Advanced performance assessment of existing concrete buildings by coupling 3D analysis of load arrangement, structure analysis including membrane action and test-based model updating

A Data Management Plan created using DMPonline.be

Creators: Shana Van Hout, n.n. n.n.

Affiliation: KU Leuven (KUL)

Funder: Fonds voor Wetenschappelijk Onderzoek - Research Foundation Flanders (FWO)

Template: FWO DMP (Flemish Standard DMP)

Principal Investigator: n.n. n.n.

Data Manager: Shana Van Hout

Grant number / **URL:** 1SG3523N

ID: 198299

Start date: 05-12-2022

End date: 04-12-2026

Project abstract:

To meet climate objectives, there is a clear need to deal differently with our building patrimony. In the future, building structures must be re-used possibly in combination with changes of their intended function. This research work will develop an assessment procedure for existing structures. After collecting the necessary historical data, the procedure focuses on the modelling of load arrangements through linear FEA. Despite being the starting point of further (advanced) analyses, disproportionally little research attention has been given to this. Often, simplified methods are used which results in a conservative outcome. Starting from the results of the linear load model, a coupling will be proposed with a non-linear FEA to perform a structural analysis. In this non-linear FEA (NLFEA), the possibility to use membrane actions in ambient conditions and system behaviour is researched. To validate the proposed mathematical models a real test structure will be build on a scale of 1/3, which allows for model updating and perform test till the level of robustness checks. The use of NLFEA in structural analysis requires also the study of reliability levels and model uncertainties to obtain a credible working procedure.

Last modified: 20-04-2023

Advanced performance assessment of existing concrete buildings by coupling 3D analysis of load arrangement, structure analysis including membrane action and test-based model updating
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)

Mainly new data will be generated. This data is not personal.
- Results of testing: LVDT's, Load cells, strain gauges, images, time-laps, Processing and analysis of results, reports - (excel, jpg, word, pdf)
- Scientific publications: (1) PhD (2) Conference papers (3) journal paper (4) national training day in collaboration with ie-net (Royal Flemish engineering society) to spread the obtained knowledge in the Flanders region. - (word, pdf)
- Guidelines: book proposal in collaboration with CRC Press (Oxford, UK) - (word, pdf)
- Presentations: Training days with practicing engineers and suppliers of materials - (ppt, word)
This type of data will be collected:
- Session reports: input of stakeholders during the training days - (word)

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)

1. Designation of responsible person (If already designated, please fill in his/her name.)
    - during the research: Shana Van Hout
    - after the research: Tom Molkens
2. Storage capacity/repository
   Storage capacity is provided by KU Leuven and the research group of Campus De Nayer up to 10 years after the end of the research. The results of the research will be accessible in directly readable file formats.
    - during the research: OneDrive (2TB)
    - after the research

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)

/

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)

No

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

/

Advanced performance assessment of existing concrete buildings by coupling 3D analysis of load arrangement, structure analysis including membrane action and test-based model updating
DPIA

DPIA

Have you performed a DPIA for the personal data processing activities for this project?

- No

Advanced performance assessment of existing concrete buildings by coupling 3D analysis of load arrangement, structure analysis including membrane action and test-based model updating

GDPR

GDPR

Have you registered personal data processing activities for this project?

- No

Advanced performance assessment of existing concrete buildings by coupling 3D analysis of load arrangement, structure analysis including membrane action and test-based model updating
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.

				Only for digital data	Only for digital data	Only for digital data	Only for physical data
Dataset Name	Description	New or reused	Digital or Physical	Digital Data Type	Digital Data format	Digital data volume (MB/GB/TB)	Physical volume
Sensor readings	LVDT, strain gauges,...	Generate new data	Digital	Observational	.xml	<100GB	
Images	DIC	Generate new data	Digital	Observational	.jpg	<1TB	
Analysis	of experimental resuts	Generate new data	Digital	Experimental	.xml	<100GB	
Simulations	Diamonds, Abaqus	Generate new data	Digital	Simulation data		<1TB	
Publications		Generate new data	Digital	Other	.pdf	<100GB	
Guidelines	Book proposal CRC Press	Generate new data	Digital	Other	.pdf	<100GB	
Presentation	Training days	Generate new data	Digital	Other	.ppt	<100GB	
Reports		Generate new data	Digital	Other	.pdf	<100MB	

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:

/

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.

- No

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).

Sensor data set: settings sensors, symbols - README.txt
Simulation: settings, symbols - README.txt

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.

- Yes

Metadata will be saved on ReadMe.txt files. Template is given by KULeuven.

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

Where will the data be stored?

OneDrive available through KULeuven with backup and 2 TB memory.

How will the data be backed up?

OneDrive available through KULeuven with backup and 2 TB memory.

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

OneDrive available through KULeuven with backup and 2 TB memory. There is a possibility to enlarge the memory to 5TB.

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

OneDrive can share documents with or without editing rights.

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

The costs are covered by KULeuven.

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...).

Data will be preserved for 10 years according to KU Leuven RDM policy.
Institutional policies:
Retained data:

- are at the basis of publications (or PhDs)
- can only be generated or collected once (e.g. live observations, unique access to data, ...)
- are generated or collected as a result of substantial financial or personal efforts (e.g. fieldwork in difficult locations, longitudinal data, ...)
- are likely to be reused within the research unit or in wider contexts

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

RDR (Research Data Repository) provided by KU Leuven

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

RDR is an open-source software.

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

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

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.

RDR

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.

Attribution-ShareAlike 4.0 International (CC BY-SA 4.0)

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

RDR (repository) automatically provides DOI

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

RDR is an open-source software that gives a one-stop platform to upload, describe, and share their research data, conveniently and with support from university staff.

6. Responsibilities

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

Shana Van Hout

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

Shana Van Hout

Who will manage data preservation and sharing?

Tom Molkens

Who will update and implement this DMP?

Shana Van Hout