Plan Overview

A Data Management Plan created using DMPonline.be

Title: NDT-ReMat: Non-Destructive Testing methods for informed Reuse of building Materials.

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Data Manager: n.n., Eline Vandecruys, n.n., Els Verstrynge, Robby Caspeele

Project Administrator: Els Verstrynge

Affiliation: KU Leuven (KUL)

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Template: FWO DMP (Flemish Standard DMP)

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Project abstract:

A circular construction sector is an essential component of the path to a sustainable society. Especially production of building materials weighs heavily on the environment. The NDT-ReMat project aims at an increased and informed reuse of construction materials. At present, required technologies for efficient condition assessment and certification of reuse materials are lacking. In the NDT-ReMat project, non-destructive testing (NDT) methods for condition assessment are developed, tested and validated to address this challenge. Advanced NDT methods employing multi-frequency mechanical wave-based techniques (from ultrasonics to acoustics and vibrations) are developed for three selected material groups: clay bricks, RC panels and timber beams. A two-step test program is planned. Firstly, NDT protocols are tested on new materials subjected to accelerated ageing, allowing control of property ranges and boundary conditions, ensuring suitable test populations. Secondly, developed NDT methods are validated on real sets of reuse materials. Multi-variate regression models are developed for robust data interpretation, model updating in a Bayesian framework, and linking between material properties and multi-frequency NDT results. The project team consists of experts from KU Leuven, UGent and Buildwise, with strong collaboration and complementary expertise, covering all required aspects to successfully reach the project's scientific goals as well as optimizing its utilization potential.

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NDT-ReMat: Non-Destructive Testing methods for informed Reuse of building Materials. Application DMP

Questionnaire

Describe the datatypes (surveys, sequences, manuscripts, objects …) the research will collect and/or generate and /or (re)use. (use up to 700 characters)

The datatypes generated consist of:
- experimental data and measurements obtained during non-destructive and mechanical testing, in the form of tables, waveforms, pictures, data sheets, etc.
- software codes (Bayesian updating, regression analysis) and related empirical and numerical models
In addition, published results from other projects, and European and other standards for materials testing will be used.

Specify in which way the following provisions are in place in order to preserve the data during and at least 5 years after the end of the research? Motivate your answer. (use up to 700 characters)

During the research, raw generated data and codes are managed by each of the three researchers at the partner institutes, in consultation with their respective supervisor. Processed data and models are brought together in a protected, online data platform managed by KU Leuven (responsible: E. Verstrynge) to enhance research interactions and joint publications. This platform will also host meeting reports.
After the research, each of the supervisors (E. Verstrynge, R. Caspeele, J. Vrijders) remains responsible for the preservation of the raw data. In addition, the structure of the joint data repository is optimized to ensure maximum preservation and reusability of data in future projects.

What's the reason why you wish to deviate from the principle of preservation of data and of the minimum preservation term of 5 years? (max. 700 characters)

We do not wish to deviate.
At each partner institute, required data backup and storage facilities are available to ensure the minimum preservation term of 5 years.

Are there issues concerning research data indicated in the ethics questionnaire of this application form? Which specific security measures do those data require? (use up to 700 characters)

N.A.

Which other issues related to the data management are relevant to mention? (use up to 700 characters)

Selected published data sets will be made available open access through the KU Leuven Research Data Repository (RDR.kuleuven.be), with reference to the NDT-ReMat project, allowing other researchers to reuse our data in their research.

NDT-ReMat: Non-Destructive Testing methods for informed Reuse of building Materials. 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 Digital Data Type	Only for digital data Digital Data format	Only for digital data Digital data volume (MB/GB/TB)	Only for physical data Physical volume
experimental data	data obtained during experiments	*new*	digital data and physical test samples	*Please choose from the following options:* • Observational • Experimental • Compiled/aggregated data • Simulation data • Software all of the above	• .por, .xml, .tab, .csv,.pdf, .txt, .rtf, .dwg, .gml, … all of the above + matlab, excel, word, jpg, …	• <50TB	bricks, timber beams and concrete samples: for indicative amounts, see project description
this table cannot be filled-in in detail at the moment and will be updated in the second year of the project							

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:

internal data generated in previous research projects at the Reyntjens Laboratory of KU Leuven. No DOI or URL available.

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

Tech transfer is foreseen as a goal of the FWO project and coordinated by KU Leuven and Buildwise in WP4. It includes a workshop and an R&D post-trajectory plan. Specific datasets cannot yet be detailed at this point and depend on the project results - to be updated.

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.

- No

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).

Data are saved in standard file types (e.g. Office), an overview of available datasets is made at the end of the project and saved together with the data on KU Leuven servers. In case of more comprehensive data types or coding (e.g. Matlab), readme files and comment lines will be foreseen within the code.

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?

During the research, raw generated data and codes are managed by each of the three researchers at
the partner institutes, in consultation with their respective supervisor. Processed data and models are
brought together in a protected, online data platform managed by KU Leuven (responsible: E.
Verstrynge) to enhance research interactions and joint publications. This platform will also host
meeting reports.
After the research, each of the supervisors (E. Verstrynge, R. Caspeele, J. Vrijders) remains responsible for the preservation of the raw data. In addition, the structure of the joint data
repository is optimized to ensure maximum preservation and reusability of data in future projects.

How will the data be backed up?

During the research, raw generated data and codes are managed by each of the three researchers at
the partner institutes, in consultation with their respective supervisor. Each researcher is responsible for backup of their PC on their respective host

servers.

Processed data and models are brought together in a protected, online data platform managed by KU Leuven (responsible: E. Verstrynge) to enhance research interactions and joint publications. This platform will also host meeting reports.

After the research, each of the supervisors (E. Verstrynge, R. Caspeele, J. Vrijders) remains responsible for the preservation of the raw data. In addition, the structure of the joint data
repository is optimized to ensure maximum preservation and reusability of data in future projects.

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

all three partners have decent backup facilities and server space.

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

all three partners have decent/protected backup facilities and server space.

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

few 100 euro/year, covered by the project funding

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...).

Processed data and models are brought together in a protected, online data platform managed by KU Leuven (responsible: E. Verstrynge) to enhance research interactions and joint publications. This platform will also host meeting reports.

After the research, each of the supervisors (E. Verstrynge, R. Caspeele, J. Vrijders) remains responsible for the preservation of the raw data. In addition, the structure of the joint data
repository is optimized to ensure maximum preservation and reusability of data in future projects.

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

Processed data and models are brought together in a protected, online data platform managed by KU Leuven (responsible: E. Verstrynge) to enhance research interactions and joint publications. This platform will also host meeting reports.

After the research, each of the supervisors (E. Verstrynge, R. Caspeele, J. Vrijders) remains responsible for the preservation of the raw data. In addition, the structure of the joint data
repository is optimized to ensure maximum preservation and reusability of data in future projects.

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

few 100 euro/year, covered by other project funding

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 a restricted access repository (after approval, institutional access only, …)

After the research, each of the supervisors (E. Verstrynge, R. Caspeele, J. Vrijders) remains responsible for the preservation of the raw data. In addition, the structure of the joint data
repository at KU Leuven is optimized to ensure maximum preservation and reusability of data in future projects.
An open access repository is under consideration, yet will depend on the project results.

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

members of the research groups of E. Verstrynge, R. Caspeele, J. Vrijders if they need it for their research.
In addition, open access repositories will have no restrictions.
In addition, other researchers may request access to published data, which will be assessed by the project coordinator on an individual basis.

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.

- No

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

if an open access repository is set up, it may likely be RDR. Others are possible and will be considered.

When will the data be made available?

after being published.

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

not yet known.

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

if an open access repository is set up, a DOI will be linked.

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

Deposition of smaller datasets in data repositories is usually covered by the repository and for sharing physical data the cost are typically paid by the researcher requesting the materials.

6. Responsibilities

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

During the research, raw generated data and codes are managed by each of the three researchers at the partner institutes, in consultation with their respective supervisor. Processed data and models are brought together in a protected, online data platform managed by KU Leuven (responsible: E. Verstrynge) to enhance research interactions and joint publications.

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

During the research, raw generated data and codes are managed by each of the three researchers at the partner institutes, in consultation with their respective supervisor. Processed data and models are brought together in a protected, online data platform managed by KU Leuven (responsible: E. Verstrynge) to enhance research interactions and joint publications.

Who will manage data preservation and sharing?

During the research, raw generated data and codes are managed by each of the three researchers at the partner institutes, in consultation with their respective supervisor. Processed data and models are brought together in a protected, online data platform managed by KU Leuven (responsible: E. Verstrynge) to enhance research interactions and joint publications.

Who will update and implement this DMP?

E. Verstrynge