Oemof User Meeting 2020

Open Energy Platform – A community database for energy data

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2020-05-14 16:30 – 17:15

Background

RLI Research Unit: Transformation of Energy Systems (images not licensed)

Open Science – Motivation

Motivation

- Improves reproducibility and good scientific practice

- Allows reuse and collaborative development

- Increases credibility and legitimacy

- Ethical considerations suggest that research financed with public money should be public

- Becomes the new norm

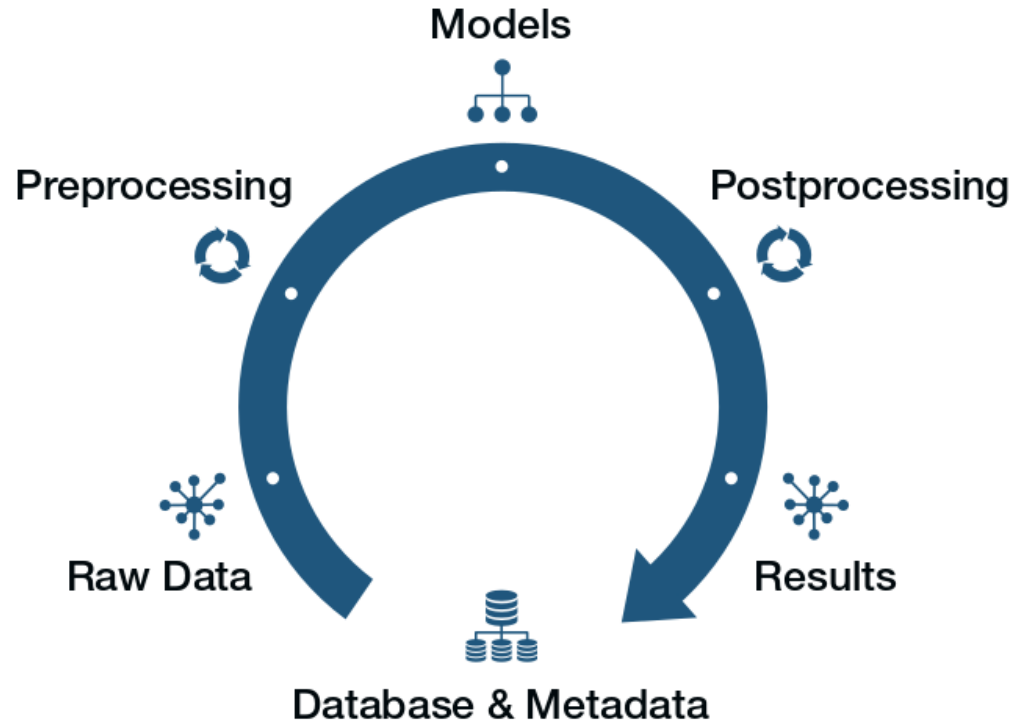## Barriers

- Knowledge and experience necessary

- Additional effort needed

- Personal and institutional reservations in an performance-based science system
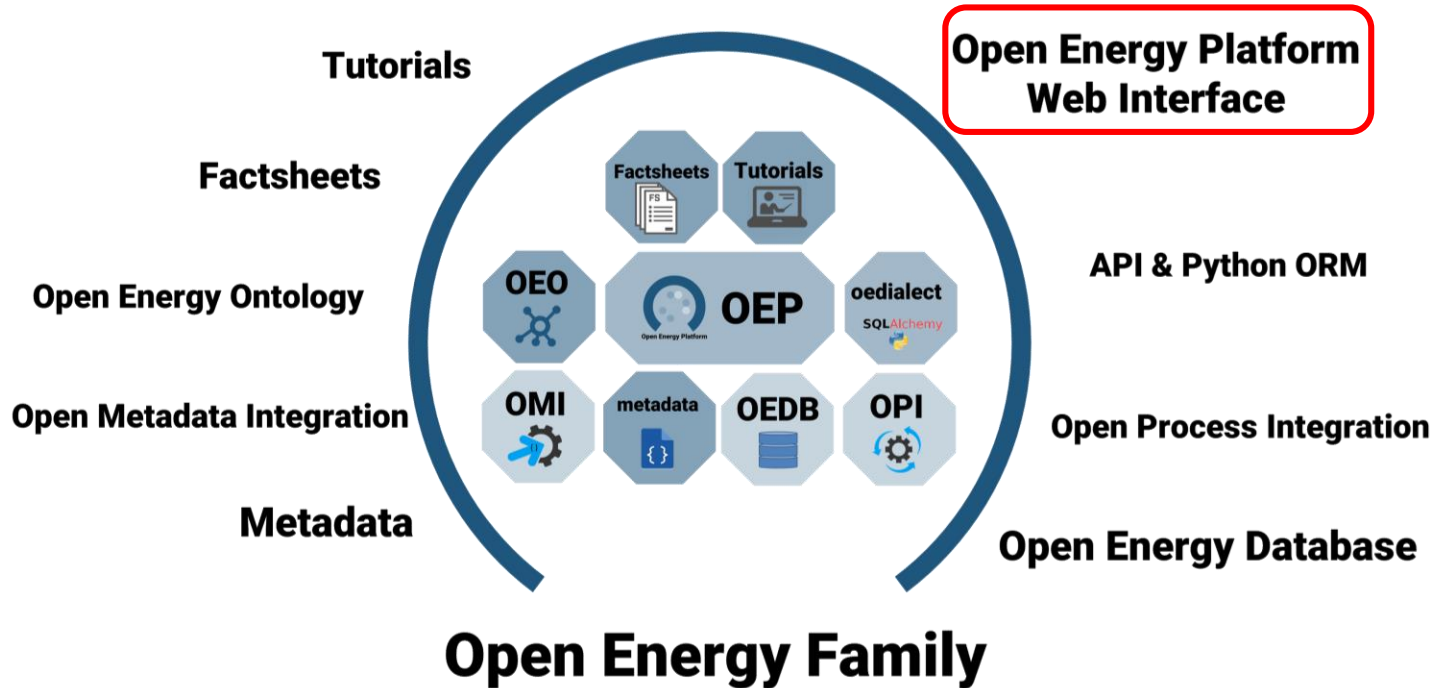
Open Science - Energy System Modelling
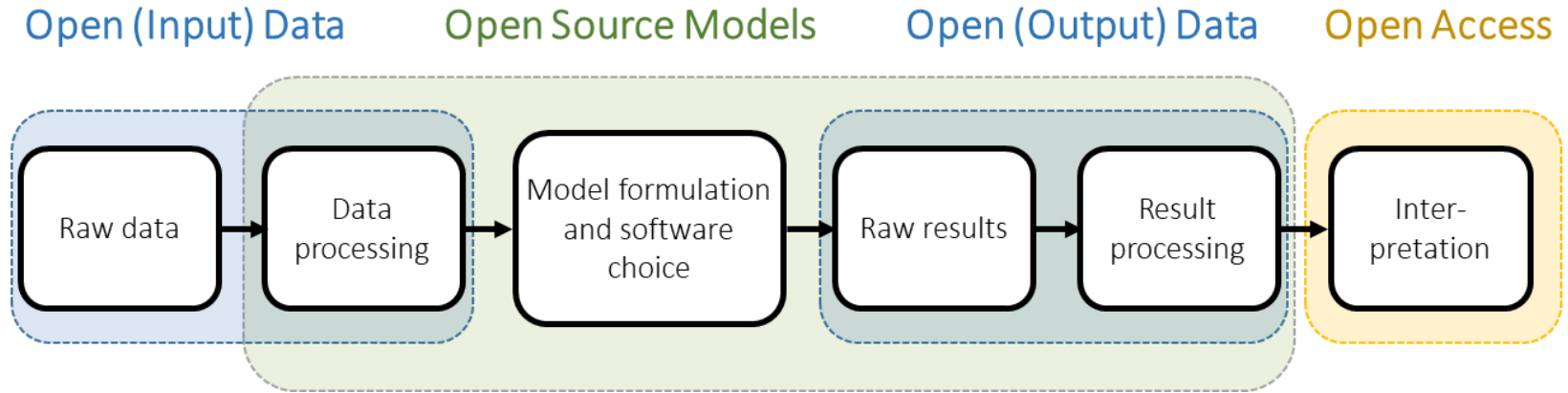
"Open data, open source, and open access in relation to the energy modelling process."
Pfenninger et al. (2018) licensed CC BY 4.0

Open Energy Family

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Open Energy Platform (OEP)

openenergyplatform.org

- University Magdeburg (OvGU) is host and main developer

- Funded projects until 2023

- Server deployment for +10 years guaranteed by OvGU

- Cross-tier community project

- Code available at GitHub

Gefördert durch:

Bundesministerium für Wirtschaft und Energie

aufgrund eines Beschlusses des Deutschen Bundestages

OTTO VON GUERICKE UNIVERSITÄT MAGDEBURG

ZNES
ZENTRUM FÜR NACHHALTIGE ENERGIESYSTEME
FACHHOCHSCHULE | EUROPA-UNIVERSITÄT FLENSBURG

Helmholtz-Zentrum Geesthacht
Zentrum für Material- und Küstenforschung

DLR Deutsches Zentrum für Luft- und Raumfahrt
Institut für Vernetzte Energiesysteme

BEUTH HOCHSCHULE FÜR TECHNIK BERLIN
University of Applied Sciences

Öko-Institut e.V.
Institut für angewandte Ökologie
Institute for Applied Ecology

Fraunhofer
IEE

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Open Energy Platform (OEP)

Development History:

open_eGo

open_FRED

SzenarienDB

LOD-GEOSS

Internal project
use of the OEDB

Factsheets

Presentation of a
commonly used open
database at the openmod
in London

Start new URL
openenergyplatform.org

OpenEnergyOntology

Workshop to
introduce to OEP

API & oedialect

60

40

20

0

2015   2016   2017   2018   2019   2020

2016   April   July   October   2017   April   July   October   2018   April   July   October   2019   April   July   October   2020

Contributions: **Commits** ▾

Open Energy Platform (OEP)

Goal:

Better research through transparency and reproducible data management in energy system analysis

Existing tools:

- Open database for energy data

- API and oedialect

- Fact sheets for frameworks, models and scenarios

- Data review process
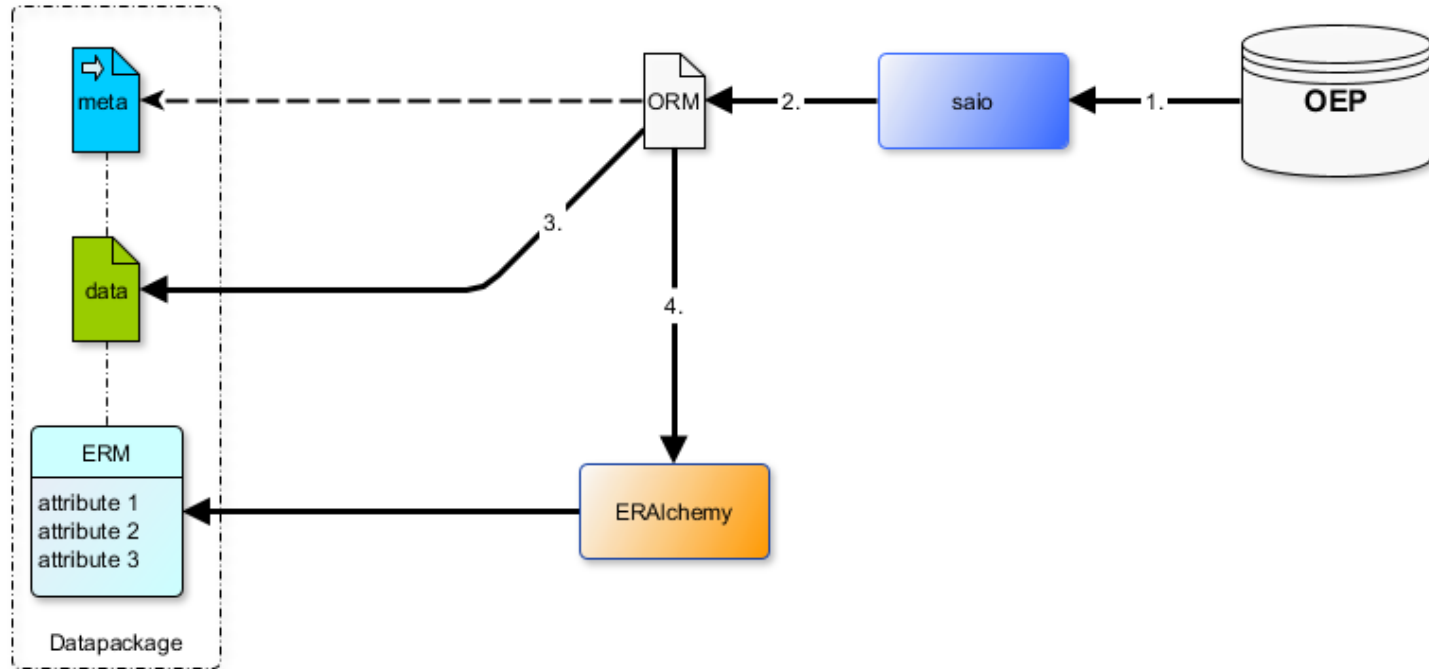
- Updated Django frontend

Ongoing Developments :

- Improve data upload (oem2orm)

- General datapackage standard

- Data versioning

- Scenario Bundles

Contributions:

- Upload open data

- Add and improve metadata
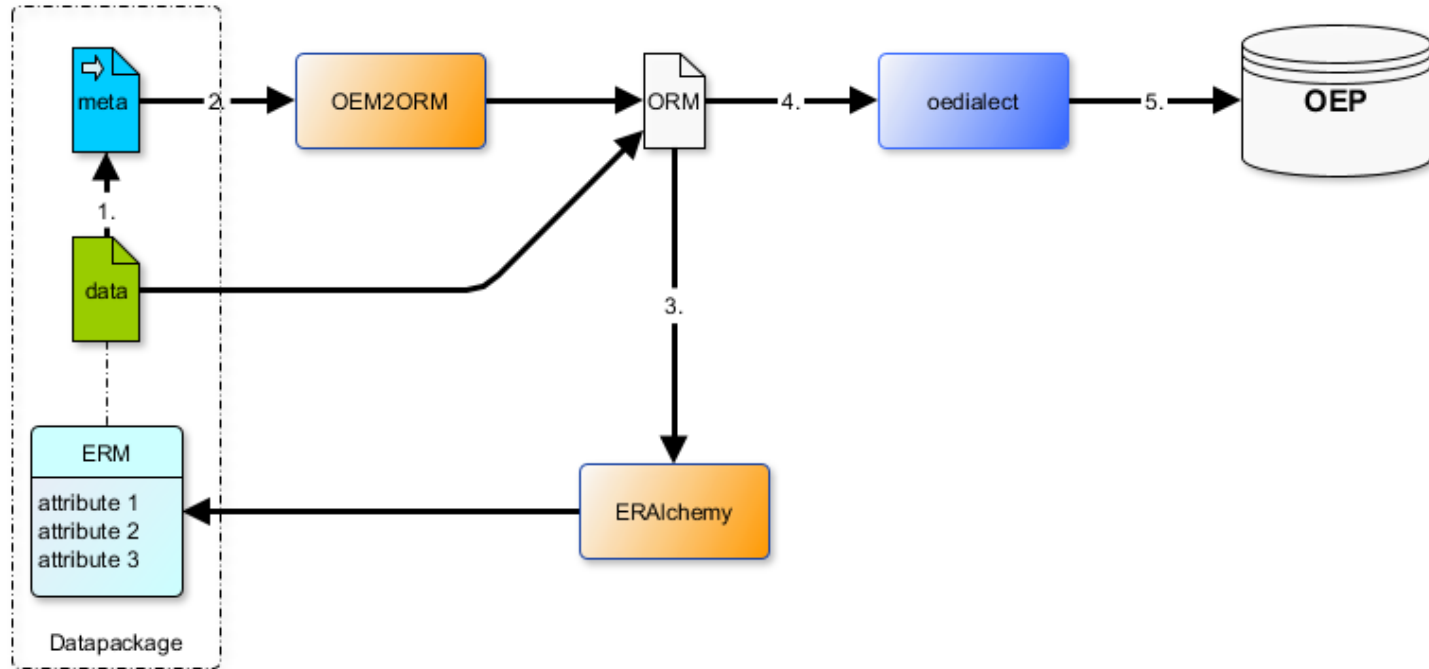
- Review other metadata and data

Open Energy Platform (OEP)

Download

Open Energy Platform (OEP)

Upload

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Open Energy Ontology (OEO)

What is an Ontology?

- An ontology is a way of showing the properties of a subject area and how they are related, by **defining a set of concepts and categories** that represent the subject.

- An ontology encompasses a **representation, formal naming and definition** of the categories, properties and relations between the concepts, data and entities in a field.

- The Open Energy Ontology aims to be the ontology in the domain of energy system modelling

Open Energy Ontology (OEO)

Use cases:

- Standardising terminology
- Data annotation and integration
- Templates for data capture
- Visualisation and comparisons
- Text and data mining
- Semantic similarity analysis
- Data analysis & LOD

Open Energy Ontology (OEO)

Characteristics:

- Domain Ontology for and by Energy System Modellers
- Uses Manchester OWL Syntax (OWL2 Web Ontology Language)
- Uses Basic Formal Ontology (BFO) as Top Level Ontology
- Developers use protégé [1] as main development tool
- Openly Licensed (CC0) for Open Science
- Public Development on GitHub [1]

[1] https://protege.stanford.edu/
[2] https://github.com/OpenEnergyPlatform/ontology

-> contribute.md
-> Best Practice Principles
(Terminology, Definitions, Taxonomy

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Framework Factsheet

Model Factsheet

Scenario Factsheet A
Factsheet B

Models

Preprocessing

Postprocessing

Ontology

Raw Data

Results

Database & Metadata

Input data:
- Sources – Buses – Sinks
- Technology parameters
- Prices
- Boundaries & Social data
- ......
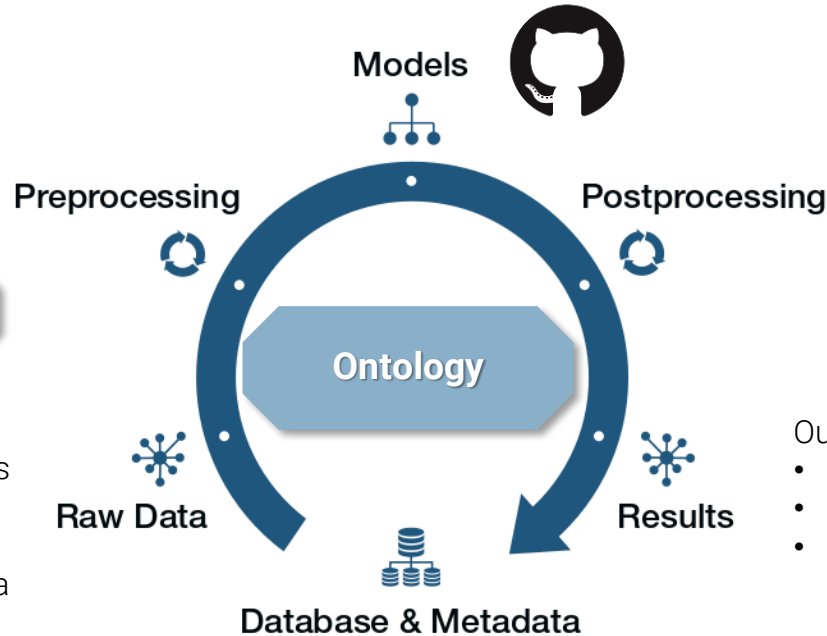
Output data:
- Capacities & Dispatch
- Costs & Emissions
- ......

„Open Science should be the default, not the exception"
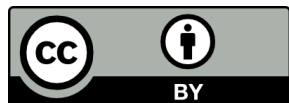
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