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## Plan Overview

*A Data Management Plan created using DMPTuuli*

**Title:** Hyytiälä Living Lab – Sustainable and wellbeing supporting wood construction, a post-occupancy study

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**Template:** General Finnish DMP template

### Project abstract:

Hyytiälä Living Lab post-occupancy study explores the influence of goal-discrepancy on restorative experiences in accommodation buildings using a post-occupancy evaluation method. The study investigates perception of well-being effects (e.g. quality of sleep, restoration) experienced by the visitors of Hyytiälä Forest Station in novel wooden accommodation buildings, using a post-occupancy survey. Special emphasis in the survey is put to psychophysiological self-evaluation together with subjective evaluation of the building (e.g. ambiance, indoor air quality) and its surrounding natural environment (e.g. milieu, social interaction). Drawing upon the goal-discrepancy theory (Joye et al. 2023), the research examines how mismatches between individuals' current goals and their accommodation environment influence perceptions of stress reduction, mood enhancement, and cognitive restoration. The data consists of visitors (mainly students, researchers and education professionals) accommodating overnight in new wooden buildings in Hyytiälä Forest Station in Finland. First, during the pilot phase the study contributes by examining applicability of goal discrepancy theory and post-occupancy survey method in a built environment setting. Second, the pilot phase provides data to assess the option for continuous data collection using the framework. Third, the study grants feedback for the development of the spaces in Hyytiälä Forest Station. Fourth, the study examines associations between goal-discrepancy and residents' experiences of restoration, providing implications for design practices for improved resident well-being consideration in novel wooden buildings. Fifth, the survey data can be combined with technical measurement data collected from accommodation buildings, providing opportunities for interdisciplinary research on building quality aspects (e.g. indoor air quality themes) on subjective user experiences of the spaces.

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# Hyytiälä Living Lab – Sustainable and wellbeing supporting wood construction, a post-occupancy study

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## 1. General description of the data

**1.1 What kinds of data is your research based on? What data will be collected, produced or reused? What file formats will the data be in? Additionally, give a rough estimate of the size of the data produced/collected.**

The research data consists of survey data directed at Hyytiälä guests, as well as data generated from the analysis of this research material.

1. Research data collected for Hyytiälä living lab post-occupant survey, file format: .xlsx, .csv, .pdf, size less than 1 GB, n=50+
1. Data generated as a result of the research data analyses, file format: .pdf, .pptx, .xlsx, size less than 5 GB
1. Data documentation (questionnaire, description of analyses, figures and tables, readme files), file format: .docx, .pdf, .jpg, .pptx, .xlsx, size less than 1 GB

For the most part, data will be collected, reported and stored in .docx, .csv or .xlsx format. Image files are stored in original formats (e.g., .jpg, .pptx). Permits, contracts, etc. are saved as .pdf files. The research will create a personal data register, the controller of which is the University of Helsinki. More information on the processing of personal data can be found in the study's Privacy Notice.

**1.2 How will the consistency and quality of data be controlled?**

The data repository accumulates over time as the project advances. Research questions are mainly based on validated methods. The question formats and scales used to improve the quality of information and streamline the survey have been made as uniform as possible across the questionnaire. The formation of questions and the selection of variables are based on research literature and theories. An analytical framework has been created as a basis for the variables.

Copies of original data files will be kept unmodified, archived with intuitive, consecutive file naming, and backed up during the research project.

The members of the research group handling the research data have been involved in planning the research questions, only designated researchers have access to the research data. The inducted researcher is responsible for transferring physical materials to electronic format, storing physical materials securely and, after the research has ended, for the appropriate disposal of the data. The research data stored is anonymised.

## 2. Ethical and legal compliance

**2.1 What legal issues are related to your data management? (For example, GDPR and other legislation affecting data processing.)**

The privacy protection follows European and national law. In connection with the collection of research data, a personal data register is formed, the administration of which is regulated by the EU's General Data Protection Regulation.

The research material contains sensitive information about people's experience of well-being. The aim is to improve the privacy of data by not collecting direct personal data about research subjects (principle of minimization) and by anonymizing research data using generally accepted tools (e.g. OpenAIRE) when necessary. A sufficient amount of research data is collected and, if necessary, variables that can be interpreted as personal data are classified so that individual respondents cannot be identified. A separate Data Protection Notice has been drawn up for the processing of the personal data register.

The research data does not meet the eligibility for ethical review process of the research. The research participants are aware of the research, participation in the research is voluntary, and the consent of the research subjects has been separately requested.

The most important risks in research data management are related to data ending up in the wrong hands, for example through a data breach or careless handling of research data by researchers. It is possible to accumulate sensitive information in the material, for example, through open-ended questions, if the research subject wishes to bring this up. Efforts have been made to minimise these risks by storing research data using data management methods and storage locations in accordance with the university's guidelines, protecting the collected data behind passwords and using care in the processing of data. Research participants have been informed in advance and asked for informed consent to participate in the study. The consent forms are stored separately from the actual research data, and the data is combined with the help of separate code keys.

Research data may also be disclosed for scientific research purposes to other research organisations, possibly also outside the EU economic area. In this case, the material disclosed does not contain personal data and, as a rule, they are agreed upon separately.

**2.2 How will you manage the rights of the data you use, produce and share?**

The owner of the research data and the controller of personal data is the University of Helsinki. In accordance with the principle of openness in scientific research, anonymised research data and research publications based on the analysis can be published under open licences (e.g. University of Helsinki's Creative Commons license).

The research material can be utilised together with the university's research partners.

## 3. Documentation and metadata

**3.1 How will you document your data in order to make it findable, accessible, interoperable and re-usable for you and others? What kind of metadata standards, README files or other documentation will you use to help others to understand and use your data?**

After data collection, the research data is stored in the university's group storage (p-disk), access to which is restricted to the members of the research group. The processing of anonymised research data can be carried out in a decentralised manner by individual researchers. After the research project, the long-term storage of the data for possible further use is planned to be implemented in the University of Helsinki Databank.

For the re-usability of the data, metadata is compiled as a README document, which describes the description and variables of the data, information about the experimental design and the research environment. Metadata data can be published in open metadata services. Possible questionnaires are made available as appendices of publications.

## 4. Storage and backup during the research project

#### 4.1 Where will your data be stored, and how will the data be backed up?

During data collection, the research data is stored in a survey program (Webropol), the use of which is protected and requires password identification. After anonymisation, the data will be stored in the university's personal or group network storage ("p-disk"), where it can be used by the research group and, if necessary, shared for collaborators. Group storage has been backed up and is the responsibility of the University of Helsinki's IT Centre. The sharing of research data used for non-sensitive data between partners takes place using a secure data transfer method or, for example, through Office365 cloud services.

#### 4.2 Who will be responsible for controlling access to your data, and how will secured access be controlled?

Access to research material is defined by the PI of the research group. UH's IT Centre is responsible for accessing the storage systems and they are implemented with the access rights protected by passwords. Sharing access and editing rights with co-authors with institutional user authentication is permitted. Physical documents are archived during the research phase in the responsible researcher's locked office, in a locked filing cabinet. The office is kept locked from people other than researchers that have been granted access to the space.

### 5. Opening, publishing and archiving the data after the research project

#### 5.1 What part of the data can be made openly available or published? Where and when will the data, or its metadata, be made available?

Essential source data and data created, necessary for the replication of the results for peer-reviewed publications, shall be made freely available for anyone to access through appendices or online material of scientific journals, ensuring the anonymity of the research subjects (no direct personal identifiers).

Larger datasets and metadata that have relevance beyond single publications will be made available through Zenodo or other similar service provider (copyrights permitting), once they are in the final form, which ensures having a persistent identifier (DOI) to the data. Access to the original/raw data collected from research objects shall only be granted with a separate request for the purpose of verifying the scientific rigor of the analysis. The participants are informed on the exact purpose, use, and openness of the data collected and the related permissions are gathered from participants prior to data collection.

#### 5.2 Where will data with long-term value be preserved, and for how long?

Datasets with no direct personal data, published alongside research results will be made available through appendices or supplementary online material and remain available indefinitely. Separate datasets with long-term value may be made available in open data repositories for potential re-use for at least 10 years. Non-essential research datasets are archived in personal drives for a verification period of at least 5 years.

### 6. Data management responsibilities and resources

#### 6.1 Who (for example role, position, and institution) will be responsible for data management?

The main responsibility for implementing and, if necessary, revising the data management plan lies with the PI of the research project. All research team members and collaborators need to adhere to the plan, and implement it when they are the ones producing, collecting and using the data.

#### 6.2 What resources will be required for your data management procedures to ensure that the data can be opened and preserved according to FAIR principles (Findable, Accessible, Interoperable, Re-usable)?

No additional resources are needed for data management and publishing, as it is an inherent part of the PI duties in the research project. It may take around 1-2 days per month, on average. No additional costs arise, as the services are provided through project overheads for the host institution and through the research publishers that may charge ATPs.