Plan Overview

A Data Management Plan created using DMPonline

Title: PhD thesis: Interviews on transition in aviation towards net-zero 2050 - Analysis & pathways

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Principal Investigator: Guido Schwartz

Affiliation: Delft University of Technology

Template: TU Delft Data Management Plan template (2025)

Project abstract:

My PhD research will apply socio-technical transition theory to the aviation sector's climate goal aspirations. The focus is on the sustainability transition in aviation and how to accelerate it towards 2050. This includes technical considerations and how existing technologies, together with policy and governance instruments, industry and market dynamics, and societal and cultural factors, can form relevant and realistic acceleration pathways. The research intends to go beyond purely technological evaluations and aims rather at the entire socio-technical system that ensures a technology's success.

Two technologies have been identified: the open fan propulsion system and the blended wing body architecture, which could have realistic potential for net-zero by 2050. Those offer two examples of innovation applicable to testing the social science testing methodology. By 2050, commercial air transportation aspires to be climate-friendly, but only a short time remains to implement relevant technologies globally. New approaches could accelerate developments.

This research aims to incorporate sectoral knowledge to discover relevant information and critical data that inform it. A a multi-level perspective will be applied, and interviewee feedback will inform the analysis using the technological innovation system framework (TIS) and the development of realistic pathways. The interview will concentrate on two parts: 1st, the relevant 7 TIS I. building blocks; II. product performance and quality, III. product price, IV. production system, V. complementary products and services, VI. network formation and coordination, VII. customers and innovation-specific regulation, and 2nd, the development of the pathway for successful application in the sector.

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PhD thesis: Interviews on transition in aviation towards net-zero 2050 - Analysis & pathways

0. Administrative questions

1. Provide the name of the data management support staff consulted during the preparation of this plan and the date of consultation. Please also mention if you consulted any other support staff.

Data Steward: Nicolas Dintzner (N.J.R.Dintzner@tudelft.nl)
Faculty: TPM
DMP reviewed: [date]
Data Steward: Heather Andrews Mancilla (H.E.AndrewsMancilla@tudelft.nl)
Faculty: AE
DMP reviewed: [date]

2. Is TU Delft the lead institution for this project?

- No – please provide details of the lead institution below and TU Delft's role in the project

The PhD project is a collaboration of the Aerospace (AE) and Technology, Policy and Management (TPM) faculty. The research is funded by Airbus, but with the freedom to concentrate fully on independent research unrelated to corporate interests.

I. Data/code description and collection or re-use

3. Provide a general description of the types of data/code you will be working with, including any re-used data/code.

Type of data/code	File format(s)	How will data/code be collected/generated? For re-used data/code: what are the sources and terms of use?	Purpose of processing	Storage location	Who will have access to the data/code?
Anonymized data on TIS building blocks and pathway options	csv files / mp3&4 files	first time questions	To recieve expert feedback on research questions, analysis and outlook	TUD OneDrive	PhD candidate and AE&TPM supervisor team
Informed consent forms	PDF	Informed consent forms signed digitally.	To obtain and document informed consent.	TUD OneDrive	As above
Age*, occupation, gender, company, entity, level, rank	.xlsx files, .csv files	Semi-structured interviews and data collected anonymously.	Addressing the research questions, TIS includes building blocks to form pathway aspects	TUD OneDrive	As above
Personally Identifiable Information (PII) of participants: name, email	.xlsx files, .csv files	Contact information for participants taking part in interviews	For administrative purposes: obtaining consent and communicating with participants.	TUD OneDrive	As above

II. Storage and backup during the research process

4. How much data/code storage will you require during the project lifetime?

- < 250 GB

5. Where will the data/code be stored and backed-up during the project lifetime? (Select all that apply.)

- TU Delft OneDrive

III. Data/code documentation

6. What documentation will accompany data/code? (Select all that apply.)

- Data – README file or other documentation explaining how data are organised
- Data – Methodology of data collection
- Data – Codebook describing the contents, structure, layout, and variable definitions of the data

interview analysis by atlas.ti

IV. Legal and ethical requirements, code of conducts

7. Does your research involve human subjects or third-party datasets collected from human participants?

If you are working with a human subject(s), you will need to obtain the HREC approval for your research project.

- Yes – please provide details in the additional information box below

The interview sessions will include human interviewees from across the aviation sector. Each interview is planned to take approximately 50 minutes and will be conducted in person; if that's not possible due to other obligations, it will be conducted online. The semi-structured, open-ended interviews will consist of 8 questions related to the TIS analysis, pathway development, and feedback on the set research questions.

The HREC application has been submitted in parallel.

8. Will you work with personal data? (This is information about an identified or identifiable natural person, either for research or project administration purposes.)

- Yes

Ensurance that no data leaks will not occur and all interviewees will be informed not to share sensitive information of any kind.

Further data need to be presented in the thesis in a way that doesnt allows person identification by data provided. Anonymization is crucial that participants can't identify in the course of the research and after the thesis finalization. The mix of people will ensure that there is least bias due to interviewees from all level of the value chain. All data (names, company, level, position, country, full transcripts) will be treated very sensitively and stored on TU Delft onedrive provided by Microsoft. All data will be deleted with the end of the research project and graduation.

9. Will you work with any other types of confidential or classified data or code as listed below? (Select all that apply and provide additional details below.)

If you are not sure which option to select, ask your Faculty Data Steward for advice.

- No, I will not work with any other types of confidential or classified data/code

Just semi-structured, open-ended questions will be applied.

10. How will ownership of the data and intellectual property rights to the data be managed?

For projects involving commercially-sensitive research or research involving third parties, seek advice of your Faculty Contract Manager when answering this question.

Access to full data is just granted to PhD candidate and AE/TPM supervisors. IP is not involved into that research at all.

11. Which personal data or data from human participants do you work with? (Select all that apply.)

- Names as contact details for administrative purposes
- Proof of consent (such as signed consent materials which contain name and signature)
- Names and/or geolocation information as part of research data
- Gender
- Date of birth and/or age
- Telephone number, email addresses and/or other addresses as contact details for administrative purposes
- Job title and/or employer

Only personal data strictly necessary to accomplish the specified research goals are stored and processed. All of those will, as above described, be stored on the TUD OneDrive that only the PhD candidate can access.

12. Please list the categories of data subjects and their geographical location.

The interview participants are professionals in the aerospace sector. All participants are at least partially located in the European Union (NL, DE, FR). Those who are not available for in-person interviews will be reached via an online Teams interview.

13. Will you be receiving personal data from or transferring personal data to third parties (groups of individuals or organisations)?

- No

16. What are the legal grounds for personal data processing?

- Informed consent

An agreement between the researcher and the participants will be signed before the interview. The form is about what participants will do for the research, what the researcher will do to ensure participants' physical, emotional, and reputational security, how long personal data will be stored, and whether data will be anonymized or pseudonymized and made available in a data repository for use in further research.

17. Please describe the informed consent procedure you will follow below.

The researcher will inform the potential participants about the goals and procedures of the research project. The researcher will also inform them about the personal data being processed and the purpose for which it is being processed. This information will be provided to the potential participants in writing, as part of a consent form, before the interview. All participants will be asked to provide consent to take part in the study and to have their data processed by signing a physical informed consent form and ticking relevant boxes before the start of the interview.

18. Where will you store the physical/digital signed consent forms or other types of proof of consent (such as recording of verbal consent)?

Forms will be stored on TUD OneDRIVE

19. Does the processing of the personal data result in a high risk to the data subjects? (Select all that apply.)

If the processing of the personal data results in a high risk to the data subjects, it is required to perform a Data Protection Impact Assessment (DPIA). In order to determine if there is a high risk for the data subjects, please check if any of the options below that are applicable to the processing of the personal data in your research project.

If any category applies, please provide additional information in the box below. Likewise, if you collect other type of potentially sensitive data, or if you have any additional comments, include these in the box below.

If one or more options listed below apply, your project might need a DPIA. Please get in touch with the Privacy team (privacy-tud@tudelft.nl) to get advice as to whether DPIA is necessary.

- None of the above apply

23. What will happen with the personal data used in the research after the end of the research project?

- Anonymised or aggregated data will be shared with others

No names will be applied in this context, only the anonymous transcripts from the interviews. All transcripts and evaluations will only include the 'type' of interviewee and field of expertise, to avoid identification. An anonymous summary of the transcript can be shared with you, allowing you to review the interview content and mark potential data that could facilitate the identification of the interviewee. The anonymous summary you authorized will be attached to the thesis monograph; in an academic paper, it will not be incorporated.

24. For how long will personal research data (including pseudonymised data) be stored?

- Personal data will be deleted at the end of the research project
- 10 years, in accordance with the TU Delft Research Data Framework Policy

With the finalization of the PhD research, all recordings, transcripts, analyses, evaluations, and this consent form will be securely deleted from the OneDrive and also all data from atlas.to. The finalized data will be stored under the control of the

supervisors at the TU Delft for potential later access needs.

25. How will your study participants be asked for their consent for data sharing?

- In the informed consent form: participants are informed that their personal data will be anonymised and that the anonymised dataset is shared publicly

All participants in the interviews are entirely voluntary in it, and can withdraw at any time. They are free to refuse any questions during the interview and even afterward, before graduation. They are also free to ask questions or request clarification on all matters related to the interview process and execution. They have the right to request access to and to rectify or erase personal data for the duration of the project and thereafter.

V. Data sharing and long term preservation

27. Apart from personal data mentioned in question 23, will any other data be publicly shared?

Please provide a list of data/code you are going to share under 'Additional Information'.

- All other non-personal data/code produced in the project

29. How will you share research data/code, including those mentioned in question 23?
Select all that apply and provide additional details below.

- All anonymised or aggregated data, and/or all other non-personal data/code will be uploaded to 4TU.ResearchData with public access

The data gathered will be used in the PhD thesis, and the final document will be stored in TU Delft's Thesis Repository. The finalized data will be stored under the supervision of the supervisors at TU Delft for potential future access needs.

30. How much of your data/code will be shared in a research data repository?

- < 100 GB

31. When will the data/code be shared?

- At the end of the research project

32. Under what licence(s) will the data/code be released?

- Other – please explain below

copyrighted thesis

VI. Data management responsibilities and resources

33. If you leave TU Delft (or are unavailable), who is going to be responsible for the data/code resulting from this project?

Supervisor team at AE and TPM

1. Prof Dr. Linda Kamp TPM
2. Prof Dr. Roenad de Breuker AE
3. Prof Dr. Roland Ortt TPM
4. Prof Dr. Rinze Benedictus AE

34. What resources (for example financial and time) will be dedicated to data management and ensuring that data will be FAIR (Findable, Accessible, Interoperable, Re-usable)?

No additional costs will arise beyond the standard ecosystem already in place at TUD.

35. Which faculty do you belong to?

- Faculty of Technology, Policy and Management (TPM)

Collaboration between Aerospace and Technology, Policy and Management

Planned Research Outputs

Dissertation - "The socio-technical transition of commercial air transportation and the acceleration of net-zero pathways - Navigating the complexities of aviation’s sustainable obligation (2030-2025)"

A methodology that evaluates promising technologies concerning their acceleration potential beyond purely considering technology readyness level and road mapping. By using a socio-technical methodology a wider perspective is taken including policy, market, society and technology to be more successful when it comes to innovation application and diffussion.

Planned research output details

Title	DOI	Type	Release date	Access level	Repository(ies)	File size	License	Metadata standard(s)	May contain sensitive data?	May contain PII?
The socio-technical transition of commercial air t ...		Dissertation	2027-12-31	Open	None specified		None specified	None specified	No	No