This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 821875.

SESAME-PMP-0001-AG

H2020 :SESAME

Smart European Space Access through Modern Exploitation of data science

Project Management Plan
D7.1

DISTRIBUTION

Company	Name	Area	Distribution
European Commission			
	Stéphanie STOLTZ-DOUCHET	European Commission	Internet
ArianeGroup			
	C.Lambert Campello	AG	Internet
	C. Bakouche	AG	Internet
	N.Toureau	AG	Internet
	I. Girard-Carrabin	AG	Internet
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	N. Guiller	AG	Internet
	P. Schotter	AG	Internet
	F. Planchot	AG	Internet
	D.Gignac	AG	Internet
	I.Quinquis	AG	Internet
	F.Blondeau	AG	Internet
Partners			
	M. Ferlin	CNES	Internet
	P.Porcar	Cap Gemini	Internet
	V.Romeas	Cap gemini	Internet
	J.Levoir	Cap Gemini	Internet
	S. Guibert	Cap Gemini	Internet
	F. Bonada	Eurecat	Internet
	G. Anzaldi	Eurecat	Internet
	I. Marsh	Nupsa	Internet
	F. Peysson	Predict	Internet
	F. Barbier	predict	Internet
	A. Schisano	Vitrochiset	Internet
	K.Fabbri	Vitrochiset	Internet
	A.Tortorelli	CRAT	Internet
	A.Pietrabissa	CRAT	Internet
	F.Liberati	CRAT	Internet

Internal reference : JLF n° 188/2019	Issue	Page
Structured reference : SESAME-PMP-0001-AG	1	3/47

CLASSIFICATION	ARIANEGROUP		MILITARY			PROGRAM		
	Public	☒	Unclassified	(NP)	☒	General Public	(1)	☐
	Internal use	☐	Confidential	(CD)	☐	Industry	(2)	☒
	Confidential	☐	Secret	(SD)	☐	Limited distribution	(3)	☐
	Secret	☐	Top Secret		N/A	Confidential	(4)	☐
			French National	(SF)	☐			

TITLE D7.1 - Project Management Plan of Sesame Project

ABSTRACT

KEYWORDS Program, Project, Management Plan, Sesame, H2020, Artificial Intelligence, Factory 4.0

File ref. :	Configuration management	Distribution category
Software :		
Language code : EN	None ☒	Interest: Short term ☐ / Medium or long term ☒
Taking precedence : EN	Internal ☐	Sup. distribution: Authorized ☒ Checked ☐

VISAS	Content responsible	Compliance responsible	Enforcement responsible
Sigle	JLFS	JTQ	JLF
Name	F.BLONDEAU	C.LAMBERT CAMPELLO	JC.HENOUX
Signature			

ISSUES STATUS RECORD		
Issue n°	**Date**	**Main reasons for document change (+ paragraphs nb concerned)**
1	31/08/2019	First issue of Preliminary Project Management Plan for Sesame project

Table of Contents

1 INTRODUCTION

This document is the H2020 Sesame Project Management Plan made available for Sesame Project. This preliminary status includes other plans (Quality Management Plan, System Engineering Management Plan, …).

This document describes the proposed organisational structure as well as the preliminary principles, methods, and standards applied by ArianeGroup and consortium partners to manage the successful execution of the contract in response to [AD1].

This Project Management Plan implements the Governance Structure detailed in the Consortium Agreement. The Consortium Agreement remains the contractual reference binding the Consortium Members.

The Sesame consortium partners shall at least comply with the ISO 9001-2015[1] standard or equivalent.

Each beneficiary shall verify that its own company Project Management Plan is compatible with this document.
This Project Management Plan constitutes the fundamental setup and tailoring of the project management processes of the organization in order to achieve the actual contractual requirements in scope. It takes into account the applicable requirements and obligations from the contracts in scope.

This plan govern the execution of the project from the contractual start date to the formal project closure that can be anterior the contractual end date.

This Project Management Plan has been elaborated in course of the me initiation process.

It will be updated in response to exceptional events, e.g. if a contract is in such a fundamental way altered, e.g. by rider or contract change note, that an entire re-set-up is necessary;

These major changes will be subject to acceptation from the AG Program Coordinator (sees &5.1.1).

2 ACRONYMS AND ABBREVIATION LIST

AG	ArianeGroup
AI	Artificial Intelligence
CMS	Company Management System
EC	European Commission
ESA	European Space Agency
OBS	Organizational Breakdown Structure
PBS	Product Breakdown Structure
PMQP	Program Management & Quality Plan
GDPR	General Data Protection Regulation
MAIT	Manufacturing, Assembly, Integration and Test
OQOTOC	On Quality On Time On Cost
SOW	Statement Of Work
WBS	Work Breakdown Structure
WP	Work Package

[1] «Systems of management of the quality - requirements». Models for the quality Assurance in conception, development, production, installation and associated services

3 DOCUMENTS AND REFERENCES

3.1 Applicable Documents

In order of priority:

[AD1] Grant Agreement number: 821875 — SESAME — H2020-SPACE-2018-2020/H2020-SPACE-2018

[AD2] AD2 - 2018-165C_H2020_SESAME_V3.1_consortium Agreement

[AD3] Sesame - Note - answers to EC comments - merging v2 – AG-JLF19-154

[AD4] Space-TEC-16-2018b SESAME Part 1-2-3-4-5 & Ethics

[AD5] SESAME Security Scrutiny ESR

[AD6] 821875_SESAME_ESR (European Commission notation)

[AD7] DOC19031111_58_40 (licence export control) – Not available for no French eyes.

3.2 Reference Documents

ArianeGroup Company Management System is built in conformance with ISO 9001, EN 9100, AQAP 2110 requirements and has been certified in 2016.

This Project Management Plan which are consistent with partners ways of working and AG CMS processes.

4 OBJECTIVES AND CONSTRAINTS OF THE PROJECT

In response to the challenge and expected impacts of the H2020 SPACE-16-TEC-2018b topic, our consortium proposes a project detailed in [AD3] to harness digital technologies, processes and methods for automation of the European launchers' manufacturing and operations. This activity aims at the following 10 direct and indirect objectives derived from market needs defined by Industry and operators, as well as strategic needs defined in the EU Strategy for Space.

Direct objectives of SESAME are :

1. Develop a complete data management framework to proactively manage risks in new automated production and operations.

2. Develop new Predictive Maintenance and Quality components to implement new automated launcher production and operations maintaining quality and reliability. (objective is to pass from TRL 3 to TRL 7).

3. Implement new logistic processes (adaptative operations) that allows an optimal management of resources in an environment where resources are shared among different organisations and products.

4. Evaluate the benefit of these new capabilities in realistic operational scenarios developed based on two very challenging Use Cases.

5. Accompany the consequent transformation of human competencies, create new job profiles.

6. Evaluate other possible sectors for which the proposed predictive framework could be applied to create a large eco-system with tools for Predictive Maintenance and Quality.

Indirect objectives of SESAME are:

7. Increase Flexibility of the production of Ariane 6 and future Programs manufacturing facilities (in France and Germany)

8. Create an ecosystem involving the overall European launcher industry and possibly other sectors to share knowledege and implement new more effective industrial processes with less risks and costs.

9. Improve competitiveness of European launch service from the "*Centre Spatial Guyanais*" (CSG) spaceport by improving service availability and reducing overhead cost

10. Maintain European autonomous, reliable and cost-effective access to space

Two use cases have been identified to perform the execution of the Project:
Use case 1: Ariane 6 Lower Liquid Propulsion Module Production Line in Les Mureaux;
Use case 2: Integration activities in the VEGA Mobile Gantry in French Guyana

The project is structured round four phases, ended with milestones:

T0 : April 1, 2019

• M1 – Concept Specified: Concept V1.0 – T0 + 9M (End of December 2019).

• M2 – Feasibility Assessed and Concept V2.0 – T0 + 21M (End of December 2020).

• M3 – Developments Achieved and Concept V3.0 – T0 + 30M (End of June 2021).
• M4 – Go/ No Go decision – T0 + 33M (End of September 2021).

The main constraints of the project is the export control in the environement datas issued from Ariane 6 production that fall under the French Export control regulation.

The project shall comply with the French export license environment.

5 PROJECT ORGANIZATION

5.1 Organizational

Roles and responsibilities of each entity involved in the project are defined as follows:

- European Commission is the customer;
- ArianeGroup is the Coordinator of the Consortium with following partners:

Participant no.	Participant organisation name	Country
1 (Coordinator)	ArianeGroup SAS (AGS)	France
2	Centre National d'Etudes Spatiales (CNES)	France
3	Vitrociset SpA (VCS)	Italy
4	Predict SAS (PR)	France
5	Eurecat (ER)	Spain
6	Consortium for the Research in Automation and Telecommunication (CRAT)	Italy
7	Capgemini SAS (CG)	France
8	National University of Political Studies and Public Administration (NUPSA)	Romania

Fig 1: Consortium Sesame and particpants

The activity is being performed in a partnership:

ArianeGroup assumes the Program Coordinator and coordinates the overall execution of the Research and Innovation action. The Program Coordinator is the interface to the EC and is responsible for the Grant Agreement Management.

The organisation of the activity and the repartition of tasks between the team partners is further described in [AD1] and [AD4].

Nota: No Industrial subcontractors have been identified.

Link to SESAME Project team file on AG SharePoint: SESAME - Participant list (Direct access for Ariane Group Members only) : partners will receive a copy on a need basis and each time a major evolution is made.

It will be updated as needed. Arianegroup will comply with GDPR procedures.Internal AG Organization

5.1.1 Ariane Group & Future Programs Organization

Available only for Sesame Stakeholders

Fig 2: Future Program AG Organization

Within the ArianeGroup organization, the Future Programs Department will be in charge of the project. ,

The AG Project Team is described in Figure 3. It consists in an Integrated Project Team (IPT) gathering the personnel having a key role in the project.

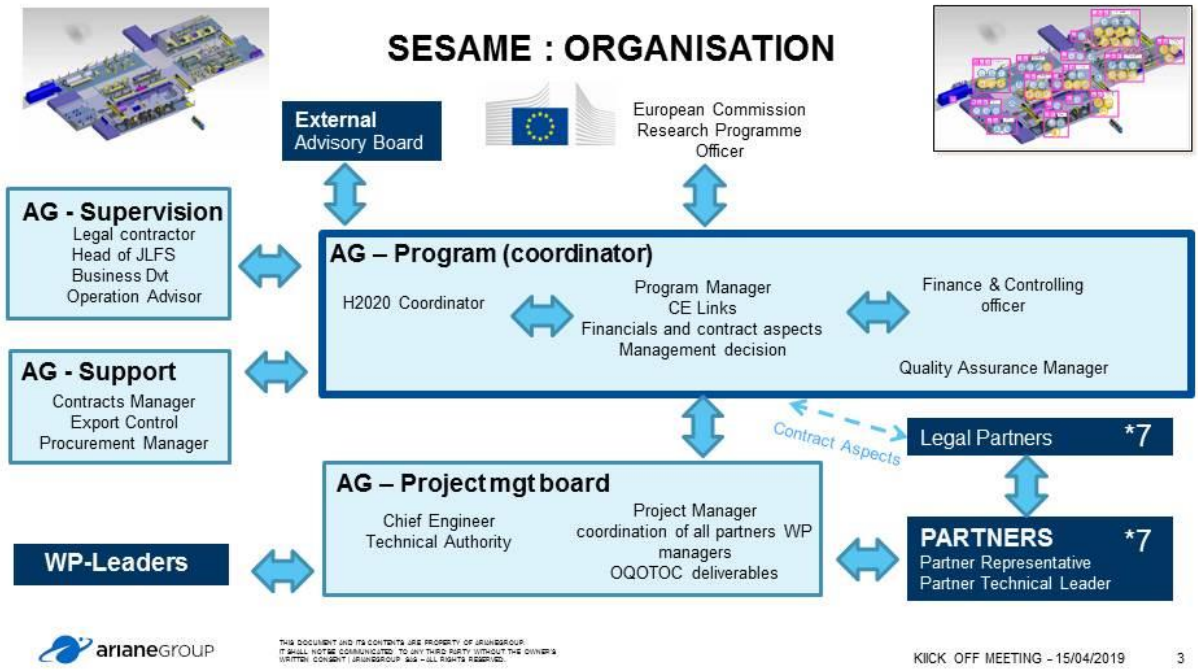

Figure 3: Project Team and Key Roles

The management and execution of the Project is driven by the Program Manager.

The Program Manager is the sole Point of Contact of the Consortium with European Commission for the execution of the Program as well as the Management of On Time, On Quality and On Cost deliveries of the Project.

The contracts and financial aspects are under the responsibility of the Program management.

The project manager has the delegation of the Program Manager is responsible for:

- Relations management with partners;
- Planning compliance;
- Production costs;
- Technical coordination between Work Packages.

The Program Manager has authority over the nominated team, and team members have a clearly identified reporting line.

In the same way as the Program Manager, who has the responsibility to monitor the project management process from end to end, the roles described in the following section have the responsibility to monitor the processes in their respective scope from end to end as well.

	Program Manager	Project Manager	Finance & Controlling Officer	Quality Officer	H2020 AG Coordinator	Chief Engineer	Contract Manager	Export Control Representative	Procurement Manager	Partner representative / Technical Leader
Program Management	A/R	C	C	C	C	I	C	C	C	C
Day to day Project management with Partners	A	R	I	C	C	R	I	I	I	C
Financial reporting	A	I	R	I	I	I	I	I	I	C
AG European Project Coordination	A	C	I	I	R	C	I	I	I	I
Export control	A	R	I	I	I	I	I	C	I	I (partial*)
Legal: contract modification	A	C	C	I	C	I	R	I	C	C
Document classification	A	R	I	C	I	R	I	C	I	I (partial*)
Reporting to EC	A/R	C	C	I	C	I	C	I	I	I
Internal AG reporting	A	R	I	I	I	I	I	I	I	Not applicable
Work Package.	C	A	I	I	I	R	I	I	I	R
Partner own reporting	Not applicable	I	Not applicable	Not applicable	Not applicable	I	Not applicable	Not applicable	Not applicable	R
Configur	A	C	I	C	I	R	I	I	I	C

	Program Manager	Project Manager	Finance & Controlling Officer	Quality Officer	H2020 AG Coordinator	Chief Engineer	Contract Manager	Export Control Representative	Procurement Manager	Partner representative / Technical Leader
ation Management										
Documentation	A	R	I	C	I	R	I	I	I	R
Risk and Opportunities management	A	R	I	C	I	I	I	I	I	C
Engineering management	C	A	I	I	I	R	I	I	I	R
Procurement processes	A	C	C	I	I	I	I	I	R	C

Legends:
A: Accountable, the one who decides
R: Responsible, those who do
C: Consulted, those who are consulted
I: Informed, those who are informed

*Partial: this project is under Export Control French regulations.

This responsibility matrix is subject to modification during General Assembly.

Table 1: List of Key Personnel

Role	Summary Description
Program Manager	Manages the Project and is accountable for on quality, on time and on cost delivery of all contractual elements and French export control aspects. The Program Manager is the single point of contact towards the Customer European Commission. The Program manager assumes main control of : financial , contracts aspects and is the unique decisionnaire for these aspects. H2020 coordinator could replace the Progam Manager if not available.
Project Manager	Ensures the coordination of all partners WP managers with respect to the project and is the contact of partners of projects. Within AG, he is responsible for OQOTOC deliverables under Ariane Group responsibility and WP coordination and Technical Delivery He reports to the Program manager any key points and issues internal in AG or with partners, costs, contracts, schedule and export control topics.Chief Engineer could replace the Project Manager if not available
Finance & Controlling Officer	Manages the daily operations in controlling in support of the Project Manager, including Project structuring. Sets up cost consolidation and reports project KPIs.
Quality Assurance Manager	Assures and provides evidences both internally and externally that the project deliveries comply with the requirements and applicable rules of the contract.
Contracts Manager	Coordinates the contracts aspects for the Project and assists the Program manager for consortium management aspects and contracts modification with European Commission.
Chief Engineer	Manages the consistency between specification and technical choices and ensures the overall technical consistency of the project in interface with partners
Export Control Representative	Supports the Program manager on the export control aspects and is the single point of contact towards French regulation
Procurement Manager	Manages the procurement of projects (hardware/Software/ Sub contractors if any).
H2020 Coordinator	Responsible for the coordination between the overall EC H2020 projects managed by ArianeGroup, in particular concerning the coherence & alignment in the preparation & execution of each project. H2020 AG Expert and advisor for European Commision project. The role of Coordinator is to vérify that EC Rules are applied.
Legal Partner	Legal entity for each Partner and signed the Grant

Role	Summary Description
	Agreement. He has signing authority. It represent the Partner Company for all legal aspects.
Work Package Leader	Responsible for coordination, planning, monitoring and reporting of the activity and for detailed coordination of this activity with others in the project. The Work Package Leaders will report to the Project Coordinator.
Partner representative	Work in the partner Legal Entity. Contribute to Work Package.
Partner Technical Leader	Manages the consistency between specification and technical choices and ensures the overall technical consistency of the WP.

5.1.2 External & User Advisory Board ("EUAB")

EUAB offers guidance to the project and critically reviews its progress. The role of this board is to give an external view and to prepare for the exploitation of the project outcomes.
The EUAB includes:
• End users: other companies in space domains or in other industries sharing similar issues.
• European Space Agencies.
• Big data, AI, and Digital experts with theoretical and/ or practical knowledge of the issue at hand.

The following organizations have been identified as members of the board:
• Automotive: Renault (France).
• Defence and security: Terra-spatium (Greece).
• University: University of Athens.
• Institution: ESA, CNES, EAQG (European Aerospace Quality Group).
The list of organisations to participate to the EUAB will be confirmed within the final version of the present PMP not later than . 1 month before the first EUAB.
The EUAB meets a minimum of twice a year (M1 and M7 of each year) to review the progress of the project, thus ensuring the quality of the scientific/ technical work and the quality of the project deliverables.

The EUAB is responsible for the following activities

- Participate to a minimum of one yearly meeting
- Advise quality of major progress reports, deliverables and experiments
- Provide scientific and technical advice to the Project Management Plan
- Provide assistance in elaborating dissemination inputs

During the proposal preparation, the following members have been confirmed:

ESA :

Technology Manager FLPP - Future Launcher Preparatory Program
Costing and production Manager of Programs A5, A6 et VEGA
Ground Facility and Launchpad Experts

CNES

CNES General Inspector
Simulation and Datascientist

Orbital AI systems Manager
Payload Launch Campaign Expert

ArianeGroup
Ariane 6 E2E Digital Transformation
Company Management System
Industrial Directorate

Other Space Company (showing interest as well):
Alliance Renault Nissan
Valeo

5.1.3 Steering Committee

A steering committee (nammed AG Supervision) is created at the beginning of the project

The steering committee is represented by:

- Head of Civil Future Programs Organization and Legal Contractor for EC
- Head of New Customers and Services
- Head of Future Launchers Systems
- Factory 4.0 representative

The Program Management Team and Project Manager report to the steering committee at minimum at the key Milestones of the project (M1 M2 M3)) and when major event requires major decision for Sesame Project (contractual , legal issues, etc…).

5.2 Communication and reporting

5.2.1 Interfaces with EC

The ArianeGroup Program Manager, as Consortium coordinator, is in interface with EC representative. He is accountable for organizing progress report and contractual meetings (M1,M2,M3) following the schedule. It will address identified deliverables together with progress data such as:

- The technical status and progress status vs schedule;
- The milestones and events accomplished;
- The difficulties and risks if any, and actions planned and/or taken:
- In case of slippage, the updated planning, including the reasons for modification;
- The events anticipated during the next period;
- The status of deliverables and payment milestones;
- The status of the actions items.

Progress meetings will be prepared on the basis of the internal project reporting processes. All inputs will be prepared by the representative from each consortium partner to support the Progress Meeting, gathered and approved by the Program Manager and the Quality Assurance Manager.

The AG Program Manager will establish the invitation of the EC, 10 days before the meeting and will establish the Minutes of Meeting which will include the presentations provided during the progess meeting, the conclusions and action items agreed during the progress meeting. The Minutes of Meeting will be signed both by EC representative and by AG Program Manager as Consortium Coordinator and will be distributed to EC and all partners representatives within 10 days. The presentations for progress meetings will constitute the progress report.

The list of attendees will be adapted to the content of the progress meeting.

Key Performance Indicators to be provided by Partner every semester minimum:

- On Time Delivery of their work package:
- On Cost delivery of their workpackage
- Number of Publication
- Risks and Opportunities
- Financial report

In addition a short phone meeting will be organized monthly (technical point, planning, issues to be solved, risks…).

Progress Reports:

ArianeGroup will provide progress report in electronic version starting covering above mentioned progress data.

Periodic reporting:

SESAME is divided in 2 periods – 2 reports dealing with financial and technical aspects,
All templates to fill in are in the participant portal,
After the end of the reporting period, a 60 days period is allowed to submit the reports. Then, revisions and explanations period is starting.

Register a project webage on the ".eu" domain is particulary recommended.

The deliverables that are public are meant to be published at some point.Interfaces with Partners

Partners involved in the Project will be managed on day-to-day tasks by ArianeGroup Project Manager.

Meetings may be organized on ArianeGroup or partner request, as frequently as necessary, by phone/video or physically, to discuss any matter related to the work to be performed, and to solve any blocking situation and to allow ArianeGroup to prepare its periodic reporting and presentation as described in AD3.

Partner are requested to provide the following data 1 week before progress reports:

1. Executive summary of the work achieved: 1 page.
2. Description of work plan ahead, and road map: 1 page

AG will work using AGILE methods (see& 12.7.4). Partner are free to manage their work using the methodologies of their choice.

Key Performance Indicators to be provided by Partner every trimester minimum:

- On Time Delivery of their work package:
- On Cost delivery of their workpackage
- Number of Publication
- Risks and Opportunities

5.2.2 Internal AG Project Reporting

The periodic reviewing and reporting cycles are performed through a bottom-up process supported by an project Monthly progress meeting chaired by the Program Manager with the following objectives:

- Progress status and expectations in interface between the project partners
- Decision on issues
- Identification of issues or risks to be upgraded at upper level or needing a specific treatment
- Identification of information to be escalated at upper level (Program Management).

ArianeGroup internally, Project Review (MPR) with Finance & Controlling is performed every 3 months.

In case of new risk or issue, Partners are requested to inform within 2 weeks with the Project Manager by email. Such an issue will try to be solved during next Progress Meeting.

5.2.2.1 Issue Escalation between partners

Issues that cannot be solved at progress meeting level, the Project Manager will escalated the issue to the Program Manager.
In case such issue cannot be solved at Program Manager level and has an impact on the execution of the Project and could jeopardize the Project planning & deliveries, this shall be escalated to the European Commission :

Stéphanie STOLTZ-DOUCHET

Research Programme Officer

European Commission
Research Executive Agency
Unit B1

COV2 19/017
B-1049 Brussels/Belgium

5.2.2.2 Escalation to the European Commission

Specific meetings may be organised by decision of the Program Manager in case of unforeseen occurrence of critical issues to be shared and treated rapidly under the oversight of EC.

EC can nominate its own experts to review these KPs in accordance with ArianeGroup.

In case issue cannot be solved at EC level, the dispute shall be settled by the Consortium agreement clauses & conditions (AD2).

6 PROJECT BREAKDOWN STRUCTURES

6.1 Product Tree (PBS)

The detailed Product Tree Breakdown Structure, incorporating the product trees of each Partner, shall be provided in separate document during the project execution. This project being a research project, one of the objective is to work toward a datascience framework definition including a Product Tree structure.

6.2 Work Breakdown Structure (WBS)

The general work logic was derived from the Proposal and associated tasks description. The WBS for the project is presented in 4.

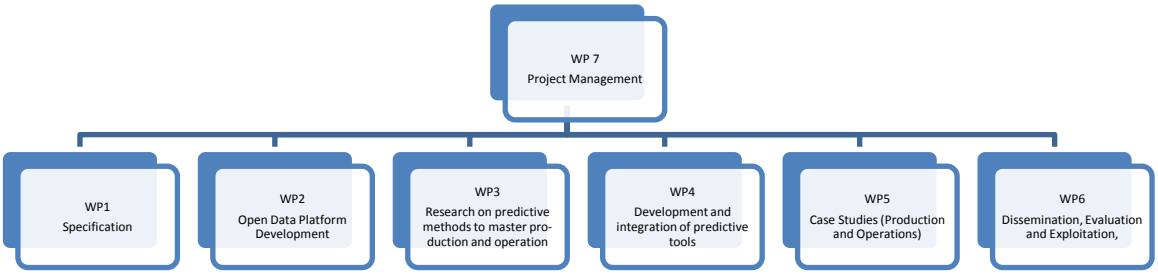

Figure 4: Work Breakdown Structure

6.3 Organization Breakdown Structure (OBS)

The project organization Breakdown Structure is described in figure 5.

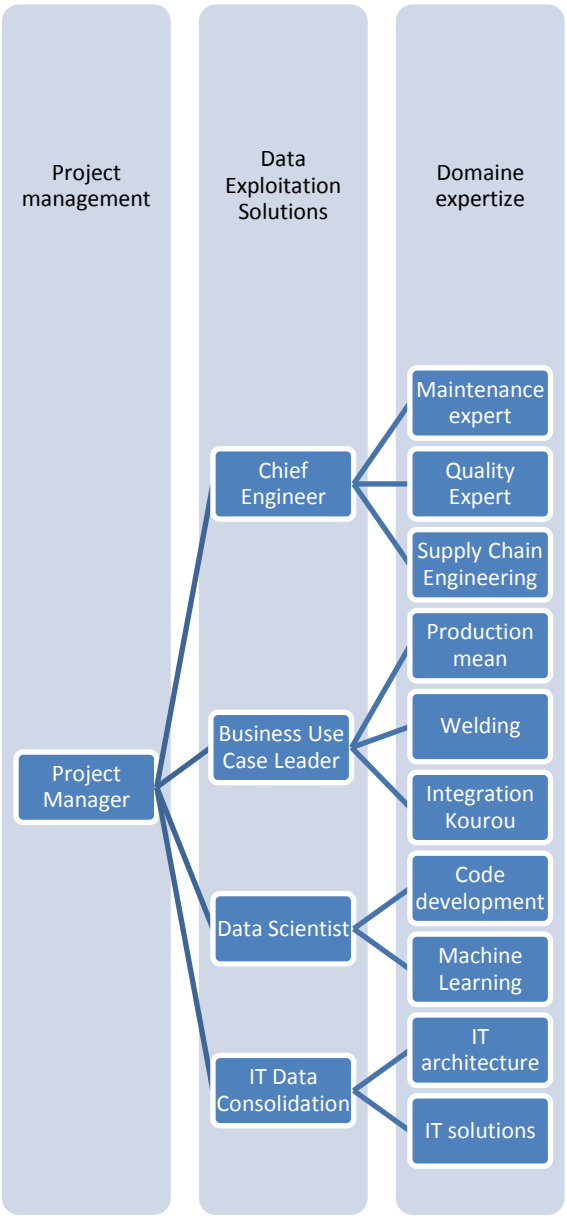

Figure 5: Organisation Breakdown Structure

The Project team consist of :

- Internal AG employees
- Partners employees

Lthe list is managed in the following file and will comply with GDPR procedures:
SESAME - Participant list AG (Direct access for Ariane Group Members only) : partners will receive a copy on a need basis and each time a major evolution is made.
It will be updated as needed. Arianegroup will comply with GDPR procedures.Internal AG Organization.

7 CONFIGURATION, INFORMATION AND DOCUMENTATION MANAGEMENT

7.1 Configuration Management

The data and documentation will be clearly identified and located thanks to versioning processes. This will be performed by the Chief Engineer.

The main documentation database is AG Internal SharePoint. Link H2020 SESAME: (Direct access for Ariane Group Members only) : partners will receive a copy on a need basis and each time a major evolution is made.
It will be updated as needed. Arianegroup will comply with GDPR procedures.Internal AG Organization.

7.2 Documentation Management

The documentation management is applied throughout the entire life cycle of the Project. It allows to ensure:

- Correctness, accessibility, rapid availability, reliability and security of information provided to all the actors having the right to know, both internal and external to the Project Team;
- The coherence of the overall project information, thus facilitating effective and efficient use of the information;
- That all the actors who need access to the information are aware of its availability, the means of access, and related methods and procedures;
- The documentation management is performed in order to respect the export control regulation applicable for the relevant set of deliveries (classification, restricted access, etc.).

Documentation rules applicable for the present activity are described in the following paragraphs.

A documentation template is provided in annex 1.

The Documentation Management, under the responsibility of the Project Manager, is organized in order to ensure timely and effective identification, creation, update, control, delivery and storage of project information. To achieve this objective, all recorded project information is managed electronically in a Sharepoint managed by ArianeGroup. Link H2020 SESAME (Direct access for Ariane Group Members only) : partners will receive a copy on a need basis and each time a major evolution is made.
It will be updated as needed. Arianegroup will comply with GDPR procedures.Internal AG Organization.

The following phases, hereafter described, constitute the documentation management process: Identification, Presentation, Internal approval cycle, Category, Classification, Control, Distribution, Registration & Storage.

7.2.1 Document identification

- The document identification number is structured as follows:

Project Name	-	Document Type	-	Sequential Number	-	Company Code
1		2		3		4

1 Project name :	SESAME
2 Document Type :	see Annex 2
3 Sequential number =	numerical value with 4 digits linked to document type
4 Company Code =	**AG** for ArianeGroup

Example: SESAME-DF-X-0001-AG

For a few specific documents, the split of one document into several volumes is compatible with this structured reference. In such a case, the sequential number is completed with a free text area identifying the volume (ex: SESAME-DF-0001-**XXX**-AG)

A list of the acronyms is accessible in annex 2.

Memorandums: Considering the new capability of tools to ensure traceability from document meta data, the use of documents not having a structured reference is authorized for SESAME Project: this is true in particular for documents having a short- and medium-term interest (ex: to trace properly and quickly technical results or exchanges), and not containing sensitive information. Technical Notes with structured reference shall still be used for technical synthesis, and to keep traceability for the long term (e.g. justification aspects).

7.2.2 Document Presentation

The SESAME referenced documents contain:

- a cover page,
- a distribution list page,
- an information page,
- an issue status record page,
- a table of contents, and

- text pages including applicable documents, reference documents and abbreviations.

The information page formally indicates:

- the document classification with regards to:
    - the company,
    - the Project name,
    - export control aspects
- whether the document is a contractual deliverable or not.

The applicable template for SESAME referenced documents is reachable from the SESAME collaborative Sharepoint (AG)) or in Annexe 1 of this document.

7.2.3 Internal validation Cycle

The formal publication of a document is performed only after successful completion of the signature release cycle.

This signature release cycle relies on the application of the 3-signatures rule for the documents with a structured reference. The key roles in charge of signing a document are:

- The author as Content responsible
- The Quality Manager as Compliance responsible
- The Program Manager as Endorsement responsible

7.2.4 Document classification

The attribution of the class of confidentiality to a SESAME document (with or without structured number) is proposed by the author and validated by the Project Manager.

Dealing with the protection of the information, four kinds of classification which reflect access restrictions have to be considered:

7.2.4.1 Class 1 – General Public

The documents in this class are accessible by any organisation for publication at symposia, conferences, presentations and communications to the general public. Class 1 is indicated on cover page and information page.

7.2.4.2 Class 2 – Industry – SESAME Project

All documents in this class are produced within the SESAME Project and may be released to all organizations and subcontractors within the SESAME Project. Class 2 is indicated on cover page and information page.

7.2.4.3 Class 3 – Limited Distribution – SESAME Project

The documents in this class contain information whose release needs to be restricted to organizations of SESAME Project on a need to know basis. Class 3 is indicated on cover page and information page **and the mention "LIMITED DISTRIBUTION" is marked in red on all the pages**.

Distribution list and class level is proposed by Project Manager in coordination with the Quality Manager. Quality Manager manage the list of documentation, class level, and need-to-know list.

Program Manager approve the proposal.

Within the recipient company, the document released is under the responsibility of the Program Manager of this company, who will decide on the persons who “need to know”.

Copies of the files may only be made within the recipient company with the approval of the Program Manager of this company.

Any other release will only be possible with the approval of AG Program Manager and will be done by the author in accordance with the restricted conditions mentioned inside the document.

7.2.4.4 Class 4 – Confidential – SESAME Project

This classification applies to documents containing highly confidential information to be sent nominally only to the persons who need to know.

Class 4 is indicated on cover page and information page **and the mention “CONFIDENTIAL” is marked in red on all the pages**.

Release is the responsibility of the author who respects strictly the nominative list, the document should be sent only to the persons who need to know. Any other release will only be possible with the approval of AG Program Manager and will be done by the issuer in accordance with the restricted conditions mentioned inside the document.

Distribution list and class level is proposed by Project Manager in coordination with the Quality Manager. Quality Manager manage the list of documentation, class level, and need-to-know list.

Program Manager approve the proposal.

The documents are distributed by name with numbered copies (ex. 1 / XX).

Physical copies (papers, CD-roms, …) are stored in special cabinets or other units under lock and key only accessible to the addresses listed in the distribution list and the defined extra addresses.

Any movement of such documents has to be traced at the receiver’s company. These documents are then to be recorded in a special “CONFIDENTIAL” register giving the names and signatures of the addressees.

In case a person identified on the distribution list leaves his position, his exemplar must be affected to his successor who has exactly the same function. In that case, the traceability of the transfer is made through a register and there is no need to ask for approval by the issuing company. In case no successor has been identified, the exemplar must be destroyed and destruction traced in the register.

7.2.5 Documents distribution

- External AG/CNES distribution

For the external distribution, selection of the recipients names is to be made in the external official distribution list which is provided and updated directly in the templates reachable from SESAME collaborative Sharepoint.

- Internal distribution

- Class 2:

These documents are made accessible to all the people working on SESAME Project.

- Class 3:

For these documents, communities are to be used for both access and distribution (but only one community is to be selected and can be limited to french contract only) + nominative list for extra recipients out of the community. The communities are defined in an internal note to be provided and updated directly through SESAME collaborative Sharepoint.

- Class 4:

For these documents, access and distribution will, obviously, be defined through a nominative list available in SESAME collaborative Sharepoint.

7.2.6 Documents Subject To Export-Control Rules

These documents have special markings.

Please refer to documents presented during Kick Off Meeting.

7.2.7 Control

The Program Manager, with the support of the Quality Assurance Manager, has in charge to verify and control that all the document management requirements, rules and procedures are applied, so the documents can be officially released. For any change, a new issue is published, revision is forbidden.

The Program Manager, as coordinator of the Consortium, will validate the deliverables.

7.2.8 Distribution

All documents (excepted Class 4 ones) which are not subject to export-control regulation are delivered electronically. The name of the files is structured in such a way to identify immediately the concerned document.

Class 4 documents are distributed by paper form,by CD-ROM or securized electronic container only.

Each delivery is accompanied by the following information: sending number, document reference, title, issue number, date. WP reference is mentioned if the document is part of the contractual deliverables list DIL. Each delivery to an external company shall be indicated in the DIL database.

7.2.9 Registration,Storage and Archiving

Documentation databases in Sharepoint will be implemented for SESAME Project under the responsibility of the Project Manager in order to store and make available a constantly updated record of all issued and received documents. All the documents metadata are registered as well as the electronic files.

All documents are stored at least for all the duration of the Project.

The storage of documentation shall be made using reference Key Words compatible with the searching process.

8 COST AND SCHEDULE MANAGEMENT

Rules for Cost and Schedule Management are described in the following sections.
Project Management software is used for Cost and Schedule Management

8.1 Planning and Scheduling Management

The key outputs of planning and scheduling are an integrated, concise and up-to-date view on the project, especially with respect to:

- The Work Breakdown Structure,
- The Organizational Breakdown Structure,
- The project schedule, including the key milestones of the Project (refer to §5.2.1),
- The detailed schedule enabling to drive the cost and the milestones of the project.

The key contributors to project planning and scheduling are SESAME partners WP managers, the AG Project Team members and the Project Finance & Controlling Officer. The contractualized Master Project Schedule is the reference schedule.

The scheduling process will be customised as follows:

- The schedules are performed under the responsibility of the dedicated WP Managers (including partners WP managers), who identify the activities, milestones, sequencing, duration and margins,
- The planning of activities of WP Managers (including partners WP managers) are captured in the project management tools with their direct contributions to the schedule using the weekly internal progress meetings,
- The arbitration of schedule conflict between due date planned in the Master Project Schedule and delivery date will be managed at appropriate level with the mindset to implement all the necessary recovery actions to respect contractual milestones,
- The scheduling policy will be defined under the responsibility of the Project Manager,
- The Master Project Schedule will be shared with European Commission and the partners via the Progress Meeting process in order to verify the overall consistency.

8.2 Project Finance and Controlling Process

The Project Finance and Controlling processes are aimed at supporting the Program Team especially in terms of cost, and to take the right decisions at the right time considering all the parameters: cost, but also performance, schedule, risk and opportunity, quality aspects. In particular (but not limited to), the processes will encompass the following list:

- Manage costs and hours: actuals, Estimation At Completion, monthly forecast;
- Build / analyze the internal KPIs (AG Process) as needed by the Project;
- Set up and report the project status jointly with the Project Manager, at all levels;
- Organize and animate the MPRs (Monthly Project Reviews);
- Support the Project Manager to drive and to manage potential improvement at his level
- At the beginning of the project, contribute to create and maintain the Work and Cost Breakdown Structures (WBS / CBS) and the project baseline together with the Project Manager and Project Team.

9 EXPORT CONTROL

9.1 Export control overview

Export control is an international tool put in place in order to limit the proliferation of

- weapons of mass destruction and
- items and technologies related to chemical, biologic, nuclear and ballistic domains.

It is based on international treaties and multilateral regimes such as MTCR.

Once an equipment is identified on the list that defines the Defense items (Munition List), it is controlled and its export is submitted to a license application delivered by the national Authorities.

In France, launch vehicles and associated data and technology are considered as Defense items.

9.2 French export license for H2020 Project

The French companies must apply for an export license before sharing any launch vehicle data, including production data.

An export license for H2020 Project has been granted by the French government

As the launcher's data are considered as highly sensitive, the selection of those that can be shared may take a little time

9.3 Authorized Group

ArianeGroup and CNES listed all the entities on a need-to-know basis in this license :

- Vitrociset S.P.A.,
- Fundacio Eurecat,
- C.R.A.T.
- NUPSPA

They can share the data among the authorized group but cannot transfer any controlled data to a non authorized entity.

9.4 Non re-transfer certificate

The French laws impose to collect a commitment from every consignee before exporting any controlled data.
By signing this document, each authorized entity commits on sharing the data only among the authorized group.
Any diversion/disclosure is prohibited.

9.5 Labelling

The controlled documention is labelled as such :

Other label may be present on the documentation and shall be respected (class3/4, limited distribution, ..) They reflect the sensitivity scale of the data

10 RISK MANAGEMENT

Risk and Opportunities management will be performed according to AG internal processes P-0003-E, P-0078-E and D-0016 using Planning AG tool. Partners are free to use their own R&O tool and escalate to AG their critical risks. It will be applied at the right level of declination in order to be compliant with the context of the Project and to effectively manage and mitigate Risks, as well as to manage and realise Opportunities to support the achievement of the project objectives.

Its objective is to identify, assess, reduce, accept, and control Project risks as well as to identify and enhance opportunities in a systematic, proactive, comprehensive and cost effective manner, taking into account technical and programmatic constraints. This encompasses also the treatment of special requirements and critical items.

It is an iterative process divided into 4 steps as follows :

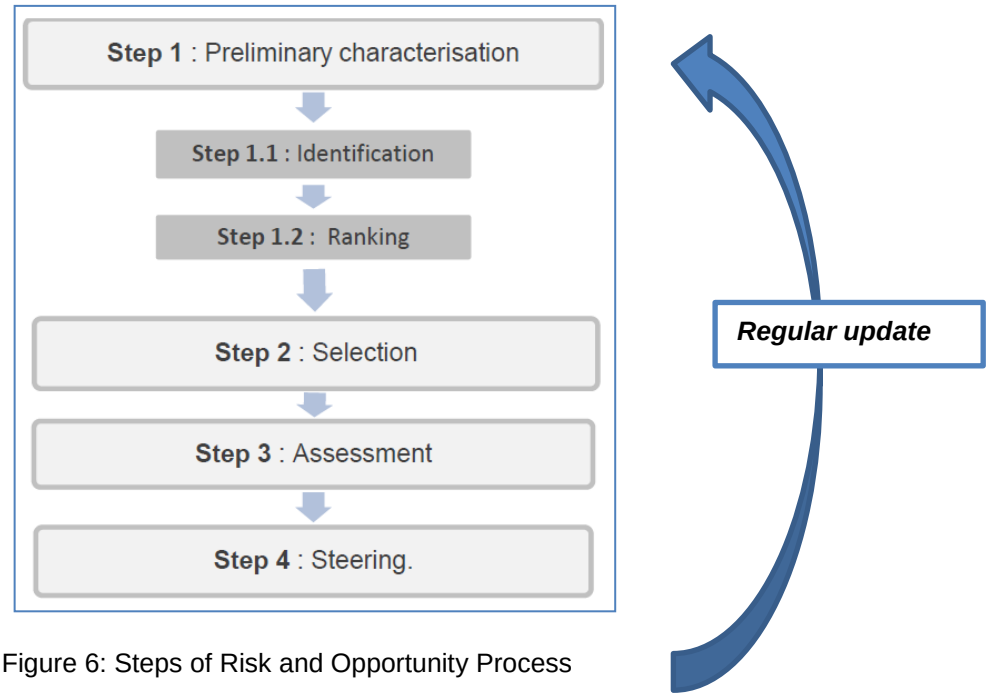

Figure 6: Steps of Risk and Opportunity Process

The quantified criteria that define the limits of acceptability for the risks and the limits of priority for the opportunities are identified in a criticality matrix according to four severity/gain levels and four occurrence levels, see figure below. Partners will follow the same process, criteria and rules.

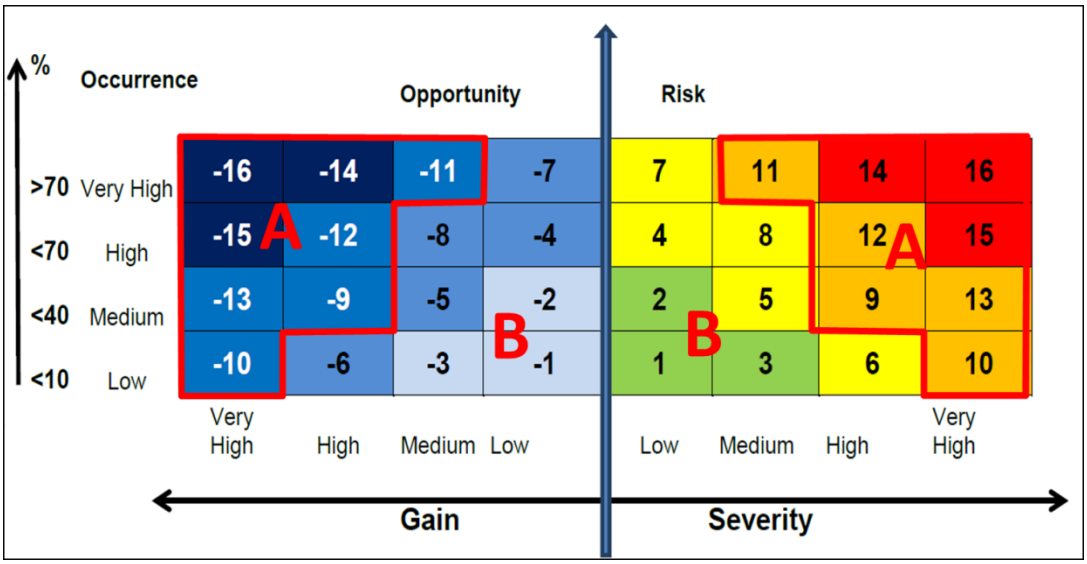

Figure 7 : Risk and opportunity criticality matrix

Risks and opportunities are managed differently, depending on their category, whether they are non-acceptable risks / high priority opportunities (category A) or acceptable risks / low priority opportunities (category B).

For SESAME Project, the criteria for the four severity/gain levels and four occurrence levels used for quotation of risks or opportunities criticality are the following ones:

Occurrence (O)	Low	Medium	High	Very High
	O < 10 %	10 % < O < 40 %	40 % < O < 70 %	O > 70 %

Severity (S)	Low	Medium	High	Very High
Schedule	Delay < 2 week	2 weeks < Delay < 1 month	1 month< Delay< 3 months	Delay > 3 months
Cost	Additional Cost < 30 k€	30 k€ < Additional Cost < 100 k€	100 k€ < Additional Cost < 300 k€	Additional Cost > 300 k€
Performance	Major objectives slightly degraded	Major objectives moderately degraded	Major objectives strongly degraded	1 or several Major objectives missing

Gain (G)	Low	Medium	High	Very High

Schedule	Time saved < 2 week	2 weeks < Time saved < 1 month	1 month< Time saved < 3 months	Time saved > 3 months
Cost	savings < 30 k€	30 k€ < savings < 100 k€	100 k€ < savings < 300 k€	savings > 300 k€
Performance	Major objectives slightly improved	Major objectives moderately improved	Major objectives strongly improved	Additional objectives

The R&O management process will be performed in AG internal Schedule Tools.

The SESAME Risk & Opportunities Register is available for all project partners in an Excel file. Each partner can propose his own risks or opportunities and the risk and opportunity management process is coordinated via the internal Project reporting. It is carried out throughout the entire Project duration.

Programmatic and major technical risks and opportunities are reported to EC within the progress meetings.

11 PRODUCT ASSURANCE MANAGEMENT

Product/Quality Assurance covers all activities undertaken by the Program Team in order to ensure that project processes that have been defined are implemented from end to end and contribute to the expected On Quality target conforming with the requirements.

Applicable rules and adapted processes contributing to On Quality will be derived from AG CMS and are part of this PMP.

11.1 Product Assurance planning

11.1.1 Product Assurance organization and responsibilities

In Ariane Group, Product Assurance is part of the Quality Directorate under the direct Ariane Group Corporate Technical Officer accountability.

Obtain both an On Quality product and project objectives is the responsibility of everyone throughout the Project Team to the confidence and satisfaction of the Customer. PA function ensures the quality of deliverables by monitoring the quality acquisition all along the value chain and the project organization.

The Product Assurance Manager is responsible for drafting and updating the Product Assurance plan included in the PMP and for communication and application.

11.1.2 PA management interfaces

The Product Assurance Manager interfaces with EC Quality representative if any and Partners Quality representatives if any on Quality Assurance matters.

11.2 Product Assurance implementation

11.2.1 Product assurance management

The Product Assurance manager drives acquisition of projects quality along the end to end value chain and throughout the internal and external project organization against Project Requirements.

He/she relies on:

- Partners Quality representatives and
- AG Quality Network representatives:
    - Quality Assurance (including Supply Quality Assurance), ensuring maturity and proper application of relevant processes, with the adequate skills and certifications,
    - Central Quality providing standard tools, skills and improvement resources support.

11.2.2 Product Assurance reporting

Product Assurance reporting will be part of the periodical reporting towards EC (see § 5.3).

11.2.3 Critical items control and PA interfaces to project risk management

PA representative participates and contributes to the project R&O Management process by:
- Ensuring the correct implementation of the process
- Contributing to the R&O identification, ranking, assessment and steering.

11.2.4 Quality records

Quality records adapted to the content of the project will be detailed in the next issue of the PMQP.
They will rely on the project KPIs.

11.3 Materials and processes

Due to the upstream phase of this Project and as no MAIT activity is foreseen, there is no need for implementing management for materials and processes at this step.

11.4 Software product assurance

Management rules relative to Software Product Assurance will be setup (if needed) in the updated Project Management Plan.

11.5 Lessons Learned Capture

Lessons learnt from Present Project:

Lessons Learned capture is a continuous task throughout the Project. During the Project execution, the members of the Project Management Team are responsible for securing systematic lessons learned capture in their respective domain of responsibility.

Lessons learnt from others projects:

Analysis of lessons learnt from others Projects are part of the R&O identification and mitigation process.

11.6 ENGINEERING MANAGEMENT Engineering activities logics

This paragraph aims to describe the main engineering tasks and gates foreseen during the project.

11.6.1 Main Engineering tasks

The main milestones of the projects have already been defined in the [§6.3.1] “Milestones and KP”.

11.6.2 Data management

Given the early stage of development of the project, all data management tasks will be initially performed using MS Excel and/or MS Access.

However, given the volume of data to handle along the project, more robust and collaborative tools will be implemented. As long as the project goes on, all datas will be transferred to a data lake (e.g. Cloudera), and analysis will be performed on a data science tool connected to the data lake (e.g. Dataiku).

11.7 Features allocation

11.7.1 Develop a feature baseline

Requirements are defined and refined in engineering terms from the stakeholders needs expressions. Different methods may be used to reinforce the rigor of this process, such as, for instance, the Model Based System Engineering.

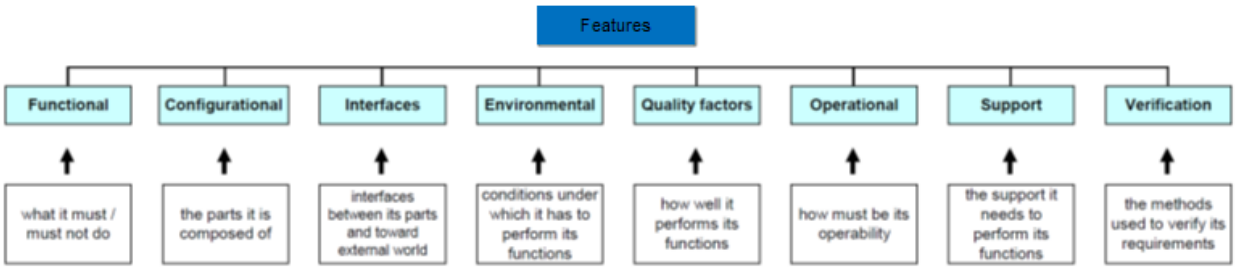

Figure 8 : feature baseline

11.7.1.1 Identifying engineering features

Main features attributes:

Description,
justification / rationale,
product, process,
priority (with regard to risk, importance, complexity…),
level of maturity (open points “tbd”, “tbc”…),
Verification method,

Engineering features may come from:

- stakeholders needs (also called users, and customers),
- stakeholders expectations (if these expectations are, or are not translated into requirements),
- constraints such as norms and standards, laws and regulations, availability of some resources,

Some terms to avoid in the definitions of features:

- “and”, “or”, “commas”, “is to be”, “should”…
- superlatives (“best”, “most”, …),
- subjective language (“user friendly”, “easy to use”, “cost effective”),
- ambiguous adverbs or adjectives (“significant”, “minimal”, “precisely”, “many”, “few”…),
- open-ended, unverifiable terms (“provide support”, “not limited to”…),
- comparatives (“better than”, “higher quality”…),
- loopholes (“if possible”, “as appropriate”…),
- other indefinites (“etc.”, “and so on”…).

11.7.2 Establish Specifications & Features Justifications

11.7.2.1 Translate performance features into design features

- Design features are identified according to the design concept defined.

11.7.2.2 Establish specifications

- Specifications are established according to the priorities defined by the Product Owner and the customers [§6.3.1].
- A specification is not a description of a solution. The customer shall let the specialist identify the best solution with respect to the design concept.
- Even if the specification is established under the responsibility of the requester, the product owner shall be involved in this task.
- All the open points (TBD, TBC…) shall be gathered in the backlog (cf. [§6.3.1]).

11.7.2.3 Establish engineering features justifications

- The justification of each feature shall be traced (within the project backlog) in order to avoid unnecessary feature and to make easier the analysis of features changes.

11.7.3 Monitor features Issues

Open points may come from:

- Inconsistencies,
- Incoherencies,
- tbd, tbc points,
- not achievable features,
- insufficient performance margins,
- …

The status of the features open points is an important outcome of this process for supporting the mastering of the project maturity.

11.7.4 Agile process : Scrum methodology

11.7.4.1.1 Glossary

Expression	Definition
Backlog	Sorted list of the actions to be done.
Burndown chart	Graphic representation of the “to-do” list. It aims to show the progression of the project.
Product owner	Represents the users and customers. He litteraly is the owner of the product developed.
Release	A new incrementation of the product being developed. Each release has to be presented at the end of each sprint.
Scrum master	Drives the communication, coaching and vision to the project team.
Sprint	Time range dedicated to produce a release of the product.
User story	Description of a functionality to be developed.

11.7.4.1.2 Scrum Methodology

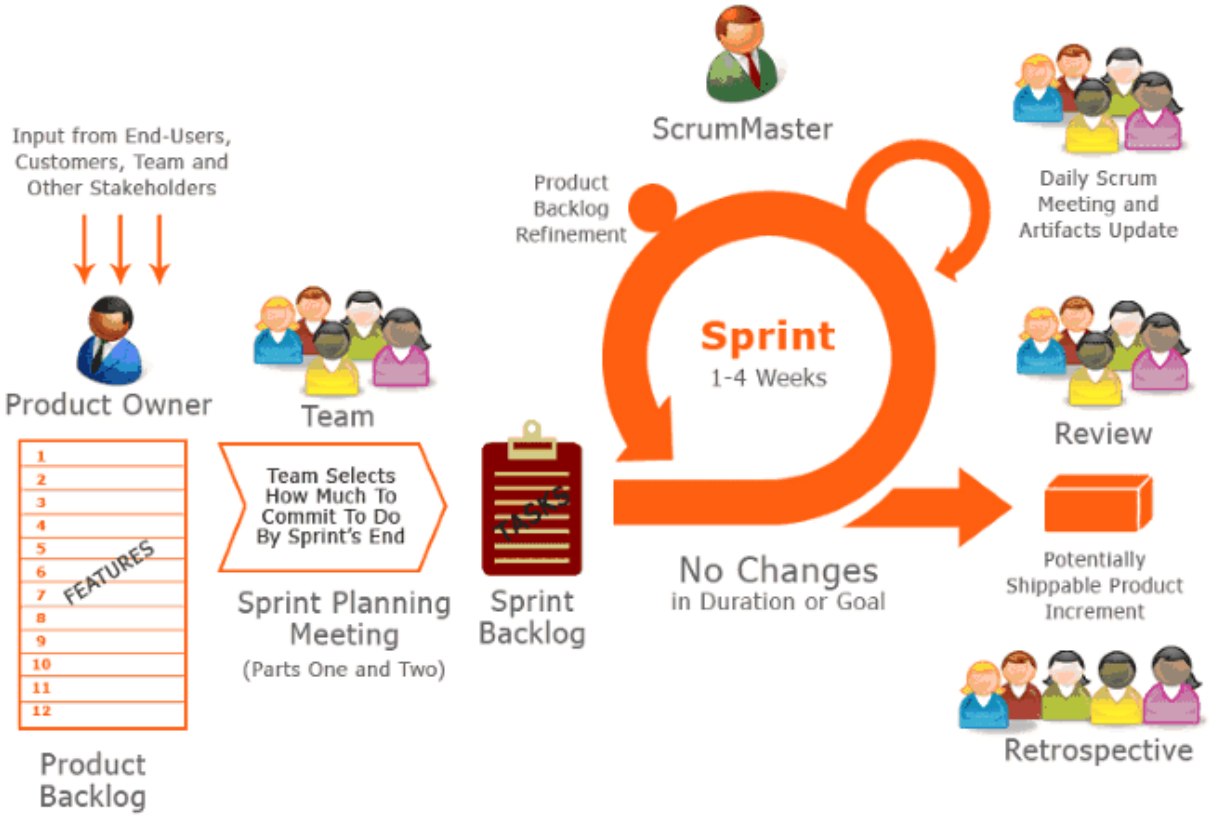

Figure 9: scrum Methodology diagram

The team is composed of several roles :

- The Product Owner : he represents the users and customers. He is responsible of the ROI (Return On Investment), and he also identifies the main functionalities of the final product.
- The Scrum Master: he has the charge to protect the team of any distruption that might come from outside of the project. He also drives the communication, objectives and vision of the project.
- The project team : it has the responsibility to deliver a new release of the product at the end of each Sprint. It is self organized, and chooses its way to accomplish the tasks it's been given.

In order to verify and validate the deliverables, the Scrum methodology will be applied to the project within ArianeGroup. However, each partner has the freedom to set up its own management method.
During common work sessions, ArianeGroup has in charge to invite each partner in order to set up Scrum sessions.

Several tools will be used in order to apply the Scrum methodology :

- JIRA : used to manage the "sprint backlog" ,
  Sharepoint : used to store the documents related to the project.

11.8 INFORMATION MANAGEMENT

All the documents, datasets and outputs relative to the project will be available on the ArianeGroup collaborative Sharepoint. Action list and management KPI will be stored on the dedicated Jira page. Dedicated folders for data, requirements and interfaces management will be created. As it is too complex

to install a shared Sharepoint between the consortium partners, for this Project of limited time and scope, key documents will be exchanged by email or secured containers.

12 PROCUREMENT

ArianeGroup procurement processes will not be implemented within this project, as sourcing of commodity parts, materials and equipment is not foreseen.

In case any partner would like to subcontract an identified task, EC through ArianeGroup shall give its prior written approval.

ANNEX 1

Applicable template for SESAME Project referenced documents

SES	-	XXXX-XXXXXXX-X-XXXX-XXX

Export/transfer authorization: licence n° XXXXXXXX

Issue:	XXXX
Date:	XXXX
Internal ref.:	XXXX
Class:	X
Page:	38/47

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 821875.

SESAME

Document Title

DISTRIBUTION

Company	Name	Area	Distribution

Internal reference :	Issue	Page
Structured reference :		X/Y

CLASSIFICATION	ARIANE GROUP		MILITARY			PROGRAM		
	Public	☒	Unclassified	(NP)	☒	General Public	(1)	☐
	Internal use	☐	Confidential	(CD)	☐	Industry	(2)	☒
	Confidential	☐	Secret	(SD)	☐	Limited distribution	(3)	☐
	Secret	☐	Top Secret		N/A	Confidential	(4)	☐
			French National	(SF)	☐			

TITLE

ABSTRACT

KEYWORDS

File ref. :	Configuration management	Distribution category
Software :		
Language code : EN	None ☒	Interest: Short term ☐ / Medium or long term ☒
Taking precedence : EN	Internal ☐	Sup. distribution: Authorized ☒ Checked ☐

VISAS	Content responsible	Compliance responsible	Enforcement responsible
Sigle			
Name			
Signature			

ISSUES STATUS RECORD		
Issue n°	**Date**	**Main reasons for document change (+ paragraphs nb concerned)**

Table of Contents

CNR: Certificate of No reexportation template.

FRENCH REPUBLIC
MINISTRY OF DEFENCE

cerfa
N° 10 919*02

END-USER CERTIFICATE
NON TRANSFER CERTIFICATE

1. Name of french company :	2. Name, address of end-user :	3. End-use State :

4. Reference number of prior governmental agreement (sale level) : _____

5. Reference number of contract or order : _____ dated : _____

6. Products:

QUANTITIES	GOODS

7 - Certification of foreign consignee

We certify that we are importing the goods defined in section 6, which shall be delivered to the end-user specified in section 2. With the exception of the end-user specified in section 2, we will not sell, give, lend, transmit to any third party or export the goods, including any related specific supplies, spare parts or tools delivered within the scope of after sales services, in addition to the related documentation and user manuals, without the prior written approval of the French Government.

Signature _____

Name and title of signatory _____ Date _____

_____ Seal

Traduction de courtoisie du texte français

1/2

ANNEX 2

List of Document Types

This annex defines in the table here below the list of documents type to be used when creating a new document.

AIL	**Actions Item List**
CCB	**Configuration Control Board Report**
CCN	**Contractual Change Notice**
COD	**Source listing (software)**
CQ	**Certificate of Qualification**
DC	**Costs File: all Design to Cost files**
DEF	**Data Exchange File**
DF	**Definition File (incl. functional description)**
DI	**Industrial File = DID + DIF + DIC**
DIC	**Industrial Inspection File**
DID	**Industrial Definition File**
DIF	**Industrial Manufacturing File**
DIFC	**Industrial Manufacturing and Inspection File = DIF + DIC**
DP	**Presentation File or Synthesis File (in powerpoint format)**
DR	**Design Rules**
DSP	**Process Specifications File (software)**
DV	**Development Plan**
GR	**General Rules**
IB	**Inventory of Goods**
ICD	**Interface Control Document**
IRD	**Interface Requirement Document**
JF	**Justification File**
LEJF	**Justification File for Load and Environment Specification Document**
LES	**Load and Environment Specification Document**
LI	**List**
LLI	**Long Lead Item List**
LS	**Logbook: only concerns the Accompanying File**
MG	**Management Document (concerns all management documents including PMP, Configuration Management plan, …)**
MI	**Installation Manual (Software)**
MM	**Maintenance Manual**
MOM	**Minutes of Meeting**
MS	**Management Specification**
NO	**Organisation note: only concerns Reviews, Working Groups, audits, etc.**
OD	**Any Operational Document (Operational Concept, Operational Procedure, Operational Plan, …)**
PBS	**Product Breakdown Structure**
PC	**Inspection plan**
PEQ	**Qualification Test Plan**
PF	**Program File**

PG	**General Schedule**
PI	**Inspection Procedure**
PR	**Test Procedure**
PS	**Procurement Specification**
PV	**Report**
QA	**Quality Assurance Documents**
RA	**Activities Report**
RC	**Configuration Register including CIDL and ABCL**
RCI	**Individual Inspection Register: only concerns the accompanying file**
RE	**Test Analysis Report**
RF	**Financial Report**
RJF	**Requirements Justification File**
RR	**Review Report: concerns the final report of each review**
SC	**Inspection Specification**
SDD	**Software Design Document**
SE	**Test Specification**
SSS	**System Support Specification**
SVR	**Software Verification Report**
SOW	**Statement Of Work**
SP	**Process Specification**
SR	**Acceptance Specification**
SRD	**System Requirement Document**
SY	**Flowchart of operations: production and inspection**
TN	**Technical note**
TP	**Test Plan**
TRS	**Technical Requirements Specification**
TS	**Technical specification**
UM	**User's Manual**
URD	**User Requirement Document**
VCD	**Verification Control Document**
VP	**Verification Plan**

END OF THE DOCUMENT