Aerospace Districts: Acceleration of the Strategic Transfer of Regional Advancements

Final data management plan (DMP)

D5.2 – Final data management plan (DMP)

Abstract:

The final Data Management Plan (DMP) presented here provides a comprehensive overview of the data sharing processes related to inter- and intra-regional connections achieved throughout the AD-ASTRA project. This DMP outlines the complete data management lifecycle for all datasets collected, processed, or generated by the project. It details the handling of data during the project and its ongoing management after project completion, including the types of data collected, the methodologies and standards applied, and the strategies for data accessibility and storage. Key aspects covered include: the categorization and classification of data, the methods and standards employed for data collection and processing, the procedures for ensuring data accessibility and secure storage, the adherence to the General Data Protection Regulation (GDPR) and the FAIR (Findable, Accessible, Interoperable, and Reusable) principles. Although this DMP reflects the final stage of the project, it was continuously updated and refined throughout the project's duration to ensure alignment with evolving practices and consortium needs. This approach facilitated the sharing of data with a broader community, stakeholders, and policymakers, ensuring transparency and effective dissemination of project results.

Keywords:

Innovation, regions, aerospace, international cooperation.

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Furthermore, the statements made herein do not necessarily have the consent or agreement of the AD-ASTRA consortium. These represent the opinion and findings of the author(s).

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Acronyms and Terminology

Term	Definition
ACARE	Advisory Council for Aviation Research and Innovation in Europe
AD-ASTRA	Aerospace Districts: Acceleration of the Strategic Transfer of Regional Advancements
CA	Consortium Agreement
D & C & E	Dissemination & Communication & Exploitation
DDoS	Distributed Denial of Service
DLP	Data Lost Protection
DMP	Data Management Plan
DTA	Distretto Tecnologico Aerospaziale
FAIR	Findable, Accessible, Interoperable, and Reusable
GA	Grant Agreement
GDPR	General Data Protection Regulation
IPR	Intellectual property rights
IQ	Innovation Quarter
NDA	Non-Disclosure Agreement
UPM	Universidad Politecnica de Madrid
SSL	Secure Sockets Layer
TLS	Transport Layer Security
TM	Toulouse Metropole
WP	Work Package

1. Introduction

The AD-ASTRA project aimed to establish a cohesive and competitive interregional innovation landscape across five European regions: Emilia-Romagna, Madrid, Apulia, Occitania, and South Holland. This goal was achieved through a detailed series of activities. Initially, each ecosystem was thoroughly analyzed, as documented in *D1.1 – "Innovation Inventory"*, which provided a comprehensive description of the ecosystems of each partner region. Building on this foundation, the project identified the connections among these ecosystems in *D1.2 – "Former Successful Connections and Case Studies"*, highlighting past collaborations and successful initiatives. The next phase, detailed in *D1.3 – "Future Regional Developments and Megatrends"*, focused on the future of the aerospace regions and identified subjects for long-term cooperation. Initially, general megatrends were narrowed down to a practical longlist of 'aerospace megatrends'. These were ranked based on regional strengths, providing an actionable framework that enabled each region to identify and rank its strengths concerning these megatrends.

Following this foundational analysis, a more detailed examination was conducted using individual and common SWOT (Strengths, Weaknesses, Opportunities, Threats) and TOWS (Threats, Opportunities, Weaknesses, Strengths) analyses reported in *D2.2 – "Initial report on the SWOT analysis, relevant networks, and innovation barriers mitigation"* and *D2.3 – "Final report on the SWOT analysis, relevant networks, and innovation barriers mitigation"*. These tools were essential in defining strategic scenarios and establishing a robust foundation for a Joint Action Plan developed within Work Package 3 (WP3). The SWOT analysis provided a structured framework for evaluating internal and external factors impacting each region, while the TOWS analysis facilitated strategy development by matching external threats and opportunities with internal strengths and weaknesses.

In parallel with the SWOT and TOWS analyses, five co-creation events were organized. These events, starting in South Holland in May 2023 and concluding in Madrid in February 2024, facilitated knowledge sharing and collaboration among diverse stakeholders, further strengthening the interregional innovation network. All the information was reported in *D2.1 – "Report on the interregional workshops and exchange activities"*.

As the AD-ASTRA project concluded, the consortium underscored the importance of strategic collaboration within the aerospace sector. They defined a series of comprehensive actions aimed at aligning innovation agendas across various sectors and regions, and their impact on the consortium and other potential beneficiaries; all these actions were reported in the *D3.1 – "Joint Action Plan"* and *D3.2 – "Report on the foreseen impacts and potential beneficiaries"*.

All these activities generated different types of data and the management of this data is reported in this final Data Management Plan (DMP). The DMP supported data-sharing for inter- and intra-regional connections that included the following key aspects:

- **Data Handling**: guidelines for managing data during and after the project.

- **Data Types**: included personal data, emails, phone numbers, canvases, surveys, and Excel tables.

- **Methodology and Standards**: applied standards and methodologies for data management.

- **Accessibility**: ensured data was (openly) accessible.

- **Data Storage**: secure storage procedures.

To comply with General Data Protection Regulation (GDPR), data management adhered to FAIR principles, promoting transparency, accessibility, and collaborative innovation. The initial DMP, detailed in deliverable D5.1, was continually updated to align with project objectives and shared with stakeholders and policymakers, respecting ethical and legal frameworks. The final updated version is presented in the following chapters. Data managed during and after the project followed these principles to support ongoing and future innovation initiatives. As the project aimed to create connected communities through co-creation workshops and data sharing, the DMP was regularly revised and refined. This iterative process ensured that data management practices consistently supported the project's objectives, fostering transparency, accessibility, and collaborative innovation across the five participating regions.

2. Governance structure

2.1. Project Organization and Management

As reported in *D5.1 – "Initial data management plan"*, the AD-ASTRA project was managed by ART-ER, responsible for the overall project coordination, planning, performance and financial control, quality assurance, risk management, and administration of the EU funding. The coordinator was responsible for ensuring the management structure's effective operability and that the necessary liaisons, including both formal and informal meetings, were efficiently undertaken. The activities of the coordinator under this task included:

- monitoring the proper implementation of the action
- acting as the intermediary for all communications between the consortium and the EC
- requesting and reviewing any documents or information required and verifying their quality and completeness before passing them on to the EC
- submitting the deliverables and reports to the EC
- managing the overall periodic reporting in compliance with the Model Grant Agreement (MGA), based on the reporting of the individual beneficiaries
- maintaining the Consortium Agreement (CA)
- preparation and post-processing of project meetings as set out in the CA as well as of Review Meetings with the EC
- distribution of deliverables and reports to the consortium, maintenance of a project archive
- handling of project correspondence ensuring an adequate level of communication.

In addition to the above, the coordinator was also responsible for data management, including the development of the DMP to collect all the data management guidelines and make data findable, accessible, interoperable, and re-usable. Sensitive data was managed in compliance with the GDPR regulation. All partners had the duty to submit their individual contributions to deliverables, periodic reports, and financial statements and related certificates where required, as well as any required data/information related to their participation or that of their affiliated entities.

2.2. Data access model

The AD-ASTRA project focused on the promotion and the interconnection among aerospace innovation ecosystems. This implied having a good communication strategy designed to promote initiatives and activities that involved targeted stakeholders. In

this scenario, the collected data were numerous (16,5 GB) and were delivered and stored in different ways according to the different destinations. In particular there were identified two main categories of data users within this project:

1. *beneficiaries of the project*;

2. *stakeholders and community at large*.

Each of them had access to different data, along the project. In particular:

Beneficiaries of the project	o general personal data types (name, job title, organization, e-mail) o partner's list and information about existing and past collaboration o administrative information and requirements o Information on stakeholders and ecosystems' composition and peculiarities o documents, presentations, communications materials, deliverables, etc…
Stakeholders and community at large	o website (news, newsletters, press release, project public deliverables, videos, etc…) o social media (LinkedIn, Twitter, You Tube, Facebook, Instagram, etc…) o workshop and conferences o general personal data types (name, e-mail, telephone, organization) and description of some organizations within the five ecosystems, shared with their consent.

Regarding the first category (*beneficiaries of the project*) the data, planned for internal sharing among project partners, were stored using Google Drive as a sharing system. The access to this shared folder was managed only by the coordinator (ART-ER) who granted access rights to the beneficiaries upon request.

Data related to the second category (*stakeholders and the broader community*), available for external communications, was made open access and available to stakeholders involved in AD-ASTRA project as well as to a broader internet community. These data were not editable, and were stored mainly on the project website and in an open folder on Google Drive. All the above-mentioned data adhered to the FAIR principles as stated in the HE Programme Guidelines on open science practices. Compliance with these principles was always ensured, without compromising data protection or intellectual property rights agreements. Data sharing was conducted responsibly.

2.3. Data structure

Regarding the data produced and used by the partners of the project (first category, section 3.2), as reported in D5.1, were organised following the project structure:

- **WP1** (led by UPM): is focused on the ecosystem networks analysis for the development of activities carried out in the following WPs.
- **WP2** (led by DTA): contributes to the development of networking-building activities apt to both define the important overlaps between the regional innovators and also key network connections.
- **WP3** (led by ART-ER): deals with the established networks and further their connections by delivering an action plan capable of capitalising on the asset identified by WP1 and able to foster the initial collaborations established within WP2.
- **WP4** (led by UPM and with the support of all partners): deals with the engagement of stakeholders, increasing AD-ASTRA impact, and building synergies with ongoing initiatives.
- **WP5** (led by ART-ER): deals with the project management.

Thus, for each work-package a shared folder has been created in Google Drive and sub-structured as such:

- **WPX**
  - Deliverables and Milestones
  - Management Documents
  - Meetings
  - Other

Figure 1 provides a more schematic overview of WP folders and their contents. In this way, the work carried out within the project was effectively and homogeneously classified, allowing for a higher data accessibility and data losses avoidance.
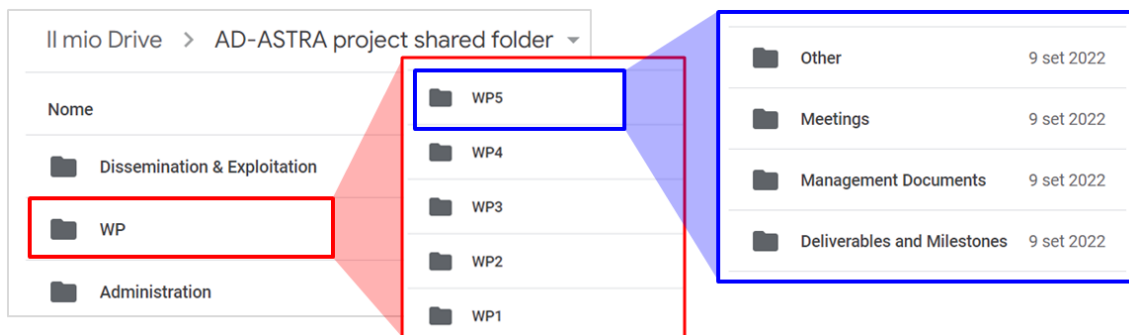

Figure 1 Schematic organisation of WP folders.

All the data contained in these folders were used to carry out the activities of the project and were used for the writing of deliverables, production of presentations for

internal and events organized with external stakeholders, videos, news, posts on LinkedIn, etc… An example is reported in the following Figure 2.
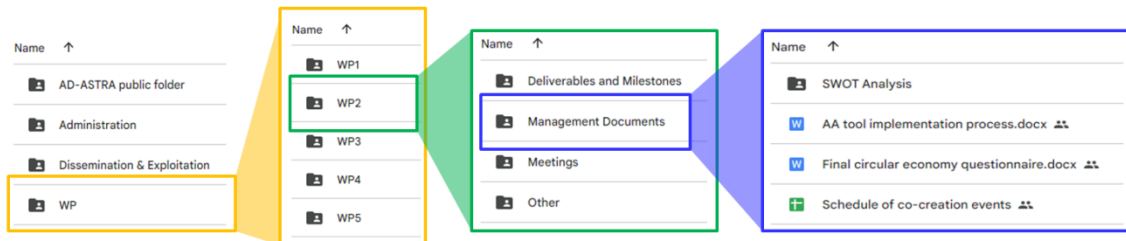
Figure 2 Schematic figure of the information and documents contained in a WP folder. In this case the information reported within these documents was used for the realization of D2.2, D2.3, co-creation workshop in Toulouse, final event, etc.

Due to the importance of project management and Dissemination & Communication & Exploitation (D & C & E) activities, the materials related to such activities are stored separately in two folders (Figure 1), named *"Administration"* and *"Dissemination & Communication"* respectively. These folders are structured in this way (Figure 3):

- Administration
    - o Consortium Meetings
    - o Other documents
    - o Partners list
    - o Proposals and Project Description
    - o Reporting

- Dissemination & Communication
    - o Dissemination
        - ▪ Communication kit
        - ▪ Pictures
        - ▪ Project Brochure
        - ▪ Project Logo
    - o Exploitation.

The scope of this tree structure was to offer a project self-explanatory system, allowing each of the partners to be able to easily access and proactively implement the material collectively developed, allowing for an effective data organisation, and favouring all the activities related to data exploitation.
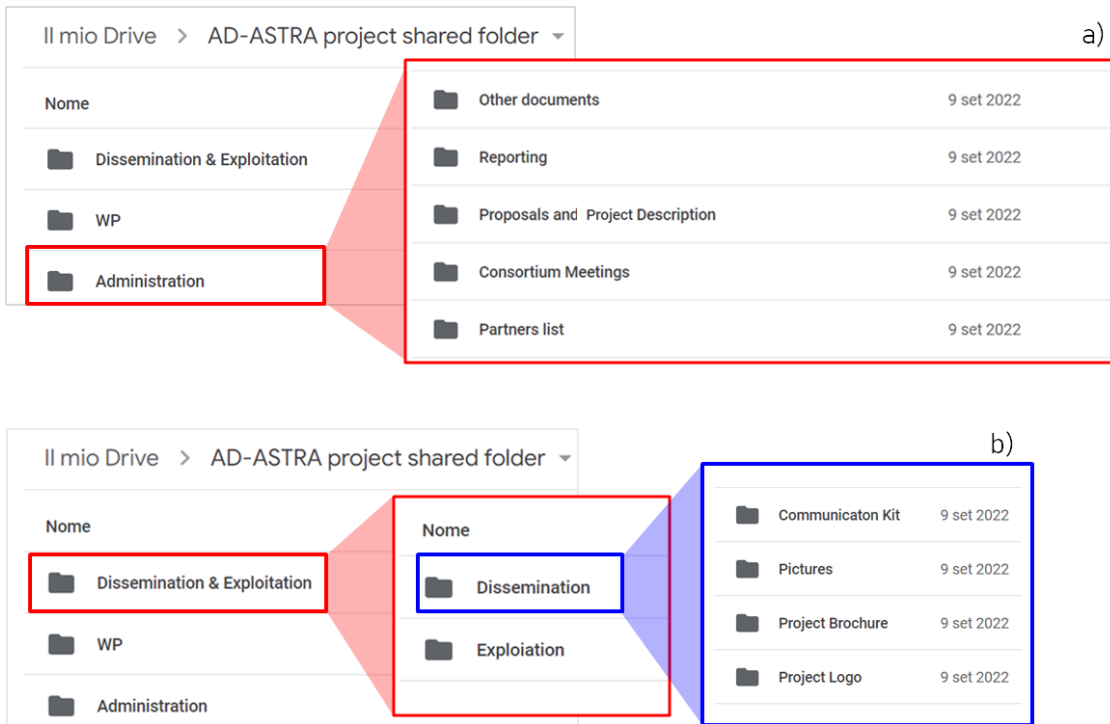
Figure 3 Schematic organisation of (a) "Administration" and (b) " Dissemination & Exploitation" folders.

All data in the above folders will remain available to consortium partners after the end of the AD-ASTRA project.

Publicly available data were structured within the shared Google Drive folder (Figure 4a) and the official website (Figure 4b) open to any stakeholders and community. In these spaces, all of the project materials were saved and enriched during the two years of the project.
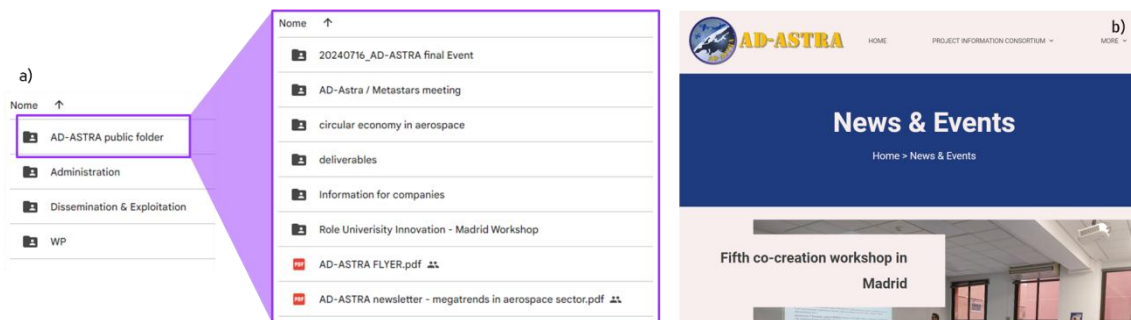
Figure 4 Schematic organisation of (a) Google Drive public folder and (b) project website.

2.3.1. Data confidentiality and integrity

The AD-ASTRA consortium adhered to the regulations outlined in Article 15 of the Grant Agreement (GA) regarding data protection. Any personal data (full names, phone numbers, email addresses, etc.) processed under the GA were handled in compliance with the applicable EU (in particular the GDPR regulation), international, and national laws on data protection. This included ensuring that personal data were processed lawfully, fairly, and transparently, as well as ensuring appropriate security of these data. Moreover, the parties kept confidential any other types of data, documents, or materials (in any form) that were identified as sensitive. They paid particular attention to the principles of proportionality, the right to privacy, the right to physical and mental integrity of persons, the right to non-discrimination, the need to ensure protection of the environment, and high levels of human health protection.

Regarding the integrity of data, the project folders on Google Drive were only accessed and modified by the beneficiaries of the project. Any modifications were recorded over time (in the Google Drive folder) and attributed to a specific user. Regarding publicly available data reported on the website and the public folder on Google Drive, these were accessible to external users (stakeholders and the community at large) only in read mode, and they were allowed to download only public documents.

2.3.2. Data availability

All data mentioned above were recorded in .xlsx, .docx, .pptx, and mp4 formats and were/are available 24x7x365, with restriction according to the two categories of data users (Section 3.2), to facilitate the project ongoing and simultaneously the development of a connected, competitive, interregional innovation ecosystem between the five EU regions. All documents were distributed by the project partners using the documentation repository (Google Drive) made available by ART-ER. The folders were stored on secure European servers and were protected using Data Lost Protection (DLP) systems and protocols (https://storage.googleapis.com/gfw-touched-accounts-pdfs/google-cloud-security-and-compliance-whitepaper.pdf). Information exchange between computer and Google Drive repository was only possible via using a secure SSL connection and with a previous invitation/accreditation by the administrator. This means that no-one has access to the project shared folder unless the coordinator explicitly invited them to join. The direct dissemination of documents via e-mail was discouraged and only allowed for emergency reasons. Moreover, the AD-ASTRA project website (https://aerospacedistricts.eu/) and the public folder on Google Drive containing publicly available information, were, and still are, always available to the public 24 hours a day.

2.4. Control of the communication and disclosure process

In this section, the process for managing and sharing data among partners and outside of the partnership of the AD-ASTRA project is reported as it has been agreed among the partners. The procedure for the acceptance and sharing of data related to the own ecosystem, stakeholders, results produced by the project activities, etc… followed the time frame reported in the bullet list:

- 30 days prior notice for data to be shared in publications, newsletters, and presentations at workshops and fairs;
- shorter timeframe (approximately 10 days prior notice) for data to be released online (posts published on LinkedIn or on the websites of the organizations to which consortium members belong);
- longer timeframe (45 to 60 days prior notice) for sensitive data, such as data related to intellectual property rights (IPR).

All data shared among partners complied with the GDPR and the principles of openness and FAIR. This DMP is the result of a continuous update and fine-tuned in order to share data with a broader community, stakeholders, and policy makers, while respecting the ethic-legal framework.

2.5. Conflict resolution procedures

At the beginning of the AD-ASTRA project, the following procedure was established to address any potential conflicts and was detailed in D5.1 as a precautionary measure. By the end of the project, no conflicts had occurred, but the procedure remains valid beyond the project's conclusion. The procedure is outlined as follows:

"In the event of a conflict, the most suitable resolution strategy for the situation and individuals involved would be selected according to the Consortium Agreement and the Grant Agreement. The coordinator would be supported by a well-defined management structure, including the General Assembly of partners, where each partner would be represented by one delegate with the right to cast one vote."

2.6. Obligations regarding information on EU funding and use of the EU logo during exploitation activities

The AD-ASTRA consortium adhered to all the guidelines outlined in Article 17 of the Grant Agreement regarding communication, dissemination, and visibility of the project. This compliance was maintained across all documents produced by the consortium, including deliverables, news, presentations, videos, and more.

Specifically, the consortium ensured that every communication or dissemination activity acknowledged EU support and prominently displayed the EU emblem and funding statement. This was also applied to any postcard, documents, presentations, videos, vehicles, supplies, or significant results funded by the grant. Furthermore, all communications and dissemination activities used factually accurate information and included the required disclaimer: "Funded by the European Union". Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or [name of the granting authority]. Neither the European Union nor the granting authority can be held responsible for them."

Overall the project followed the recommendations reported as communication toolkit in the EISMEA website: https://eismea.ec.europa.eu/communication-toolkit_en.

3. Data summary

3.1. Purpose of the data collection/generation

Aerospace has been a fast-growing sector in recent years for several reasons: it is a high-tech sector with considerable investments in research and development, and the advent of private capital and the commercialization of space has opened significant opportunities for private investors.

For these reasons, forecasts for the sector's performance had shown promising growth prospects for the coming years. At the same time, the aerospace sector could also be defined as highly fragmented due to its wide range of activities (e.g., civil aviation, military aviation, space industry, helicopters, defence systems, downstream applications, etc.) that could not be easily integrated. To minimize the difficulties arising from this fragmentation, the AD-ASTRA project aimed to establish a solid and long-lasting connection between regions with a shared interest in innovation, fostering the development of a collaborative EU network of regional innovators.

In this context, the European aerospace pole was intended to become active within specific innovation ecosystems. The project started by identifying key institutions and companies that play crucial roles in this scenario. Subsequently, key stakeholders from across the Quadruple Helix were involved in creating the interregional network through a series of co-creation events and in defining a Joint Action Plan for the development of each regional aerospace district.

Throughout this process, data were collected and generated primarily to deeply characterize each ecosystem and to define potential actions for enhancing these ecosystems into a supra-regional European ecosystem (*e.g.*, data for common policies, best practices, university *curricula*).

3.2. Types and formats of data

The data collected for the project comprised various types and formats, tailored to meet the diverse needs of documentation and communication.

- **Text documents (.doc)** were mostly used for the deliverables and newsletters. Specifically, throughout the project, 13 deliverables and 8 newsletters were produced and uploaded both to the project's website and on LinkedIn page. These documents highlight the project's key achievements and provide detailed descriptions of the activities carried out.

- Excel files (.xls) facilitated data organization, analysis, and sharing of different types of information. For example, Excel files have been widely used for the innovation inventory in WP1 and for the co-creation workshops, SWOT, and TOWS analyses in WP2.

- Presentations (.ppt) have been widely used for summarizing and visually conveying information during meetings and project updates.

- High-quality images (.jpg, .png) were used not only in deliverables but also in presentations and videos to enhance visual appeal and clarity.

- Videos (.mp4) provided dynamic and engaging ways to present information, making complex concepts more accessible. Specifically, two videos were produced during the course of the project. The first video provided a brief overview of the project and introduced the five participating regions. The second video offered a concise description of the Joint Action Plan, outlining the actions divided into specific time intervals.

Overall, the strategic use of varied data formats ensured robust documentation and effective communication, essential for the project's success in addressing the needs of the five ecosystems involved.

3.3. Re-use of data

The information gathered about each ecosystem — encompassing stakeholders, capacities, programs/policies, and connections — was initially collected by partners and progressively refined through surveys, practical activities, and canvases. This data was crucial for characterizing each ecosystem, carry on with project activities, producing necessary documents, and developing the Joint Action Plan aimed at aligning innovation agendas across different sectors and regions.

Additionally, the data collected during the AD-ASTRA project have been leveraged to implement the actions outlined in the Joint Action Plan, thereby aligning aerospace-related political activities in each region. After the project's conclusion, each partner will continue to use the collected data to further characterize each ecosystem, deepening their analysis and expanding on all relevant aspects to support ongoing and future initiatives.

This strategic reuse of data ensures that the valuable information gathered during the project will continue to inform and guide efforts beyond the project's lifespan, fostering sustained collaboration and innovation across the involved sectors and regions.

3.4. Origin of the data

At the beginning of the project, the data originated partly from the past experiences and activities of each of the five regions involved. As the project progressed and the activities continued, the partners within the consortium gained more knowledge about each other and the five ecosystems, leading to the evolution and generation of new information. This information was primarily used to create deliverables and presentations.

Additionally, graphical information such as images and videos was either newly created by the partners to meet specific graphic needs or sourced from free websites like Pexels or Pixabay. In these cases, the graphical elements were used to enhance the visual appeal of the deliverables and presentations.

This combination of historical data, evolving insights, and carefully selected graphical elements ensured that the project's outputs were both informative and visually engaging, supporting effective communication and documentation throughout the project.

3.5. Size of the data

The total amount of data generated during the project is 16.5 GB. As previously mentioned, this data primarily consists of documents, Excel files, canvases, presentations, images, and videos. The sizes of these elements range from a few kilobytes, such as for smaller images or documents, to a maximum of 163 MB, which is the size of the final video presentation of the Joint Action Plan. This diverse array of data types and sizes highlights the extensive and varied nature of the information managed throughout the project.

3.6. Data Utility

The ultimate goal of this project was to prepare a Joint Action Plan for the five regions involved, enabling the growth within each ecosystem in themes connected to the aerospace sector, with potential spillover benefits to other sectors. The project aimed to foster technology transfer and societal synergy, extending aerospace and aeronautic infrastructures to benefit the industrial, scientific, and societal communities as a whole.

The information collected and generated during the project holds considerable importance for various stakeholders:

- **Academia**: It supports the development of joint programs in aerospace and related disciplines, fostering academic collaboration and innovation.
- **Industry**: It promotes stakeholder involvement in groups, meetings, and the exchange of best practices, enabling companies to explore future megatrends, new technologies, and valuable insights.
- **Public Bodies**: It offers opportunities to stay informed on cutting-edge themes that impact local ecosystems and to connect with new and unconventional partners.
- **Civil Society and Citizens**: The growth of regional ecosystems will generate new opportunities and highly specialized jobs. Additionally, technological advancements will spill over to civilian applications, leading to the co-design of services and technologies that address societal needs.

The successful completion of the project has thus set a foundation for continued growth and innovation across these sectors, leveraging the data and insights gained to drive future developments.

4. FAIR data

This DMP contributes to adapting the data collected in the platform to the FAIR principles in order to improve their findability, accessibility, interoperability, and re-usability. Therefore, all the data are stored and, whenever possible, made available for reuse (in compliance with IPR rights, data protection regulations or other applicable laws and regulations) in suitable repository or archiving systems (see Section 3.2). Whenever possible, data are assigned globally unique and persistent identifiers to allow for their findability both by humans and automated systems. The implementation strategies of the four mentioned principles are detailed below.

4.1. Making data findable, including provisions for metadata

All data have an associated metadata document (stored as a .docx or .xlsx or .pdf) which includes the key aspects of the data (*e.g.*, inventory of the stakeholders, relevant innovation technical capabilities in each region, inter- and intra-regional connections, international connections, information about co-created workshops, surveys, etc…) described in the project Grant Agreement.

4.2. Making data openly accessible

To maximize the impact of AD-ASTRA, the information produced by the five regions involved was made openly accessible from the initial phases of the project. Throughout the project, additional data was generated by stakeholders participating in project activities, aimed at enhancing the creation of an interconnected and inclusive innovation ecosystem across Europe. This data was also made quickly accessible through the publication of the action plan.

Overall, the AD-ASTRA dataset is public and remains accessible via:

- The AD-ASTRA project website: https://aerospacedistricts.eu/
- Partners' databases.

This approach ensured that valuable information and insights were available to a broad audience, fostering transparency and collaboration beyond the project's duration.

4.3. Making data interoperable

The interoperability of data was a central focus of the project, ensuring seamless integration and utilization across various systems and platforms. At the project's

outset, data was drawn from the past experiences and activities of the five regions, forming a foundational dataset. As the project advanced, consortium partners generated new insights and information, which were standardized to enhance compatibility and interoperability.

To ensure interoperability, the partners adhered to several key practices:

- **Document Formats**: Utilized widely accepted formats such as .docx for Word documents, ensuring compatibility across different word processors.
- **PDFs**: Employed PDF as a standard format for document sharing, with a focus on using compliant versions to maintain accessibility.
- **Spreadsheets**: Used the .xlsx format for Excel spreadsheets, which is widely supported and facilitates data sharing.
- **Images**: Standardized image formats to .jpg, .png, or .tiff to ensure broad compatibility and ease of use.
- **Videos**: Adopted .mp4 as the standard video format to ensure playback across various devices and platforms.

Additional practices included:

- **File Naming Conventions**: Implemented clear and consistent file naming conventions to simplify file identification and retrieval.
- **Testing and Validation**: Regularly tested documents, spreadsheets, images, and videos across different systems to ensure compatibility, correct formatting, and usability.
- **Guidelines and Documentation**: Provided consortium with detailed guidelines on how to create, save, and share files to ensure interoperability.
- **Version Control**: Applied version control to track changes and maintain compatibility across different versions of documents and spreadsheets.

By prioritizing these practices, the project facilitated efficient data sharing and collaboration among consortium partners and stakeholders. This approach not only enhanced the quality and usability of the project's outputs but also ensured that the data could be readily accessed and applied in various contexts, supporting the project's overarching goals of creating an interconnected and inclusive innovation ecosystem.

4.4. Increase data re-use

As the project is now in its final phase, this section has been thoroughly developed. Key results of the project—such as the Innovation Inventory, Successful Connections, Megatrends, and Action Plan—are publicly available (see Section 3.2), and substantial re-use of this data is anticipated. Each ecosystem is expected to utilize this information for its policies, best practices, and academic curricula.

To maximize the re-use of our deliverables, the consortium implemented several strategies: all deliverables have been published on the project website for easy access. It has also been created and distributed concise newsletters summarizing the most significant aspects of the project findings to increase engagement and interest. Additionally, most of the results were actively promoted on LinkedIn, sharing posts to extend the project results to a broader community and enhance the visibility and impact of the work.

5. Open access data

The AD-ASTRA project is approaching its conclusion and it is fully committed to ensuring open access to all publicly available publications and results. In line with the consortium dedication to responsible and transparent data management, the project partners adhered to the FAIR principles, aiming to make the data accessible to a broad audience. All relevant outputs and results are available on the project website (https://aerospacedistricts.eu/), in a public Google Drive folder (AD-ASTRA public folder   – https://drive.google.com/drive/u/0/folders/1Uy4t3hS7KcP2wCcbyrZLXuUaeY1wCbSj) and are also accessible through the Horizon Results Platform (https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/horizon-results-platform).

Emphasizing open science, the AD-ASTRA project promoted open collaboration, transparency, and widespread dissemination of knowledge. As such, all project outputs and results, including newsletters, have been made publicly available and are accessible as machine-readable electronic copies.

To ensure accessibility:

- All publicly available publications can be read online, downloaded, and printed.
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Recognizing the sensitive nature of some data and its potential commercial implications, any sensitive data was shared only with relevant consortium partners and stakeholders who have signed a Non-Disclosure Agreement (NDA). Such data were not disclosed publicly except in specific cases and with prior approval from the entire project partnership, safeguarding the interests of all involved entities.

6. ICT Support to the Project

6.1. Project Website

The web page of AD-ASTRA project (https://aerospacedistricts.eu/) comes from a contract made with the Hosting company "One" (www.one.com). Support for the web hosting plan has been obtained from it, including: Secure email, Website builder, Free SSL certificates with corresponding backup copies, Free domain for 1 year, Unlimited hosted database (MariaDB).

The website builder is based on WordPress, and includes features like Real-time Activity Logging, DDoS Mitigation, and Firewall protection; in addition to a multitude of tools and templates for the creation and modification of properties of the web page.

6.2. Electronic Communication

At the beginning of the project, a file was generated with a detailed list containing the e-mail of the participants. Starting from this document, the coordinator created a mailing list which is used for all types of communication between partners. All e-mail communications are protected by standard TLS (Transport Layer Security) cryptography (https://support.google.com/a/answer/2520500).

7. Conclusions

This deliverable represents the final version of the AD-ASTRA Data Management Plan (DMP) at the conclusion of the project, which has now reached month 24. The purpose of this plan is to detail the entire data management lifecycle for the data collected, processed, and created throughout the AD-ASTRA project. This includes the handling of research data during and after the project's completion.

The plan provides comprehensive information on:

- The types of data collected and the sources from which it was gathered.

- The classification of data into shared and confidential categories.

- Strategies for data storage and backup to ensure data integrity and security.

- The preservation plan to manage and maintain data following the project's conclusion.

It is important to acknowledge that while this DMP reflects the final state of the project's data management practices, it is designed as a living document. Future updates may be made to address any changes in data management policies or intellectual property rights (IPR) strategies for exploitable results.