RECTORATE
VICE RECTOR SCIENCE, ENGINEERING AND TECHNOLOGY
NAAMSESTRAAT 22 BOX 5000
3000 LEUVEN, BELGIUM

FWO
Leuvenseweg 38
1000 Brussel

2023-04-06

OUR REF
YOUR REF
LEUVEN

PhD fellowship SB 1S82323N applicant: Olena Shkundalova – verandering promotorschap

Geachte mevrouw, mijnheer,

Het FWO heeft aan mevrouw Olena Shkundalova op 7 oktober 2022 een beurs toegekend als aspirant strategisch basisonderzoek (applicatienummer: 1S82323N - titel 'Development of Viable 3D-Printing Methods for Digital Fabrication of Reinforced Concrete') voor de duur van 2 jaar, startend op 1 november 2022.

Er is echter een conflict gerezen met haar promotor, prof. Tom Molkens, en ik zie mij daarom genoodzaakt u te melden dat dit doctoraatstraject verder opgevolgd zal worden door prof. Bert Lauwers (KU Leuven) als hoofdpromotor. Prof. Martin Classen van RWTH, Aken (DE) zal optreden als copromotor. Mogelijk zal dit team nog verder aangevuld worden. In dat geval zal het FWO onverwijld op de hoogte gebracht worden.

Prof. Bert Lauwers heeft reeds uitgebreid overlegd met mevrouw Shkundalova en is bereid om het verdere doctoraatstraject duurzaam en kwaliteitsvol te begeleiden, en dit in sterke interactie met de co-promotor en eveneens de leden van de begeleidingscommissie. Vanzelfsprekend wordt de wetenschappelijke bijdrage van de terugtredende promotor, prof. Tom Molkens, erkend. Zij zal dan ook zichtbaar gemaakt worden in het doctoraatsproefschrift en de publicaties die uit het onderzoek zullen volgen.

Hoogachtend,

Prof. Dr. Gerard Govers
Vice Rector Science, Engineering and Technology

PROF. DR. GERARD GOVERS, VICE RECTOR SCIENCE, ENGINEERING AND TECHNOLOGY
TEL. + 32 16 32 64 23 gerard.govers@kuleuven.be
www.kuleuven.be

FWO DMP Template - Flemish Standard Data Management Plan

Project supervisors (from application round 2018 onwards) and fellows (from application round 2020 onwards) will, upon being awarded their project or fellowship, be invited to develop their answers to the data management related questions into a DMP. The FWO expects a **completed DMP no later than 6 months after the official start date** of the project or fellowship. The DMP should not be submitted to FWO but to the research co-ordination office of the host institute; FWO may request the DMP in a random check.

At the end of the project, the **final version of the DMP** has to be added to the final report of the project; this should be submitted to FWO by the supervisor-spokesperson through FWO's e-portal. This DMP may of course have been updated since its first version. The DMP is an element in the final evaluation of the project by the relevant expert panel. Both the DMP submitted within the first 6 months after the start date and the final DMP may use this template.

The DMP template used by the Research Foundation Flanders (FWO) corresponds with the Flemish Standard Data Management Plan. This Flemish Standard DMP was developed by the Flemish Research Data Network (FRDN) Task Force DMP which comprises representatives of all Flemish funders and research institutions. This is a standardized DMP template based on the previous FWO template that contains the core requirements for data management planning. To increase understanding and facilitate completion of the DMP, a standardized **glossary** of definitions and abbreviations is available via the following link.

1. General Project Information	
Name Grant Holder & ORCID	**Olena Shkundalova,** **http://orcid.org/0000-0003-1472-2840**
Contributor name(s) (+ ORCID) & roles	**Prof. Bert Lauwers, supervisor** **http://orcid.org/0000-0001-6882-301X**
Project number[1] & title	1S82323N Development of viable 3D printing methods for digital fabrication of reinforced concrete.
Funder(s) GrantID[2]	1S82323N
Affiliation(s)	☒ KU Leuven ☐ Universiteit Antwerpen ☐ Universiteit Gent ☐ Universiteit Hasselt ☐ Vrije Universiteit Brussel ☐ Other: Provide ROR[3] identifier when possible:
Please provide a short project description	This project aims at developing methods for the production of reinforced concrete digitally using 3D concrete printing technology. New environmental friendly materials will be used to provide more sustainable solutions.

[1] "Project number" refers to the institutional project number. This question is optional since not every institution has an internal project number different from the GrantID. Applicants can only provide one project number.

[2] Funder(s) GrantID refers to the number of the DMP at the funder(s), here one can specify multiple GrantIDs if multiple funding sources were used.

[3] Research Organization Registry Community. https://ror.org/

2. 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[4].

				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
Simulations	Finite element simulations of the structural behaviour of 3D printed RC elements	☒ Generate new data ☐ Reuse existing data	☒ Digital ☐ Physical	☐ Observational ☐ Experimental ☐ Compiled/ aggregated data ☒ Simulation data ☐ Software ☐ Other ☐ NA	☐ .por ☐ .xml ☐ .tab ☐ .csv ☐ .pdf ☒ .txt ☐ .rtf ☒ .dwg ☐ .tab ☐ .gml ☒ other: .cae, .jnl ☐ NA	☐ < 100 MB ☐ < 1 GB ☒ < 100 GB ☐ < 1 TB ☐ < 5 TB ☐ < 10 TB ☐ < 50 TB ☐ > 50 TB ☐ NA	
Experimental	Conducting experiments on 3D printed reinforced concrete structural elements	☒ Generate new data ☐ Reuse existing data	☒ Digital ☐ Physical	☐ Observational ☒ Experimental ☐ Compiled/ aggregated data ☐ Simulation data ☐ Software ☐ Other ☐ NA	☒ .xls ☒ .pdf ☒ .txt	☒ < 100 GB	

GUIDANCE:

DATA CAN BE DIGITAL OR PHYSICAL (FOR EXAMPLE BIOBANK, BIOLOGICAL SAMPLES, …). DATA TYPE: DATA ARE OFTEN GROUPED BY TYPE (OBSERVATIONAL, EXPERIMENTAL ETC.), FORMAT AND/OR COLLECTION/GENERATION METHOD.

EXAMPLES OF DATA TYPES: OBSERVATIONAL (E.G. SURVEY RESULTS, SENSOR READINGS, SENSORY OBSERVATIONS); EXPERIMENTAL (E.G. MICROSCOPY, SPECTROSCOPY, CHROMATOGRAMS, GENE SEQUENCES); COMPILED/AGGREGATED DATA[5] (E.G. TEXT & DATA MINING, DERIVED VARIABLES, 3D MODELLING); SIMULATION DATA (E.G. CLIMATE MODELS); SOFTWARE, ETC.

EXAMPLES OF DATA FORMATS: TABULAR DATA (.POR,. SPSS, STRUCTURED TEXT OR MARK-UP FILE XML, .TAB, .CSV), TEXTUAL DATA (.RTF, .XML, .TXT), GEOSPATIAL DATA (.DWG,. GML, ..), IMAGE DATA, AUDIO DATA, VIDEO DATA, DOCUMENTATION & COMPUTATIONAL SCRIPT.

DIGITAL DATA VOLUME: PLEASE ESTIMATE THE UPPER LIMIT OF THE VOLUME OF THE DATA PER DATASET OR DATA TYPE.

PHYSICAL VOLUME: PLEASE ESTIMATE THE PHYSICAL VOLUME OF THE RESEARCH MATERIALS (FOR EXAMPLE THE NUMBER OF RELEVANT BIOLOGICAL SAMPLES THAT NEED TO BE STORED AND PRESERVED DURING THE PROJECT AND/OR AFTER).

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.	

[4] Add rows for each dataset you want to describe.

[5] These data are generated by combining multiple existing datasets.

Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? If so, please describe these issues further and refer to specific datasets or data types when appropriate.	☐ Yes, human subject data ☐ Yes, animal data ☐ Yes, dual use ☒ No If yes, please describe:
Will you process personal data[6]? If so, briefly describe the kind of personal data you will use. Please refer to specific datasets or data types when appropriate. If available, add the reference to your file in your host institution's privacy register.	☐ Yes ☒ No If yes: - Short description of the kind of personal data that will be used: - Privacy Registry Reference:
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 ☒ No If yes, please comment:
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 to what data they relate and what restrictions are in place.	☐ Yes ☒ No If yes, please explain:

[6] See Glossary Flemish Standard Data Management Plan

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 to what data they relate and which restrictions will be asserted.	☐ Yes ☒ No If yes, please explain:

3. 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).	1. Experimental data: After each experiment, the test data will be saved as a set of .txt and .xls files generated automatically during the test. Together with that, a short report will be provided in word and pdf versions with the specific test setup parameters, etc. The drawings in .dwg format will depict the structural elements tested. Data aggregation and analysis of test data can be done in Excel. Photos of experiments will be stored in .jpeg and .heif/hevc formats. 2. Simulations: The FE simulation files will be stored as .cae and .jnl files, which can be opened in a text editor to see the commands used, or opened in Abaqus with the models appropriately numbered and classified. An Excel file will be created describing the parameters of each generated model.

Will a metadata standard be used to make it easier to **find and reuse the data**? If so, please specify which metadata standard will be used. If not, please specify which metadata will be created to make the data easier to find and reuse. *REPOSITORIES COULD ASK TO DELIVER METADATA IN A CERTAIN FORMAT, WITH SPECIFIED ONTOLOGIES AND VOCABULARIES, I.E. STANDARD LISTS WITH UNIQUE IDENTIFIERS.*	☐ Yes ☒ No If yes, please specify (where appropriate per dataset or data type) which metadata standard will be used: If no, please specify (where appropriate per dataset or data type) which metadata will be created: Word and Excel files will be used providing guidance to simplify the search.

4. Data Storage & Back-up during the Research Project	
Where will the data be stored?	All the data will be mirrored to KU Leuven OneDrive for Business (personal storage with max. capacity 2 TB) on a daily basis (continuous synchronization). The data from local computers will also be mirrored to One Drive on a daily basis.

How will the data be backed up? *What storage and backup procedures will be in place to prevent data loss? Describe the locations, storage media and procedures that will be used for storing and backing up digital and non-digital data during research.*[7] *Refer to institution-specific policies regarding backup procedures when appropriate.*	Experimental and simulation data will be saved on KU Leuven servers.
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 ☐ No If yes, please specify concisely: 2 TB are provided, and extra space can be provided upon request If no, please specify:
How will you ensure that the data are securely stored and not accessed or modified by unauthorized persons? *Clearly describe the measures (in terms of physical security, network security, and security of computer systems and files) that will be taken to ensure that stored and transferred data are safe.* [7]	Data can be accessed using a secure password and a KU Leuven authenticator. External members can only be granted personalized access.
What are the expected costs for data storage and backup during the research project? How will these costs be covered?	The costs for data storage and backup are covered by the allocated project budget.

[7] Source: Ghent University Generic DMP Evaluation Rubric: https://osf.io/2z5g3/

5. 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 retained for a period of 10 years according to the KU Leuven RDM policy
Where will these data be archived (stored and curated for the long-term)?	The data will be stored on so-called 'Archive Storage' of KU Leuven ICTS. The mirrored hard drive will also be stored during this period of 10 years.
What are the expected costs for data preservation during the expected retention period? How will these costs be covered?	The cost for 'Archive Storage' of KU Leuven ICTS is € 104.42 EUR/year, corresponding to an expected total cost of 1044.2 EUR. The cost for data preservation is covered by the allocated project budget and will be paid upfront.

6. Data Sharing and Reuse	
Will the data (or part of the data) be made available for reuse after/during the project? Please explain per dataset or data type which data will be made available. *NOTE THAT 'AVAILABLE' DOES NOT NECESSARILY MEAN THAT THE DATA SET BECOMES OPENLY AVAILABLE, CONDITIONS FOR ACCESS AND USE MAY APPLY. AVAILABILITY IN THIS QUESTION THUS ENTAILS BOTH OPEN & RESTRICTED ACCESS. FOR MORE INFORMATION: HTTPS://WIKI.SURFNET.NL/DISPLAY/STANDARDS/INFO-EU-REPO/#INFOEUREPO-ACCESSRIGHTS*	☐ Yes, in an Open Access repository ☒ Yes, in a restricted access repository (after approval, institutional access only, …) ☐ No (closed access) ☐ Other, please specify: The data collected through this project will make a valuable contribution and can be shared afterwards upon request after approval and in agreement with the research institution.
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 per dataset or data type where appropriate.	☐ Yes, privacy aspects ☐ Yes, intellectual property rights ☐ Yes, ethical aspects ☐ Yes, aspects of dual use ☐ Yes, other ☒ No If yes, please specify:
Where will the data be made available? If already known, please provide a repository per dataset or data type.	

When will the data be made available? *THIS COULD BE A SPECIFIC DATE (DD/MM/YYYY) OR AN INDICATION SUCH AS 'UPON PUBLICATION OF RESEARCH RESULTS'.*	The data will be made available as soon as the main findings of the project have been published.
Which data usage licenses are you going to provide? If none, please explain why. *A DATA USAGE LICENSE INDICATES WHETHER THE DATA CAN BE REUSED OR NOT AND UNDER WHAT CONDITIONS. IF NO LICENCE IS GRANTED, THE DATA ARE IN A GREY ZONE AND CANNOT BE LEGALLY REUSED. DO NOTE THAT YOU MAY ONLY RELEASE DATA UNDER A LICENCE CHOSEN BY YOURSELF IF IT DOES NOT ALREADY FALL UNDER ANOTHER LICENCE THAT MIGHT PROHIBIT THAT.* *EXAMPLE ANSWER: E.G. "DATA FROM THE PROJECT THAT CAN BE SHARED WILL BE MADE AVAILABLE UNDER A CREATIVE COMMONS ATTRIBUTION LICENSE (CC-BY 4.0), SO THAT USERS HAVE TO GIVE CREDIT TO THE ORIGINAL DATA CREATORS."* [8]	https://www.kuleuven.be/rdm/en/rdr/licenses Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0)
Do you intend to add a PID/DOI/accession number to your dataset(s)? If already available, please provide it here. *INDICATE WHETHER YOU INTEND TO ADD A PERSISTENT AND UNIQUE IDENTIFIER IN ORDER TO IDENTIFY AND RETRIEVE THE DATA.*	☐ Yes ☒ No If yes:
What are the expected costs for data sharing? How will these costs be covered?	Publications of research findings are expected to be free of charge.

[8] Source: Ghent University Generic DMP Evaluation Rubric: https://osf.io/2z5g3/

7. Responsibilities	
Who will manage data documentation and metadata during the research project?	The project supervisor, Prof. Bert Lauwers, bears the responsibility for the data documentation & metadata.
Who will manage data storage and backup during the research project?	The project supervisor, Prof. Bert Lauwers, bears the responsibility for data storage & back up during the project.
Who will manage data preservation and sharing?	The project supervisor, Prof. Bert Lauwers, bears the responsibility for managing data preservation and sharing.
Who will update and implement this DMP?	The project supervisor, Prof. Bert Lauwers, bears the overall responsibility for updating & implementing this DMP. The PhD student Olena Shkundalova will also contribute to the update and implementation of this DMP.