# Reliable, Privacy-friendly Flexibility Coordination in Residential Districts
## FWO DMP (Flemish Standard DMP)

1. Research Data Summary

List and describe all datasets or research materials that you plan to generate/collect or reuse during your research project. For each dataset or data type (observational, experimental etc.), provide a short name & description (sufficient for yourself to know what data it is about), indicate whether the data are newly generated/collected or reused, digital or physical, also indicate the type of the data (the kind of content), its technical format (file extension), and an estimate of the upper limit of the volume of the data.

| Dataset Name | Description | New or reused | Digital or Physical | Only for digital data<br><br>Digital Data Type | Only for digital data<br><br>Digital Data format | Only for digital data<br><br>Digital data volume (MB/GB/TB) | Only for physical data<br><br>Physical volume |
|---|---|---|---|---|---|---|---|
| | | *Please choose from the following options:*<br>• Generate new data<br>• Reuse existing data | *Please choose from the following options:*<br>• Digital<br>• Physical | *Please choose from the following options:*<br>• Observational<br>• Experimental<br>• Compiled/aggregated data<br>• Simulation data<br>• Software<br>• Other<br>• NA | *Please choose from the following options:*<br>• .por, .xml, .tab, .csv,.pdf, .txt, .rtf, .dwg, .gml, …<br>• NA | *Please choose from the following options:*<br>• <100MB<br>• <1GB<br>• <100GB<br>• <1TB<br>• <5TB<br>• <10TB<br>• <50TB<br>• >50TB<br>• NA | |
| FMIExchange.jl | Simulation software package | Generate new data | Digital | Software | NA | <1GB | |
| MoPED | Simulation models | Generate new data | Digital | Software | NA | <100 GB | |
| Other simulation software | Simulation software | Generate new data | Digital | Software | NA | <100 GB | |
| Control software | Control software | Generate new data | Digital | Software | NA | <100 GB | |
| Simulation Results | Output of simulation software | Generate new data | Digital | Simulation data | .csv | <100 GB | |
| GenkNET building modelsGenkNET building models | Building models estimated from real data in Genk | Reuse existing data | Digital | Other | NA | <1 GB | |
| Building occupancy data | Building occupant behavior models simulated using StROBe | Reuse existing data | Digital | Simulation data | .csv | <100 GB | |
| TMY weather data | Climate-averaged weather data over multiple years | Reuse existing data | Digital | Aggregated data | .mos | <100 GB | |
| Vliet building weather data | Observed weather data in 2021 at the Vliet building in Heverlee | Reuse existing data | Digital | Observational data | .mos | <100 GB | |

**If you reuse existing data, please specify the source, preferably by using a persistent identifier (e.g. DOI, Handle, URL etc.) per**

**dataset or data type:**

- GenkNET building models [1]
- Building occupancy data [2]
- TMY weather data: https://climate.onebuilding.org/
- Vliet building data: available at https://gitlab.kuleuven.be/positive-energy-districts/moped

[1] I. De Jaeger and D. Saelens, "On the Impact of Input Data Uncertainty on the Reliability of Urban Building Energy Models," phd, KU Leuven. Arenberg doctoral school of science, engineering & technology, Leuven, 2021. [Online]. Available: https://lirias.kuleuven.be/retrieve/617306

[2] R. Baetens and D. Saelens, "Modelling uncertainty in district energy simulations by stochastic residential occupant behaviour," *Journal of Building Performance Simulation*, vol. 9, no. 4, pp. 431–447, Jul. 2016, doi: 10.1080/19401493.2015.1070203.

**Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? Describe these issues in the comment section. Please refer to specific datasets or data types when appropriate.**

- No

**Will you process personal data? If so, briefly describe the kind of personal data you will use in the comment section. Please refer to specific datasets or data types when appropriate.**

- No

**Does your work have potential for commercial valorization (e.g. tech transfer, for example spin-offs, commercial exploitation, …)? If so, please comment per dataset or data type where appropriate.**

- Yes

Control software

**Do existing 3rd party agreements restrict exploitation or dissemination of the data you (re)use (e.g. Material/Data transfer agreements/ research collaboration agreements)? If so, please explain in the comment section to what data they relate and what restrictions are in place.**

- Yes

GenkNET building models may not be disseminated. However resulting simulation data and derived reduced-order models may be disseminated. Therefore first reduced-order models will be derived from the GenkNET dataset and these will be used during the rest of the PhD.

**Are there any other legal issues, such as intellectual property rights and ownership, to be managed related to the data you (re)use? If so, please explain in the comment section to what data they relate and which restrictions will be asserted.**

- No

**2. Documentation and Metadata**

**Clearly describe what approach will be followed to capture the accompanying information necessary to keep data understandable and usable, for yourself and others, now and in the future (e.g., in terms of documentation levels and types required, procedures used, Electronic Lab Notebooks, README.txt files, Codebook.tsv etc. where this information is recorded).**

Since the main output is software, standard software development guidelines apply. Git is used for version control; documentation is written in a manner appropriate for the programming language; GitLab/GitHub tools for issues/pull request management are used during the development process. All software repositories will be accompanied by a README.
Simulation data: steps for reproducing the simulation results, including the exact software versions used for generating the results will be published alongside the data. The software simulation models contain additional metadata describing the results.

**Will a metadata standard be used to make it easier to find and reuse the data? If so, please specify (where appropriate per dataset or data type) which metadata standard will be used. If not, please specify (where appropriate per dataset or data type) which metadata will be created to make the data easier to find and reuse.**

- No

### 3. Data storage & back-up during the research project

**Where will the data be stored?**

KU Leuven Gitlab instance

**How will the data be backed up?**

KU Leuven GitLab has its own back-up policies. Additionally, the borg backup tool is used to back up data on the PhD candidate's machine on the KU Leuven OneDrive instance.

**Is there currently sufficient storage & backup capacity during the project? If yes, specify concisely.**
**If no or insufficient storage or backup capacities are available, then explain how this will be taken care of.**

- Yes

**How will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?**

GitLab projects and OneDrive data are private by default and have various permission settings. Respective platforms are responsible for their security measures.

**What are the expected costs for data storage and backup during the research project? How will these costs be covered?**

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### 4. Data preservation after the end of the research project

**Which data will be retained for at least five years (or longer, in agreement with other retention policies that are applicable) after the end of the project? In case some data cannot be preserved, clearly state the reasons for this (e.g. legal or contractual restrictions, storage/budget issues, institutional policies...).**

All data will be archived by KU Leuven for a duration of 10 years.

**Where will these data be archived (stored and curated for the long-term)?**

Software remains available on the KU Leuven GitLab instance.

**What are the expected costs for data preservation during the expected retention period? How will these costs be covered?**

Free of charge

## 5. Data sharing and reuse

**Will the data (or part of the data) be made available for reuse after/during the project? In the comment section please explain per dataset or data type which data will be made available.**

- Yes, in an Open Access repository

Software will become open source after acceptance of related papers, or earlier if required by the journal/conference policy.

**If access is restricted, please specify who will be able to access the data and under what conditions.**

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**Are there any factors that restrict or prevent the sharing of (some of) the data (e.g. as defined in an agreement with a 3rd party, legal restrictions)? Please explain in the comment section per dataset or data type where appropriate.**

- Yes, Intellectual Property Rights

Building models from De Jaeger et al. cannot be shared publicly.

**Where will the data be made available? If already known, please provide a repository per dataset or data type.**

- KU Leuven Gitlab instance
- GitHub on the Electa-Git account

**When will the data be made available?**

upon publication of research results

**Which data usage licenses are you going to provide? If none, please explain why.**

OSI-approved licenses as listed on https://opensource.org/licenses

Do you intend to add a PID/DOI/accession number to your dataset(s)? If already available, you have the option to provide it in the comment section.

- Yes

**What are the expected costs for data sharing? How will these costs be covered?**

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**6. Responsibilities**

**Who will manage data documentation and metadata during the research project?**

PhD Candidate (Lucas Bex)

**Who will manage data storage and backup during the research project?**

PhD Candidate (Lucas Bex)

**Who will manage data preservation and sharing?**

Promotor (Geert Deconinck)

**Who will update and implement this DMP?**

PhD Candidate (Lucas Bex)