Search results

Search data.gov.uk		Q	
Filter by	506 results found		Sort by
Publisher	Erewash Distric	ct Council Polling Districts	Best match v
•	Published by:	Erewash Borough Council	
Topic Mapping	Polling District areas used internally to manage elections. They are sub- divisions of the 2015 electoral ward boundaries.		
Format	DDC INSPIRE OGC WFS service		
Open Government Licence (OGL) only	Published by: Last updated: abstract	Daventry District Council 20 May 2015	
Apply filters	Primary School Catchment Areas		
Remove filters	Published by: Last updated:	Gateshead Council 07 October 2015	
	Catchment boundari	es for Primary Schools in Gateshead	d Council.
	Secondary School Catchment Areas		

Published by:	Gateshead Council
Last updated:	07 October 2015

Catchment areas for secondary schools in Gateshead Council.

And what is zip doing in the format list?

Search results

Search data.gov.uk		Q	
Filter by	730 results found		Sort by
Publisher	<u>Visual Bounda</u> Model (NTEM)	ries for the National Trip Er	Best match v
Topic	Published by:	Department for Transport	
Manaian T	Last updated:	22 September 2021	
Format ZIP V	[GIS files for the zoning system used in the National Trip End Model (NTEM)](https://data.gov.uk/dataset/visual-boundaries-for-the-national-trip- end-model-ntem). Shapefiles for the zoning		
Open Government Licence	Lancaster City updated	Council Brownfield Regist	<u>er 2019</u>
(OOC) only	Published by:	Lancaster City Council	
Apply filters	Last updated:	10 December 2019	
Remove filters	Lancaster City Coun republished its brow The register will be u	cil Brownfield Register 2019 update nfield land register data on the 10th iploaded annually. The data	d The Council December 2019.
	AddressBase F	Plus for contractors	
	Published by:	Greater London Authority	
	Last updated:	15 November 2018	
	GLA's processed pa by contractors that h	n-London Ordnance Survey Address ave signed PSMA Contractor Licence	sBase Plus for use ce

Oh, you mean Shapefile!

By default I want all the data



Not phase 1 or phase 2

A map interface is nice



- But I don't want to click add all 40 times.
- And I don't really want a shopping cart

Download options

Scottish Remote Sensing Portal



Datasets Map Download Case studies Contribute Home About

Download

- Scotland Lidar Phase 2 DSM NH09	nh09_1m_dsm_phase2	7.6 MB image/tiff	4 Download
- Scotland Lidar Phase 2 DSM NH16	nh16_1m_dsm_phase2	92.9 MB image/tiff	4 Download
Scotland Lidar Phase 2 DSM NH17	nh17_1m_dsm_phase2	31.8 MB image/tiff	💩 Download
Scotland Lidar Phase 2 DSM NH18	nh18_1m_dsm_phase2	99.1 MB image/tiff	💩 Download
Scotland Lidar Phase 2 DSM NH19	nh19_1m_dsm_phase2	62.2 MB image/tiff	💩 Download
Scotland Lidar Phase 2 DSM NH22	nh22_1m_dsm_phase2	55 MB image/tiff	💩 Download
Scotland Lidar Phase 1 DSM NH24	nh24_1m_dsm_phase1	26.8 MB image/tiff	💩 Download
Scotland Lidar Phase 2 DSM NH25	nh25_1m_dsm_phase2	17 M8 image/tiff	💩 Download
- Scotland Lidar Phase 2 DSM NH26	nh26_1m_dsm_phase2	150.2 MB image/tiff	💩 Download
Scotland Lidar Phase 2 DSM NH27	nh27_1m_dsm_phase2	122.5 MB image/tiff	💩 Download
Scotland Lidar Phase 2 DSM NH28	nh28_1m_dsm_phase2	5.1 MB image/tiff	💩 Download
Scotland Lidar Phase 1 DSM NH32	nh32_1m_dsm_phase1	14.2 MB image/tiff	💩 Download
Scotland Lidar Phase 1 DSM NH33	nh33_1m_dsm_phase1	101.4 MB image/tiff	💩 Download
Scotland Lidar Phase 2 DSM NH33	nh33_1m_dsm_phase2	19.2 MB image/tiff	💩 Download
- Scotland Lidar Phase 1 DSM NH34	nh34_1m_dsm_phase1	63.2 MB image/tiff	💩 Download
Scotland Lidar Phase 2 DSM NH34	nh34_1m_dsm_phase2	33.8 MB image/tiff	💩 Download
			1



▶ Why would I want 397 separate files to download?

Nor do I want to be told I'm requesting too much



The 1990s phoned and said "disk is cheap!"

A digression about formats

Raster Formats

- I want a compressed, tiled GeoTif that contains all my data
- If it's actual measurements I want LZW compression
- If it's aerial imagery then JPEG compression is fine
 - go read Paul Ramsey's compression for dummies

Vector Formats

- I want something that is a single file
- with full attribute names (no 10 char cut off)
- in the best projection (no forcing local data to EPSG:4326)
- that respects character sets
- that is well supported by FOSS4G code (so nothing proprietary)

Is there a better way?

Better living through standards

- Open Geospatial Consortium (OGC) standards
- Easy to use in (most) GIS tools
- "Well, that's OK We provide a WMS for our data!"

Is that enough?





But I want the data for Glasgow, so let's clip it

	Raster Extraction - Clip Raster by Extent	×
Parameters Log		
Input layer		-
FIND2020 [EPSG:4326]	•	
Clipping extent		
-4.467758862,-4.12115706	8,55.713073905,55.921523153 [EPSG:4326]	
Override the projection f	for the output file	
Assign a specified NoData v	value to output bands [optional]	
Not set		\$
 Advanced Parameters 		
Additional creation option	ns [optional]	
Profile High Compressio	n ·	-
Name	Value	
1 COMPRESS	DEFLATE	
2 PREDICTOR	2	-
	0% Ca	ncel
Help Advanced *	Run as Batch Process	Run



Oooops!

Raster Extraction - Clip Raster by Extent	×
Parameters Log	
CDAL command: gdal translate -projwin -4.467758862 55.921523153 -4.121157068 55.713073905 - of GTiff -co COMPRESS=DEFLATE -co PREDICTOR=2 -co ZLEVEL=9 -co TILED=YES "crs=CRS:84&dpiMode=7&featureCount=10&format=image/ png&layers=SIMD2020&styles&tilePixelRatio=0&url=https://maps.gov.scot/server/ services/ScotGov/PeopleSociety/MapServer/MMSServer" /tmp/processing_KKFLJo/ 51b2f30de34349a69f678d941097ca9a/0UTPUT.tif CDAL command output: ERROR 4: crs=CRS:84&dpiMode=7&featureCount=10&format=image/ png&layers=SIMD2020&styles&tilePixelRatio=0&url=https://maps.gov.scot/server/services/ScotGov/ PeopleSociety/MapServer/VMMSServer: No such file or directory Process returned error code 1 Ferrution 0.07 seronds	
Results: OUTPUT: /tmp/processing_KKFLJo/51b2f30de34349a69f678d941097ca9a/OUTPUT.tif	
Loading resulting layers The following layers were not correctly generated. • /tmp/processing_KKFLJ0/51b2f30de34349a69f678d941097ca9a/OUTPUT.tif You can check the 'Log Messages Panel' in QGIS main window to find more information about the execution of the algorithm.	•
Complete Cancel	
Advanced Run as Batch Process	s

- And this is the result for all the raster tools
- ► This is **unexpected** to (new) users

Other Standards

- If WMS is a picture of the data, what should we use?
- Vector Data
 - Web Feature Standard (WFS)
 - OGC API Features
- Raster Data
 - Web Coverage Server (version 2.0)

Web Feature Server





Web Feature Server, part 2



• After I told QGis to ignore the axis order.

Now I have the data!



So I can style and select as I want

Or can I?

```
to make the selection I needed the following:
intersects(centroid($geometry),
  geometry(
             get_feature(
                  'scotland_and_wales_const',
                  'Name',
                  'East Kilbride P Const'
             )
         )
)
 Hardly, intuitive to a first time user!
```

Web Coverage Server



- This is a raster
 I can style it
- Can I clip it?

Clipping a WCS in QGIS

Raster Extraction - Clip Raster by Extent	×
Parameters Log	
<pre>>.852489808,15.82285930/,4/.2/1128911,55.8053343// [EP56:4320] }</pre>	-
GDAL command: gdal translate -projwin 4007104.7803121833 3562279.6539294817 4700977.555114074 2684175.8882311624 -of GTiff "dpiMode=7&identifier=K08_Weizenanteil 2020&tilePixelRatio=0&url=https:// www.wcs.nrw.de/stba/agraratlas?VERSION%3D1.0.0" /tmp/processing_uZVMnr/ 3217f8fa&e334a0a96f09ab97de5ffa8/OUTPUT.tif GDAL command output: ERROR 4: dpiMode=7&identifier=K08_Weizenanteil_2020&tilePixelRatio=0&url=https:// www.wcs.nrw.de/stba/agraratlas?VERSION%3D1.0.0: No such file or directory Process returned error code 1 Execution completed in 0.08 seconds Desulte:	
OUTPUT: /tmp/processing_uZVMnr/3217f8fa8e334a0a96f09ab97de5ffa8/OUTPUT.tif	
Loading resulting layers The following layers were not correctly generated. •/tmp/processing_uzVMn/3217f8fa8e334a0a96f09ab97de5ffa8/OUTPUT.tif You can check the 'Log Messages Panel' in QGIS main window to find more information about the	
execution of the algorithm.	-
	1
Complete	
Help Advanced Run as Batch Process	ers

- ► Well, no!
- This one is on QGIS, since if I save the WCS as a GeoTiff it works!

Conclusions

Things to avoid

- Restricting output format to whatever was uploaded
- Non-standard formats that
 - restrict the attribute names
 - restrict the projection (CRS)
- Forcing users to choose by hand what they want
- Restricting output to a small subset of the data
- Requiring users to download more than they want

Things to consider

- Providing access through OGC Standard Data endpoints
 - WFS
 - WCS
 - WMS
- Providing related data sets if appropriate
- Providing a way to filter by appropriate areas
- Allowing machines to access your data
- Static URLs so people can cite the data source

Questions

Download the slides

https://www.ianturton.com/talks/portals/turton.pdf

