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Windpowerlib – An open source library for generating wind feed-in time series.

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Oemof developer meeting

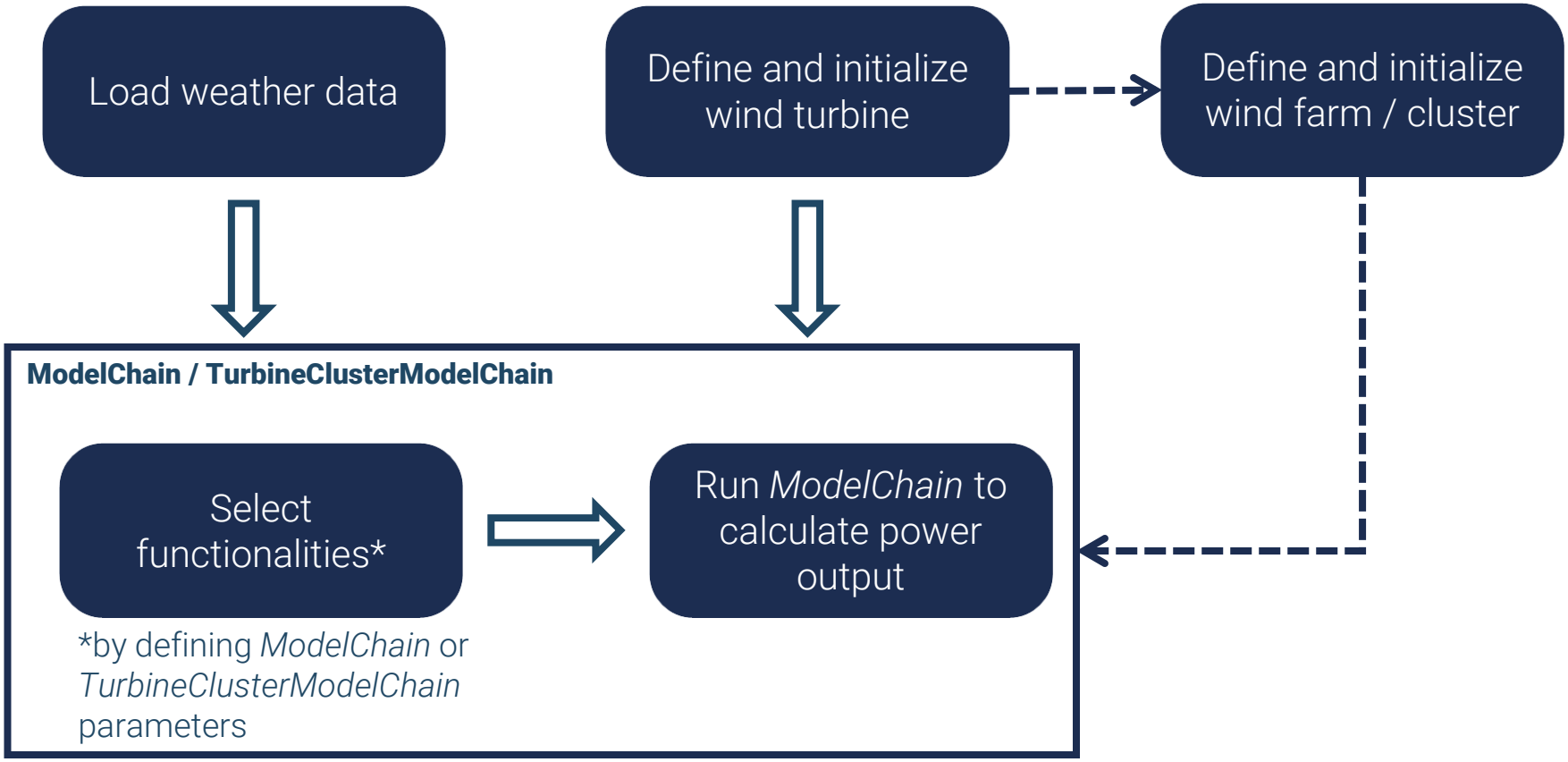
Berlin, 04.12.2019

windpowerlib

Introduction

Motivation	Generate wind feed-in time series that serve as input for energy system models
Scope	Feed-in time series for counties, federal states and countries.
v0.0.1	Windpowerlib **v0.0.1** was released in August 2016
v0.2.0	Windpowerlib **v0.2.0** was released in September 2019

Work flow



See examples: https://github.com/wind-python/windpowerlib/tree/dev/example

Overview

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Features

- Height correction of weather data
- **Power output** calculations (power curves, power coefficient curves)
- **Wake losses** by wind farm efficiency and wind efficiency curves [1] [2]
- **Power curve smoothing** to consider spatial distribution of wind speeds
- Aggregated power curves of wind farms and clusters
- „**Modelchain**“ to automate much of the modeling process

New features (v0.2.0, this year)

- Automatic download of turbine data from **wind_turbine_library** in OpenEnergy Database (https://openenergy-platform.org/dataedit/view/supply/wind_turbine_library)
- Test coverage has risen to 100 % 

Popularity

- 97 stars, 38 forks

Join us! ☺

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Tomorrow, windpowerlib session at 09:10 AM !

windpowerlib

Access and participation

Source code on Github
https://github.com/wind-python/windpowerlib

Documentation on Readthedocs
http://windpowerlib.readthedocs.io/en/latest/

Install from PyPi
https://pypi.python.org/pypi/windpowerlib/
pip3 install windpowerlib

License

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Sources

[1] Knorr. Modellierung von raum-zeitlichen Eigenschaften der Windenergieeinspeisung für wetterdatenbasierte Windleistungssimulationen. PhD thesis, Universität Kassel, 2016.

[2] Agricola et al.: dena-Netzstudie II. Integration erneuerbarer Energien in die deutsche Stromversorgung im Zeitraum 2015– 2020 mit Ausblick 2025. Technical report, 2010.