D6.4 Data Management Plan

Grant Agreement Number: 952463

Project Acronym: UMA^3

Project title: Unique Materials for Advanced Aerospace Applications

Starting Date: 01/09/2020

Project Duration: 36 months

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Due Submission Date: 28/02/2021

Actual Submission Date: 26/02/2021

Status	
Draft	
Final	X

Type		
R	Document, report	X
DEM	Demonstrator, pilot, prototype	
DEC	Websites, patent fillings, videos, etc.	
ETHICS		

Dissemination Level		
PU	Public	X
CO	Confidential, only for members of the consortium (including the Commission Services)	

Revision History

Date	Lead Author(s)	Comments
16/02/2021	EASN-TIS	Draft
26/02/2021	UniMi	Approved

This project has received funding from the European Union's Horizon2020 research and innovation programme under grant agreement No 952463

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1. INTRODUCTION

According to the Horizon 2020 relevant guidelines and rules, all beneficiaries shall provide online access to scientific information that is reusable and free of charge. Consequently, the UMA3 consortium will ensure free online open access (OA) to all publishable results. Furthermore, Horizon 2020 projects are encouraged to provide open access to research data needed to validate their results, through a flexible pilot launched by the European Commission (EC) for open access to research data (ORD pilot), where opt-outs are possible.

In line with the abovementioned requirements, as well as in order to outline in detail how to properly and effectively manage data during and after the end of this project, including specifications on what data will be open; the development of a dedicated Data Management Plan (DMP), relevant to the planned research, is considered necessary, reflecting also the current state of the UMA3 signed Consortium Agreement (CA) on knowledge data management and protection (IPR included).

The UMA3 partners, acknowledging the significance of “openness” not only for science evolution purposes but also for speeding up innovation and for further involving the European citizens and society, embrace open access for all end-users. Furthermore, they embrace absolute consistency towards the relevant guidelines and recommendations of the EC, for the strategic lifecycle management, through the sound implementation of the FAIR principles, meaning that the research data to be produced, collected and processed within UMA3, are Findable, Accessible, Interoperable and Reusable.

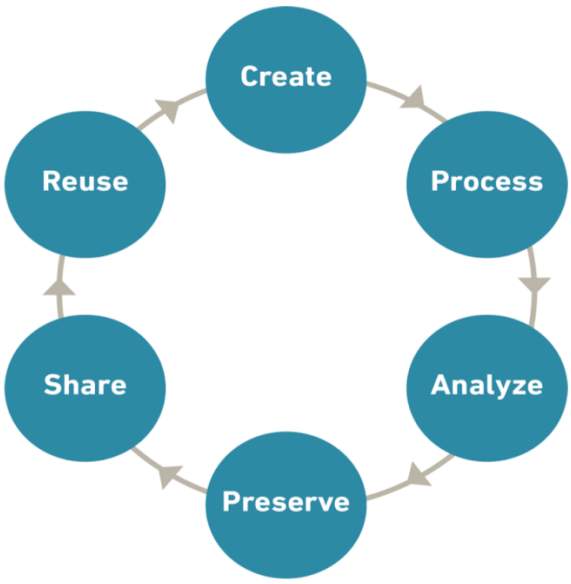

Figure 1: Research data life Cycle (Adapted from UK archive References)

Nonetheless, respecting also the values of sound knowledge data management and protection (including IPR issues), not all data can be open, as there are certain exceptions to openness, including for instance, confidentiality and privacy. Namely, in such cases in which Open Access to research data represents a risk to the legitimate interests and rights of the involved beneficiaries, data will not be shared or made openly accessible, following the EC approach: *"as open as possible, as closed as necessary"*. It shall be stressed, however, that even the data which cannot be open and publically available, shall be still properly, efficiently and soundly managed, as part of good practice to advance scientific inquiry.

To this end, the present document aims to be part of sound research practice as a vital conduit leading to knowledge discovery and innovation, as well as to be in full compliance to the relevant EC requirements. This DMP reflects the UMA3 policy for data lifecycle management and aims at providing a general blueprint of the data to be collected, processed and generated throughout the project.

The UMA3 WP6: *Dissemination and Promotional Activities*, predominantly aims at maximising the dissemination and promotion of the project results in Hungary and across the EU. Precisely, its specific objectives can be outlined as follows:

• Design and implement an effective dissemination, communication & networking strategy;
• Communicate the concept, objectives, ongoing progress and outcomes of the project to the identified target groups;
• Publish achievements and lessons learnt through events and local and international press during but also beyond the end of the project;
• Organize workshops and events and participation to international Conferences to discuss on the outcomes of the project, promote the twinning activity and boost the recognition of the developed integrated knowledge centre;
• Develop synergies between regions under the interlink of RIS3 strategies and promote clustering within and outside the project consortium;
• Prioritise areas for extending the developed approach into other applications, value chains and sectors;
• Provide adequate and effective protection and management of the knowledge created in the project, having due regard to the legitimate interests of the partners concerned.

Namely, the amount of knowledge and research data expected to be collected, processed and generated in the frame of UMA3, will be large. It is thus important that said data is properly managed, preserved and protected, ensuring on the one hand the adequate consideration of legitimate confidentiality requirements (including IPR

protection and privacy), yet on the other hand, also allow the proper dissemination of the new knowledge and results produced throughout the project. Accordingly, the foremost objectives of the UMA3 Data Management Plan are to:

1. Define an effective and solid strategy for the proper management and protection of research data and knowledge, in line to the project objectives and planned activities;

2. Describe the research data expected to be collected, derived and generated, specifically addressing:

- volume, origin, types and formats of data,
- metadata,
- collection and processing methodology and standards to be applied,
- access of data for verification and re-use in conjunction with data curation and maintenance;

3. Distinguish the data which can be made openly available from the confidential data.

In conclusion, the present Data Management Plan, forming UMA3 Deliverable D6.4, is meticulously created to effectively protect, manage and maintain the project related data and describes all the processes and activities required to do so, throughout the research lifecycle. Moreover, it provides an extensive analysis of the foundation elements of the data management policy that will be used by the UMA3 consortium, regarding the project research data, for current and future research purposes and users. It also describes the approach to be followed for managing and protecting the research data generated and collected, addressing in particular: the types of (open and non-open) data that will be produced and collected within the project, the standards to be used to encode the data, how the research data will be preserved, shared and accessed, as well as what parts of the data-sets will be shared for verification or reuse.

The present DMP concerns data management and IPR for the EC Horizon 2020 CSA Project UMA3 (Grant Agreement No 952463) and should be considered in conjunction with the relevant Articles of the project's Consortium and Grant Agreements. It describes the types of data expected to be generated within the project, the management of this data during and after the project as well as a strategy for dissemination. Furthermore, it provides this information to the EC as the project funder, but also to the UMA3 consortium as a guideline and tool. Lastly, the UMA3 DMP shall be considered a live document and shall be periodically reviewed and updated, in order to coherently conform to the unfolding of the project and consider both the results produced, as well as any potential unforeseen issues that may occur throughout the project lifespan.

The document is divided into eight chapters. Following the introduction in Chapter 1, Chapter 2 provides a brief overview of the UMA3 Coordination and Support Action, illustrating its topmost objectives and methodological approach to be followed for achieving them. Chapter 3 is dedicated to the data management general principles, including IPR protection issues and the FAIR Data principles to be followed. Chapter 4 presents the dedicated UMA3 approach and strategy to be applied for effectively managing the research data collected, processed and generated by the project. Chapter 5 deals with the allocation of resources for data managements and chapter 6 focuses on the data security issues. Chapter 7 analyses the potential ethical and legal compliance aspects, while Chapter 8 describes how the project intends to regularly update and revise this DMP.

2. UMA3 PROJECT OVERVIEW

UMA3 (Unique Materials for Advanced Aerospace Applications) aims at creating an international excellence centre to reinforce the UNIMI-FMSE (Faculty of Materials Science and Engineering) position in Borsod-Abaúj-Zemplén county and Hungary by enhancing the scientific excellence, knowledge and technology degree of innovation potential for Unique Materials for Advanced Aerospace Applications. The challenge addressed is to use the twinning instrument, i.e. excellence centre, as a trigger to enhance the competitiveness of regional and national SMEs and large companies in the aerospace sector.

The concept of an integrated knowledge centre (Excellent Centre for Advanced Materials, ECAM) in UMA3, is based on the creation of a value chain of knowledge of research entities in the scope of Powder Metallurgy, additive manufacturing, PVD (nano)coatings, and fully 3D investigations. The purpose of establishing said international Excellent Centre, is to master the greatest challenges in processes and technologies that are crucial for implementation of advanced materials designed for safe and durable performance and tailored properties in both aviation and space conditions, in order to boost:

- the knowledge and technology degree of innovation potential of UniMi-FMSE in developing new technologies, products and services with high-added value for regional, national and international clients,
- cooperation with SMEs, research organizations, industry and academia partners in regional, national, European and international projects,
- up-taking valuable research results in regional and national companies from the design to testing advanced materials with highly improved performances under space solutions.

The main aim of UMA3 is to attract to UniMi-FMSE forefront technologies and knowledge in advanced materials, prepared by powder metallurgy route for aerospace application, in order to be used by the industry and especially by small and medium sized enterprises (SMEs). Moreover, UMA3 will greatly support the research activity of UniMi-FMSE and promote its research excellence in advanced materials science and technology in Hungary and in Europe. Precisely, the main objectives of UMA3 can be summarized as follows:

-Strengthen the UNIMI-FMSE research excellence in advanced aerospace materials solutions;
-Improve the transfer of knowledge between Academia and Industry by establishing a long term collaboration strategy and sustainable network of partners;
-Enhance the promotion and preparation of highly trained and skilled young/early stage researchers and engineers in the aeronautical sector;
-Inspire the R&I activity of UNIMI-FMSE, project partners and Borsod-Abaúj-Zemplén county and North Hungary region;
-Enhance the mobility of both early stage and experienced researchers within the UMA3 network;
-Support research and innovation priorities in synergy with the RIS3 strategies;
-Strengthen the research management and administration profile of UNIMI-FMSE;
-Boost the research profile of UNIMI-FMSE and UMA3 partners.

The UMA3 partners join forces to develop new material systems and create new solutions, while using their competencies (knowledge, human resources, infrastructures) and cooperating in synergistic approach. The multi-step process of the project (from theoretical elaboration and experimental engineering to computational modelling) will remarkably contribute to existing know-how and concept-driven, market-based innovation and scientific & research progress as well. Namely, to boost the scientific excellence and innovation activities of UNIMI-FMSE, a dedicated strategy will be implemented by the project based on 4 main pillars:

PILLAR I: EXCELLENCE SCIENCE:
-Analysis of the lightweight materials, metal matrix composites requirements for aerospace, aeronautical applications;
-Innovative and sustainable materials and coatings solutions for the enhancement of the structures in the proposed field will be devised and provided;
-Development of new research directions in UNIMI-FMSE by exchanging know-how and experience through twinning actions with research intensive partners. This will lead to the increase of the number of peer-reviewed international scientific co-publications with at least 100% rate at the end of the project;
-Development and widening of our knowledge in the field of additive manufacturing and powder metallurgy assisted by ECAM;

-Increase the scientific visibility of UNIMI-FMSE and the number of peer-reviewed international scientific co-publications in high impact factor journals of the speciality (e.g. journals in the Q1 and Q2 quartiles of the Web of Science platform);
-The participating researchers will be devised to implement a personal publication plan, which can be continuously monitored via the Hungarian Scientific Bibliography.

PILLAR II: TRAINING, EDUCATION AND STAFF EXCHANGE:
-Organization of at least 3 training activities and 2 summer schools with the partners from intensive research countries as partners in: additive manufacturing of advanced materials, coatings with designed properties; 3D structure analysis;
-Training by research on new sintering and forming methods for obtaining high quality advanced material parts;
-Implementation of one common international PhD curricula in the field of advanced materials for aerospace and aeronautical through the cooperation with academic partners;
-Promote the involvement of early stage researchers and excel their scientific career through dedicated training, networking and mentoring;
-Organization of dedicated training modules that will enable an increment on the experience of the UNIMI-FMSE staff with regard to European proposals preparation, project management and administration.

PILLAR III: INNOVATION:
-Integration of new research facilities for applications of advanced materials systems for additive manufacturing, aeronautical and other industrial sectors;
-Elaboration of at least 2 new certified methods to be proposed for standardization: 3D characterization of additive manufactured advanced materials by FIB-SEM (Focus Ion Beam Scanning Electron Microscope) and micro CT (microComputer Tomography) and Thermal Analysis of nanostructured coatings using Differential Scanning Calorimetry and Gravimetry (DSC-TG);
-Collaboration agreements with business partners involved in the Industrial Board of the UMA3 project, leading to development of new materials and technologies on demand;
-Proposing collaborative research projects in the frame of Horizon 20202 calls and National Projects in the frame of the National Smart Specialization Strategy in Hungary. This would lead to an increase of private funding in UNIMI-FMSE and strengthen the position of the Faculty.

PILLAR IV: SYNERGIES:
-An Industrial cluster and Excellence centre will be established to provide solutions (materials and/ methods) for the aerospace sector in the field of: Nano multilayers, additive manufacturing of nanostructured alloys and powder metallurgy;
-Synergic cooperation activities, projects and networks will be proposed to sustain

the continuation of a dynamic activity after the end of the project, by actively supporting related strategic objectives of EU Technological Initiatives and being involved in the continuous elaboration of new joint projects;
-Joint participation in at least 1 International Conference and organization of a Policy Development Workshop, in the field of materials under extreme environments for additive manufacturing, aeronautical and other high-tech applications;
-Organization of a foresight workshop to identify and prioritize research topics and technologies in the field of novel advanced materials with tailored properties, according to strategic scientific and industrial needs for enhancing the Hungarian and regional competitiveness in the aerospace industry and propose measures to improve accordingly the National and regional strategies for RDI;
-Synergies between regions under the interlink of RIS3 strategies;
-Dissemination, Promotional Activities and communications with potential end-users to maximize the transfer and promotion of project results of the UMA3 project in Hungary and across the EU.

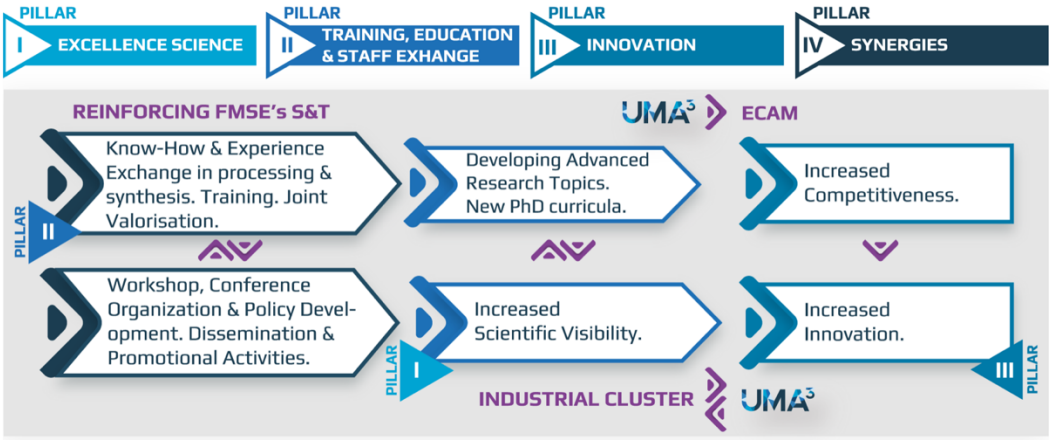

Figure 2: UMA3 Methodological approach

3. UMA3 DATA MANAGEMENT GENERAL PRINCIPLES

Knowledge Management and Protection of IPR

The effective exploition of research results predominantly depends on the proper management of intellectual property, which will thus form a crucial part of the overall UMA3 knowledge management strategy. Because of the novelty research aimed to be realized in the frame of the UMA3 CSA, certain measures are required to be applied towards protecting the legitimate interests of the involved parties with respect to the background introduced to the project and the foreground developed. To this end, special focus will be given for ensuring the appropriate knowledge management and protection. The UMA3 IPR strategy will define the terms and conditions in which

the project partners shall share project related information and knowledge. In this critical point will relay the confidence and effectiveness of the information flow, therefore its importance for the development of the project.

A first and very important measure for managing IPR issues, is the CA which has been signed between the UMA3 partners, and which inter alia describes the main conditions in order to establish the scope of the information (background & project generated) shared, IPR and Knowledge Management rules. Therein, the necessary protocols and tools for resolving any disputes that may arise are also defined. Precisely, during the project development, the data generated will be collected following standardized protocols and procedures regarding to databases, spreadsheets (outputs generated at each operation step), reports with parameters of each processing operation, equipment inventory, process design, prototype equipment designs, and prototype product dossiers. Sample templates will be provided and standards will be implemented to establish a framework. The general procedure for knowledge management (document versioning, approval and release) will be performed following the following stages: Identify–Assess–Protect–Exploit–Disseminate. All results will be identified, assessed and protected first, and only then exploitation/dissemination or communication will take place.

Conscious of the importance of IPR issues for scientific development, a training of Unimi-FMSE researchers in a short training stage in IPR and entrepreneurship will be organised with the support of COMET/Fraunhofer IFAM. The training will be performed in conjunction with one of the Twinning or workshop activities organized in Unimi-FMSE. Foreground knowledge will be generated during the course of the short-term staff exchanges, training workshops and conferences. The UMA3 consortium partners will make regular IP searches throughout the project in relation to logistics technology, in order to a) keep up-to-date with the IP landscape and b) assess the viability of possible patent applications. The guiding principle for intellectual property ownership is that it will belong to the consortium partner(s) responsible for the invention. The following IP ownership table reflects this preliminary agreement:

Table 1: IP ownership table

Possible Foreground Knowledge	Partners Concerned	Other Partners claiming Qwnership Rights
Physic-chemical characterization of materials, new multiscale modelling of alloys	UniMi-FMSE	No

Advanced laser sintering method for composite materials	UniBo-CIRI	No
Complex mechanical characterization of light-weight materials and composites	LTSM	No
New multi-scale modelling and LCA for advanced materials	ICAMCyL	No
Advanced solutions for additive manufacturing	All	All
Database for the analysis and monitoring of advanced materials processes	All	All

Any possible exploitation and transfer of IP between the concerned partners of the consortium and any interested commercial entity will be thoroughly evaluated with respect to the most appropriate commercialisation strategy and to IP risks, and will involve the signature of license agreements, assignment agreements or any other form of agreement between the parties involved.

FAIR Data Principles

In line with the relevant EC guidelines and rules, the FAIR principles will guide the UMA3 overall strategy for the management and protection of the research data collected, processed and produced during and after the project lifecycle. Namely, these principles state that the data generated shall be Findable, Accessible, Interoperable and Reusable and shall be applied to any project that creates, collects or processes research data. Each of the criteria is specified by several sub-criteria describing the specific measures that have to be implemented in each case. With the endorsement of the FAIR principles and its incorporation into the relevant guidelines for the development of DMPs in H2020, the former serve as a solid template for a full-lifecycle data management, following the signed GA and CA.

Even though the FAIR principles do not act as an independent lifecycle data model, they nevertheless assure that the essential components of a full-life cycle model are covered. Hence, these FAIR principles will be implemented throughout the entire UMA3 duration, provided that the implementation of said principles is proposed as a

conceptual integration rather than a technical integration. For properly addressing the FAIR principles for research data, UMA3 will inter allia consider: the data-set reference, name and description, the standards and metadata, the data sharing and handling as well as the archiving and preservation measuring (during and after the end of the CSA). A detailed description of the UMA3 implementation of the FAIR Principles can be found in chapter 4, under the FAIR Data Management section.

4. MANAGEMENT OF DATA

Collection and generation of data

All research data will be attributed with preservation, confidentiality/non-disclosure/ accessibility and re-use flags. With regards to personal and/or sensitive data, all legal provisions are complied with (see also chapter 5 on ethical issues for further details). The main types and formats of the data (and metadata) expected to be collected, derived and generated within UMA3 are listed in the table below. It is worth noting that this table is indicative at this time and may be subject to change/amendment during the project evolution in line with the UMA3 specific needs and activities at each stage of its lifespan.

Table 2: Types and format of data UMA3 will collect / derive / generate

Primary data	Qualitative and Quantitative Data, e.g. from workshops (specialized and industrial) and events, seminars, conferences, meetings, training and twinning activities, summer and winter schools, staff exchenges, interviews, etc.
Secondary data	Published data sources, public sector record, organizations records, administrative data and comparable
Data sources	Collected / derived / produced
Description of data to be collected / processed / generated	List of relevant experts and stakeholders, stakeholder contact collection Data on project participants (contacts, mailing lists etc.) Data on Advisory and Industrial Board members (mailing list, address, affiliation, bank details for reimbursement, etc.) Queries documentation (transcripts verbal communication), digital copies of workshops/events graphical material (sketches, post-it notes, flip-over sheets) Workshops/events and/or interview related data Questionnaire(s), survey(s) and reports

	Peer-reviewed publications Manuscripts (deliverables, publications and internal documents Additional mailing lists (e.g. newsletter subscriber list) and participant lists (to events) resulted from the project's dissemination and communication activities
Data Origin	Literature survey Workshops and events related data Deliverables, internal documents Partners know-how Public sector and organizations records Administrative data EC database
Data underpinning scientific publication	Conference Journals Scientific magazines Presentations EC portals
Format of data to be collected / processed / generated	Quantitative: MS Excel (.xls/.xlsx), MS Access (.mdb/.accdb), dBase (.dbf), ODS (.ods), (.txt), etc. Documentation: Plain text (.txt), MS Word (.doc/.docx) or MS Excel (.xls/ .xlsx), XML marked-up text (.xml) according to an appropriate DTD or schema, e.g. XHMTL 1.0 PDF/A or PDF (.pdf).xls(x)/.doc/.pdf/.ppt(x), etc. All final and approved documents will be made available in .pdf format. Digital image data: JPEG (.jpeg, .jpg) TIFF (other versions; .tif, .tiff) JPEG 2000 (.jp2), Adobe PDF (PDF/A,PDF) (.pdf), .ai, .psd files etc. To be defined Audio / video files (mp3, mp4, WAV and comparable)

Data management during the project

For each project Report or Deliverable, all contributing partners will be coordinated by the respective WP Leader and/or Task Leader, generating an internal document that should be subsequently approved. This document will contain the specific sensible information, background needed, generator of information, category of information, and destiny of information, defining the IPR-protocol in this concrete task (if any change in the general is needed).

Moreover, a special task to be performed is the so-called UMA3 Relationship Database. The creation of such a database requires a deep previous study and

understanding of foreseeable contents, relations and extension. The needs will be particularly analyzed, in order to build friendly and efficient structures, with easy maintenance and management. The final implementation will ensure an adequate tool, useful for dissemination inside and outside the Consortium (for example during presentations focused in specific industry or technological companies). Staff expertise, Open Sources, accepted standards and widespread usage will be used as file formats to collect data. International standards will be used to manage the data generated and collected in the frame of the project, such as ISO/IEC TR 20943-1:200337; IEC 82045-2:200438; ISO 23081 (Records Management); Directory Interchange Format, Writers' Guide 2015, Global Change Master NASA.

Furthermore, archiving data will take place earlier in the UMA3 project in order to maintain coherence, easing future management or maintenance works. The data generated and/or collected in the frame of the UMA3 project will be curated and preserved by depositing in a repository ensuring that they will be available to the beneficiaries and other researchers in the long term. Policies for access, sharing and re-use are envisaged according to the CA, e.g.

i) self-dissemination through a dedicated website. A dissemination schedule including the dates of turn over to a third party will be provided;
ii) preservation with delayed dissemination (within a year);
iii) restricted-use collections (public files will be altered to prevent disclosure of sensitive information about survey participants).

General Data and Knowledge Management

The internal UMA3 communication channels will create a fluent and quick flow of data during all stages of the project (including but not limited to meetings, webinars, workshops, summer schools, publications, etc.). All knowledge management will be centralized at the Reception Office, where experts in IPR management will analyse the information and treat, if necessary, the sensitive data. All data suitable to be openly accessible will be accordingly transferred to the Data Management Office, which will be in charge of transforming the respective information into legible messages for each target audience (based on the specific needs of each of the target groups).

The Data Management Systems and the Decision Support Systems will select the information from the knowledge database and convert it into the appropriate format for the different communication channels. After the end of the project, the project website will host the Knowledge/Relationship Database and all the documents will be

transferred to this repository. The database will contain sorted information, in a comprehensive manner, ready to be used in a subsequent External Communication (National and International) as part of the UMA3 Dissemination and Exploitation strategy.

Moreover, it should be underlined that the UMA3 consortium aims to apply the main principles of the European Commission's 3O Policy (i.e. Open Innovation, Open Science, Open to the World), in the context of a code of conduct agreed between the involved partners. This code of conduct will be a balanced compromise between the legitimate interests of the involved parties and the openness required to be achieved for a sound social benefit.

Data and Knowledge transfer to UniMi-FMSE

As previously analysed in section 2 of this document, UMA3 is structured around the research and innovation development of UniMi-FMSE in the field of advanced alloys. Due to this inspiring concept of the project, a specific knowledge transfer mechanism has been identified to grant the transparency and optimization of the activities towards this objective. The knowledge flow designed for UMA3 is divided in the following three branches:

1. The first one includes the internal partners' relationships, including their own Knowledge Transfer vehicles and Background in projects development, and the useful flow from their Influence Network (which in whole will form the initial Stakeholders Community).
2. The second branch is formed by the External Support, with International spirit, and includes the Policy-Makers, those related with the Strategic Alignment (these two groups will be integrated by the EC, the National and Regional Governments), and other External Partners.
3. Finally, the UMA3 Industrial Board will complete the third branch of Knowledge flow, adding the special needs of industry, practical aspects, and returning useful critical reviews to the "work in progress" documentation. Around these concepts, a Plan of Knowledge Transfer will be implemented, to accelerate the path towards UniMi as institution and to final beneficiaries (scientific staff, technicians, PhD Students, KT Office).

FAIR Data Management

As abovementioned, specific measures will be applied during the evolution of the

UMA3 project in order to ensure the proper application of the FAIR principles, in line with the relevant EC guidelines, i.e. ensure data that is findable, accessible, interoperable and reusable:

Data Findable: All data designated for Open Access to research data will be named according to a specific file naming convention including a versioning system. Dataset description will be done by an added .txt-File that describes the data by a text, so that a potential re-user gets context and can evaluate the data. Additionally, the metadata will be documented in a .txt-File "Metadata". Relevant additional metadata will be entered as well. By the time of publication, the data(sets) will get an DOI as unique identifier. They will be indexed by a searchable resource by its publication.

Data Openly Accessible: In line with the Open Access principle, the consortium partners will follow two main routes in UMA3:

1. Self-archiving: The UMA3 partners have identified the following acceptable choices for self-archiving:

- *Subject-based repositories:* arXiv.org, ResearchGate.

-*Centralized repositories:* UMA3 related publications can be made available on own company/institutional websites and on Open access websites. To determine what repository to choose, entering the Access Infrastructure for Research in Europe (OpenAIRE) has been recommended (www.openaire.eu), where the National Open Access Desks provides further assistance. Besides the published article, the overlaying data necessary to validate the results will also be deposited in a data repository.

2. Open access publishing: In the frame of H2020, Open Access, as a step towards Open Science, is obligatory. Concurrently, in line with the Horizon 2020 rules, open access will be granted to all scientific publications resulting from the project. Broader access to scientific publications helps to: build on previous research results, encourage collaboration among researchers and avoid duplication of effort and resources, speed up innovation and further involve citizens and society (improved transparency of the scientific process). To this end, the UMA3 partners will pay special attention to publishing in Open Access journals, while also caring to maintain the copyrights of their work. Moreover, it should be underlined that the UMA3 website will provide OA to all public (PU) documents, public deliverable reports and produced dissemination/communication materials.

Data Interoperable: the data repository will be based on the datacite-standard and contain controlled vocabulary for the following fields:

Subject

Licence
Funder
Language
Abstract
Technical Description
The (meta)data will use a formal, accessible, shared and broadly applicable language representation, thus ensuring the interoperability of the data. It will also be possible to reference the linked resources via an identifier. Common interfaces like OAI-PMH will be contained, for allowing the exchange and harvesting of metadata into other data collections and into the repository of the EU “OpenAIRE”. The data created in this project will be made available in standardized, wide-spread formats.

Data Reusable: The project data (e.g. transcripts of workshops and training activities, surveys, questionnaires and experts’ interviews) will remain reusable by delivering them in standardized, wide-spread data formats (mp3 and pdf/a). There is no embargo foreseen. The data will be released with a clear and accessible data usage license (Open Definition license) which will allow the further processing under attribution and sharing under the same conditions. For each item, a single master data file will be created. A project member will be assigned to be responsible for that master file. All changes to master files will be recorded. Copies of the master files will be stored in regular intervals. The quality of data will be assured by using mp3-format with high transfer rate (320 kbps). In case of interviews transcribions, the recordings will be heard and checked in advance, in terms of good sound quality. Similarly, the transcripts of workshops or other occurred events, will also be checked in terms of good quality prior to their final saving/storing.

Dissemination of data and expected impact

Under the condition that prior notice of any planned dissemination of own Results by one or several Parties, including but not restricted to publications and presentations, is given to the other project partners before the dissemination occurs, during and for one year after the end of the project; a dedicated monitoring process has been set up. This approach was carefully defined considering that each party shall not include in any dissemination activity another party's results or background (data, know-how or information, IPR) without obtaining the owning party's prior written approval.

Specifically, unless it goes against their legitimate interests, each beneficiary must as soon as possible disseminate its results by disclosing them to the public by appropriate means (other than those resulting from protecting or exploiting the

results), including in scientific publications (in any medium). This does not change the obligation to protect results in Article 27 of the GA, the confidentiality obligations in Article 36 of the GA, the security obligations in Article 37 of the GA or the obligations to protect personal data in Article 39 of the GA, all of which still apply.

A beneficiary that intends to disseminate its results must give advance notice to the other beneficiaries of (unless agreed otherwise) at least 45 days, together with sufficient information on the results it will disseminate. Any other beneficiary may object within (unless agreed otherwise) 30 days of receiving notification, if it can show that its legitimate interests in relation to the results or background would be significantly harmed. In such cases, the dissemination may not take place unless appropriate steps are taken to safeguard these legitimate interests. If a beneficiary intends not to protect its results, it may, under certain conditions, (see Article 26.4.1 of the GA) need to formally notify the Agency before the dissemination activity takes place.

Dissemination and exploitation will both be a coordinated and collective activity implemented by the entire consortium and an individual set of actions handled by a specific partner on local level. EASN-TIS, as the dissemination Leader, will be responsible for monitoring all planned and performed dissemination and exploitation activities, so as to ensure that the CA and GA requirements are respected and that the involved parties IPR are adequately protected from unauthorised use or any other kind of misuse. It is also worth noting that at all times, care will be taken to ensure that knowledge protection rules and requirements stated within the CA and GA are fully respected.

The process and schedule for the production of the dissemination materials and publications will be described in detail in deliverable D6.2: “Plan for the Dissemination, Communication, Networking activities & Exploitation of the project results”, which will be periodically updated, in order to include achieved results and coherently confirm to the evolution of the project. Accordingly, the UMA3 produced dissemination and communication materials will be based on the identification of the respective stakeholders they will address at each time and consider their specific needs and interests. Said products will include for example: Printed and electronic flyers and brochures, presentations and posters, banners, videos, fact sheets and press releases, infographics, storyboards, visual maps and e-news, etc.

Concerning scientific publications, it is anticipated that papers for scientific journals and conferences will be prepared and submitted as soon as the project delivers its

first results. The UMA3 partners will be regularly invited to submit publications to some conferences and journals, to generate understanding on the project activities and engage the stakeholders. Additionally, the articles' references and, whenever possible, a copy of the publication will be available on the project public website.

Open Access publications and, in addition, press releases and media interviews will ensure the wide dissemination of the UMA3 outcomes to the scientific & industrial community and the general public, opening the field to further scientific inquiry and technological innovations. The meetings, workshops and Summer/Winter Schools scheduled will further disseminate the UMA3 results to relevant stakeholders. All these will prepare the ground for the participating SMEs, well established in their respective fields. The initiatives carried out by the academic institutions, and the consolidated role held by the participant PIs as "opinion makers" by the major national and international media (newspapers, TV/Radio channels, Nature News, etc.) will ensure proper dissemination of the UMA3 objectives, to the general public. Thus, these actions will provide a soundproof for support provided by the EU policy to international collaborations.

Data Preservation and Archiving

The research data processed and generated by the UMA3 CSA, will be diversely stored, preserved and archieved, depending on the sharing policies attached to them. For both open and non-open data, the aim is to preserve the data and make them readily available to the interested parties throughout the entire duration of the project as well as after its end. Consequently, the following measures have been identified and will be implemented for assuring the proper management, preservation and archiving of said data:

- Identification of which data shall be preserved during and beyond the lifetime of the project
- Data-sets stored in an established repository to enhance sustainability of the access to data associated metadata, documentation and code
- Sufficient storage provisions under the project data volume
- Backup frequency and replication in multiple copies in the online system on a regular basis
- Minimum timeframe regarding the physical and cyber resources and facilities that will be used to secure and back up data
- When possible, the information will be also made available in the initiative that the EC has launched for open data sharing from research (i.e. EU repository, Zenodo).

5. ALLOCATION OF RESOURCES

Presently, no specific additional costs are foreseen beyond the described processes and methods for the data collection and storage set out in this DMP and which fall within the activities covered by the current grant. Later versions of this DMP may identify additional costs if required and properly justified by the project's future activities and needs. The responsibility for managing research data relevant to the UMA3 activities will lie with the authors of the individual research studies and/or deliverables. All authors are, however, requested to comply with the guidelines set out in this DMP and with the relevant OpenAIRE procedures, including the storing of data on the Zenodo repository categorised as an outcome of the UMA3 project.

6. DATA SECURITY

All data collected, processed and generated in the frame of the UMA3 project will be archived in a secure manner, via regular database backups (including daily backups, security updates, securely controlled administrative access, etc.). Further and more detailed information on that can be found in chapter 4, under the Data Preservation and Archiving section.

All UMA3 partners will be responsible for ensuring that the project-related data are safely and securely handled and stored; in full compliance with the relevant EU data protection regulations. It will also be ensured that said data will be available to the beneficiaries and other researchers in the long term. Deliverables, reports, internal documents and project-related material will be primarily stored on the project's collaboration server. The UMA3 partners will deposit, in an OpenAIRE compliant repository, the published version or the final peer-reviewed manuscript accepted for publication. Authors may use on their institutional repositories (if any) as well as on Zenodo. Moreover, all produced UMA3 public deliverables, public documents, communication material and open access papers and publications will be uploaded on the project's public website.

7. ETHICAL ASPECTS

Data protection and good research ethics are of topmost importance for the consortium of this project. Good research ethics meet all actions to take great care and prevent any situation where personal and/or sensitive information could get misused. Specifically, in the frame of the UMA3 project, several events (physical and virtual) addressed to third parties are planned to be organized and held, both for dissemination purposes, as well as for knowledge exchange purposes. Said events

include but are not limited to workshops (specialized and industrial), seminars, conferences, meetings, summer/winter schools, staff exchanges, training and twinning activities, etc. Accordingly, UMA3 will involve humans and collect, store and process personal data. These issues set out eventual ethical complications in line with the relevant EU Data Protection and Privacy legal framework.

To this end, the specific potential ethical issues raised by the UMA3 project are duly identified, as well as the relevant legal framework is assessed to determine the potential impact on data sharing, among others. Consequently, a dedicated and reliable plan for monitoring and managing these ethical concerns is duly established for this CSA. Personal data which that will collected in the frame of UMA3, will only be stored, analysed and used anonymously. The individuals conserned, will be informed comprehensively about the intent use of the information provided by them and will have to give their prior approval to the data collection for this specific scientific purpose with their active approval in form of a written consent.

To be noticed that for UMA3, personal data is thought of as any information, private or professional, which relates to an identified or identifiable natural person. Moreover, it shall be underlined that the information to be handled by this project will not be considered as "sensitive", as the project consortium will not acquire, store, and process “sensitive” information.

8. UPDATES AND REVISIONS

The present Data Management Plan is a living document that is expected to evolve, improved and gain more precision and substance during the lifespan of the project, based on its evolution, performed/planned activities and evolving needs. Since not all data or potential uses are fully clear from the start, more elaborated versions of the UMA3 DMP may be delivered at later stages of the project if issues arise due to an inclusion of new data sets, changes in consortium policies or external factors.