

## OEO Developer Meeting #14

### Pads:

- Notes from last meeting: <https://etherpad.wikimedia.org/p/oeco-dev-13>
- Pad to this meeting: <https://etherpad.wikimedia.org/p/oeco-dev-14>
- Pad for next meeting: <https://etherpad.wikimedia.org/p/oeco-dev-15>

### Date:

- ○ 2021-02-10 14:00 - 18:00

**Participants:** Hannah (only until 16.00), Vera, Lukas, Ludwig, Christian, Carsten, Simon , Janna, Mirjam, Michaja, Ulrich, Christoph

- moderator: Vera
- protocol: Ludwig

**Next meeting organiser** (2 people): (2021-03-10) Carsten, Christian, Christoph?

- reach out to presenters about 1 week before the meeting
- detailed manual here: <https://github.com/OpenEnergyPlatform/ontology/wiki/oeco-dev-meeting-plan>

### Preparation:

- Read last protocol:
  - <https://etherpad.wikimedia.org/p/oeco-dev-13>
  - ( <https://github.com/OpenEnergyPlatform/ontology/wiki/OEO-developer-meetings> )
- Check issues for next release: <https://github.com/OpenEnergyPlatform/ontology/milestones>

### Agenda:

- Technical issues
  - OEO zeigt Lizenz für databus nicht richtig an -> hotfix? nächstes Release geplant für 01. März
    - Es gab weitere Kriterien, die die OEO auf dem Databus nicht findet. Nachfragen bei Johannes @LH
    - <https://databus.dbpedia.org/ontologies/openenergy-platform.org/ontology--oeco>
    - <https://github.com/OpenEnergyPlatform/ontology/issues/667>
  - WebVOWL online again
    - [http://www.visualdataweb.de/webvowl/#opts=doc=2;filter\\_objectProperties=true;#iri=https://openenergy-platform.org/ontology/oeco/](http://www.visualdataweb.de/webvowl/#opts=doc=2;filter_objectProperties=true;#iri=https://openenergy-platform.org/ontology/oeco/)
    - Can be closed? <https://github.com/OpenEnergyPlatform/ontology/issues/647>
    - Closed

- **Missing FIBO-Terms @Janna, Hannah, Ulrich**
- <https://next.rl-institut.de/s/DTmF6ncxgtLFAfx>
- terms: energy market, trading, economic good, money, market participant

### **market participant (#330) (=role?)**

In economics there are supply and demand expressed on a market. The agents expressing supply and demand could be called *supplier* and *consumer*, while the quantities they announce they are willing to trade at a specific *price* could be called *supply* and *demand*.

- Question of using *producer* (#314) vs. *supplier* arose.
- Agreed that we need market participant as a general grouping above e.g. trader, supplier, consumer etc. Need a definition of market participant that is general enough for all market-related roles.
- *price* (#331, PR640):
- an amount of money, goods, or services requested, expected, required, or given in exchange for something ✓
- Nextcloud:
- An entity with the agent and exchange role?
- Def: economic agent participating in decision-making in markets
- **Suggested def:**
- A market participant is an agent who participates in a market

### **economic good (#340)**

-> discuss if needed for the OEO, or whether *commodity* suffices for the purposes that are depicted in modelling. unanimous decision that it's not needed. economic resource also not needed.

- Decided to not include as commodity suffices for the purposes of modelling.
- Nextcloud:
- FIBO:
- Economic resource: Anything that can bought sold or exchanged
- any tangible thing that is not money or real estate
- *commodity* (PR644):
- A role that inheres in something that is used in commerce and is exchangeable with other commodities of the same type.

### **money (#335)**

General Background: Money is used to store something ("wealth") and money (in various possible concretisations) serves as a medium to exchange things ("commodities" PR644, #339) between agents ("market participants" #330) by transferring a specific amount of wealth (= amount of money, reflecting a price that the commodity is available for exchange?) from one agent to another in exchange for the desired commodity.

- Decision on money: not needed

- Question:
- As per the long discussion the question arises whether we need the concept of money.
- What is it we actually need to capture in the ontology and is money the needed concept, or do other concepts such as price (#331, closed), currency etc. suffice?
- What do energy system models actually depict when exchanges of goods are modelled?
- *currency (PR640):*
- A unit which is a measure of the medium of an exchange value, defined by reference to the geographical location of the monetary authorities responsible for it
- *(monetary) price (PR 640):*
- A monetary price is a quantity value that describes the amount of money requested, expected, required or given in exchange for something else.
  
- *commodity (PR644):*
- A role that inheres in something that is used in commerce and is exchangeable with other commodities of the same type.
  
- Suggestion by Janna:
- As per the discussion above, we should distinguish different sorts of entity:
- A portion of money, e.g. \$10
- A concretization of a portion of money, e.g. a \$10 note
- A currency ( PR 640), e.g. dollars ✓
- A price (#331, PR640), which is a specification of a quantity of money that a good or service is available for exchange for ✓
- The social and legal institutions, organisations and entities that define and regulate money
- Some of these entities are defined in FIBO, we should also look there for inspiration? E.g. currency.
- Wikipedia:
- Money is any item or verifiable record that is generally accepted as payment for goods and services and repayment of debts, such as taxes, in a particular country or socio-economic context. The main functions of money are distinguished as: a medium of exchange, a unit of account, a store of value.

## Energy market (#302)

- **Defs:**
- **Exchange:** An exchange is an institution where goods and services can be traded. (synonym market)
- **Energy Exchange:** An energy exchange is an exchange in which energy is traded.
- --
- **Trade:** the act of exchanging one commodity or service for another commodity or service (usually money)
- **Market:** a facility where buyers and sellers trade commodities or services
- **EnergyMarket:** a market where energy commodities are traded.
- We agree that we don't include those terms separately, only as a synonym of energy market exchange.
- Currently: **Market exchange:** A role of an organization, association, or group of persons, whether incorporated or unincorporated, which constitutes, maintains, or provides a facility for bringing together purchasers and sellers of financial instruments, commodities, or other products, services, or goods, and includes the market place and facilities maintained by the exchange

- FIBO:
- exchange: any organization, association, or group of persons, whether incorporated or unincorporated, which constitutes, maintains, or provides a facility for bringing together purchasers and sellers of financial instruments, *commodities*, or other products, services, or goods, and includes the market place and facilities maintained by such exchange
- **Suggested def:**
- Energy market exchange: A market exchange in which energy commodities are traded.

## Trading (#307)

\* trading and associated classes

-> process

- **Suggested def:**
- Trade: Def: A process in which one commodity or service is exchanged for another commodity or service (usually money)
- FIBO:
- trade: transfer of financial assets in any financial market on behalf of a client or a financial services provider (typically buying and selling)
- trader: party that engages in the transfer of financial assets in any financial market on behalf of a client or the financial services provider

@Hannah GitHub

@Janna does implementation

YAY DONE WITH FIBO! :-)

5 min Break

- **energy subclasses: (last meeting: <https://etherpad.wikimedia.org/p/oeco-dev-energy-subclasses>)**
  - definition of
  - Hydro energy
    - Ocean/Marine energy
      - tidal
        - [https://en.wikipedia.org/wiki/Tidal\\_power](https://en.wikipedia.org/wiki/Tidal_power)
      - marine current
        - [https://en.wikipedia.org/wiki/Marine\\_current\\_power](https://en.wikipedia.org/wiki/Marine_current_power)
      - wave energy
        - [https://en.wikipedia.org/wiki/Wave\\_power](https://en.wikipedia.org/wiki/Wave_power)
      - Osmotic
        - [https://en.wikipedia.org/wiki/Osmotic\\_power](https://en.wikipedia.org/wiki/Osmotic_power)
      - (Ocean thermal energy)
        - [https://en.wikipedia.org/wiki/Ocean\\_thermal\\_energy\\_conversion](https://en.wikipedia.org/wiki/Ocean_thermal_energy_conversion)
  - Nuclear energy
  - Geothermal energy (#393)
  - combustion energy?
  - bioenergy

- ○ --> define 4 classes for them:
  - a: primary energy process
  - b: transformation process
  - c: primary energy
  - d: primary energy carrier
  - +Relations
  
- ○ using the existing definitions:
  - **Energy** is a quality of matter and radiation which manifests as a capacity to perform work (such as causing motion or the interaction of molecules)
  - **chemical energy** is energy that is stored in the chemical bonds of a substance, which can be released by a chemical reaction.
  - **electrical energy** is a form of energy derived from the potential or kinetic energy of charged particles.
  - **thermal energy**
  - **Kinetic energy** is the energy that a material entity possesses due to its motion. It is defined as the work needed to accelerate a body of a given mass from rest to a stated velocity. (existing definition)
  - potential energy
  - radiative energy

## 1. Hydro energy:

existing in the OEO:

- Hydro energy: Hydropower or water power [...] is power derived from the energy of falling water or fast running water, which may be harnessed for useful purposes.
- water: Water is a portion of matter that is ...
  - dammed water
  - pumped water

a: new def. of **water current**? is this needed? Water flow

- **water flow**: is a process of liquid water moving.
- The hydropowerlib uses these terms:
- [https://github.com/hydro-python/hydropowerlib/blob/395a153031fba6319706b3c7426e5e79869bacfd/hydropowerlib/hydropower\\_plant.py#L27-L29](https://github.com/hydro-python/hydropowerlib/blob/395a153031fba6319706b3c7426e5e79869bacfd/hydropowerlib/hydropower_plant.py#L27-L29)
- **dV\_n : float Nominal water flow** entering the plant in m<sup>3</sup>/s. In case of multiple turbines, this is the sum of the nominal inflows in each turbine.

**water flow rate** is the process attribute of water flow that quantifies the water volume per time unit.

b:

- parent class: **hydro energy transformation** is an energy transformation that converts hydro energy.
- **hydroelectric energy transformation** is an hydro energy transformation that converts hydro energy to

electrical energy.

- **run-off-river energy transformation** is an hydroelectric energy transformation that converts hydro energy of a river to electrical energy.
- **hydroelectric dam energy transformation** is an hydroelectric energy transformation that converts ~~potential~~ hydro energy of dammed water to electrical energy.
- Postpone: Ocean energy transformation is / tide / wave energy

c:

- $\text{power\_output} = (\text{eta\_t} * \text{eta\_g} * 9.81 * 1000 * \text{dV} * \text{hpp.h\_n}).\text{where}(\text{dV\_pu} < 1., \text{other}=\text{hpp.P\_n})$
- **hydro energy** is kinetic energy of moving liquid water which can result directly from its potential energy

Relations:

- liquid water has quality some hydro energy ~~kinetic (or some potential)?~~ energy
- liquid water has disposition some primary energy carrier disposition
- water flow has participant some liquid water
- (hydro energy transformation has participant some hydro energy converting unit)
- hydro energy transformation has input some hydro energy
- hydroelectric energy transformation has output some electrical energy
- 

a: **water flow:** is a process of liquid water moving.

d: water

Subclasses of water

**Liquid water** is water that has a liquid state of matter.

**Steam** is water that has a gaseous state of matter.

github: Mirjam

implementation: together in the meeting

<https://github.com/OpenEnergyPlatform/ontology/issues/679>

- if there is time: complete **transformative measure and policy instrument**
- <https://github.com/OpenEnergyPlatform/ontology/issues/444>
- check the two last comments