

GDAL, OGR - VECTOR DATA

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OGR

- part of GDAL
- OpenGIS simple feature Reference
- Manipulation of vector data
- [List of supported vector formats](#)
- e.g. Shapefile, PostGIS, KML, CartoDB, ...

COMMAND LINE PROGRAMS

ogrinfo

List information about dataset

ogr2ogr

Converter for vector data

orgtindex

Creates a tileindex

GEOMETRIES WELL KNOWN TEXT (WKT)

WKT can represent 18 distinct geometric objects:

- Geometry
- Point, MultiPoint
- LineString, MultiLineString
- Polygon, MultiPolygon, Triangle
- CircularString
- Curve, MultiCurve, CompoundCurve
- CurvePolygon
- Surface, MultiSurface, PolyhedralSurface
- TIN
- GeometryCollection

EXAMPLES

Point

```
POINT(30 10)
```

LineString

```
LINESTRING(30 10, 10 30, 29 34)
```

Polygon

```
POLYGON ((30 10, 40 40, 20 40, 10 20, 30  
10))
```

FIONA



Figure 1: an ogr's dream girl

LIBRARY FOR USING OGR BINDINGS IN A NICE BUT SIMPLE WAY

- Fiona trades memory and speed for simplicity and readability.
- For special cases or optimized applications - user ogr
- use `ogr2ogr` if you can.
- [Manual](#)

SHAPELY

- Computational geometry in the Cartesian plane.
- Projection handled elsewhere
- Data I/O handled elsewhere(OGR, Fiona, DB interface)
- [Manual](#)

PYPROJ

- python bindings to the proj.4 C library
- handles map projections
- [Project Site](#)

DESCARTES

- Allows you to use Shapely Polygons as Matplotlib patches.
- Means that you can plot filled polygons instead of just lines.
- Not really necessary but nice for plotting.
- [PyPi Site](#)

INSTALLATION WITH CONDA

```
conda install -c https://conda.anaconda.org/scitools shapely pyproj  
fiona  
pip install descartes
```

EXAMPLE

- We will work with some open data from the city of Vienna.
- Ipython notebook `Wien-Ubahn.ipynb` contains the code

USED DATA

METRO NETWORK OF VIENNA

<https://open.wien.gv.at/site/datensatz/?id=2d0e9a21-fa5f-441d-948a-fe97a453a827>

DISTRICTS OF VIENNA

<https://open.wien.at/site/datensatz/?id=2ee6b8bf-6292-413c-bb8b-bd22dbb2ad4b>