SWEET overview

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ESIP SUMMER MEETING

Microsoft
esri
Element 84

NASA MODIS Image of
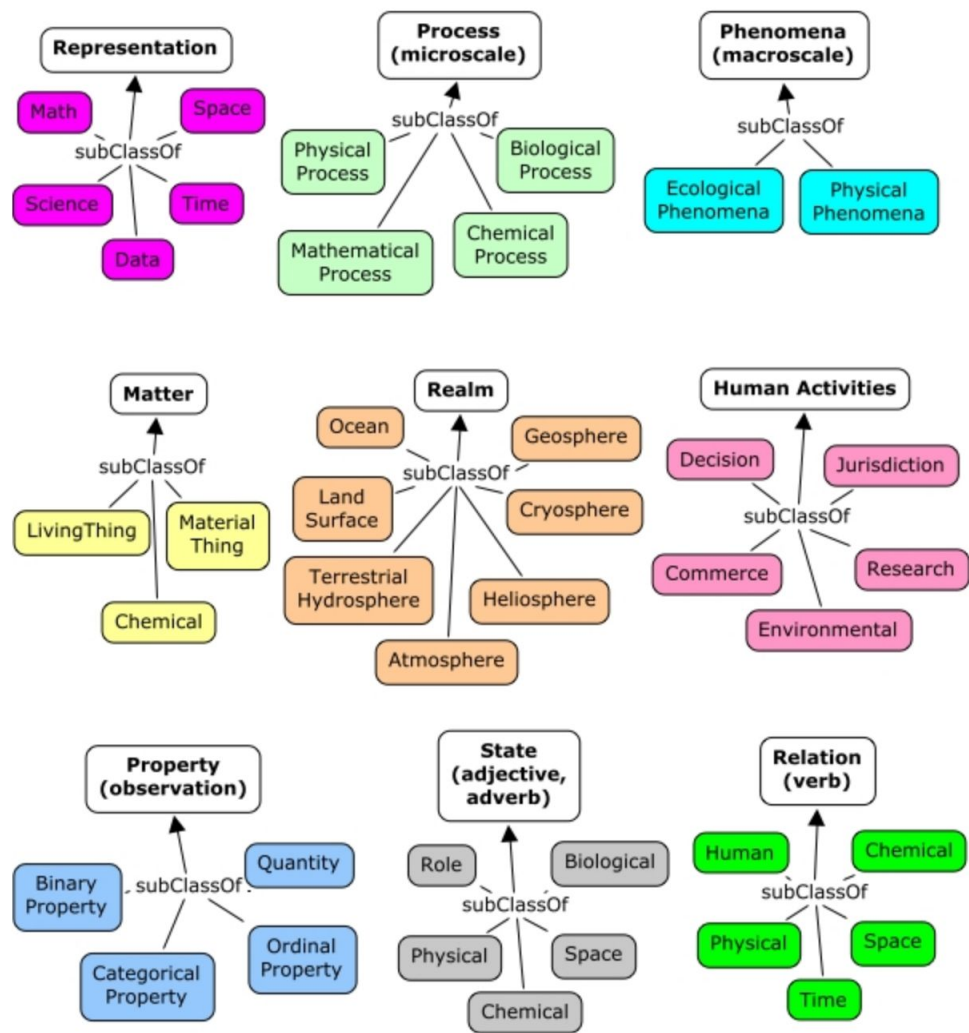Lake Erie, May 24, 2021

Context & background

- SWEET (Semantic Web for Earth and Environmental Terminology) was initially conceived and developed internally at NASA JPL during the early part of this century (versions 1.x to 2.x)
- Released to the public domain (CC0 1.0) in 2017
- Migrated to a publicly available, ESIP hosted, GitHub repository – http://github.com/esipfed/sweet
- Members of the ESIP STC serve as custodians, curators and developers of the resource
- The utility and future direction of SWEET is being discussed

Context & background

- Now on version 3.5 (next release looming)
- ~200 commits
- Examples of updates/upgrades:
  - Added `rdfs:label` for all entities
  - Normalised namespaces throughout
  - Created mappings for:
    - SSN
    - DCAT
    - QUDT
    - *GCMD (in progress)*

Positives

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  - ~11000 concepts
- Modular
  - 225 separate ontologies (ontology files)

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- Web-enabled ontology
  - Dereferenceable URIs – http://sweetontology.net/stateTimeGeologic/Holocene
  - PyLode ontology viewer – http://sweetontology.net/stateTimeGeologic
  - Hosted on ESIP's Community Ontology Repository (COR) – http://cor.esipfed.org/ont
  - SPARQL endpoint – http://cor.esipfed.org/ont/sparql
- Openly available
- Community owned and driven
- Around since the beginning
- Well known

Needs improvement

- Inconsistent coverage
- Organization
- Depth of structure
- Lacks concept definitions
- Documentation
- Funding
- ...

Use cases

- Discovery
- Data integration
- Annotation of datasets
- Interoperability support
- Automated reasoning
- Linking research artifacts

A way forward

- 'Hub' for definitions
  - Re: proposal in SWEET's issue tracker – https://github.com/ESIPFed/sweet/issues/211
  - *Uplifting* other resources
  - Foster a discussion around conceptual semantics in hopes that we may identify areas of overlap and clear areas of separation

A way forward

```
###  http://sweetontology.net/matrSediment/Soil
:Soil rdf:type owl:Class ;
     rdfs:subClassOf :Sediment ;
     rdfs:label "soil"@en ;
     skos:definition [
          dcterms:source <http://www.wikidata.org/entity/Q36133> ;
          rdfs:comment "natural body consisting of layers that are primarily composed of
minerals"@en ] ;
     skos:definition [
          dcterms:source
<https://gcmd.earthdata.nasa.gov/kms/concept/3526afb8-0dc9-43c7-8ad4-f34f250a1e91> ;
          rdfs:comment "The range of dynamic natural bodies composed of mineral and organic
materials and living forms in which plants grow."@en ] ;
     skos:definition [
          dcterms:source <http://id.agrisemantics.org/gacs/C113> ;
          rdfs:comment "Complex mixture of inorganic minerals (i.e., mostly clay, silt, and
sand), decaying organic matter, water, air, and living organisms."@en ] ;
     skos:definition [
          dcterms:source <http://dbpedia.org/resource/Soil> ;
          rdfs:comment "Soil is a mixture of minerals, organic matter, gases, liquids, and
countless organisms that together support life on Earth."@en ] ;
.
```

A way forward

- 'Hub' for definitions
  - *Uplifting* other resources
- Potentially incorporating definitions from:
  - Wikidata
  - GCMD
  - USGS Thesaurus
  - GEMET
  - NOAA NWS Glossary
  - *Others?*
  - ...

A way forward

- Are there concepts (or modules) which need to be culled?
  - Out of date
  - More recent work
  - Structures with more precise semantics
- Integrate or interoperate with other structures?
- Could SWEET be a place where *research ontologies* might be incorporated?
  - Leverage SWEET's supporting technical infrastructure

Further points of interest

- STC calls on last Tuesday of every month @4pm EST
  - STC wiki – https://wiki.esipfed.org/Semantic_Technologies
  - ESIP events calendar – https://www.esipfed.org/get-involved/telecon-calendar

- Initiate SWEET working sessions following this Summer Meeting

- SeREEn Federation (Semantic Resources for Earth and Environment)
  - Project in its infancy – repo here: https://github.com/ESIPFed/SeREEn
  - Currently part of ESIP STC
  - Calls are second Tuesday of every month @4pm EST

Questions?

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