

Where did Meteorites land in the Earth?

Team: Semantic

Mets

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Motivation & The NASA Dataset SSW 16

- NASA scientist wants to improve their understanding of the Meteorite impact phenomena
- Main info available on meteorite impacts
 - name of the meteorite
 - meteorite class
 - mass (g)
 - year
 - latitude and longitude (decimal format)
- Format and access: RDF (+ others), no SPARQL endpoint



Research Questions:

•RQ1 - Can Semantic Web Technologies together with visualization techniques provide support to the Data Analysis of the NASA Dataset Meteorite?

- •**RQ2** -Which are the advantages of providing our dataset with a "semantic description"?
- •**RQ3** Can we integrate our dataset with other data from the LOD cloud? Can we perform the integration by relying on a federation of SPARQL Endpoints?



<u>Video</u> with Google Earth showing the capacity of scientists to visualize the data about the NASA Meteorites Dataset

Data comes from the integration of NASA, Wikidata, and DBpedia.

Data workflows that relies on federated query engines and visualization techniques

Overall Approach





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Visualization of the Results





NASA Dataset query



Wikidata (query)



Lake Bullen Merri is a brackish crater lake near Camperdown in southwestern Victoria, Australia. The lake has a maximum depth of 66 metres (217 ft), with a clover leaf outline indicating that it was probably formed. by two overlapping maar volcanoes. The lake is depicted n beautiful work by Eugene von Guerard. The edge of he lake was marked by a stone in the late 1800s by ames Dawson; from this and von Guerard's painting it is bvious that the level of the lake has dropped nsiderably in the last 100 years.

dbreds.org/resource/Lake Bulleri Mi

DBpedia (query)

Lessons Learned



- Semantic Web Technologies can be used to integrate data from different data sources (RQ1, RQ2)
 - –viable solution for providing scientists with powerful data analytics & visualization tools, beyond RDBMS-based approaches
- Data quality and interoperability issues limited the possibility of linking the NASA dataset to available Open Data

Future Work



- In the future (**RQ3**):
 - -Link the NASA dataset to DBpedia and Geonames
 - Exploit links in Data Workflows, particularly in the visualization component
 - –Develop crowdsourcing techniques to enhance the quality of NASA dataset, e.g., meteorite data with the objective to calculate the trajectory of the meteorite landing
 - -Link the Nasa dataset with the future dataset of FRIPON

