


CZO: Geostreaming Data Framework Integration

Goals


- CSV files uploaded to Clowder are annotated with information about the variables contained within the file using standard vocabularies.
- This metadata, together with metadata about the location or sensor attached to a dataset is used to automatically ingest data into the Geostreaming API.
- Given an annotated tabular file, apply format unit conversion to specific columns and create a new version of the tabular data.

Components


- Clowder
 - Dataset is annotated with sensor information
 - Reuse existing relationship between dataset and sensor
 - Or... add metadata to dataset
- Variable Annotation Extractor (VAE)

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 - Annotate files with entries from standard vocabularies
 - Col. 3 contains term <http://odm2/precipitation>
 - Multiple mappings can be provided, each with their own likelihood
 - For example, if only 9 out of 10 columns match a prior mapping, likelihood is 90%
 - Or percentage of files seen with this type of mapping
- Variables Mapping Service (VMS)

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 - POST/GET/PUT/DELETE mappings
 - The collection in MongoDB contains documents that represent mappings
 - Each mapping is a collection of mappings between strings (column headers) and standard vocabularies (uri terms)
 - How many times have seen a particular mapping (how many unique files)
 - When a mapping is not complete, i.e. we can only identify a subset of the columns, we should keep track of how many we columns we successfully identified
 - let's say a csv file has 10 columns, but we can only tag 4, we would have 40% accuracy
 - Maybe keep a collection of what files match what mapping
 - SEARCH for mappings that match a set of CSV headers and return them in order of accuracy
 - Client submits one list of CSV column names, service returns a list of potential mappings including accuracies.
 - Dockerize the service:

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- Semantic Annotation Service (SAS)
 - <http://ecgs.ncsa.illinois.edu/SAS.html>
 - We should build a simpler version of this as a Flask application storing info in MongoDB
- Datapoints Extractor (DPE)
 - Creates datapoints in the Geostreaming API based on rows in the CSV input file
 - Requires mapping from Variable Annotation Extractor
 - Site information as metadata on dataset
- Geostreaming Data Framework
 - Store and visualize datapoints
 - <https://geodashboard.ncsa.illinois.edu/>
 - Geostreaming API (GSAPI)
- Unit Conversion Extractor
 - Given a CSV file and information about what units to convert ??? return a new file with the specific column converted to new units
 - Requires ability to show derived files in GUI
 - How does the user specify what units they want?

Workflow

- File F1 (CSV) uploaded to dataset D1
- VAE reads headers in
- VAE requests matching mappings from mapping service VMS

- VAE adds metadata entries to file F1
- DPE extracts datapoints from CSV and adds them to GSAPI

Tasks

- Update <https://opensource.nasa-illinois.edu/bitbucket/projects/CATS/repos/extractors-csv> to store more information **(Decided as Won't Do.)**
 - which column has which header
 - include column number and label, for example (3, "temperature")
- Develop Variables Mapping Service (VMS)
 - Simple flask app with mongodb back end
- Variable Annotation Extractor (VAE)
 - En extension of the extractor-csv that queries the VMS and stores standard names in metadata
 - We should support multiple mappings added to metadata
- Figure out where the frontend should be
 - Standalone client
 - Clowder add metadata widget