

## OEO Developer Meeting #30

### Pads:

- Pad to this meeting: <https://etherpad.wikimedia.org/p/oeo-dev-30>
- Pad for next meeting: <https://etherpad.wikimedia.org/p/oeo-dev-31>
- Notes from last meeting: <https://etherpad.wikimedia.org/p/oeo-dev-29>

**Date:** 13.01.2022, 10:00 -- 12:00 a.m.

### Participants:

- moderator: KS
- main reporter: JH
- next meeting organiser: MS

### Preparation:

- Read last protocol: <https://github.com/OpenEnergyPlatform/ontology/wiki/OEO-developer-meetings>
- Check issues for next release: <https://github.com/OpenEnergyPlatform/ontology/milestones>
- Load software (GitHub, git, Protégé, DFN)

### Agenda:

Introduction round

- new members (welcome Alex, new team member at OvGU)

P.S. can we use Zoom for future meetings? - the DFN conference room is not working for everyone. (Add to agenda for next meeting to determine this)

Include math. formulas in the OEO (LH)

- <https://github.com/OpenEnergyPlatform/ontology/issues/987>

- Decide on a LaTeX Option
  - Need for mathematical formulas in the ontology, how would be best?
  - Already decided to not use MathML, as they are too verbose, not supported by all browsers, not widely used. Better to use LaTeX.
  - Example: <https://next.rl-institut.de/s/FNKac4DyqQtMBjb>
  - Four options regarding the beginning and end of the LaTeX expression, a fifth option to just include the expression itself and not the e.g. `\begin{equation}...\end{equation}`
  - Decision: option 5, just the expressions
  - @LH: Is there already a Pull request? -> #990
- Next step: Ludwig to test mathematical expressions and see if any of them will break OWL in a class annotation. Important to test e.g. backslashes before the end of the string, other commonly problematic characters
- A good example to use would be composed units like €/MW, we have several of these in the ontology and it would be great to add formulas to them
- How do we link the symbols used in formulae to the classes in the OEO?
  - One option is using the OEO identifiers or labels in the formula directly
  - Another option is using shorter symbols in the formula but then having some guidance on how to include a subsequent note which says which of the symbols relate to which classes
- Definition: *A mathematical expression is an annotation property that describes the class with a mathematical formula in LaTeX syntax.*

<https://github.com/OpenEnergyPlatform/ontology/issues/870> (automated annotation for module identification)--> MG prepares

- Overall question: how to handle classes distributed across several modules and not being clear which module a particular class is in. Can we have annotations which point a class to the file it is contained in?
  - First option: manual annotations that developers add manually, + automated tests on repo that they are consistent
  - Second option: Manual annotations + commit hooks check validity before commit. But commit hooks are client-side (developer-side), not repo-side, so everyone has to install the hooks themselves

- Third option: pre-receive hooks only available on commercial version of GitHub.
- Fourth option: Github actions, completely automated, no manual, but, such scripts would be very difficult to create
- Discussion:
  - Perhaps option 4 is unlikely to be a solution for the near term as may introduce instability into the repository and would need to be VERY carefully tested and debugged, and 3 not available.
  - Would using option 4 bind us to GitHub too closely?
  - GitHub server-side hooks also allow you to trigger actions on a separate server. We could implement scripts on e.g. open-energy-platform server. But cross-server infrastructure is very brittle usually very difficult to maintain.
  - Simplest option: start with case 1, work towards case 2, and then see if we need to and can extend towards additional automation.
  - Initial adding of annotations can be scripted. Magdeburg to allocate someone [ Alex volunteers :-) ] to create such a script and report back in a month - put on agenda for 32nd dev meeting.

Moved from OEO DEV meeting 29

Follow-up on shortcuts: <https://github.com/OpenEnergyPlatform/ontology/issues/492>:  
preparation by **MG and AM**

- **RDF/SHACL** discussion is a larger discussion. bigger than possibly our current project. so maybe a good follow-up project. rdf based technology database.
- Nested triples using existing oeo classes
  - advantage: smaller and better OEO
  - dis: complicated and long rdf
- Shortcut in the OEO
  - advantage: easy triples and rdf
  - dis: more classes in the OEO
- SHACL hack?
  - middle layer

- Create real life examples to showcase
- Discussion:
  - Adel demonstrates the RDF creation for the two options (OEO pattern vs. shortcuts)
  - Comment: There is a new repo for the Open Energy Knowledge Graph: <https://github.com/OpenEnergyPlatform/oekg/issues>
  - Discussion about number of triples, not that different between the two approaches (8 vs. 6)
  - When using the shortcut relations, can add the information about domain and range specific to the intended classes which can be used to check the consistency of the resulting RDF graph.
  - To check consistency of an RDF graph with the OWL document together requires OWL reasoning together with the instance data from the RDF graph (do some of the triplestores offer this functionality?)
  - LOD-GEOSS using Apache Jena, can Jena in principle check inconsistency of RDF graph with the OWL ontology using OWL-DL reasoning?
    - Apache Jena can: <https://jena.apache.org/documentation/inference/>
    - Allows inference (InfModel.query) and consistency check (InfModel.validate)
  - Units are very important for the LOD-GEOSS knowledge graph and QUDT provides unit conversions. But QUDT cannot straightforwardly be imported into OEO and used in axioms within OEO which is why we use the UO instead. To investigate: can we use QUDT together?
- Links:
  - <https://colab.research.google.com/drive/1ccoLb2GqXxkkeMeETpb4YMIwOxZZTGHF?usp=sharing>
  - <https://opengeospatial.github.io/ogc-geosparql/geosparql11/spec.html#C.1.1.1.2>
  - <http://www.qudt.org/2.1/catalog/qudt-catalog.html>
- Action: follow up smaller technical meeting needed to discuss specifics (HOW) of using OWL reasoning to check inconsistencies in the RDF graph. Martin and Janna to invite Patrick and Jan after investigating into Apache Jena functionality.

Update: log4shell in Protégé [LH]

- News: <https://github.com/protegeproject/protege/issues/1038>

#### Discussion on Taxonomy vs. Ontology [LH]

- There are differences but there are also similarities. Can we document this?
  - Community efforts vs. political decision
  - Main difference: only hierarchy vs. more properties and connections
  - It is a good time to advertise the OEO, since a lot of people are talking about definitions
- Good example:
  - RE-share [https://openenergy-platform.org/ontology/oeo/OEO\\_00140133](https://openenergy-platform.org/ontology/oeo/OEO_00140133)
  - *RE-share is a process attribute that indicates the fraction of **renewable energy** related to the total energy of an energy generation or consumption process.*
  - ~~What is *renewable* is not defined (yet)~~
  - renewable [https://openenergy-platform.org/ontology/oeo/OEO\\_00030004](https://openenergy-platform.org/ontology/oeo/OEO_00030004)
  - *Renewable is an origin of portions of matter or energies that replenish on a human time scale.*
- Collect ideas from OEO-DEV, then approach the OEO-SC
- Decide on a suitable output format and draft it
- Open an issue for discussion [LH]
- <https://github.com/OpenEnergyPlatform/ontology/issues/991>

<https://github.com/OpenEnergyPlatform/ontology/issues/916>: Add term "gross national electricity consumption"

- Eurostat definition: *Gross national electricity consumption includes the total gross national electricity generation from all fuels (including auto-production), plus electricity imports, minus exports. Auto-production is defined as a natural or legal person generating electricity essentially for his/her own use. Gross electricity generation is measured at the outlet of the main transformers, i.e. it includes consumption in the plant auxiliaries and in transformers.*

- existing OEO class: **Gross inland energy consumption** is the total consumption of energy in a spatial region (e.g. a country). with the relation: 'has quantity' value some 'energy amount value' --> consumption is a **process** subclass
- Last proposed definition of the discussion: **Gross national electricity consumption** is the [energy] consumption of electricity in a spatial region (e.g. a country), including gross electricity generation (value?) plus electricity imports, minus electricity exports. It is part of the gross inland energy consumption.
- Questions:
  - Is it possible to describe a process with mathematical operations (+, -)? or do we need a consumption quantity value?
  - Is the relation 'has quantity value' for a process possible? yes
  - Is a new class energy consumption necessary?
- Discussion:
  - The entity being discussed here is the output of a mathematical calculation thus it is a quantity value which is about some consumption process
  - Important that the consumption is always quantified over a period time
  - Gross national electricity consumption is a quantity value measuring the consumption of electrical energy in a spatial region (e.g. a country), including gross electricity generation (value?) plus electricity imports, minus electricity exports. It is part of the gross inland energy consumption.
  - Gross national electricity consumption 'is quantity value of' ??? (some electricity consumption process) e.g. 'energy use' ? Do we need something more specific e.g. energy use, aggregate energy use, national aggregate energy use? (defined for a spatial region, a country, and a time frame) -- but energy consumption is always for a specific time frame?
  - new concept: energy consumption value is an energy quantity value that measures the energy consumption over a (time/temporal) duration
  - change existing class to a quantity value as well
  - Kai and Vera to implement together

Postponed to next meeting:

- Continue with discussion on costs (Hedda)
- <https://github.com/OpenEnergyPlatform/ontology/issues/891>

- <https://github.com/OpenEnergyPlatform/ontology/issues/891#issuecomment-972775251>
- ramping parameters (Hedda)
- <https://github.com/OpenEnergyPlatform/ontology/issues/948>
- discuss in issues