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AldesignTEX

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Data Management Plan

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Abstract	This document outlines the Data Management Plan (DMP) for the AldesignTEX project, funded under the Horizon Europe programme. It describes the types of data generated, processed, and stored throughout the project, including experimental, survey, multimedia, and analytical data. The plan ensures compliance with FAIR principles, ethical standards, and data protection regulations (RODO/GDPR), providing guidelines for data accessibility, interoperability, long-term archiving, and secure management. The DMP supports the project's objectives by facilitating transparent, responsible, and sustainable data handling practices.
Keywords	international partnerships, networking activities, short-term visits

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1. Data summary

The **Data Summary** section describes the data that will be collected, generated, processed, and stored in the AIdesignTEX project. Its purpose is to provide a clear and transparent description of the nature of the data, its source, formats, size and usability. This will enable stakeholders, project partners and future data users to better understand how and why data is created and how it can be used.

The basic elements of this section are:

1. The purpose of data collection and generation, which reflects the relationship between the data and the project goals.
2. Data types that indicate a variety of information, such as experimental results, reports, media data, and surveys.
3. Format the data to ensure compatibility with the tools and platforms used in the project.
4. Źródło danych, które identyfikuje, skąd dane pochodzą – czy to z badań eksperymentalnych, ankiet czy analiz cyfrowych.
5. A data source that identifies where data comes from – whether it's from experimental studies, surveys, or digital analytics.
6. Data usability, which highlights which user groups can benefit from the project's results.

1.1 Purpose of data collection in the AIdesignTEX project

The data in the AIdesignTEX project is collected and generated for the following purposes:

- a) Optimize textile manufacturing processes using artificial intelligence and machine learning tools
- b) Development and analysis of circular economy circular economy strategies for textiles.
- c) Conducting an educational campaign and surveying public awareness of textile recycling.
- d) Fostering collaboration with stakeholders and promoting sustainable textile production.

1.2 Types of data

The data generated in the project includes:

- a) Experimental data:
 - Textile morphology images from microscopy and laboratory tests (for example, JPEG, TIFF).
 - Results of thermal analysis (DSC, TGA) and FTIR spectroscopy (TXT and CSV formats).
 - AI/ML simulation results for textile design (e.g., JSON, HDF5, CSV files).
- b) Survey data:
 - Results of the recycling awareness survey as CSV or XLS files.
- c) Data from the educational campaign:
 - Analysis of the number of visits to the project website and interactions in social media (XLS, PDF formats).



- Photos and videos used in LinkedIn, Facebook and Instagram campaigns (JPEG, TIFF, PNG, MP4, MOV)
- d) Reports and project documents:
 - Reports and scientific papers in PDF format, presentations in PPT.

1.3 Data formats

The data will be stored in the following formats:

- a) Images: JPEG, TIFF, PNG.
- b) Videos: MP4, MOV.
- c) Figures: CSV, XLSX, TXT.
- d) Reports, presentations and analyses: PDF, DOCX, PPTX.
- e) Result AI/ML: JSON, HDF5 (for models and analyses) and .DWG, .IDW, .DXF, .STEP, .STL, .SLDPRT, .SLDSM, .SLDDRT, . ASCII (for other tasks).

1.4 Data provenance

The data will come from the following sources, in accordance with the provisions of the draft:

- a) **Experimental data** will be generated in the laboratories of Lodz University of Technology and project partners.
- b) **Survey data** will be collected through an online stakeholder survey.
- c) **Data from the educational campaign** will come from the analysis of statistics of visits to the project website and interactions in social media.
- d) **Multimedia materials (photos, videos)** will be developed and recorded by the project team.
- e) **Digital analytics data** This will be sourced from platforms such as Google Analytics, Facebook Insights, LinkedIn Analytics, and Instagram Insights. This data will be generated automatically by analytical tools built into the platforms and will relate to educational campaigns and promotional activities carried out under the project.

1.5 Expected data size

The total expected size of the data generated in the AIdesignTEX project will be up to 100 GB and includes:

- a) **Experimental data:**
 - Results of laboratory experiments, including images, thermal and spectroscopic analyses: 500 MB – 1 GB..
- b) **Survey data:**
 - Results of anonymous stakeholder surveys on recycling: 50-100 MB.
- c) **Multimedia data (photos and videos):**
 - Photos: Approximately 2000 photos, in JPEG/PNG formats, optimal for social media. Size: 2-5 GB.
 - Movies: Approx. 50-100 Full HD (1920x1080 px) movies. Size: 10-50 GB.



d) Analytics from digital media:

- Google Analytics: Project website traffic data, such as number of visits, traffic sources, user engagement, etc. Projected size: 1-2 GB
- Social media (Facebook, LinkedIn, Instagram): Analytics for reach, interaction, clicks, and engagement for campaigns: 1-2 GB.

1.6 Data usability

The data generated by the AIDesignTEX project will have a wide range of applications in various areas, covering both scientific, educational and practical aspects. The usefulness of the data stems from its interdisciplinary nature, which enables it to be used by project partners, industrial stakeholders, researchers and the general public. In particular, this data will support the development of circular economy technologies, promote sustainable practices in the textile industry and raise environmental awareness in society.

1. For project partners: Experimental data and simulation results will be used to test new textile production strategies.
2. For scientists and stakeholders: Circular economy reporting data and analyses will be publicly available and will support the implementation of the circular economy.
3. For the public: The results of the educational campaign will increase environmental awareness of textile recycling.
4. For the media and community" Photos and videos published on LinkedIn, Facebook and Instagram promote the project's activities and engage the audience.



2 FAIR rules

2.1. Making data easier to discover (Findable)

To ensure that the data collected and generated by AIdesignTEX is easy to find, the following measures will be taken:

a) **Providing metadata:**

Each dataset will contain metadata that complies with the Dublin Core standard, including:

- The title of the dataset.
- The authors and their affiliations.
- ORCID researchers.
- Description of the dataset (purpose, source, methods).
- Keywords for ease of search
- Dates of creation and modification.
- Unique identifier (DOI).

b) **Naming conventions:**

Files and directories will be named according to a standardized convention:

- Format: WP[Number]_Dataset_[Summary]_v[Version].[Extension]
- Example: WP4_Dataset_CELoops_v1.csv

c) **Searchability:**

The datasets will be stored in **the CYRENA** and **Zenodo** repositories, allowing search based on keywords and metadata.

2.2 Facilitate access to data (Accessible)

a) **Open data:**

- Most of the datasets, such as experimental results, reports, and educational materials, will be publicly available in **the CYRENA**, Zenodo, and partner repositories.
- The project website will provide links to datasets and reports.

b) **Data with limited access:**

- Stakeholders' personal data (e.g. name, surname, email) will not be shared publicly for RODO compliance purposes.
- Data requiring an embargo (e.g. before publication in journals) will be made available after the end of the embargo period.

c) **Access methods:**

- The data will be available for download in open formats (e.g. CSV, PDF) using standard tools.
- The documentation accompanying the datasets will ensure correct use.



2.3 Ensuring data interoperability (Interoperable)

To promote interoperability, the project will adopt the following principles:

1. **Standard formats:**

- Experimental data: CSV, TXT, HDF5.
- Reports: PDF.
- Multimedia: MP4, JPEG.

a) **Controlled dictionaries:**

- Use established terminologies, such as circular economy keywords (e.g., "recyclability," "circular economy"), to ensure cross-disciplinary alignment.

b) **Cross-disciplinary compatibility:**

- Mapping metadata to commonly used ontologies, which will facilitate wider use of data in fields such as textile manufacturing, sustainability and circular economy.
-

2.4 Ensuring the reusability of (Reusable)

Licenses:

- Open datasets will be published under Creative Commons Attribution (CC-BY) licenses, allowing for unrestricted use with appropriate attribution.

Data Quality Control:

- Experimental data will be reviewed and validated independently by two investigators prior to publication.
- Where possible, automated data consistency control tools will be used.

Longevity and Availability:

- The data will be available for at least 3 years after the end of the project.
- The CYRENA and Zenodo repositories will ensure safe and long-term storage.

3 Data security

Ensuring data security in the AIdesignTEX project is a key element of data management. Technical and organizational measures will be implemented to ensure the protection of personal data and other project data against unauthorized access, loss or modification, as well as compliance with the provisions of the RODO and .

3.1 Data protection measures

Informed consent to the processing of personal data:

- All participants of project events (e.g. conferences, workshops) will be asked to give written consent to the processing of their personal data for organizational and promotional purposes.
- The consent will include the publication of the image and name on promotional materials, posters, badges and presentations, as well as on the Internet (websites, Facebook, Instagram, LinkedIn, etc.).



Separation of sensitive data:

- Personal data (e.g. email addresses, telephone numbers) will be stored separately from the project results and will only be accessible to those involved in the organisation.

Data encryption:

- Personal information stored on computer systems will be secured with AES-256 encryption.
- Data transfer will be done using secure protocols such as HTTPS and SFTP.

Data Access Restriction:

- Access to personal and sensitive data will be limited to designated members of the project team.
- Multi-factor authentication (MFA) will be used in systems where data is stored.

Publication of personal data:

- Only necessary data (e.g. name, surname, name of the institution) will appear on promotional materials, posters, presentations and badges, with the consent of the participants.
- E-mail addresses and phone numbers will not be published.

3.2 Data backup and retention

Regular backups:

- Monthly backups to a trusted cloud (e.g. Microsoft OneDrive, Google Drive).

Storing data in repositories:

- Design data (e.g. experimental results, reports) will be stored in repositories such as CYRENA, Zenodo and OpenAIRE.
- Participants' personal data will be stored in secured local databases with limited access.

Storage Time:

- Personal data will be stored for the time necessary for the implementation and sustainability of the project and deleted after the completion of the activities, unless the participants consent to their further use.



3.3 Organizational security

Project team training:

- Members of the project team will undergo training in the field of personal data protection and principles.

Personal Data Administrator (PDA):

- The designated personal data controller in the project (Lodz University of Technology) will monitor compliance with data protection rules.

Procedures in the event of incidents:

- Your recovery plan provides for restoring data from backups within no more than 24 hours of detecting a disaster.
- Security incidents will be reported in accordance with the requirements of the .

3.4 Regulatory compliance

RODO :

- All activities related to the processing of personal data will be in accordance with the General Data Protection Regulation ().
- Participants will be informed of the purposes of the processing of their data, the duration of their storage and their rights, such as the right to access, rectify and delete data.

Pseudonymization and anonymization:

- For data that does not have to be related to the identity of the participants, pseudonymization or anonymization will be used.

4 Long-term data management and archiving

4.1. Data retention period

In accordance with the guidelines of the European Commission, the minimum data retention period for projects financed by Horizon Europe is 5 years from the end of the project. In some cases (e.g. sensitive data, data of strategic importance or data protected by an embargo), it may be reduced to 3 years or extended to 10 years if the institution deems it necessary.

Legal basis:

- Horizon Europe Model Grant Agreement (MGA) – Article 17
- Guidelines on FAIR Data Management in Horizon Europe
- Open Research Data and Data Management Plans in Horizon 2020 (partially still in force)



The data generated by the AIdesignTEX project will be stored for at least 5 years after the end of the project, in accordance with the requirements of the European Commission for projects funded under Horizon Europe.

- Scientific data, reports and research results will be stored for a minimum of 5 years.
- Personal and survey data will be stored for a maximum of 3-5 years, in accordance with the rules.
- Multimedia and promotional data will be available for 3-5 years or longer if they are considered relevant for the further promotion of the project results.

4.2. Place and conditions of archiving

Project data will be archived in secure institutional and public repositories that provide long-term access and appropriate protection and versioning mechanisms:

Institutional repositories:

- Lodz University of Technology (internal repository of research data)
- Project partners (Ghent University, Stavanger University, UCAV)
- External public repositories
- Zenodo (OpenAIRE repository, enabling DOI assignment and long-term archiving)
- CYRENA (repository dedicated to EU projects)
- OneDrive (for draft documents and staging versions)

4.3. Data availability after project completion

- Access data will be publicly available in the Zenodo and CYRENA repositories. Each user will be able to download them without restrictions, in accordance with the CC-BY license.
- Data requiring an embargo (e.g. related to scientific publications) will be made publicly available after the end of the embargo period (usually 6-12 months).
- Restricted data (e.g. data containing confidential information or personal data) will only be accessible to project partners and authorized institutions in accordance with the rules.
- Access to data will be regulated by data controllers at Lodz University of Technology and project partners.



5 Ethical aspects

AIDesignTEX has a strong focus on ethical compliance and legal aspects, particularly in the areas of data sharing, artificial intelligence (AI) applications and research ethics. Ethical issues in the project will be supervised in cooperation with the Research Ethics Committee of Lodz University of Technology, as well as with the support of an ethics advisor who will monitor the implementation of appropriate procedures.

5.1. Ethical and legal issues affecting data sharing

The most important ethical and legal issues that may affect data sharing in the AIDesignTEX project include:

1. Data protection (compliance

- a. Any personal data collected (e.g. survey responses, stakeholder data) will be processed in accordance with the **General Data Protection Regulation** () and national data protection laws.
- b. Where possible, **data minimisation and anonymisation techniques** will be used to mitigate the risk of privacy breaches.

2. Artificial intelligence and transparency

- a. The AI-based solutions used in the project will comply with the **EU Artificial Intelligence Act** to ensure **fairness, transparency and non-discrimination**
- b. **All decisions made by AI systems** will be explained and free of biases that could adversely affect specific user groups.

3. Informed consent to data collection and sharing

- a. **Any questionnaire, survey, or user data** collection process will include an informed **consent clause**, including:
 - Purpose of data collection
 - How they are stored and shared
 - Data retention period
 - Right to withdraw consent at any time
- b. Participants will be informed of their **data protection rights** and appropriate measures will be implemented to protect their privacy.

4. Non-discrimination and ensuring fairness in AI systems

- a. The AI models developed under **WP4 (T4.3)** will be tested for bias and its **elimination**



- b. The project will ensure that AI systems are **inclusive and accessible** to different users, taking into account their different abilities, beliefs, preferences and needs.

5. Ethical data management and open science compliance

- a. Ethical data management **will be achieved through strict adherence to the FAIR** (Findable, Accessible, Interoperable, Reusable) principles.
- b. Public data will be available on an **open access basis**, while data **containing confidential information or intellectual** property may be made **available** on a need-to-know basis.