Plasma Jet Pack

Data Management Plan

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Lead Partner	COMAT
Author	L. Herrero
Reviewers	C. Tine
Approved by	J.L. Cartier
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Revision

Rev.	Date	Description
1	18/06/2020	Initial version

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1 Introduction

1.1 Subject

This document presents the data management plan for the PJP project. The PJP project will generate data about vacuum arc science and space propulsion. The vacuum arc technology is not well known for space propulsion purposes. It is important that all the physics progress will be published (data, publications, trial results) in dedicated revues. As a participant of the Open Research Data Pilot (ORDP) in Horizon 2020, the PJP project will have data findable, accessible, interoperable and reusable (FAIR).

But all technological issues must remain confidential to the Consortium in order to preserve industrial know-how and commercialisation. Moreover, applicable results to space propulsion will be patented in order to fix the commercial position (as stated in Guidelines on FAIR Data Management in Horizon 2020).

The DMP presents the main elements of the data management policy to be used by the Consortium. It describes the types and formats of data to be generated or collected and the data preservation and sharing methods.

1.2 Table of acronyms

Acronym	*Meaning*
ABCL	As Built Configuration List
AIT	Assembly, Integration and Tests
PA	Product Assurance
BB	Bread Board model
CDR	Critical Design Review
EGSE	Electrical Ground Support Equipment
EM	Engineering Model
EMC	Electro Magnetic Compatibility
EQM	Engineering Qualification Model
FM	Flight Model
FME(C)A	Failure Model and Effect (Critical) Analysis
GIE	Gridded Ion Engine
GSE	Ground Support Equipment
HW	Hardware
HET	Hall Effect Thruster
ICD	Interface Control Document
IF	Interface
KO	Kick Off meeting
KP	Key Point
MAIT	Manufacturing, Assembly, Integration and Tests
MLI	Multi-layer Insulation
MRB	Manufacturing review Board
MRR	Manufacturing readiness review
PDR	Preliminary Design Review
PJP	Plasma Jet Pack
PPT	Pulsed Plasma Thruster
QR	Qualification Review
SRR	System Requirement Review
N/A	Non applicable
TRR	Test Readiness Review
TRB	Test Readiness Board
VAT	Vacuum Arc Thruster
DMP	Data management plan
GA	Grant Agreement
CA	Consortium Agreement

ORDP	Open research data pilot
WP	Work Package
DoA	Description of Actions

2 Data Management Plan Overview

The Plasma Jet Pack project is a research & innovation project that aims to develop knowledge on Vacuum Arc applied to space propulsion.

We proposed to perform classification into three kinds of datasets:

- Physical data,
- Technological data,
- Missions and needs data.

The work page and associated categories are presented hereafter:

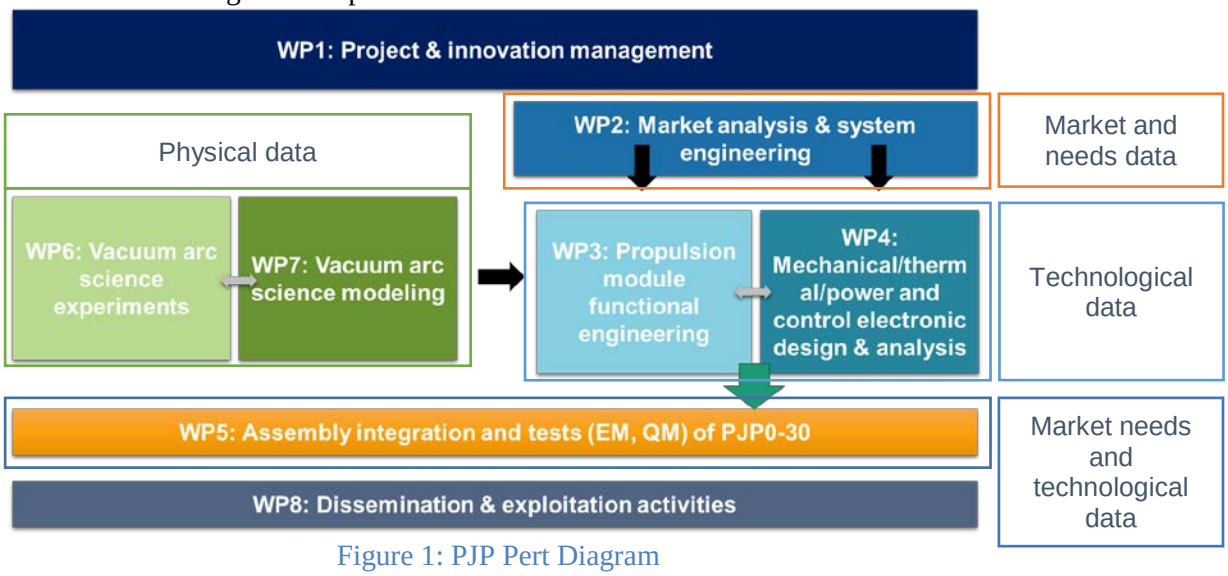

Figure 1: PJP Pert Diagram

The data types will be detailed in the following chapter.

3 List of deliverables and classification

The deliverable list and related status are presented hereafter:

Deliverables, Ethics, DMP, Other Reports									
WP No	***Del Rel. No***	***Del No***	***Title***	***Description***	***Lead Beneficiary***	***Nature***	***Dissemination Level***	***Est. Del. Date (annex I)***	***Status***
WP1	D1.1	D1	Project handbook	Presentation of the project implementation plan for all aspects	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Mar 2020	Submitted
WP1	D1.2	D2	Long-term impact roadmap	Presentation of roadmap and the associated impact	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2022	Pending
WP1	D1.3	D3	COST assessment	Cost breakdown of the PJP	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2022	Pending
WP1	D1.4	D4	Yearly Risk Assessment and Contingency Analysis report V1/4	Risk analysis and mitigation	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Jan 2020	Submitted
WP1	D1.5	D42	Yearly Risk Assessment and Contingency	Risk analysis and mitigation	COMAT	Report	Confidential, only for members of the consortium (including	31 Dec 2020	Pending

			Analysis report V2/4				the Commission Services)		
WP1	D1.6	D43	Yearly Risk Assessment and Contingency Analysis report V3/4	Risk analysis and mitigation	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2021	Pending
WP1	D1.7	D44	Yearly Risk Assessment and Contingency Analysis report V4/4	Risk analysis and mitigation	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2022	Pending
WP1	D1.8	D52	Key Performance Indicators 1/3	KPI description	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	30 Sep 2020	Pending
WP1	D1.9	D53	Key Performance Indicators 2/3	KPI follow up	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	30 Sep 2021	Pending
WP1	D1.10	D54	Key Performance Indicators 3/3	KPI follow up	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	30 Sep 2022	Pending
WP1	D1.11	D57	Ethics report	Ethics report : Dual use process for export	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2021	Pending

WP2	D2.1	D5	Customers' needs and applications report-SRR	Description of market needs, customer requirements, and application target of this technology	TASF	Report	Confidential, only for members of the consortium (including the Commission Services)	30 Jun 2020	Pending
WP2	D2.2	D6	Mission analysis & system constraints for Plasma Jet Pack-SRR	For few selected applications describes the associated mission with detailed order of magnitude	TASF	Report	Confidential, only for members of the consortium (including the Commission Services)	30 Jun 2020	Pending
WP2	D2.3	D7	Impact at satellite level-SRR	Description of impact of this technology in front of classical gas feed on-ground and in-flight at satellite level	TASF	Report	Confidential, only for members of the consortium (including the Commission Services)	30 Jun 2020	Pending
WP2	D2.4	D8	Plasma Jet Pack specifications SRR & CDR V1/2	Specifications of the PJP : functional, interfaces and environment	OHB SWEDEN AB	Report	Confidential, only for members of the consortium (including the Commission Services)	30 Jun 2020	Pending
WP2	D2.5	D10	Satellite integration report	Presentation of the integration constraints and a result on a cubesat	OHB SWEDEN AB	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2021	Pending
WP2	D2.6	D9	Plasma Jet Pack specifications SRR & CDR V2/2	Specifications of the PJP : functional, interfaces and environment update	OHB SWEDEN AB	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2021	Pending
WP3	D3.1	D11	Technical requirements	Technical requirements description using PJP	COMAT	Report	Confidential, only for members of the	30 Jun 2020	Pending

			description	specifications			consortium (including the Commission Services)		
WP3	D3.2	D12	Architecture description PDR & SRR V1/2	Description of the PJP architecture for PJP0-30 and 0-80	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2020	Pending
WP3	D3.3	D13	Specifications breakdown	Specification of each building blocks using PJP architecture	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2020	Pending
WP3	D3.4	D14	Accommodation description	Description of equipment accommodation	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2020	Pending
WP3	D3.5	D15	Functional description and analysis PDR & CDR V1/2	Description of the functional performances of PJP	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2020	Pending
WP3	D3.6	D45	Architecture description PDR & SRR V2/2	Description of the PJP architecture for PJP0-30 and 0-80 update	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2021	Pending
WP3	D3.7	D46	Functional description and analysis PDR & CDR V2/2	Description of the functional performances of PJP update	COMAT	Report	Confidential, only for members of the consortium (including the Commission	31 Dec 2021	Pending

							Services)		
WP3	D3.8	D58	Architecture and scalability of 80W and 150W	Architecture and scalability of 80W and 150W - Description of both architecture of PJP 0-80 and PJP 0-150 - Functional analysis - Accommodation of PJP 0-80 and PJP 0-150	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2021	Pending
WP4	D4.1	D16	Mechanical design and analysis report of Building blocks V1/2	Mechanical description analysis loads and results	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2020	Pending
WP4	D4.2	D17	Thermal design and analysis report of Building blocks V1/2	Thermal description analysis loads and results	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2020	Pending
WP4	D4.3	D18	Electrical design and analysis report of PPSCU	Electrical description analysis	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2020	Pending
WP4	D4.4	D19	PPSCU validation report	Tests report of the validation sequence of PPSCU	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2020	Pending
WP4	D4.5	D20	Capacitors bank characterization report	Tests report of the capacitor banks tests	COMAT	Report	Confidential, only for members of the consortium (including	31 Dec 2020	Pending

							the Commission Services)		
WP4	D4.6	D47	Thermal design and analysis report of Building blocks V2/2	Thermal description analysis loads and results update	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2021	Pending
WP4	D4.7	D48	Mechanical design and analysis report of Building blocks V2/2	Mechanical description analysis loads and results update	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2021	Pending
WP5	D5.1	D21	Design description of PJP0-30 V1/2	Description of the design of the PJP0-30	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2020	Pending
WP5	D5.2	D22	EM validation report	Tests report of the EM characterization	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2021	Pending
WP5	D5.3	D23	QM qualification report	Tests report of the qualification sequence	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2022	Pending
WP5	D5.4	D49	Design description of PJP0-30 V2/2	Description of the design of the PJP0-30 update	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2021	Pending

WP6	D6.1	D24	Triggering system characterization report	Tests report of the triggering system characterization sequence	MUNICH UNI	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2021	Pending
WP6	D6.2	D25	Cathode spot characterization report	Tests report of the cathode spot characterization	CNRS	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2021	Pending
WP6	D6.3	D26	Plasma Plume Expansion characterization	Tests report characterization of the plasma plume expansion	CNRS	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2021	Pending
WP6	D6.4	D27	Magnetic nozzle characterization	Tests reports of the magnetic nozzle characterization	MUNICH UNI	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2021	Pending
WP7	D7.1	D28	Triggering system modeling report	Tests report of the triggering system modeling	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2020	Pending
WP7	D7.2	D29	Cathode spot modeling report	Cathode spot modeling report	PlasmaSolve	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Aug 2020	Pending
WP7	D7.3	D30	Plasma Plume Expansion	Plasma Plume Expansion modeling	PlasmaSolve	Report	Confidential, only for members of the	30 Jun 2021	Pending

			modeling				consortium (including the Commission Services)		
WP7	D7.4	D31	Magnetic nozzle modeling	Magnetic nozzle modeling	PlasmaSolve	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2021	Pending
WP7	D7.5	D32	Synthesis report	Synthesis report	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2021	Pending
WP8	D8.1	D33	Project website and social network account	Project website and social network account	COMAT	Websites, patents filling, etc.	Public	29 Feb 2020	Submitted
WP8	D8.2	D34	Plans for dissemination of the results	Plans for dissemination of the results	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	30 Jun 2020	Pending
WP8	D8.3	D35	Plans for exploitation of the results V1/3	Plans for exploitation of the results	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	30 Jun 2020	Pending
WP8	D8.4	D36	Demonstrator workshop report	Demonstrator workshop report	COMAT	Demonstrator	Confidential, only for members of the consortium (including the Commission Services)	31 Oct 2022	Pending
WP8	D8.5	D37	Final report on	Final report on dissemination	COMAT	Report	Confidential, only for	31 Dec	Pending

			dissemination activities	activities			members of the consortium (including the Commission Services)	2022	
WP8	D8.6	D38	Business case	Business case	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2022	Pending
WP8	D8.7	D39	Final exploitation plan	Final exploitation plan	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	31 Dec 2022	Pending
WP8	D8.8	D40	Open Research Data Pilot	Open Research Data Pilot	COMAT	ORDP: Open Research Data Pilot	Public	31 Dec 2022	Pending
WP8	D8.9	D50	Plans for exploitation of the results V2/3	Plans for exploitation of the results	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	30 Jun 2021	Pending
WP8	D8.10	D51	Plans for exploitation of the results V3/3	Plans for exploitation of the results	COMAT	Report	Confidential, only for members of the consortium (including the Commission Services)	30 Jun 2022	Pending
WP8	D8.11	D55	Data Management Plan	Data Management Plan	COMAT	Report	Public	30 Jun 2020	Pending
WP8	D8.12	D56	Market Analysis	This report deals with :	COMAT	Report	Confidential, only for	31 Aug	Pending

				- Market needs - Competitors analysis - Key success factors analysis - Plasma Jet Pack scalability			members of the consortium (including the Commission Services)	2020	
WP9	D9.1	D41	GEN - Requirement No. 2	Applicants must confirm that the hiring of any subcontractors would not give rise to issues in terms of dual-use, alternatively that the relevant authorizations will be provided.	COMAT	Ethics	Confidential, only for members of the consortium (including the Commission Services)	31 Mar 2020	Submitted

As mentioned above, all technological, market and physics documents directly related to the product are confidential. Only data related to physics (experiments & simulations) will be published or presented during conferences or meetings.

4 Data classification

In this project we have to handle three kinds of data:

4.1 Physical data

The physical data are related to the behaviour of vacuum arc in various configurations. The understanding of phenomena will be in open access through publications.

The scientific publications that will be produced by our project will be open-accessed in order to be compliant with the general principle of the Horizon 2020 funding programmes. This will be achieved by mainly targeting publishers that provide 'gold' access, either by making the articles immediately accessed online for free, or by having each affiliated partner to cover the relevant cost. Whenever the 'gold' access model cannot be applicable, we will take the benefits of the 'green' model instead, by additionally publishing the relevant articles to an online repository, in consultation with the publisher, in case that an embargo period is needed. Furthermore, many publishers also allow the publication for educational purposes of the accepted papers, if the version of the paper before the final editing and formulation made by the editing office is used. We strongly believe that giving open access to our scientific publications will aim to speed up important breakthroughs by the European researchers that will lead to boost knowledge and competitiveness in Europe.
The publications must be approved by Consortium members 2 weeks before the submission of the papers. If a partner has no reply within two weeks, the answers will be considered as positive.

4.2 Technological data

The technological data related to design technology and manufacturing will remain in the Consortium and the data will not be in open access.

4.3 Market needs and mission data

The data related to the markets, needs and missions can be shared with other members of the research group.
The sensitive data released by large-scale integrators will remain confidential on request.

5 Data collection

All the data are collected thanks to the Project NetBoard platform. This solution allows to store and share data in a dedicated server. It makes easier exchange between all partners. All bibliography research and deliverables are stored in this tool.

Manage Share Disseminate
project netboard

Figure 2: project netboard frontpage

6 Intellectual and Property Rights

A Consortium agreement was negotiated and signed by all the parties in order to inter alia specify the terms and conditions pertaining to ownership, access rights, exploitation of background and results and dissemination of results, in compliance with the grant agreement and Regulation n°1290/2013 of December 11th, 2013. The Consortium agreement is based on the DESCA Horizon 2020 Model Consortium Agreement with the necessary adaptations considering the specific context and the parties involved in the project. The basic principles are as follows:

- The parties have identified the background intellectual property they will bring to the project, and assessed its availability for access rights as regards potential third parties' rights over such background as far as this information is known to the respective party at the moment of the assessment;
- Ownership of results including joint results generated by two or more parties will go to the party(ies) having generated such results;
- The owning parties will take all appropriate measures for the protection of the results capable of commercial or industrial exploitation, notably through intellectual property rights when relevant;
- The parties will use reasonable efforts to exploit and disseminate the results, either directly or indirectly, for instance by out-licensing said results;
- Each party will give access rights (through licenses) to their background and results to the other parties for the implementation of the project and/or for the exploitation of those other parties' own results (under fair and reasonable conditions).

Intellectual property rights issues clarification will be on the agenda of monthly general assemblies if necessary. During general assembly meetings, dedicated time will be allocated to identify results with potential intellectual property rights, in particular for joint results where there is an opportunity for further exploitation at the Consortium level.

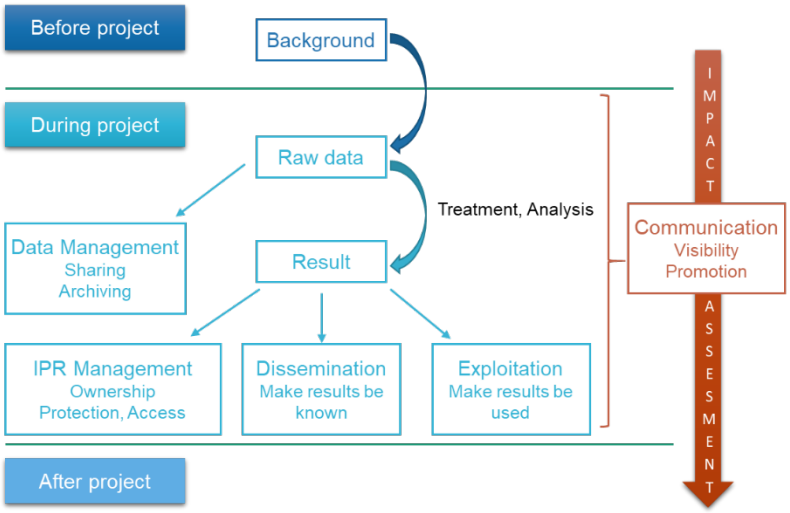

Figure 3: IPR activities according the different project phases

7 Archiving and preservation

All data will be shared through Project NetBoard during the duration of the project. Moreover, the data will be stored on the COMAT project server in the dedicated folder.
The COMAT project server is duplicated every day on two medias types and one copy is done on another remote site (location). The 3-2-1 rule is presented hereafter:

Figure 4: 3-2-1 rules presentation

8 Data security

The security of the data stored in Project Netboard is insured by Absiskey (provider of this platform).

The security of the data in the COMAT project server is insured by COMAT's IT team. The IT team follows the requirements of « Guide des bonnes pratiques de l'informatique » by ANSSI. The network is segmented as function of project access and the data flow is monitored on the server.

9 Ethical aspects

The Consortium partners are aware of possible dual-use issues and confirm that they have taken steps to identify whether the technologies involved would be subject to Regulation 428/2009 or national export controls on dual-use items of the member state(s) involved.
Sufficient expertise is made available within the Consortium to properly arrange for any authorisations required for technology transfer or export (of hardware as well as software).
In particular, COMAT wants to export the products resulting from the research, and in particular the Plasma Jet Pack propulsion module. Different steps have been achieved as regards export control towards the French government (department of Defence):
- Materiel de Guerre et Assimilé (MGA) : the Plasma Jet Pack is confirmed not classified.
- Dual-Use: the Plasma Jet Pack is confirmed not classified.

Regarding material and/or project data that are to be transferred from any members of Consortium to outside the EU including to, if applicable, non-EU shareholders of multinational consortium members, the Consortium is aware of export requirements that would be invocated in case of dual-use. COMAT has identified early this subject and has already approached the French authorities (CNES, DGA and French embassy), in particular in the frame of its commercial action toward China. Helped with recommended consultancy, COMAT received an active support from the authorities, both in term of IP protection, requirement identification, conformance to export applicable regulations and administrative back office.

Practically, no data will be transferred to the customer, at the exception of the PJP user manual and interface requirements. The hardware will be delivered as a black box with measures preventing dismounting and/or components identification.
A deliverable at Month 24 (D1.11) will provide a status on dual-use aspects regarding export.

10 Others issues

N/A