

Mapping with for Humanities

Intro to Mapping

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WHAT CAN YOU DO WITH A DIGITAL MAP?



Representing
geographical
information



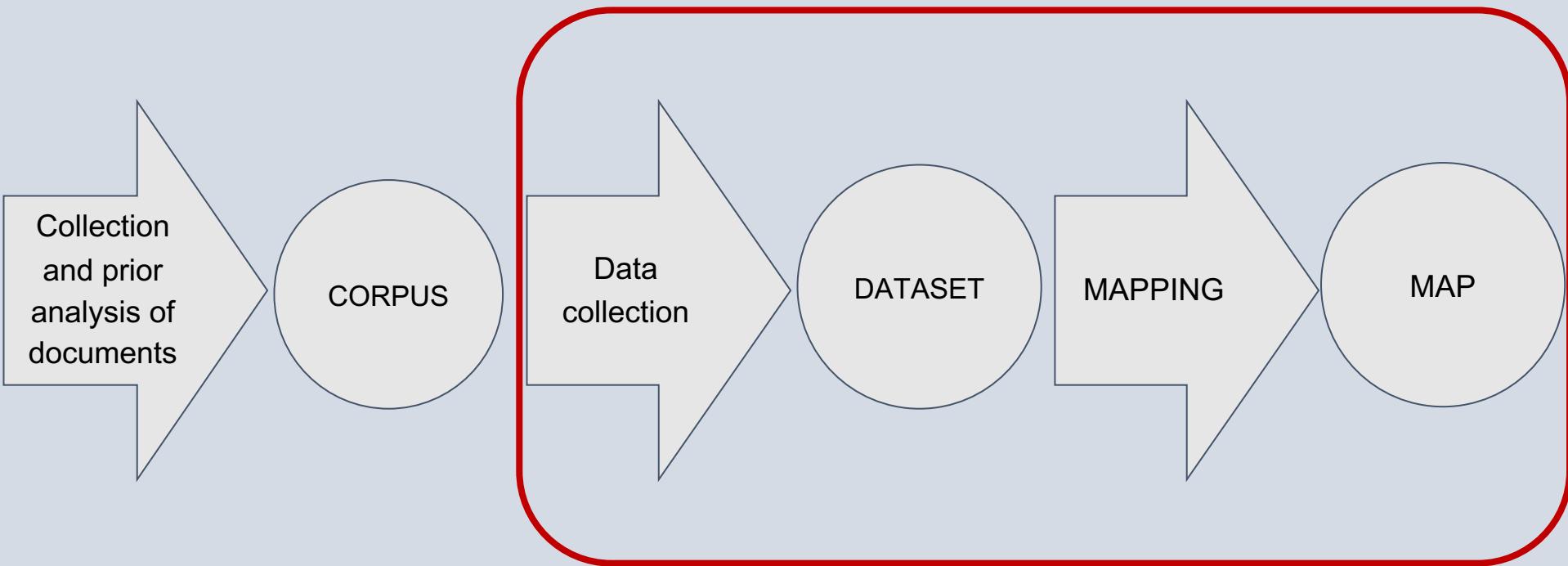
Through
coordinates



For managing
complex
contents.



What should a digital cartographer do?



Softwares

-  QGIS
-  Google Earth
-  Excel / OpenOffice
-  ArcGIS

Applications

-  Openrefine
-  GeoNames
-  Leaflet maps
-  Mapbox
-  Google Drive

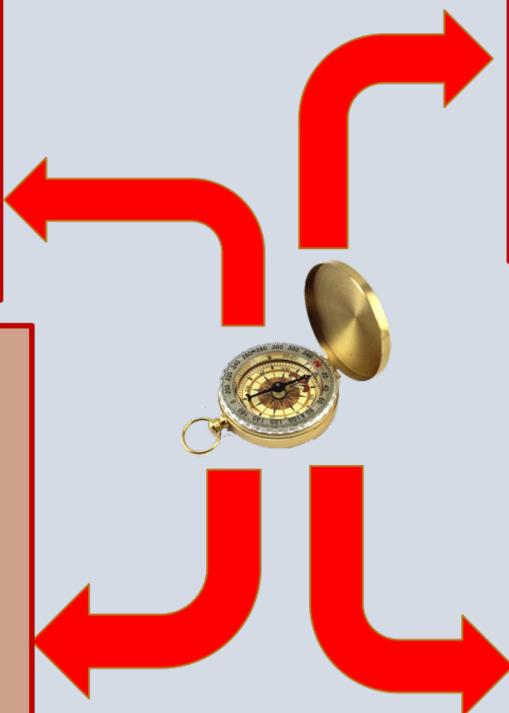
Khartis Khartis

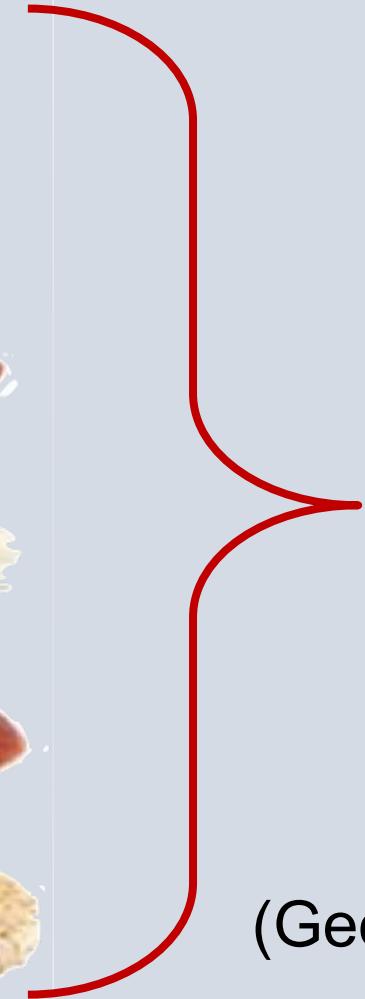
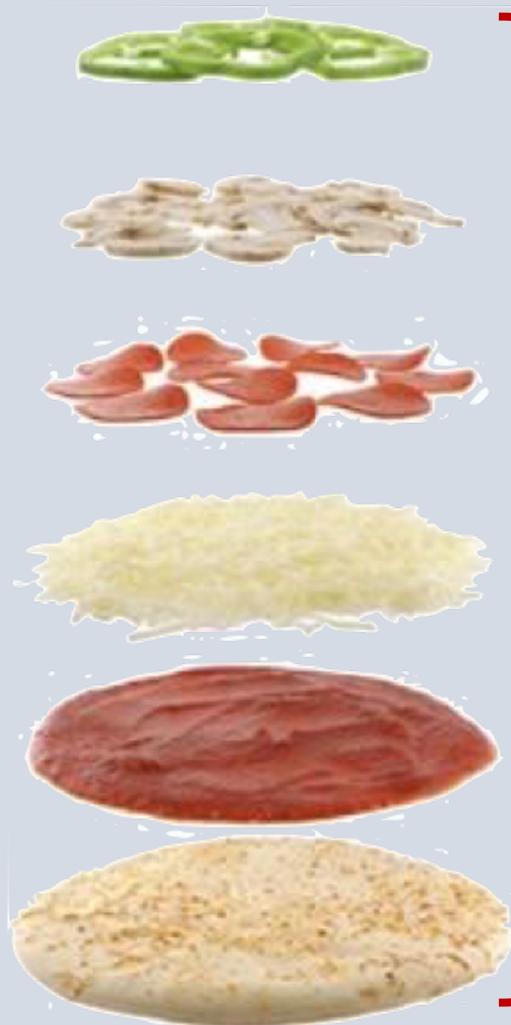
Programming languages

-  Java Script
JavaScript
-  JSON JavaScript Object Notation
-  GEOJSON
-  R R
-  SQL

Online Applications

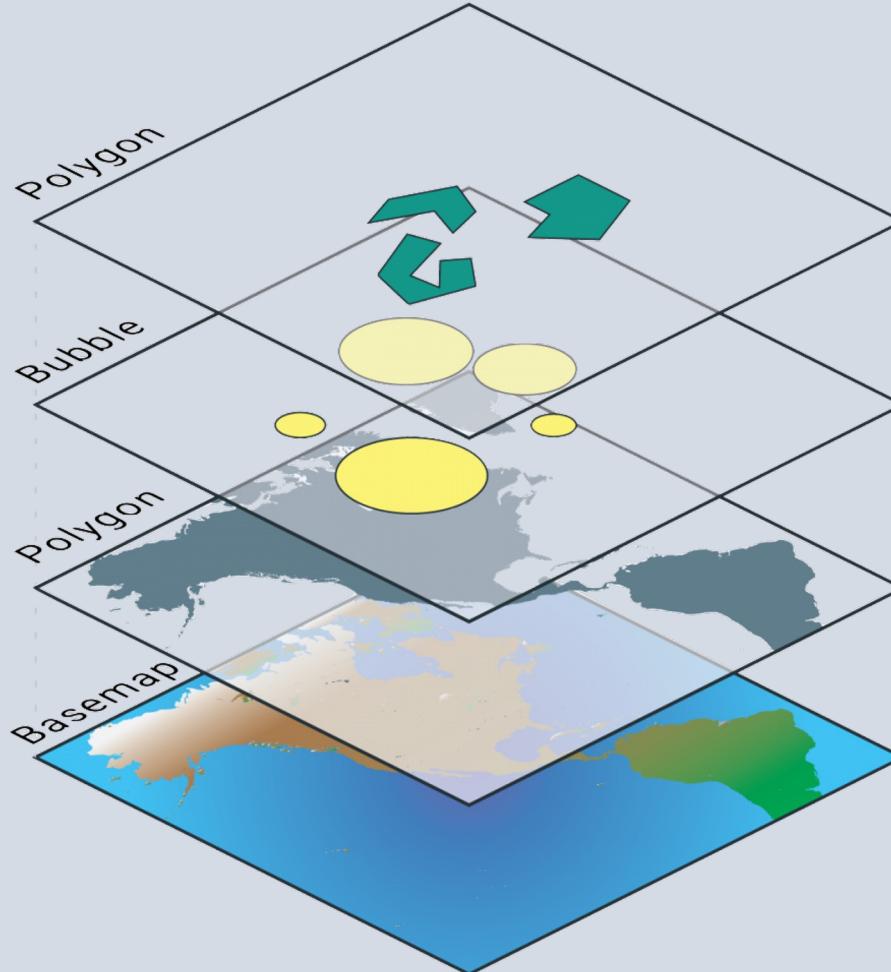
-  StoryMapJS StoryMapJs
-  Map Warper
-  Palladio (Standford)
-  Recogito
-  CartoDB
-  ArcGis
-  Umap
-  GeoJson





THE LAYER

A key concept in GIS
(Geographic Information System)



Layers



BASEMAP

<http://leaflet-extras.github.io/leaflet-providers/preview/index.html>

- Points

Zero-dimensional points are used for geographical features that can best be expressed by a single point reference.

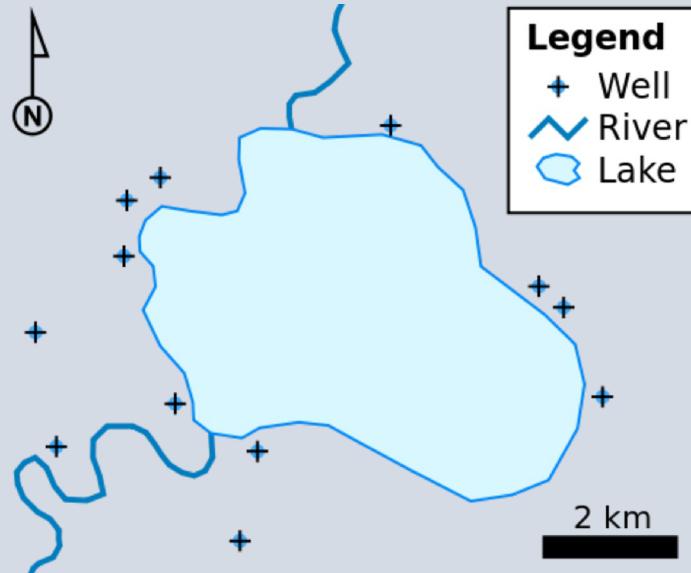
- Lines or polylines

One-dimensional lines or polylines are used for linear features such as rivers, roads, railroads, trails, and topographic lines.

- Polygons

Two-dimensional polygons are used for geographical features that cover a particular area of the earth's surface.

GEOMETRY



- [AutoCAD DXF](#) – contour elevation plots in [AutoCAD](#) DXF format (by [Autodesk](#))
- [Cartesian coordinate system](#) (XYZ) – simple point cloud
- [Digital line graph](#) (DLG) – a USGS format for vector data
- [Esri TIN](#) - proprietary [binary](#) format for [triangulated irregular network](#) data used by [Esri](#)
- [Geography Markup Language](#) (GML) – XML based open standard (by [OpenGIS](#)) for GIS data exchange
- [GeoJSON](#) – a lightweight format based on [JSON](#), used by many open source GIS packages
- [GeoMedia](#) – [Intergraph](#)'s [Microsoft Access](#) based format for spatial vector storage
- [ISFC](#) – [Intergraph](#)'s [MicroStation](#) based CAD solution attaching vector elements to a relational [Microsoft Access](#) database
- [Keyhole Markup Language](#) (KML) – XML based open standard (by [OpenGIS](#)) for GIS data exchange
- [MapInfo TAB format](#) – [MapInfo](#)'s vector data format using TAB, DAT, ID and MAP files
- [Measure Map Pro format](#) – [XML](#) data format to store GIS data
- [National Transfer Format](#) (NTF) – National Transfer Format (mostly used by the UK Ordnance Survey)
- [Spatialite](#) – is a spatial extension to SQLite, providing vector geodatabase functionality. It is similar to PostGIS, Oracle Spatial, and SQL Server with spatial extensions
- [Shapefile](#) – a popular vector data GIS format, developed by [Esri](#)
- [Simple Features](#) – [Open Geospatial Consortium](#) specification for vector data
- [SOSI](#) – a spatial data format used for all public exchange of spatial data in Norway
- [Spatial Data File](#) – [Autodesk](#)'s high-performance geodatabase format, native to [MapGuide](#)
- [TIGER](#) – Topologically Integrated Geographic Encoding and Referencing
- [Vector Product Format](#) (VPF) – [National Geospatial-Intelligence Agency](#) (NGA)'s format of vectored data for large geographic databases



GeoJSON – a lightweight format based on [JSON](#), used by many open source GIS packages



Keyhole Markup Language (KML) – XML based open standard (by [OpenGIS](#)) for GIS data exchange

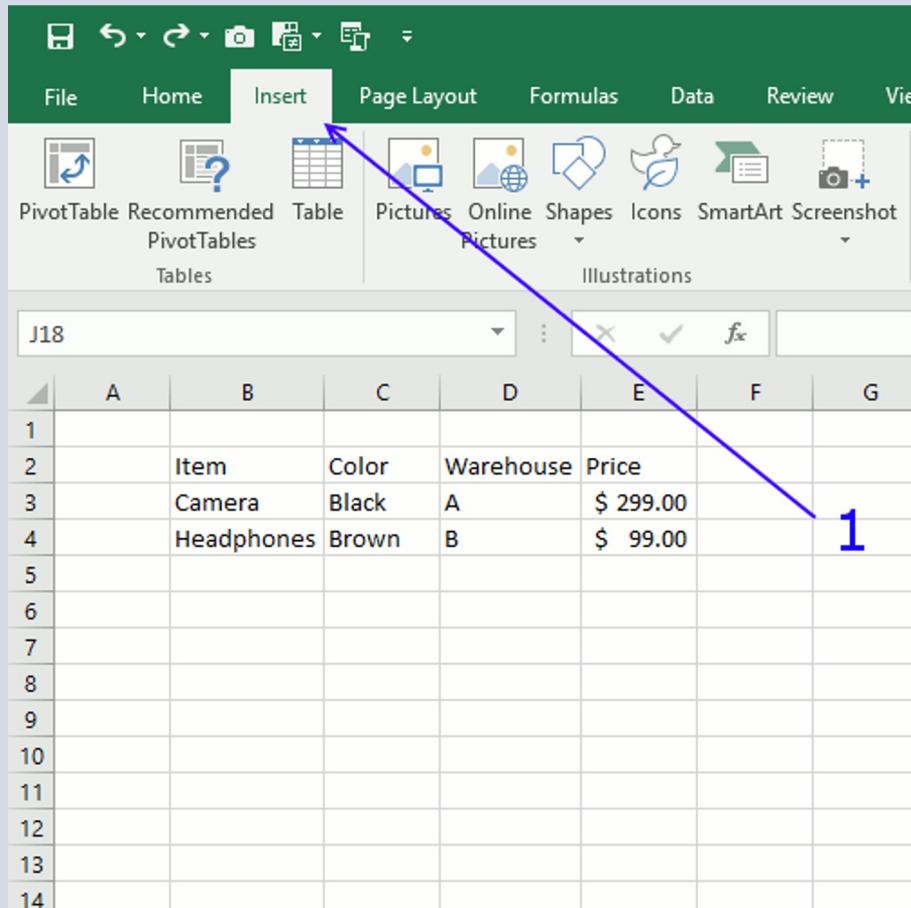


Shapefile – a popular vector data GIS format, developed by [Esri](#)

- **Esri grid** – proprietary [binary](#) and metadataless [ASCII](#) raster formats used by [Esri](#)
- **GeoTIFF** – [TIFF](#) variant enriched with GIS relevant metadata
- **IMG** – [ERDAS IMAGINE](#) image file format
- **JPEG2000** – Open-source raster format. A compressed format, allows both lossy and lossless compression.
- **MrSID** – Multi-Resolution Seamless Image Database (by Lizardtech). A compressed wavelet format, allows both lossy and lossless compression.
- **GeoTIFF** – [TIFF](#) variant enriched with GIS relevant metadata

RASTER





A screenshot of Microsoft Excel showing a table being inserted. The ribbon menu is open, and the 'Insert' tab is selected. A blue arrow points from the 'Tables' icon in the 'Tables' section of the ribbon down towards the table in the worksheet area. The table has columns labeled 'Item', 'Color', 'Warehouse', and 'Price'. The first row contains 'Camera' and 'Black' under 'Item' and 'Color' respectively, with 'A' under 'Warehouse' and '\$ 299.00' under 'Price'. The second row contains 'Headphones' and 'Brown' under 'Item' and 'Color' respectively, with 'B' under 'Warehouse' and '\$ 99.00' under 'Price'. The table is located in cells A2 to F4.

	A	B	C	D	E	F	G
1	Item	Color	Warehouse	Price			
2	Camera	Black	A	\$ 299.00			
3	Headphones	Brown	B	\$ 99.00			
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							

TABLES



Microsoft Excel



OpenOffice spreadsheet



OpenRefine



Plan texts softwares

DATASET EXAMPLES

	A	B	C	D	E	F	G	H
1	Toponimo	geonames	AdminName	Population	Lat	Long	Il partigiano	Column 13
2	Alba	{"totalResul	Piedmont	24923	44.6999	8.0347	54	405
3	Alessandria	{"totalResul	Piedmont	64178	44.90924	8.61007	2	2
4	Asti	{"totalResul	Piedmont	61254	44.90162	8.20751	15	101
5	Avene	{"totalResultsCount":0,"geonames":[]}]					4	6
6	Barbaresco	{"totalResul	Piedmont	677	44.72324	8.08194	2	6
1	Musique	Paroles	Chansonnier	Chason	Lieu	Recourrenc	Extract	Album
2	Georges Clé	Georges Clé	Georges Charle	Corne d'Au	Allemagne		2	Parce que La Mauvais
3	Georges Clé	Georges Clé	Georges Charle	L'Ancêtre	Beaujolais		1	Saumur, Er Misogynie à
4	Georges Clé	Georges Clé	Georges Charle	L'Ancêtre	Bercy		1	On avait ap Misogynie à
5	Georges Clé	Georges Clé	Georges Charle	L'Ancêtre	Bicêtre		1	Quand nou Misogynie à
6	Georges Clé	Georges Clé	Georges Charle	De place en	Brantôme		1	On s'appell Le Pornogr
7	Georges Clé	Georges Clé	Georges Charle	Corne d'Au	Corne d'Au		10	Il avait nom La Mauvais
8	Georges Clé	Georges Clé	Georges Charle	Supplique à	Espagne		1	Tantôt ven Supplique à
1	Name Place	lat.lng	Lat	Long	270bis	ADL_122	Alessandro	Amici del V
2	Adda	"totalResul	-12,2925	44,49722				
3	Adige	"totalResul	46,51	11,33333				
4	Adriatico	"totalResul	43	16				
5	Abruzzo	"totalResul	7,1881	21,09375	1			
6	Abrignano	"totalResul	37,31065	13,57661				
7	Alaska	"totalResul	64,00028	-150,0003				
8	Albania	"totalResul	41	20				
9	Alessandria	"totalResul	31,20176	29,91582				
10	Algeria	"totalResul	28	3				
11	Alpi	"totalResul	43,70313	7,26608	1			

CSV FORMAT

GOLDEN LISTS

File Edit View Insert Format Data Tools Help Last edit was made 2 hours ago by Zach Napolitano

First Name

	A	B	C	D	E	F	G
1	First Name	Last Name	Email	Company	Job Title	Lists	Tags
2	Buckaroo	Banzai	buckaroo@oneclipboard.com	Wonka Industries	VP of Misc. Stuff	Table 1, VIP	Tech
3	Snake	Plissken	snake@oneclipboard.com	Wonka Industries	Director of First Impressions	Table 2	Sports
4	Eve	Harrington	eve.harrington@oneclipboard.com	Wonka Industries	Arts and Crafts Designer	Table 3	Finance
5	Sidney	Mussburger	sidney@oneclipboard.com	Stark Industries	Director, Ethical Hacking	table 1	Government, Nuclear
6	Charles	Kane	charles.kane@oneclipboard.com	Stark Industries	Master of Disaster	table 2	Education
7	Donnie	Darko	donnie.darko@oneclipboard.com	Stark Industries	Crayon Evangelist	Table 1	Engineering
8	Santanico	Pandemonium	santanico@oneclipboard.com	Stark Industries	Creator of opportunities	Table 2	Automotive
9	Broomhilda	von Shaft	broomhilda@oneclipboard.com	Stark Industries	Ambassador of buzz	Table 3	AI
10	Barton	Fink	barton.fink@oneclipboard.com	Gekko & Co	Chief Cheerleader	table 1, VIP	Legal
11	CC	Baxter	cc.baxter@oneclipboard.com	Gekko & Co	Chief Amazement Officer	table 2	Healthcare
12	Cosmo	Brown	cosmo.brown@oneclipboard.com	Gekko & Co	Chief robot whisperer	Table 1	Tech
13	Lili	Von Shtrupp	vonshtrupp@oneclipboard.com	Gekko & Co	Director of bean-counting	Table 2	Sports
14	Vincent	Vega	vince.vega@oneclipboard.com	Gekko & Co	Software ninjaneer	Table 3	Finance
15	Sy	Snootles	sy@oneclipboard.com	Wayne Enterprises	Digital overlord	table 1, VIP	Government
16	Lancaster	Dodd	lancaster@oneclipboard.com	Wayne Enterprises	Wizard of light bulb moments	table 2	Education
17	Verbal	Kint	verbal@oneclipboard.com	Wayne Enterprises	Social Media Trailblazer	Table 1	Engineering
18	Vincent	Majestyk	vince.majestyk@oneclipboard.com	Wayne Enterprises	World Changer	Table 2	Automotive
19	Max	Dembo	max.dembo@oneclipboard.com	Cyberdyne Systems	VP of Misc. Stuff	Table 3	AI
20	Archer	Maggot	archer@oneclipboard.com	Cyberdyne Systems	Director of First Impressions	table 1	Legal
21	Lee	Christmas	lee.xmas@oneclipboard.com	Cyberdyne Systems	Arts and Crafts Designer	table 2	Healthcare
22	Elle	Driver	elle.driver@oneclipboard.com	Cyberdyne Systems	Director, Ethical Hacking	Table 1, VIP	Tech
23	Phillip	Vandamm	phil.vandamm@oneclipboard.com	Duff Beer	Master of Disaster	Table 2	Sports
24	Cole	Trickle	cole.trickle@oneclipboard.com	Sterling Cooper	Crayon Evangelist	Table 3	Finance

adjusters.csv

1	ID	Firstname	pyLabel	HourlyRate	PhoneNumber
2	1	John	Smith	25.00	678-999-0001
3	2	Ted	Turner	175.25	+1-676-676-6666
4	3	Frederick	Jones	50.00	111 222 3333
5	4	Alice	Miller	75	561-999-8888



CSV – A comma-separated values (CSV) file is a delimited text file that uses a comma to separate values. Each line of the file is a data record. Each record consists of one or more fields, separated by

The screenshot shows a Sublime Text window with the title bar "Sublime Text" and menu items "File", "Edit", "Selection", "Find", "View", "Goto", "Tools", "Project", "Window", "Help". The window title is "places_qgis.csv". The content of the file is a CSV list of cities:

```
1 id,label,country,role,lat,lng
2 001c,Rome,Italy,city,41.89414308,12.49307223
3 002c,Florence,Italy,city,43.77621845,11.25504161
4 003c,Paris,France,city,48.86358095 ,2.338131193
5 004c,Edinburgh,Scotland,city,55.95060885,55.95060885
6 005c,London,England,city,51.51378154,-0.124979086
7 006c,Prague,Czech Republic,city,50.0935165,14.40107022
8 007c,Venice,Italy,city,45.44179165,12.33922884
9 008c,Brisbane,Australia,city,-27.43466517,153.0259711
10 009c,Kyoto,Japan,city,35.04954543,135.7188243
11 010c,Rio de Janeiro,Brazil,city,-22.921474274989013,-43.20845057
12 011c,San Sebastián,Spain,city,43.35648637,-1.982197354
13 012c,Seville,Spain,city,37.38762646,-5.991109883
14 013c,Sydney,Australia,city,-33.84108339,151.2175773
15 014c,Vancouver,Canada,city,49.27765269,-123.1033069
```

GeoJSON



GeoJSON – a lightweight format based on [JSON](#), used by many open source GIS packages

Sublime Text File Edit Selection Find Goto Tools Project Window Help places_qgis.geojson.txt

places_qgis.geojson.txt

```
1 [{"type": "FeatureCollection", "features": [{"type": "Feature", "properties": {"id": "001c", "label": "Rome", "country": "Italy", "role": "city"}, "geometry": {"type": "Point", "coordinates": [12.49307223, 41.89414308]}, {"type": "Feature", "properties": {"id": "002c", "label": "Florence", "country": "Italy", "role": "city"}, "geometry": {"type": "Point", "coordinates": [11.25504161, 43.77621845]}, {"type": "Feature", "properties": {"id": "003c", "label": "Paris", "country": "France", "role": "city"}, "geometry": {"type": "Point", "coordinates": [2.338131193, 48.86358095]}, {"type": "Feature", "properties": {"id": "004c", "label": "Edinburgh", "country": "Scotland", "role": "city"}, "geometry": {"type": "Point", "coordinates": [55.95060885, 55.95060885]}, {"type": "Feature", "properties": {"id": "005c", "label": "London", "country": "England", "role": "city"}, "geometry": {"type": "Point", "coordinates": [-0.124979086, 51.51378154]}, {"type": "Feature", "properties": {"id": "006c", "label": "Prague", "country": "Czech Republic", "role": "city"}, "geometry": {"type": "Point", "coordinates": [14.40107022, 50.0935165]}, {"type": "Feature", "properties": {"id": "007c", "label": "Venice", "country": "Italy", "role": "city"}, "geometry": {"type": "Point", "coordinates": [12.33922884, 45.44179165]}, {"type": "Feature", "properties": {"id": "008c", "label": "Brisbane", "country": "Australia", "role": "city"}, "geometry": {"type": "Point", "coordinates": [153.0259711, -27.43466517]}, {"type": "Feature", "properties": {"id": "009c", "label": "Kyoto", "country": "Japan", "role": "city"}, "geometry": {"type": "Point", "coordinates": [135.7188243, 35.04954543]}, {"type": "Feature", "properties": {"id": "010c", "label": "Rio de Janeiro", "country": "Brazil", "role": "city"}, "geometry": {"type": "Point", "coordinates": [-43.20845057, -22.921474274989013]}, {"type": "Feature", "properties": {"id": "011c", "label": "San Sebasti\u00e3n", "country": "Spain", "role": "city"}, "geometry": {"type": "Point", "coordinates": [-1.982197354, 43.35648637]}, {"type": "Feature", "properties": {"id": "012c", "label": "Seville", "country": "Spain", "role": "city"}, "geometry": {"type": "Point", "coordinates": [-5.991109883, 37.38762646]}, {"type": "Feature", "properties": {"id": "013c", "label": "Sydney", "country": "Australia", "role": "city"}, "geometry": {"type": "Point", "coordinates": [151.2175773, -33.84108339]}, {"type": "Feature", "properties": {"id": "014c", "label": "Vancouver", "country": "Canada", "role": "city"}, "geometry": {"type": "Point", "coordinates": [-123.1033069, 49.27765269]}}]}]
```



Keyhole Markup Language (KML) – XML based open standard (by [OpenGIS](#)) for GIS data exchange

Sublime Text File Edit Selection Find View Goto Tools Project Window Help

places_qgis.kml

```
<?xml version="1.0" encoding="UTF-8"?><kml xmlns="http://www.opengis.net/kml/2.2"><Document><Placemark><ExtendedData><Data name="id"><value>001c</value></Data><Data name="label"><value>Rome</value></Data><Data name="country"><value>Italy</value></Data><Data name="role"><value>city</value></Data></ExtendedData><Point><coordinates>12.49307223,41.89414308</coordinates></Point></Placemark><Placemark><ExtendedData><Data name="id"><value>002c</value></Data><Data name="label"><value>Florence</value></Data><Data name="country"><value>Italy</value></Data><Data name="role"><value>city</value></Data></ExtendedData><Point><coordinates>11.25504161,43.77621845</coordinates></Point></Placemark><Placemark><ExtendedData><Data name="id"><value>003c</value></Data><Data name="label"><value>Paris</value></Data><Data name="country"><value>France</value></Data><Data name="role"><value>city</value></Data></ExtendedData><Point><coordinates>2.338131193,48.86358095</coordinates></Point></Placemark><Placemark><ExtendedData><Data name="id"><value>004c</value></Data><Data name="label"><value>Edinburgh</value></Data><Data name="country"><value>Scotland</value></Data><Data name="role"><value>city</value></Data></ExtendedData><Point><coordinates>55.95060885,55.95060885</coordinates></Point></Placemark><Placemark><ExtendedData><Data name="id"><value>005c</value></Data><Data name="label"><value>London</value></Data><Data name="country"><value>England</value></Data><Data name="role"><value>city</value></Data></ExtendedData><Point><coordinates>-0.124979086,51.51378154</coordinates></Point></Placemark><Placemark><ExtendedData><Data name="id"><value>006c</value></Data><Data name="label"><value>Prague</value></Data><Data name="country"><value>Czech Republic</value></Data><Data name="role"><value>city</value></Data></ExtendedData><Point><coordinates>14.40107022,50.0935165</coordinates></Point></Placemark><Placemark><ExtendedData><Data name="id"><value>007c</value></Data><Data name="label"><value>Venice</value></Data><Data name="country"><value>Italy</value></Data><Data name="role"><value>city</value></Data></ExtendedData><Point><coordinates>12.33922884,45.44179165</coordinates></Point></Placemark><Placemark><ExtendedData><Data name="id"><value>008c</value></Data><Data name="label"><value>Brisbane</value></Data><Data name="country"><value>Australia</value></Data><Data name="role"><value>city</value></Data></ExtendedData><Point><coordinates>153.0259711,-27.43466517</coordinates></Point></Placemark><Placemark><ExtendedData><Data name="id"><value>009c</value></Data><Data name="label"><value>Kyoto</value></Data><Data name="country"><value>Japan</value></Data><Data name="role"><value>city</value></Data></ExtendedData><Point><coordinates>135.7188243,35.04954543</coordinates></Point></Placemark><Placemark><ExtendedData><Data name="id"><value>010c</value></Data><Data name="label"><value>Rio de Janeiro</value></Data><Data name="country"><value>Brazil</value></Data><Data name="role"><value>city</value></Data></ExtendedData><Point><coordinates>-43.20845057,-22.921474274989013</coordinates></Point></Placemark><Placemark><ExtendedData><Data name="id"><value>011c</value></Data><Data name="label"><value>San Sebastián</value></Data><Data name="country"><value>Spain</value></Data><Data name="role"><value>city</value></Data></ExtendedData><Point><coordinates>-1.982197354,43.35648637</coordinates></Point></Placemark><Placemark><ExtendedData><Data name="id"><value>012c</value></Data><Data name="label"><value>Seville</value></Data><Data name="country"><value>Spain</value></Data><Data name="role"><value>city</value></Data></ExtendedData><Point><coordinates>-5.991109883,37.38762646</coordinates></Point></Placemark><Placemark><ExtendedData><Data name="id"><value>013c</value></Data><Data name="label"><value>Sydney</value></Data><Data name="country"><value>Australia</value></Data><Data name="role"><value>city</value></Data></ExtendedData><Point><coordinates>151.2175773,-33.84108339</coordinates></Point></Placemark><Placemark><ExtendedData><Data name="id"><value>014c</value></Data><Data name="label"><value>Vancouver</value></Data><Data name="country"><value>Canada</value></Data><Data name="role"><value>city</value></Data></ExtendedData><Point><coordinates>-123.1033069,49.27765269</coordinates></Point></Placemark></Document></kml>
```



Shapefile – a popular vector data GIS format,
developed by [Esri](#)

Name	^	Date Modified	Size	Kind
places_qgis.cpg		Today at 14:36	5 bytes	Document
places_qgis.csv		Today at 14:29	765 bytes	Comma-separated (.csv)
places_qgis.dbf		Today at 14:36	15 KB	OpenOffice Document
places_qgis.prj		Today at 14:36	145 bytes	Document
places_qgis.shp		Today at 14:36	492 bytes	ESRI Shapefile
places_qgis.shx		Today at 14:36	212 bytes	Document

Examples:

- Atlas Nazi-Fascist Repression
 - Github: https://bit.ly/atlas_repression_github
 - Article: https://bit.ly/atlas_article
 - Map: https://bit.ly/atlas_repression
- French Theatre 17th century
 - Github: https://bit.ly/french_theatre_17_github
 - Article: https://bit.ly/theatre_of_places
 - Map: https://bit.ly/french_theatre_17

Data:

- Pizza Map: https://bit.ly/pizzamap_url
- GADM: <https://gadm.org>
- GeoFile Data Converter: <https://mygeodata.cloud>

Mapping with for Humanities



Intro to Mapping

Giovanni Pietro Vitali
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