Boosting Space Business - Aurora Region Space Economy Ecosystem (AuroraSpace)

Data Management Plan

1. General description of data

1.1.a. The kinds of data will the research be based on:

Project data will consist of data from *Questionnaire*. The data collected will be from questionnaires (online Webropol, excel) spreadsheets.

1.1.b. Data to be collected and produced:

Questionnaire data (from Webropol)

- Excel (for processing data) *xlsx, max. 500 MB
- CSV, max. 100 MB

1.2 How will the consistency and quality of data be controlled?

The initial responses gathered through the survey research will be securely stored on the University of Vaasa's Z-server. This procedure ensures the preservation of the authenticity and integrity of the primary data. Following the storage, a separate file will be created explicitly for the purpose of analysis. This derivative file will serve as the foundation for conducting the necessary evaluations and investigations derived from the collected material. It is imperative to underline that the original dataset will remain unaltered throughout this process to maintain the veracity of the data.

The Principal Investigator (PI) along with the entire research team are entrusted with the paramount responsibility of ensuring the quality of the data. This encompasses the accuracy, completeness, and reliability of the data collected, as well as adherence to ethical standards pertaining to data management and analysis.

2. Ethical and legal compliance

2.1 What legal issues are related to your data management? (For example, GDPR and other legislation affecting data processing.)

The legal framework surrounding data management, notably the General Data Protection Regulation (GDPR), will be a central reference and guiding principle throughout the entire project. The project will adhere stringently to all GDPR mandates, with continuous vigilance for any emerging regulatory challenges. The Principal Investigator (PI) and the research team are committed to utilising templates and adhering to guidelines set forth by the University of Vaasa to ensure compliance.

To ensure stringent data privacy and protection, original data containing identifiable information pertaining to businesses will be securely stored in a dedicated, separate location. For analysis purposes, this information will be abstracted and coded, providing each business with a unique identifier. This approach ensures that the actual analytical process utilises only encoded data, thereby preserving the anonymity and confidentiality of the original data sources.

Only the researcher(s) in charge of the studies, plus the PI, will have access to the full data sets pertaining to each study. Data will be stored in archives complying with the highest levels of data security at the University of Vaasa (z-drive and the University's own cloud service).

2.2 How will you manage the rights of the data you use, produce and share?

The PI will be the primary individual responsible for managing the rights of data collected, produced, used and shared in the project. If and when necessary, the University of Vaasa's research and innovation experts, as well as legal experts, will be consulted to ensure that data rights are fair and accurate.

3. Documentation and metadata

Distinct directories will be instituted on the secure storage systems provided by the University of Vaasa, corresponding to each individual work package. This organisational strategy ensures that all data relevant to the respective sub-studies are categorically stored within their designated folders, thereby enhancing data retrievability and integrity.

In terms of data management and structural oversight, Microsoft Teams shall serve as the central platform for managing data contents and backups. This platform will facilitate the illustration of data structures and hierarchies, enabling a coherent understanding of data organisation and accessibility among project members. However, it is crucial to note that direct access to the raw datasets will not be facilitated through cloud services, in order to preserve the security and confidentiality of the data.

Furthermore, to align with the ethical dissemination and utilisation of research data, the project will introduce hyperlinks to datasets that have been made publicly available after thorough processing to remove sensitive or identifiable information. In doing so, the project will adhere to the metadata standard that aligns with the chosen data repository, ensuring that all pertinent data information is meticulously documented. This approach not only facilitates compliance with data protection regulations but also enhances collaborative opportunities by fostering a culture of openness and best practices in data sharing and transparency within the research community.

4. Storage and backup during the research project

4.1 Where will your data be stored, and how will the data be backed up?

Data storage and backup procedures are integral to maintaining the integrity and security of research data throughout the lifespan of the project. In alignment with this objective, all research data will be securely stored on encrypted drives hosted by the University of Vaasa. This ensures the safeguarding of sensitive information and compliance with relevant data protection standards.

The Principal Investigator (PI) is vested with the authority to grant access rights to the data. Access will be provided on a need-to-know basis, contingent upon individual requests and justifications. This controlled access mechanism ensures that data exposure is limited to authorised personnel, thereby minimising the risk of data breaches.

In accordance with the University of Vaasa's data management protocols, all data will be subject to regular backup procedures. These protocols are designed to prevent data loss and ensure data recoverability in the event of unforeseen circumstances.

Furthermore, all research data, unless explicit consent has been obtained for disclosure, will be anonymised. The data will be stored under coded identifiers, which are not linked back to the companies involved in the study. This measure is adopted to uphold confidentiality and ethical standards in research.

It is crucial to underline that original data will not be maintained on cloud services to mitigate potential security vulnerabilities. Nevertheless, in compliance with GDPR, datasets subjected to pseudonymisation — which still classifies them as personal data — will be prepared from the foundational material. Following guidance from our Data Protection Officer (DPO), Sami Kinnunen, it is established that these pseudonymised datasets, once encrypted, can be securely shared for research objectives within the Aurora consortium via the university's Microsoft Teams platform. This distribution strategy aligns with the data handling protocols and benchmarks set forth by the University of Vaasa, ensuring that all disseminated data abides by the stringent ethical research and data protection standards.

4.2 Who will be responsible for controlling access to your data, and how will secured access be controlled?

The Principal Investigator, Professor Heidi Kuusniemi is designated as the primary authorities responsible for controlling access to the project data. Her responsibilities encompass the stringent oversight of data accessibility to ensure that only members of the research project team have the requisite permissions to engage with the data. This exclusivity is vital for maintaining the confidentiality and integrity of the data collected.

Access control will be systematically administered; only researchers actively engaged in the project will be granted access to pertinent data. This practice ensures that data utilisation is directly aligned with project objectives and ethical guidelines. In the event that a researcher departs from the project, their access rights will be immediately revoked. This measure is critical in preserving the security of the data and preventing unauthorised access.

The storage of all project data will be executed using the Verified University of Vaasa services, which are fortified with stringent security protocols to ensure the integrity and confidentiality of the data. In accordance with the project's guidelines and the university's data retention policies, the data will be retained specifically for a period of five years following the conclusion of the project, which is slated to end in 2026. This specific duration, extending until 2031, is outlined to ensure clarity and compliance in our privacy notice, aligning with best practices for data management and legal adherence.

Upon the culmination of the project, a thorough evaluation will be undertaken to ascertain the necessity and feasibility of continued data storage at the University of Vaasa. This reassessment will consider the relevance of the data to ongoing or future research endeavours, as well as compliance with legal and ethical standards pertaining to data retention. Decisions regarding extended data storage will be made in consultation with university data management authorities, ensuring alignment with institutional policies and data management best practices."

5. Opening, publishing and archiving the data after the research project

5.1 Part of the data to be made openly available or published - Where and when

The AuroraSpace project commits to the principles of open access and transparency in scientific research, within the confines of ethical standards and data protection regulations. In alignment with these principles, a portion of the research data, specifically the anonymised analyses derived from the survey study, will be prepared for open access availability. This ensures that data utilised in further work within the Aurora project, as well as data underpinning scientific publications, adheres to the ethos of open science.

The anonymised data sets, upon which the analyses are based, will be made available subsequent to the completion of data analysis and the publication of initial findings. This staged release ensures that the research team can verify the integrity and reliability of the data prior to public dissemination.

The platforms chosen for the publication of these anonymised data sets will be aligned with the standards of academic openness and will be selected based on their relevance to the research community and the scope of the AuroraSpace project.

Furthermore, scientific publications derived from the anonymised analyses will be submitted to peer-reviewed journals that support or mandate open access. This approach not only facilitates the dissemination of research findings but also ensures that associated data sets are accessible for verification and further study.

In summary, the AuroraSpace project endeavours to promote the open sharing of anonymised data sets and scientific knowledge, thereby contributing to the broader academic community and enhancing the impact of the research conducted. Detailed planning regarding the timing and location for the open access release of data will be developed in accordance with the project's progress, and in compliance with the University of Vaasa’s guidelines and ethical considerations.

5.2 Where will data with long-term value be archived, and for how long?

Recognising the potential long-term value of certain datasets, the AuroraSpace project is committed to the preservation and archival of such data.

Data identified as possessing long-term value will be archived within the secure drives managed by the University of Vaasa. These dedicated archival systems are designed to ensure the security, integrity, and accessibility of data over extended periods. The choice of the University of Vaasa's secure drives as the archival solution underscores the project's adherence to institutional data management standards and security protocols.

The process of determining which datasets warrant long-term preservation will be undertaken as a structured review towards the project's conclusion, prior to the year 2027. This review will assess the datasets' continuing validity, relevance, and potential for contributing to future research or applications. Criteria for this evaluation will include the uniqueness of the data, its potential for re-use in related fields, and its significance to the scholarly community and beyond.

Following this review, a detailed archiving strategy will be formulated, specifying the duration for which each dataset should be retained. The default retention period will align with the University of Vaasa's guidelines and legal requirements but may be extended based on the assessed value and utility of the data.

6. Data management responsibilities and resources

6.1 Who (for example role, position, and institution) will be responsible for data management?

The stewardship of data management within the AuroraSpace project is assigned to the Principal Investigator, Professor Heidi Kuusniemi, affiliated with the Digital Economy department at the University of Vaasa. Her role encompasses overseeing the development and implementation of data management strategies, ensuring compliance with ethical guidelines, and upholding the principles of data integrity and security throughout the project's lifecycle. The PI's leadership is pivotal in guiding the research team towards achieving the data management objectives set forth by the project and the funding body.

6.2 What resources will be required for your data management procedures to ensure that the data can be opened and preserved according to FAIR principles (Findable, Accessible, Interoperable, Re-usable)?

In accordance with the commitment to the FAIR data principles — ensuring that data is Findable, Accessible, Interoperable, and Re-usable — specific resources will be allocated to uphold these standards:

Researcher Time: A dedicated portion of research assistant time will be allocated specifically for the structuring and formatting of data in alignment with FAIR principles. The investment in researcher time is critical to ensure that the data produced is well-organised, comprehensively documented, and prepared for both current analysis and future reuse.

Project Coordinator: The appointment of a project coordinator, provided by the Digital Economy research platform, is crucial for the cohesive management and organisation of data. The coordinator's role includes facilitating communication between project members, overseeing the adherence to data management plans, and ensuring that data management tasks align with project timelines. The project coordinator acts as a central figure in maintaining administrative continuity and supporting the PI and research team in their data management responsibilities.

By allocating these resources, the AuroraSpace project aims to ensure that all data generated and utilised throughout the research are managed in a manner that maximises their value, utility, and compliance with FAIR principles. This strategic approach to data management underpins the project's commitment to producing high-quality, sustainable, and impactful research outputs.