



THE UNIVERSITY OF TEXAS AT EL PASO

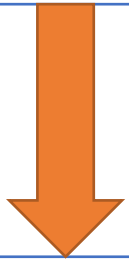
F.A.I.R. PRINCIPLES OF DATA SCIENCE
Creating Open-Source Research for
Collaboration and Publication

What is Open Science?

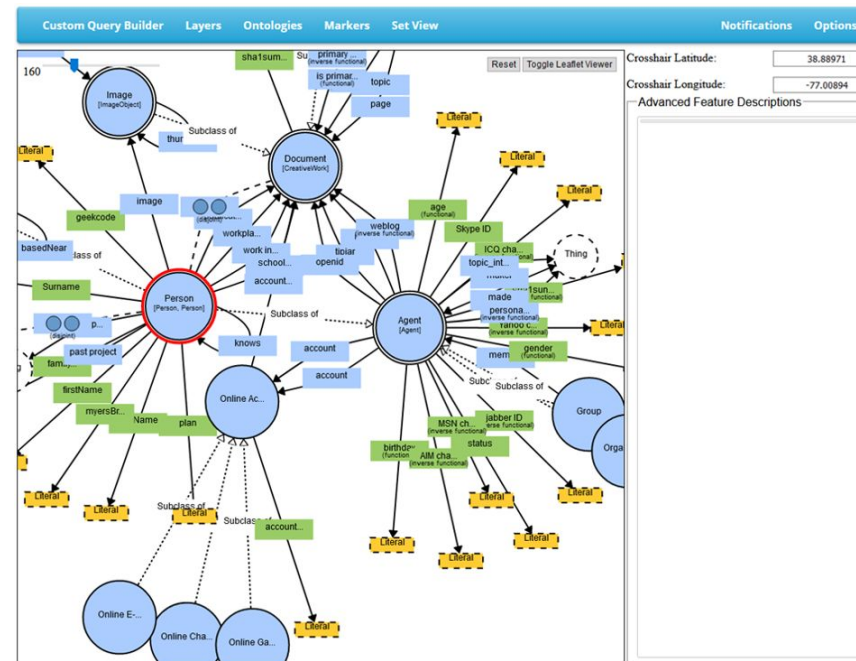
Open Science is the practice of science in such a way that others can collaborate and contribute, where research data, lab notes and other research processes are freely available, under terms that enable reuse, redistribution and reproduction of the research and its underlying data and methods.

<https://www.fosteropenscience.eu/foster-taxonomy/open-science-definition>

DATA.XLSX



JOURNAL
ARTICLE



(Credit: Tanner Fry. Public domain.)

<https://www.usgs.gov/media/images/varankaontologyviewsmall>

F.A.I.R. PRINCIPLES

Findable

Accessible

Interoperable

Reuseable

<https://www.go-fair.org/fair-principles/>

METADATA

The screenshot shows the AGU online library website. The article title is "Intensified dust storm activity and Valley fever infection in the southwestern United States" by Daniel Q. Tong, Julian X. L. Wang, Thomas E. Gill, Hang Lei, and Binyu Wang. The article is published in Geophysical Research Letters, Volume 44, Issue 9, on May 16, 2017. The abstract discusses climate models projecting a drying trend in the southwestern United States, leading to increased dust storms and Valley fever infections. The page also includes a plain language summary and a citation statements section.

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<title>Intensified dust storm activity and Valley fever infection in the southwestern United States - Tong - 2017 - Geophysical Research Letters - Wiley Online Library</title>



PROJECT WORKFLOW

1. OBTAIN ORCID iD
 - <https://orcid.org/>
2. OBTAIN A DATA MANAGEMENT CHECKLIST
 - <https://www.usgs.gov/products/data-and-tools/data-management/data-management-plans>
3. HAVE A MEETING
4. DISCUSS LICENCE ISSUES
5. EXECUTE

F.A.I.R. DATA MANAGEMENT FOR OPEN SOURCE

What, where, and how are you going to put stuff?

DATA FORMAT

Geospacial

GML, GeoTIFF, DBF

Text

geojson, csv

Sustainable Digital File Formats from
the Library of Congress

<https://www.loc.gov/preservation/digital/formats/fdd/descriptions.shtml>

USGS

Data dictionary

<https://pubs.usgs.gov/of/2003/of03-001/html/docs/datadict.htm>

Metadata Wizard

<https://www.usgs.gov/software/metadata-wizard-20>

DATA REPOSITORIES

Zenodo

Figshare

Mendelay

OSF

<https://zenodo.org/record/3946720#.YFsu-q9KhjV>

<https://fairsharing.org/collection/GeneralRepositoryComparison>

F.A.I.R. DATA MANAGEMENT FOR OPEN SOURCE

What, where, and how are you going to put stuff?

AVAILABLE METADATA

USGS

Data dictionary

<https://pubs.usgs.gov/of/2003/of03-001/htmldocs/datadict.htm>

Metadata Wizard

<https://www.usgs.gov/software/metadata-wizard-20>

GeoJSON vs CSV

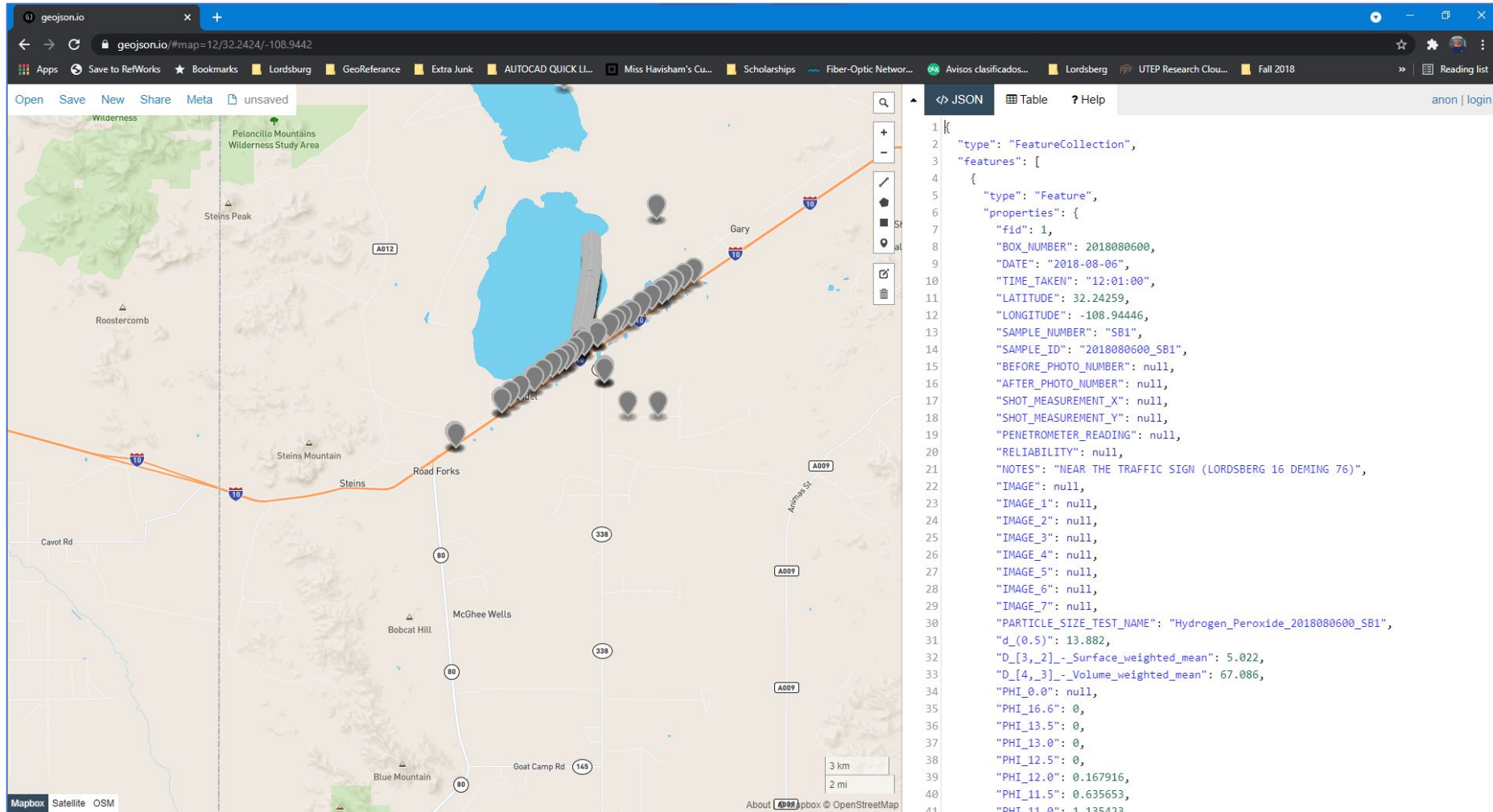
Dataset

386 lines of sample data containing: Locations (Longitude, Latitude in WGS84 datum), Images, Penetrometer readings, Shot measurements, Notes, and Particle size measurements (Weighted averages)

	GeoJSON	CSV
Form	Java Script Object Notation	Comma Separated Values
Data Size	525KB	114 KB
Hierarchical	Data has a hierarchy that can use dictionaries and lists while using python or QGIS	Not able to show Hierarchy
Extensions	.geojson or .geojson-ld	.csv or .geocsv
Scalability	Very Scalable	No support for Scalability

Other formats can be found from the Open Geospatial Consortium (OGC)
<https://www.ogc.org/docs/is>

GeoJSON vs CSV



The screenshot displays the geojson.io web application. On the left, a map shows a road with a series of grey markers. The map includes labels for various locations such as Steins Peak, Steins Mountain, Road Forks, McGhee Wells, and Blue Mountain. On the right, a JSON data panel shows the following structure:

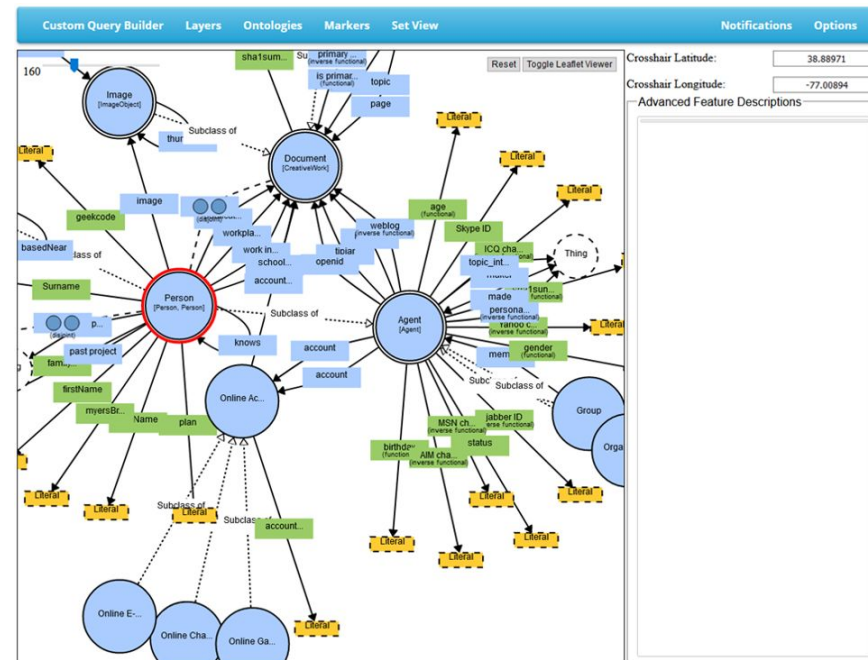
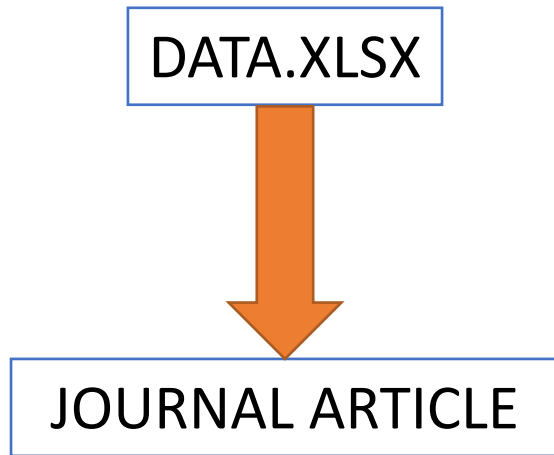
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<https://geojson.io>

LINKED DATA

The term “Linked Data” refers to a set of best practices for publishing and connecting structured data on the Web. These best practices have been adopted by an increasing number of data providers over the last three years, leading to the creation of a global data space containing billions of assertions— the Web of Data.

Bizer, C., Heath, T., & Berners-Lee, T. (2009). Linked Data - The Story So Far. *Int. J. Semantic Web Inf. Syst.*, 5, 1-22.

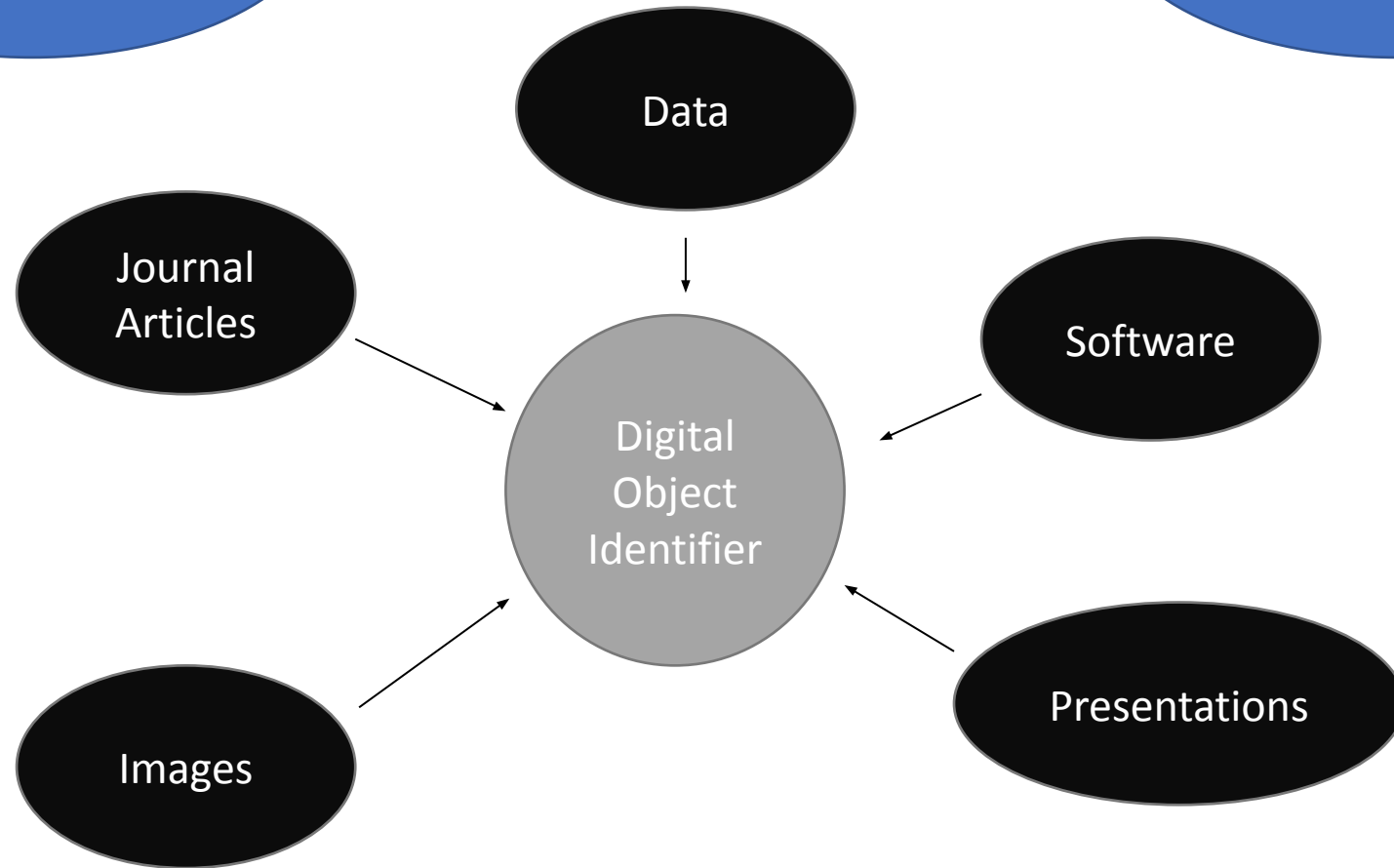
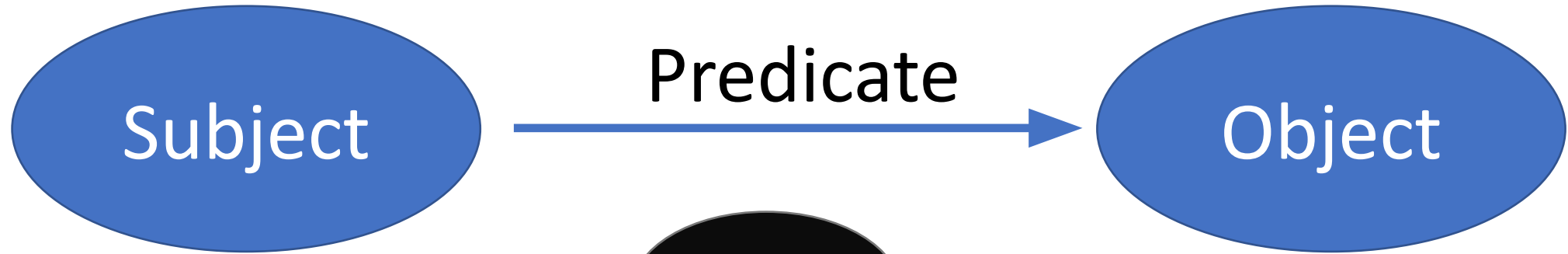


(Credit: Tanner Fry. Public domain.)

<https://www.usgs.gov/media/images/varankaontologyviewsmall>



LINKED DATA



Works Cited

Wilkinson, M. D. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data* 3:160018 doi: 10.1038/sdata.2016.18 (2016).