Rethinking Circular Architectural Design as a Participatory and Inclusive practice

A Data Management Plan created using DMPonline.be

Creator: Vitor Silveira Breder Rocha

Affiliation: KU Leuven (KUL)

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Project abstract:

Circular Design is a fundamental concept inside Circular Economy (CE) initiatives aiming to achieve sustainability goals, especially in the Architecture field. Nonetheless, many applications of CE are failing to: reduce absolute resource input; address issues in current economic order; and balance the three sustainability dimensions – environmental, economic and social. In addition, users' participation in Circular Design initiatives remains rarely disclosed. Motivated by those issues, this strategic basic research proposes a novel framework for rethinking Circular Design as a Participatory and inclusive practice in Architecture by using Information and Communication Technology (ICT) tools. Two projects will be used as testbeds: 'Woonbox' and 'Solidary Mobile Housing', both realized by Samenlevingsopbouw in collaboration with Altering Practices for Urban Inclusion Research Group.

The research aims at: 1. developing an Integrative Conceptual Framework bridging Circular Design and Participatory Design; 2. Exploring circular and participatory solutions in the existing projects; 3. Implementing social-spatial aspects as Key Performance Indicators in Circular Building Assessment tools; 5. Testing existing ICT tools; 6. developing guidelines for socio-spatial inclusion in Participatory Circular Design; 7. Creating an Interactive 3D-platform for Participatory Circular Design in Architecture, allowing involvement of multiple participants along different stages of the design process.

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Rethinking Circular Architectural Design as a Participatory and Inclusive practice 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)

I will both create primary data and use secondary data. As the project is based on a Living Lab structure, there will be also the manipulation of data that could be considered personal or traceable back to specific participants (measures for handling personal data will be taken). The data types are:
- Interviews & Focus groups (transcripted text &/or audio recordings)
- Surveys, Reports & Consent webform data
- Handwritten and digital notes
- Sketches, drawings, maps, graphs, diagrams & other (digital) images
- Pictures, Screen capture, Audio & Video Recording files
- 3D/CAD files & Simulation data
- SQL database & Computational Script files

The estimated total volume of data is <1TB.

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)

Data storage Responsible person: Prof. Chiara Piccardo, supervisor.

Data Storage during the research: OneDrive for Business for staff and students (2TB). The OneDrive account offers extensive possibilities to collaborate within and outside KU Leuven. Its access is done via web browser and a multifactor sync app, which makes it suitable to storage even strictly confidential data, provided extra precautions are taken.

Data storage after the research: KU Leuven Research Data Repository (RDR). RDR is capable of storing large amounts of data, allowing to set the accessibility of the files, and can keep the data for the 10 year minimum imposed by KU Leuven. RDR shares data according to the FAIR principles and it also assigns digital object identifiers (DOIs) to uploaded data to make it easily citable.

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)

Not applicable

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)

Participants will receive Informed Consent Forms. Eventual stored personal data will undergo extra encryption. Only the researcher and supervisors involved in the PhD will have access to the data, unless elsewhere specified. As such, folders containing personal data will have controlled access by establishing 'no access', 'read only', 'read and write' or 'administrator' permissions.

During activities, participants who do not agree to being photographed/recorded will receive distinctive badges for correct anonymization. All data no longer needed will be destroyed in a consistent manner.

Non-disclosure agreements will be provided if confidential data is manipulated.

At KU Leuven, a multifactor authentication is used to provide additional protection to all types of data.

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

Not applicable

Rethinking Circular Architectural Design as a Participatory and Inclusive practice
DPIA

DPIA

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

Question not answered.

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GDPR

GDPR

Have you registered personal data processing activities for this project?

- Yes

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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
		Please choose from the following options: • Generate new data • Reuse existing data	*Please choose from the following options:* • Digital • Physical	*Please choose from the following options:* • Observational • Experimental • Compiled/aggregated data • Simulation data • Software • Other • NA	*Please choose from the following options:* • .por, .xml, .tab, .cvs,.pdf, .txt, .rtf, .dwg, .gml, … • NA	*Please choose from the following options:* • <100MB • <1GB • <100GB • <1TB • <5TB • <10TB • <50TB • >50TB • NA	
Interviews & Focus Groups	Transcripted text &/or audio recordings	Generate new data	Digital & Physical	Observational	.txt, .pdf, .doc, .xml	<100MB	
Research Activities - Written files	Surveys, Reports & Consent webform data	Generate new data	Digital & Physical	Observational	.txt, .pdf, .doc, .xml	<100MB	
Research Activities - Multimedia	Pictures, Screen capture, Audio & Video Recording files	Generate new data & Reuse existing data	Digital	Observational & Compiled/aggregated	.psd, .ai, .id, .pdf, .jpeg, .png, .mpeg-4	<50GB	
Desk Research & other activities	Handwritten, Digital Notes, Papers & Manuscripts	Generate new data	Digital & Physical	Observational & Compiled/aggregated	.txt, .doc, .pdf, .docx, .ai, .id, .xml,	<50GB	
Design Driven Research	Sketches, drawings, maps, graphs, diagrams & other images	Generate new data & Reuse existing data	Digital & Physical	Compiled/aggregated	.psd, .ai, .id, .pdf, .jpeg, .png	<50GB	
Digital Platform - building design	3D/CAD BIM files & simulation data	Generate new data & Reuse existing data	Digital & Physical	Compiled/aggregated & simulation data	IFC compatible BIM files - IFCXML -, .rvt, .dwg, .dxf, .ifc shapefiles, .skp, and Grasshopper .gh VPL files, energy plus files .osm,	<100GB	
Digital Platform - database & backend	materials, providers, services, local (weather, geographical, socio-economic) data	Generate new data & Reuse existing data	Digital	Compiled/aggregated	SQL database,	<100GB	
Digital Platform - results & frontend	Interface, Dashboard and Computational Script files	Generate new data	Digital	Compiled/aggregated	.py, script files	<200GB	

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:

The Research uses as case study the Solidaire Mobiel Wonen, made in partnership between KU Leuven and SAAMO Brussel.
More info:
https://researchportal.be/en/project/solidary-affordable-housing-houseless-mobile-model-brussels-capital-region
The co-creation project is under a Creative Commons License, which allows its use for the purpose of the research.

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.

- Yes, human subject data

In order to develop both the conceptual framework and the digital platform as final results of the PhD, the involvement of different groups of people is foreseen. Datasets where privacy and ethical action will take place are:
- Interviews & Focus Groups
- Research Activities - Written files
- Research Activities - Multimedia

Participants will receive Informed Consent Forms. Eventual stored personal data will undergo extra encryption. Only the researcher and supervisors involved in the PhD will have access to the data, unless elsewhere specified. As such, folders containing personal data will have controlled access by establishing 'no access', 'read only', 'read and write' or 'administrator' permissions.
During activities, participants who do not agree to being photographed/recorded will receive distinctive badges for correct anonymization. All data no longer needed will be destroyed in a consistent manner.
Non-disclosure agreements will be provided if confidential data is manipulated.
At KU Leuven, a multifactor authentication is used to provide additional protection to all types of data.
In the Compliance Monitoring Tool, SMEC and PRET approvals were checked, but the forms still have to be compiled for the subsequent years of the research (year 2, 3 and 4). No approval is

necessary for the year 1, where only Desk research is currently taking place. For that reason, approval reference numbers are still not available.

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.

- Yes

The research relies on a Participatory Action Research approach where a Living Lab Methodology is carried out. In order to develop both the conceptual framework and the digital platform as final results of the PhD, the involvement of different groups of people is foreseen. In that scenario, some personal data might be relevant for the research, as well as pictures, video recordings and other multimedia might be used during research activities, which may be defined as identifiable data.
Potential groups of people involved in different stages: Other Researchers from the field; Students; External Actors interested in the research field of studies.
Datasets that will make use of personal data to some degree:
- Interviews & Focus Groups
- Research Activities - Written files
- Research Activities - Multimedia
- Design Driven Research
Personal data stored/processed:
- Age
- Gender
- Email Address
- Level of education/expertise
- Profession/Field of studies

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

Datasets with potential commercial valorization:
- Digital Platform - building design
- Digital Platform - database & backend
- Digital Platform - results & frontend
A Creative Commons License might apply in the future.

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.

- Yes

The digital platform foreseen will be part of a Creative Commons License. However, some data might include Intellectual Property Rights and ownership agreement in case an external partner takes part in the development of the platform. This, nevertheless, is something still to be discussed in the final phases of the research.

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).

Datasets:
- Interviews & Focus Groups :
- Research Activities - Written files:
- Research Activities - Multimedia:
For all three above datasets, a README.txt file will be created containing: the methodology used to collect data; the definition of relevant variables/information; encrypted information for personal data manipulation; license agreements that might apply. (a encrypted folder containing personal data will be created).
- Desk Research & other activities: README.txt containing info on methods applied and structure of the folders containing supporting bibliography and final publications.
- Design Driven Research:
For the three datasets below, a README.txt will be created containing info on methods applied and structure of the folders. Moreover, a special document will be created to describe the database structure containing also a 'how-to' description of how to re-test the results and further use the platform.
- Digital Platform - building design
- Digital Platform - database & backend
- Digital Platform - results & frontend

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.

Question not answered.

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

Where will the data be stored?

Data Storage during the research: OneDrive for Business for staff and students (2TB). The OneDrive account offers extensive possibilities to collaborate within and outside KU Leuven. Its access is done via web browser and a multifactor sync app, which makes it suitable to storage even strictly confidential data, provided extra precautions are taken.
Data storage after the research: KU Leuven Research Data Repository (RDR). RDR is capable of storing large amounts of data, allowing to set the accessibility of the files, and can keep the data for the 10 year minimum imposed by KU Leuven. RDR shares data according to the FAIR principles and it also assigns digital object identifiers (DOIs) to uploaded data to make it easily citable.

How will the data be backed up?

The OneDrive for Business cloud storage being used already provides an automatic backups.
On top of that, important files backups will be made periodically on an external hard-drive. Physical paper-based data and documentation files will be stored in clearly labeled folders in my office cabinet and will be digitalized to the folders of its corresponding dataset when possible and relevant.
The KU Leuven Repository being used at the end of the research (RDR) will be maintained by the ICT support from the KU Leuven organization and will be monitored by the Research's supervisor, Prof. Chiara Piccardo.

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

The OneDrive cloud storage already offers 2TB of space, which is more than enough when compared to the estimated total amount of volume for the research (around 550GB).

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

Physical & paper-based data and documentation files will be stored in clearly labeled folders in my office cabinet. If personal &/or confidential data is physically stored, it will be done so inside a cabinet that is only open by the use of a key that only myself and my supervisor will have access to. The digitalized files will be destroyed soon after its digitalization process.
Participants of the research will receive Informed Consent Forms before any activities that might require use of their image or personal information. Eventual stored personal data will undergo extra encryption using 7-zip software. Only the researcher and supervisors involved in the PhD will have access to the data and the password to access it, unless elsewhere specified. As such, folders containing personal data will have controlled access by establishing ‘no access’, ‘read only’, ‘read and write’ or ‘administrator’ permissions. A README.txt file will be added to these folders, explaining the Use Agreements of the data.
During Research activities that may include participants who do not agree to being photographed/recorded, they will receive distinctive badges for correct anonymization. All data no longer needed will be destroyed in a consistent manner.
Non-disclosure agreements will be provided if confidential data is manipulated.
Moreover, at KU Leuven, a multifactor authentication app is used to provide additional protection to all types of data.

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

No extra costs for data storage are expected as OneDrive cloud storage and RDR Repository are offered for free for KU Leuven staff.

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...).

Only relevant data for the reassessing of the research will be preserved. This is special true to the following datasets:
- Desk Research & other activities
- Design Driven Research:
- Digital Platform - building design
- Digital Platform - database & backend
- Digital Platform - results & frontend

The remaining datasets will be screened and will have data carefully selected in order to not keep unwanted, irrelevant (personal) data in the storage for the following 10 years.

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

For the long-term, the data will be archived at the KU Leuven Research Data Repository (RDR). RDR is capable of storing large amounts of data, allowing to set the accessibility of the files, and can keep the data for the 10 year minimum imposed by KU Leuven. RDR shares data according to the FAIR principles and it also assigns digital object identifiers (DOIs) to uploaded data to make it easily citable.

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

No extra costs are expected.

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.

Question not answered.

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

Question not answered.

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.

Question not answered.

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

Question not answered.

When will the data be made available?

Question not answered.

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

Question not answered.

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.

Question not answered.

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. For larger datasets repositories may charge a fee.

6. Responsibilities

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

The Researcher

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

The Research Supervisor

Who will manage data preservation and sharing?

The Research supervisor

Who will update and implement this DMP?

The Researcher and supervisor