SCARBOn
SPACE CARBON OBSERVATORY next step

D1.1 Project Management Plan

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Project acronym	SCARBOn
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SCARBOn participants

Participant No	Legal name	Short name	Country
1	Airbus Defence and Space SAS (COORDINATOR)	Airbus-F	FR
1.1	Airbus DS Geo SGSA (affiliated entity)	Airbus-ES	ES
2	Airbus Netherlands B.V.	Airbus-NL	NL
3	Absolut System SAS	Absolut	FR
4	Université Grenoble Alpes	UGA	FR
5	Centre National de la Recherche Scientifique	CNRS	FR
6	GRANT Garant s.r.o.	GG	CZ
7	Institut Royal d´Aéronomie Spatiale de Belgique	BIRA-IASB	BE
8	Office National d'Etudes et de Recherches Aérospatiales	ONERA	FR
9	Deutsches Zentrum für Luft- und Raumfahrt e.V.	DLR	DE
10	Institut Cartogràfic i Geològic de Catalunya	ICGC	ES

Document change record

Version	Date	Comments
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List of abbreviations

Abbreviation	Definition
AB	Advisory Board
APO	Administrative Project Officer
COORD	Project Coordinator
EC	European Commission
EU	European Union
EXCOM	Executive Committee
GA	Grant Agreement
GHG	GreenHouse Gases
HaDEA	Health and Digital Executive Agency
M	Month of project implementation
PMO	Project Management Office
PMP	Project Management Plan
SCARBO	Space Carbon Observatory, Project Under Horizon 2020
SCARBOn	Space CARbon Observatory next step
SPEXone	Name of existing Compact Aerosol Sensor
TRL	Technology Readiness Level
TRB	Test Review Board
WP	Work Package
UAB	User Advisory Board
WP	Work Package

List of reference/applicable documents

Document title	Document author	Date of issuance
Grant Agreement, Project 101135301 – SCARBOn – HORIZON-CL4-2023-SPACE-01	European Health and Digital Executive Agency (HaDEA)	V1.0 - 20/11/2023
Consortium Agreement – SCARBOn –	Airbus Defense and Space	Version 4 – 08/12/2023

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1 Executive Summary

1.1 SCARBon Overview

SCARBOn (Space CARbon Observatory Next step) is an innovation action project funded under the Horizon Europe Programme. It is the continuation of the Horizon 2020 SCARBO project. SCARBOn is a multidisciplinary project carried out by a gender-diverse team, through a consortium including the space industry, SMEs and scientific institutes. It is led from Toulouse, France by Airbus Defence and Space. SCARBOn project started in January 2024, with a total 30 months of implementation.

The main objective for the of the SCARBOn collaborative project is to mature the SCARBOn overall system based on a constellation of small satellites - with miniaturised static spectrometer concept (NanoCarb) coupled with aerosol sensors (SPEXone) - that will be able to monitor greenhouse gases (GHG) – notably the CO2, and CH4 as well – from space. The instruments together will deliver daily accurate global measurements to monitor the diurnal variations of fossil CO2 emission. This CO2 and CH4 anthropogenic emissions monitoring data aims to be a valuable contributor to the European Commission's endeavour to fight climate change. As an upside, the monitoring data will foster the development of added-value services and will represent a state-of-the-art European alternative to the burgeoning non-European commercial initiatives.

The SCARBOn project maturation is articulated over the detailed technical definition of the NanoCarb instrument, the industrial definition of both instruments and the constellation concept confirmation, targeting an operational system availability before the end of the decade. The design of the NanoCarb instrument will be upgraded and refined following the outcomes of the previous SCARBO study, and its performances will be carefully modelled. An instrument breadboard will provide valuable data during an airborne campaign, which will be used together with modelled data to verify the instrument design. This will allow raising the instrument TRL to at least 5 by the end of the project. Furthermore, data processing at levels L1 to L4 will validate the concept capability to monitor GHG plumes from space.

1.2 Document summary

The project Management Plan to be applied to the SCARBOn project defines all aspects of its organization and management. It describes the management planning and activities that will be required to support coordination activities in order to bring the project to a successful conclusion. This PMP defines the common standard to be used by all SCARBOn partners for the entire project lifecycle.

The rules and procedures described in this PMP shall be followed by each and every partner of the SCARBOn Consortium for all deliverables to the European Commission.

Consortium Partners will supervise and check the work performed by their own staff in accordance to this PMP.

2 Project Management Plan (PMP) applicability

The Project Management Plan shall be applied:

- By all partners
- For all deliverables to the European Commission.

If there is a conflict between a Consortium Partner's Project and Quality Management Procedures and those imposed on this project, this should be brought to the attention of the SCARBOn Project Coordinator. Priority should be given to the SCARBOn PMP.

3 Project Presentation

3.1 Project objectives, goals and description of work

The EU policy guidelines for anthropogenic greenhouse gases (GHG) monitoring from space call for frequent observations, as well as high accuracy and spatial resolution. These requirements are currently unmet.

A Copernicus Sentinel mission (CO2M) aimed at monitoring Global CO2 emissions will become operational after 2026. Nevertheless, there is a room for complementary and supporting measurements to solve the key challenges such temporal revisit times on specific sites of interest and high measurement accuracy.

The Horizon 2023 project Space CARBon Observatory project (SCARBOn), implemented by a consortium of 10 European organisations, including scientific institutes and SMEs and led by Airbus Defence and Space, proposes a solution to the problem by implementing a novel miniaturised static spectrometer concept on a constellation of Small Satellites coupled with aerosol sensors and high-end reference instruments. SCARBOn will address both CO2 and CH4 with special attention on CO2.

The project builds on the HE2020 SCARBO heritage and foresees to achieve the three necessary steps to increase the concept maturity:

- Mature the technical and industrial definition of the miniaturised GHG-monitoring spectro-imaging instrument, called NanoCarb, to raise TRL > 5,
- Validate the concept capability to monitor GHG point sources from space by simulations of the science data retrieval chain, from raw instrument measurements (Level 0/L0) up to fluxes estimation (Level 4/L4).
- Refine the constellation concept by adding autonomy and configurability to the mission and addressing short-term industrial implementation, as well as end-to-end system performances optimisation. The miniaturised sensors together with the use of Small Sats platforms can lead to a significant cost reduction in terms manufacturing and launch with respect to standard monolithic large spacecraft.

The overall measurement concept will be experimentally validated through a dedicated airborne campaign in 2025 with a Nanocarb prototype, upgraded from SCARBO one.

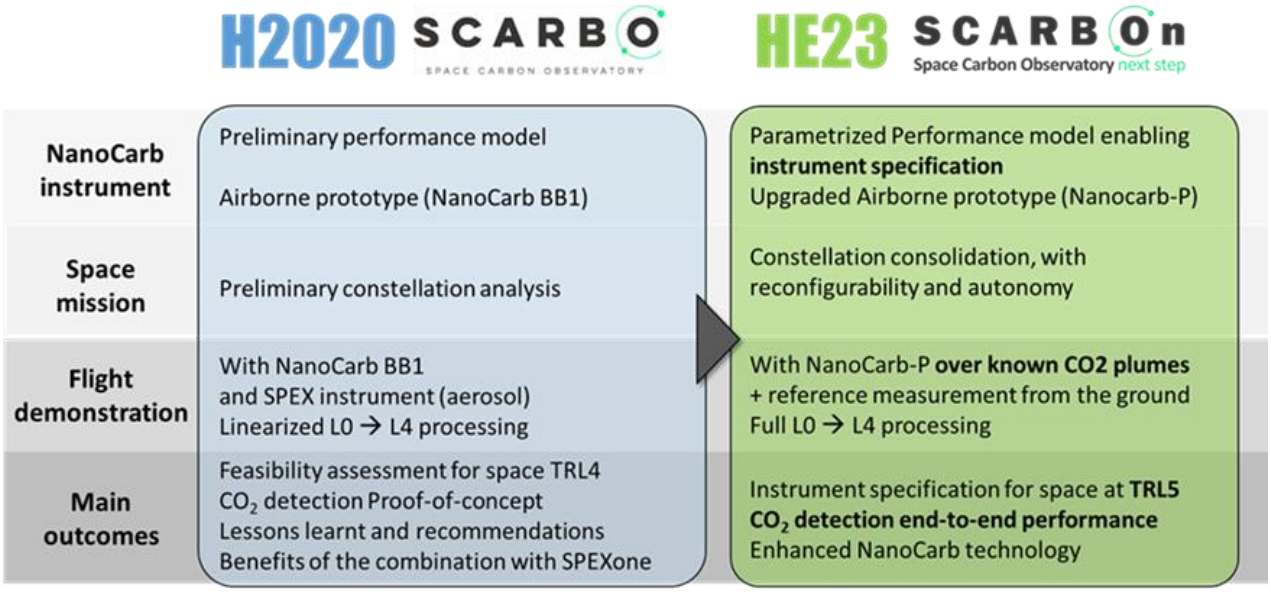

Figure 1 - SCARBO to SCARBOn roadmap

3.2 Consortium organisation

The SCARBO consortium, led by Airbus Defence and Space, is composed of 10 European partners, including scientific institutions and SMEs. Besides, there is one entity (Airbus DSGeo) affiliated to the Coordinator.

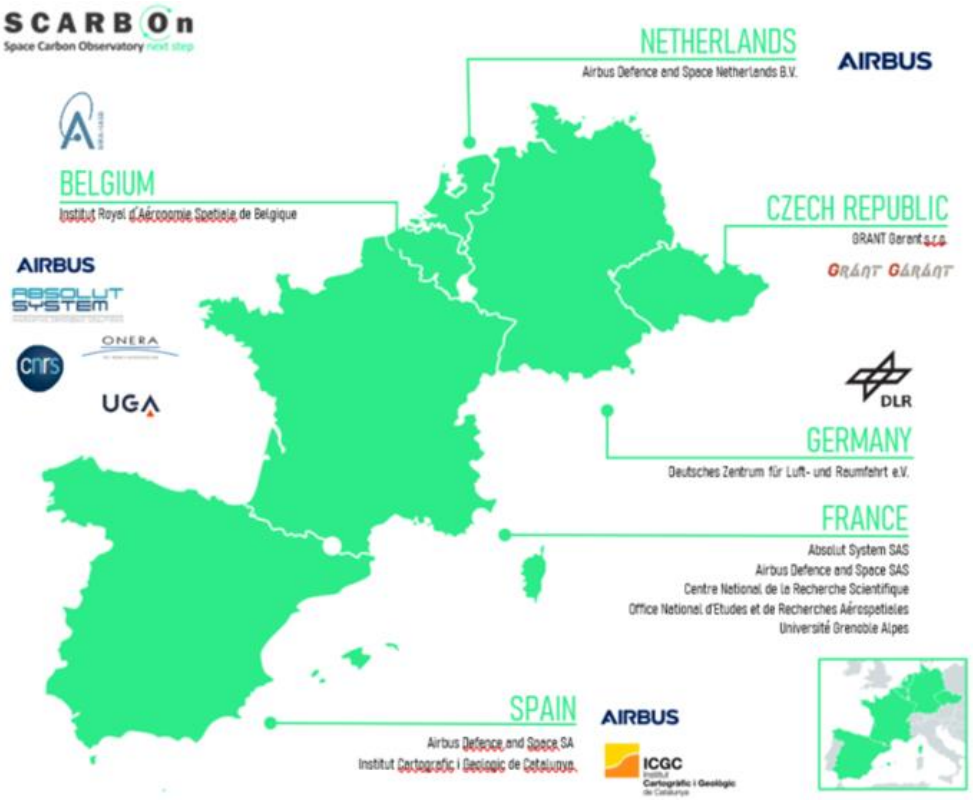

Figure 2 – European SCARBOn consortium

The table below gives an overview of SCARBOn Participants with a summary of the role and contribution of each participant to the project activities:

	NAME	*PROFILE AND COUNTRY*	*SUMMARY DESCRIPTION*	*WORKPACKAGES/TASKS LEAD*
1	Airbus-F	Space Industry *France*	Airbus Defence and Space SAS Toulouse site combines a strong heritage on optical instrumentation (on-going development of high-performance spectrometry instruments such as IASI-NG and MicroCarb); a prime contractor experience for satellites dedicated to climate monitoring and atmospheric chemistry (MetOp and MetOp-SG for ESA & Eumetsat, Merlin for CNES); a constellation background (OneWeb) as a step further towards serial production and industrialisation of low-cost satellites. Airbus-F has successfully coordinated the HE2020 SCARBO project	**Coordinator (WP1)** **WP7, WP9 leader** **Participation as task leader to WP2, WP3 and WP8**
1.1	Airbus-ES	Space Industry *Spain*	Airbus Defence and Space Geo SG SA (in Barcelona), is the Airbus-F Intelligence subsidiary in Spain, providing satellite imagery and geospatial solutions to decision makers and multiple industries users. Specific support for the NanoCarb-P test based on their huge experience with airbone campaign management (instrument mechanical interface adaptation on the aircraft, certification and permit to fly management with authorities).	**Support to WP4**
2	Airbus-NL	Space Industry *The Netherlands*	Airbus Netherlands B.V. has developed the SPEXone instrument which data is required to achieve the CO2 data precision and accuracy requirements (SCARBO outcomes). Airbus-NL industrial and commercial involvement lies in the design, development and production of space-based Instruments (SPEXone accommodation expertise; MRL raising of both instruments for series production; production study for reliability, cost & schedule-efficiency)	**WP6 leader** **Participation as task leader to WP7**
3	Absolut	Innovative SME *France*	Absolut System SAS, will provide cryogenic engineering, development, design, and commercialization of custom designed equipment, heat exchangers or thermal links thanks to their extensive experience and expertise in cryogenics.	**Participation as task leader to WP2 and WP4**

	NAME	PROFILE AND COUNTRY	SUMMARY DESCRIPTION	WORKPACKAGES/TASKS LEAD
4	UGA	University *France*	UGA-IPAG, the Institute of Planetology and Astrophysics of Grenoble, has a huge background on integrated optics for ground and space-based astronomical instruments (SWIFTS, GRAVITY); spectrometry and detection technologies (AMBER, ESO-SPHERE) ; for hyper-spectral imaging characterization, image processing, remote sensing and data reduction, experiments on aircraft. Close cooperation with LTM (Laboratoire des Technologies de la Microélectronique) of Grenoble - a joint research unit of the UGA, CNRS and CEA with a wide experience in micro and nanofabrication of silicon and other semiconductors (equipped with micro-nanotech processes equipment, especially lithography and plasma etching tools) Co-inventor of NanoCarb technology with ONERA (since 2016)	**WP4 leader** **Participation as task leader to WP2 and WP5**
5	CNRS	Research Center *France*	CNRS-LMD (Laboratoire de Météorologie Dynamique) - a joint research unit of CNRS, Ecole Polytechnique, Ecole Normale Supérieure and Sorbonne Université has a huge expertise on remote sensing of Earth atmosphere (particularly GHG), from space observations through the combination of spectroscopy, forward and inverse radiative transfer modelling, and validation activities. LMD leads and participates on several space missions (IASI, IASI-NG, Merlin, MicroCarb, FLEX, etc).	**WP3 leader** **Participation as task leader to WP5**
6	GG	Consulting Service SME *Czechia*	GRANT Garant provides consulting services for the preparation and management of international research and innovation projects; for the analysis of target groups with relevance to the transfer of technology including communication with key regulators and policy-makers based on its expert network; in data management expertise for scientific projects and in communication, dissemination and exploitation of results projects; to support clients in commercialization of their project results.	**WP8 leader** **Participation as task leader to WP1**
7	BIRA-IASB	Research Center *Belgium*	The BIRA-IASB, Belgian federal scientific research institute, studies the physics and chemistry of the atmospheres of Earth and other planets and how these are impacted by the sun, nature and human activity. The Infrared Observations team will perform solar-observing FTIR total-column measurements of the atmosphere during airbone campaign. The team has contributed to validation studies for S5-P, OCO-3, OCO-2, GOSAT and IASI, and is contributing to the preparation of the calibration and validation concept of CO2M.	**Participation as task leader to WP4**

	NAME	PROFILE AND COUNTRY	SUMMARY DESCRIPTION	WORKPACKAGES/TASKS LEAD
8	ONERA	Research Center *France*	ONERA, research center reporting to the French Ministry of Defence, is a bridge between basic research and applications. Its optics department has, among others, activities in the modelling of the optical scene (especially through radiative transfer), end development of hyperspectral imagers (especially interferometric instruments). ONERA will mostly contribute to the definition and performance assessment using numerical tools and models of NanoCarb cameras, both airborne and spaceborne. Co-inventor of NanoCarb technology with CSUG-UGA	**WP2 leader** **Participation as task leader to WP3, WP4, WP5**
9	DLR	Research Center *Germany*	Deutsches Zentrum für Luft- und Raumfahrt e.V. is the Federal Republic of Germany's research centre for aeronautics and spaceThe DLR's Institute of Atmospheric Physics investigates the physics and chemistry of the global atmosphere, and in the context of GG research develops sensors and instruments for airborne and spaceborne platforms, conducts airborne field campaigns to collect GHG data and performs analyses to estimate emissions from anthropogenic point sources such as power plants and oil & gas facilities.	**WP5 leader** **Participation as task leader to WP3**
10	ICGC	SME Spain	Institut Cartogràfic i Geològic de Catalunya has competences in geodesy, cartography and the spatial data infrastructure. In SCARBOn, ICGC is in charge of the execution of the airborne demonstration campaign from the deployment of aircraft with operating NanoCarb-P on-board, including flight permits, up to the definition of the flight plan according to science/demonstration objectives.	**Participation as task leader to WP4**

Table 1 – Consortium details and associated roles

3.3 Consortium organisation structure

The Project Management task consists of managing all the administrative and financial aspects of the project, defining the organisation, the deliverables, the milestones; the costs and scheduling for the duration of the project. It is permitted thanks to the Consortium organisation detailed and agreed in the Consortium Agreement.

The organisational structure of the Consortium, represented in the figure below, shall comprise the following Consortium Bodies:

- The **Project Coordinator – COORD (Airbus-F)** is the legal entity acting as the intermediary between the Parties and the European Commission. There will be a single line of command between the HaDEA Project Officer and the SCARBOn Project Coordinator. In addition to its responsibilities as a Party, the Coordinator performs the tasks assigned to it as described in the EC-Grant Agreement and the Consortium Agreement, summarised as:
  - Collect, review and submit deliverables to the HaDEA/EC
  - Monitor compliance by the Parties with their obligations under CA & GA
  - Supervision of the project and objectives achievement, including financial aspects
  - Manage the IPR and contractual issues within the project implementation

  The Coordinator will be assisted by the **Administrative Project Officer – APO (GG)** to ease internal consortium organisation (meetings, minutes preparation…). The APO main tasks are:
  - Organise, collect and synthetise internal consortium communication
  - Provide and monitor data management plan
  - Administrate internal repository and continuously update relevant files
  - Compile the Project Status report every five (5) months

- **WP leaders,** as the support to the coordinator, organise their WP activities, monitor progress and are responsible for reporting to the coordinator. They are in charge of:
  - Organising WP meetings if necessary
  - Ensuring the technical consistency and objectives achievement of its WP
  - Informing the Coordinator of its technical progress, achievements, or issues
- **Executive Committee (EXCOM)** as the supervisory body for the execution of the Project which shall report to and be accountable to the General Assembly. The EXCOM mission is also to support the work of the coordinator at technical level. It involves representatives if each party and is chaired by the project coordinator. Thanks to WP leader reporting it will have a good vision of the technical work and progress made at WP level. Monthly meetings will be organized online. The EXCOM:
  - Manages the Project and provides contents to the Coordinator for meetings, deliverables, …
  - Decides upon the technical roadmaps with regard to the Project
  - Decides upon measures to ensure the effective day-to-day coordination and monitoring of the technical work progress
  - Reports to the General Assembly of the Project progress
  - Proposes major changes in Work Packages to the General Assembly if needed with the agreement of the Participants concerned.
  - Proposes budget (re)allocations to the General Assembly with the agreement of the Participants concerned.

- Informs the General Assembly that the General Assembly should serve notice on a Defaulting Party

– **General Assembly (GA)** with a representative of each parties, chaired by the project coordinator, is the ultimate decision-making body of the Consortium. The General assembly shall be responsible for:

- Agrees major changes in Work Packages proposed by the EXCOM with the agreement of the Participants concerned.
- Decides of budget (re)allocations proposed by the EXCOM with the agreement of the Participants concerned.
- Decides for results use and dissemination.
- Decides to suspend all or part of the Project or to terminate all or part of the Grant agreement, or to request the Commission to terminate the participation of one or more Participants.
- In case of default of a Participant, agrees on actions to be taken against the Defaulting Participant, including a request to the Commission for an audit or for the assistance of the Commission, and making proposals to the other Participants to assign the Defaulting Participant's tasks, and if appropriate to agree upon a new entity to join the Project for that purpose.
- Decides upon the entering into the Grant agreement of new Participants.
- In case of default of the Coordinator in the performance of its tasks as a Coordinator, agrees on actions to be taken and possible nomination of a new Coordinator to be proposed to the Granting Authority.
-

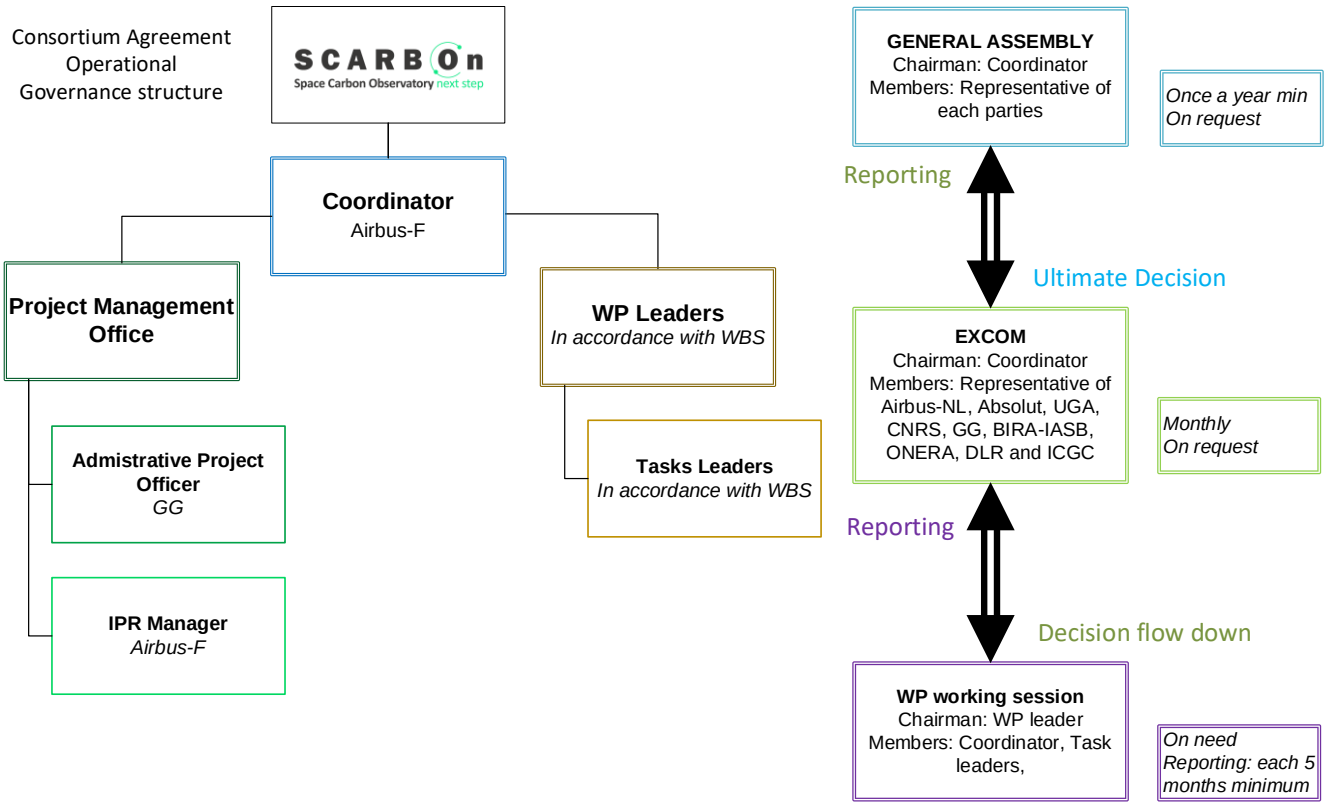

Figure 3 – SCARBOn Management Structure

3.4 Consortium Organisation Meetings

The organisational structure of the Consortium is put in place thanks to regular meetings (typically monthly for EXCOMs, annually for General Assembly) on top of the Review Meetings with the HaDEA/EC which are foreseen during the life-plan of the project. An EXCOM or General Assembly can be organised on request of a partner in case of specific demand or issue. See below the overall current EXCOM, General Assembly planning agreed (PM provided for information) which may evaluate depending of project priorities.

In addition, online WP meetings will be organised and managed by each WP leader (in accordance to WP needs) from the start and until the end of WP activities.

	Ref	Meeting name	Members	Place	Dates	Comments
Part 1 (M1-M10)	KO	Kick-Off	Consortium + EC	Virtual	19/01/2024	
	EXCOM 1	EXCOM Meeting 1	EXCOM Members	Virtual	15/02 – 2pm-4pm	
	EXCOM 2	EXCOM Meeting 2	EXCOM Members	Virtual	19/03 – 2pm-4pm	
	EXCOM 3	EXCOM Meeting 3	EXCOM Members	Virtual	23/04 – 2pm-4pm	
	EXCOM 4	EXCOM Meeting 4	EXCOM Members	Virtual	28/05 – 2pm-4pm	
	EXCOM 5	EXCOM Meeting 5	EXCOM Members	Virtual	25/06 – 2pm-4pm	
	EXCOM 6	EXCOM Meeting 6	EXCOM Members	Virtual	03/09 – 2pm-4pm	Start of the PM1 preparation
	EXCOM 7	EXCOM Meeting 7	EXCOM Members	Virtual	24/09 – 2pm-4pm	PM1 preparation
	PM1	Intermediate Meeting 1	Consortium + EC	At Brussels	15/10-16/10	TBC with the HaDEA/EC
Part 2 (M11-M20)	EXCOM 8	EXCOM Meeting 8	EXCOM Members	Virtual	19/11 – 2pm-4pm	
	GA	General Assembly 1	GA Members	Virtual	17/12 – 2pm-4pm	
	2025					
	EXCOM 9	EXCOM Meeting 9	EXCOM Members	Virtual	04/02 – 2pm-4pm	
	EXCOM 10	EXCOM Meeting 10	EXCOM Members	Virtual	11/03 – 2pm-4pm	Campaign preparation (TBC)
	EXCOM 11	EXCOM Meeting 11	EXCOM Members	Virtual	15/04 – 2pm-4pm	Campaign preparation (TBC)
	EXCOM 12	EXCOM Meeting 12	EXCOM Members	Virtual	20/05 – 2pm-4pm	Start of the PM2 preparation
	EXCOM 13	EXCOM 13	EXCOM Members	Virtual	24/06 – 2pm-4pm	PM2 preparation
	PM2	Intermediate Meeting 2	Consortium + EC	At Brussels	16/09-17/09	TBC with the HaDEA/EC
Part 3 (M21-M30)	EXCOM 14	EXCOM Meeting 14	EXCOM Members	Virtual	07/10 – 2pm-4pm	
	EXCOM 15	EXCOM Meeting 15	EXCOM Members	Virtual	04/11 – 2pm-4pm	
	GA	General Assembly 2	GA Members	Virtual	09/12 – 2pm-4pm	
	2026					
	EXCOM 16	EXCOM Meeting 16	EXCOM Members	Virtual	20/01 – 2pm-4pm	
	EXCOM 17	EXCOM Meeting 17	EXCOM Members	Virtual	17/02 – 2pm-4pm	
	EXCOM 18	EXCOM Meeting 18	EXCOM Members	Virtual	24/03 – 2pm-4pm	
	EXCOM 19	EXCOM Meeting 19	EXCOM Members	Virtual	05/05 – 2pm-4pm	Start of the PM3 preparation
	EXCOM 20	EXCOM Meeting 20	EXCOM Members	Virtual	02/06 – 2pm-4pm	PM3 preparation
	PM3	Final Review	Consortium + EC	At Brussels	30/06-01/07	TBC with the HaDEA/EC

Table 2 – SCARBOn Organisational meetings planning

4 Work Organisation

4.1 SCARBOn Study Logic Overview

In order to meet the high level objectives, the work approach proposed for SCARBOn project combines activities at different levels:

- Mature the technical and industrial definition of the NanoCarb instrument raising TRL > 5
- Validate the concept capability to monitor GHG point sources from space by simulations of the science data retrieval chain, from raw instrument measurements (Level 0/L0) up to fluxes estimation (Level 4/L4).
- Refine the constellation concept by adding autonomy and configurability to the mission and addressing short-term industrial implementation, as well as end-to-end system performances optimisation.

To overall maturity increase is articulated with four axes:

- Nanocarb-P Prototyping and testing (based on SCARBO prototype upgrade)
- Nanocarb-S detailed design, performance modelling and specification
- End-to-end performance from constellation detailed definition up to industrialisation
- SPEXone aerosol accommodation and design optimisation

The figures 4 and 6 below describe the different level of activities and their interdependencies, within the overall study planning.

The main activities and the natural mapping of the responsibilities within the WPs are in accordance with the participants' extensive and non-overlapping experience and know-how.

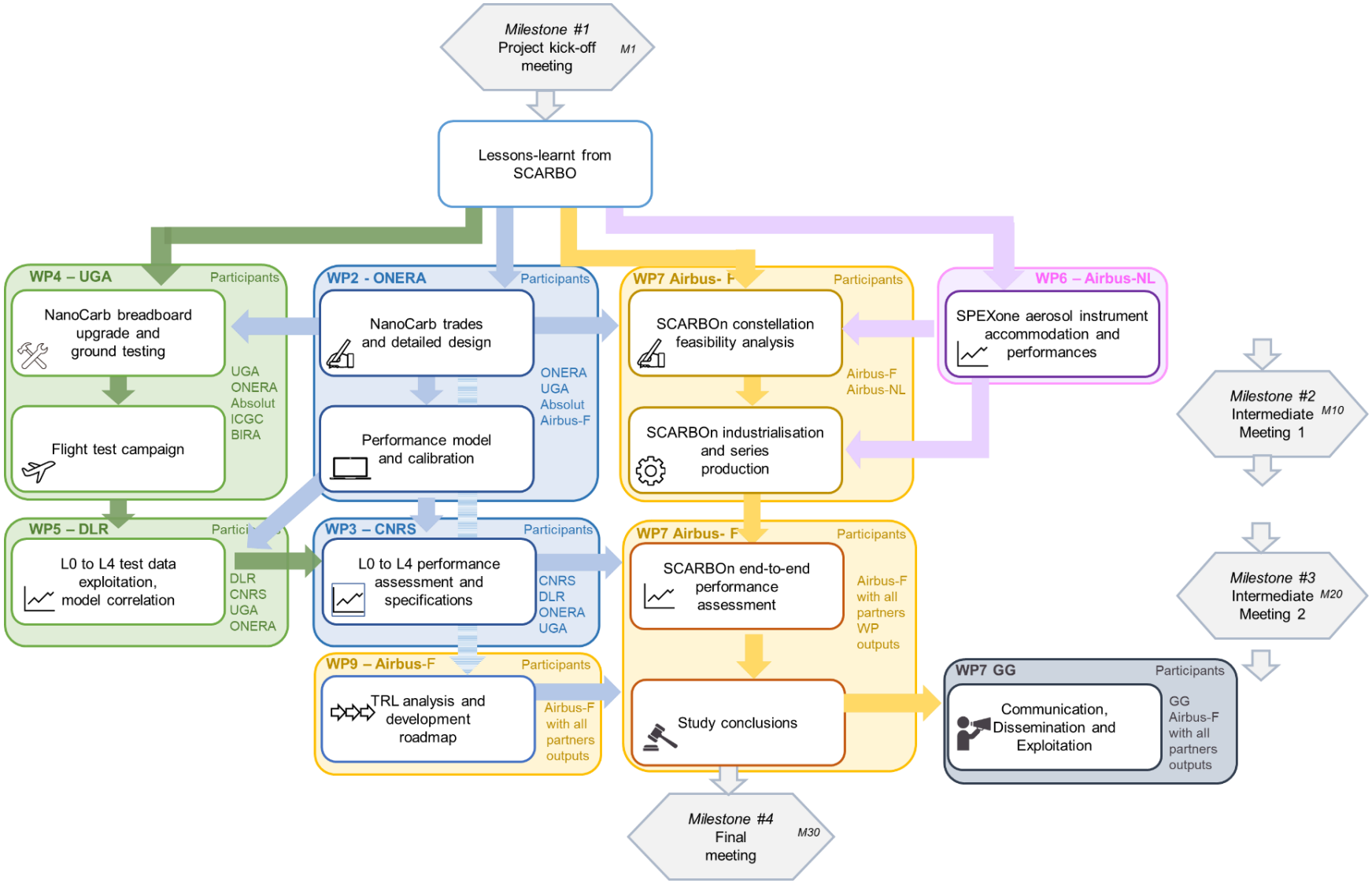

Figure 4 – Overall SCARBOn approach and methodology

		START MONTH	END MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1 Project Management and Coordination		1	30	MS1									MS4										MS8									MS10
T1.1	Project and Consortium Management	1	30		D1.1 D1.2																												
T1.2	Technical Coordination	1	30																														
T1.3	Project Control and Reporting to the EC	1	30										D1.3										D1.4										
T1.4	Internal Communication, Risk Management and Quality Assurance	1	30																														
2 NanoCarb-S Space Instrument Trades and Analysis		1	27			MS2																					MS9						
T2.1	Recommendations and Lessons Learned from H2020 SCARBO	1	3			D2.1																											
T2.2	Instrument System Architecture and Trades	6	17																	D2.2													
T2.3	Interest of an Ancillary Hyperspectral Imager	2	17																														
T2.4	Components Manufacturability	16	27																											D2.3			
T2.5	Instrument Optical and Detection Design	3	17																														
T2.6	Cryosat Mechanical and Thermal System Sizing	6	17																														
3 NanoCarb-S Space Instrument Proof of Concept		6	30																														
T3.1	Instrument Performace Assesment	9	28																										D3.1				
T3.2	Instrument Architecture Upgrade	16	26																										D3.2				
T3.3	System Calibration	10	24																														
T3.4	NanoCarb-S L1–L2 Performance Assesment	6	30																														
T3.5	SCARBOn L4 Performance Assesment Consolidation	6	30																														D3.3
4 NanoCarb-P Airborne Prototyping and Demonstration		1	22										MS3						MS5				MS7										
T4.1	NanoCarb-P Breadboard Interferometer Upgrade	1	15																														
T4.2	NanoCarb-P Breadboard Definition	1	10										D4.1																				
T4.3	NanoCarb-P Breadboard Assembly, Integration and Test	7	20																				D4.2										
T4.4	NanoCarb-P Airborne Flight Tests	13	20																				D4.3										
T4.5	Ground-based Spectrometers	13	22																						D4.4								
5 NanoCarb-P Airborne Data Exploitation		1	30																	MS6													
T5.1	NanoCarb-P L0–L1 Test Exploitation	1	25																									D5.1					
T5.2	NanoCarb-P L1–L2 Test Exploitation	6	30																														D5.2
T5.3	Emission Quantification from NanoCarb-P Measurements L4	5	30																														D5.3
T5.4	Correlation of the Model Predictions with Airborne Data	25	30																														D5.4
6 SPEXone Instrument Accomodation and Performances		10	27																														
T6.1	SPEXone Instrument Accomodation and Performances	10	27																		D6.1 D6.2													
7 SCARBOn Constellation System		10	27																														
T7.1	SCARBOn Constellation System Study and Industrial Consolidation	12	27																								D7.1						
T7.2	Instruments Industrialization and Series Production Preparation	10	18																		D7.2												
8 Communication, Dissemination and Exploitation		1	30																														
T8.1	Visual Identity and Online Profile of the Project	1	30						D8.1																								
T8.2	Identification of Key Stakeholders and the PEDR	1	30						D8.2									D8.2															D8.2
T8.3	Data Management and Protection of the IPR	1	30						D8.3												D8.3												
T8.4	Exploitation of Results	1	30																														D8.4 D8.5
9 Study Consolidation and Conclusions		24	30																														
T9.1	Pre-Development Needs	24	30																														
T9.2	End-to-End Performance Consolidation and Conclusion	24	30																														D9.1

Figure 5 – SCARBOn GANTT chart

4.2 SCARBOn Work package breakdown

As shown in the figure 6, the SCARBOn project is broken down into nine work packages:

- two focus project coordination and dissemination activities (WP 1 & 8)
- two includes synthesis, system definition and end-to-end performance assessment (WP7 & WP 9)
- five are technical oriented (WP 2 to WP 6 focusing on instruments maturation:
  - WP2 and WP3 focusing on NanoCarb-S definition
  - WP4 and WP5 focusing on NanoCarb-P protype and test campaign
  - WP6 associated to SPEXone instrument

Nanocarb instrument activities are importantly interlinked, and will necessitate an interactive way of working between each actor. Figures 7 to 10 provide a detailed description of these interlinks between WPs and associated tasks

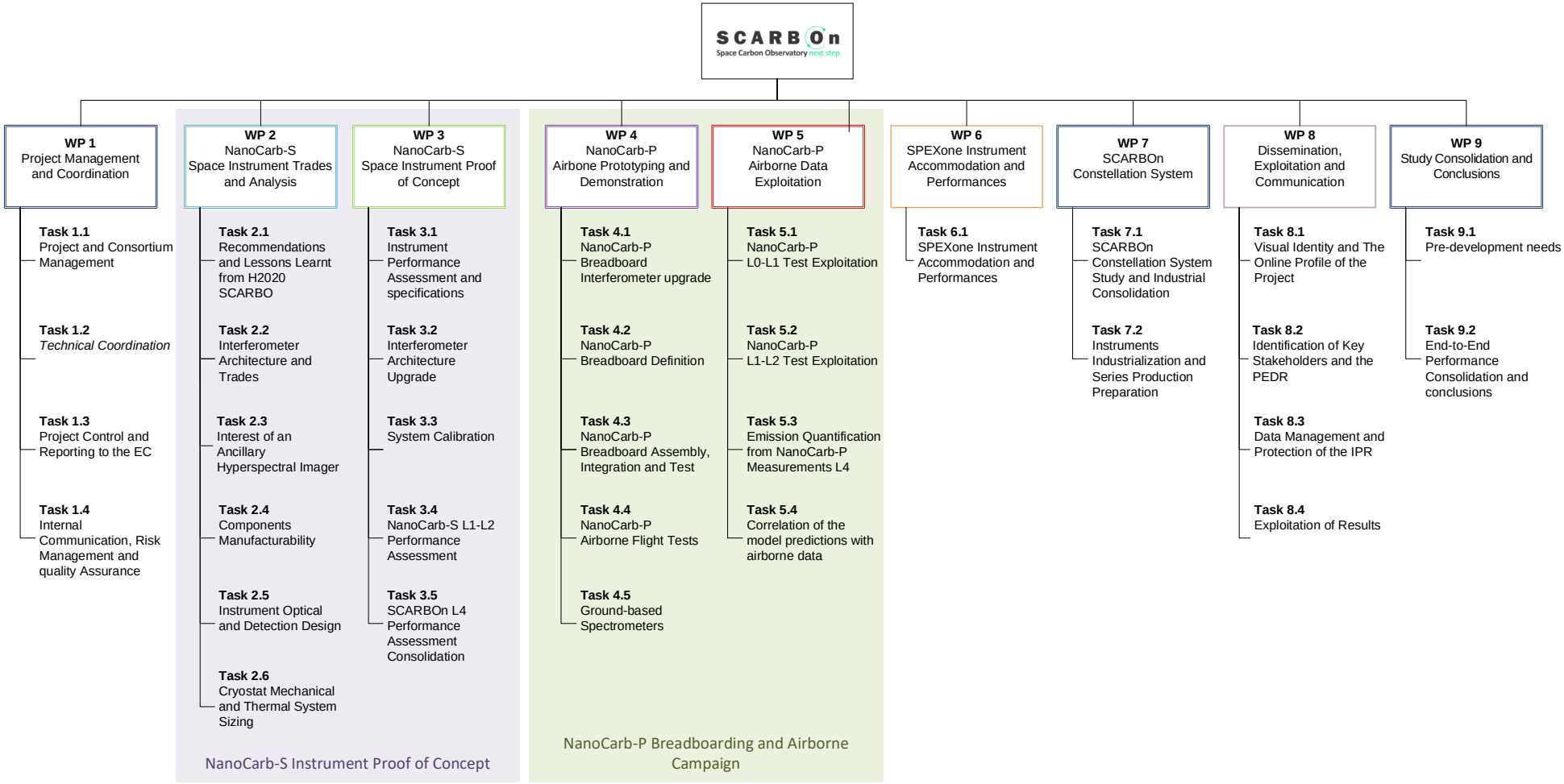

Figure 6 – SCARBOn Work breakdown Structure

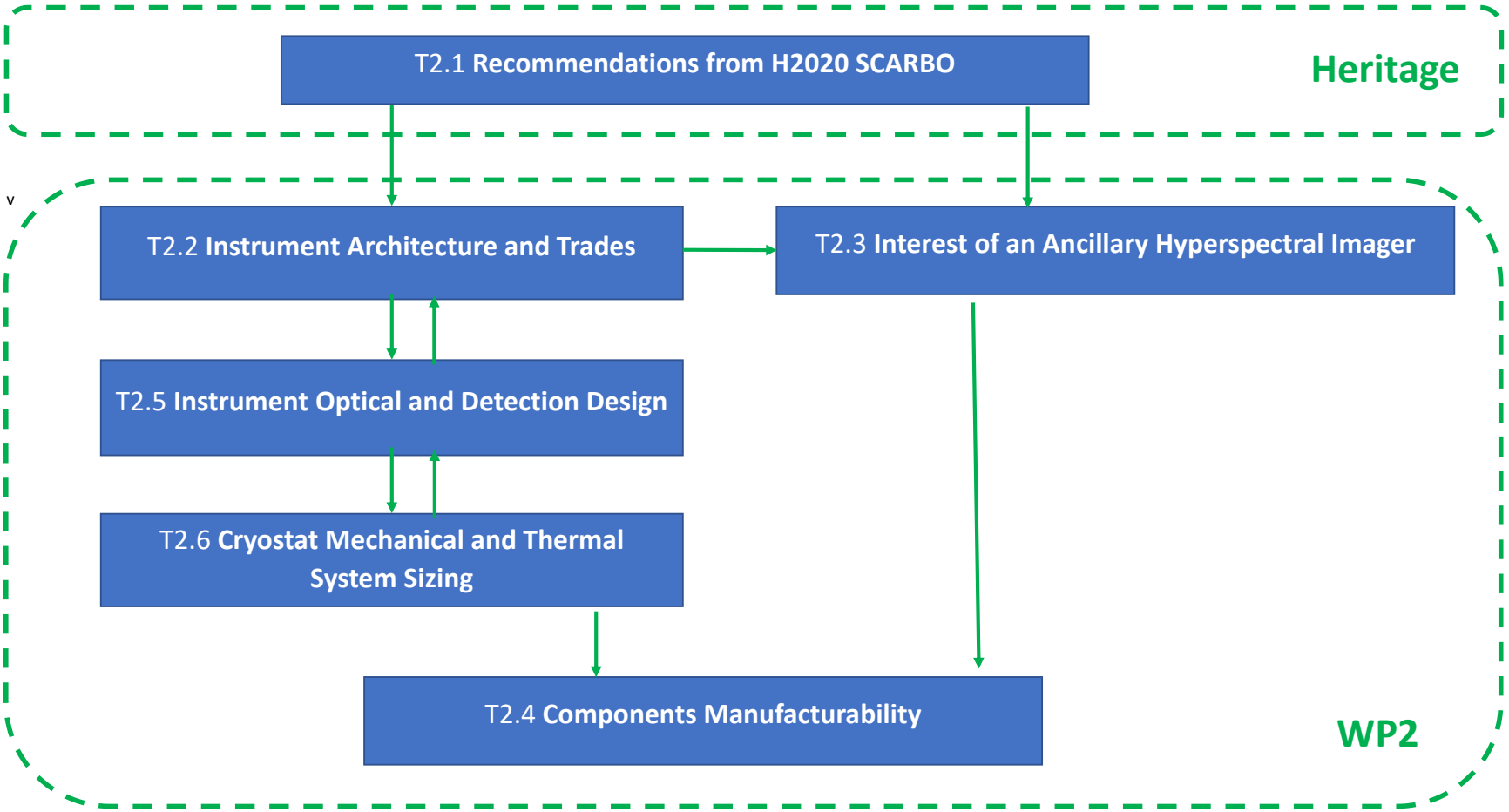

Figure 7 – WP2 detailed architecture

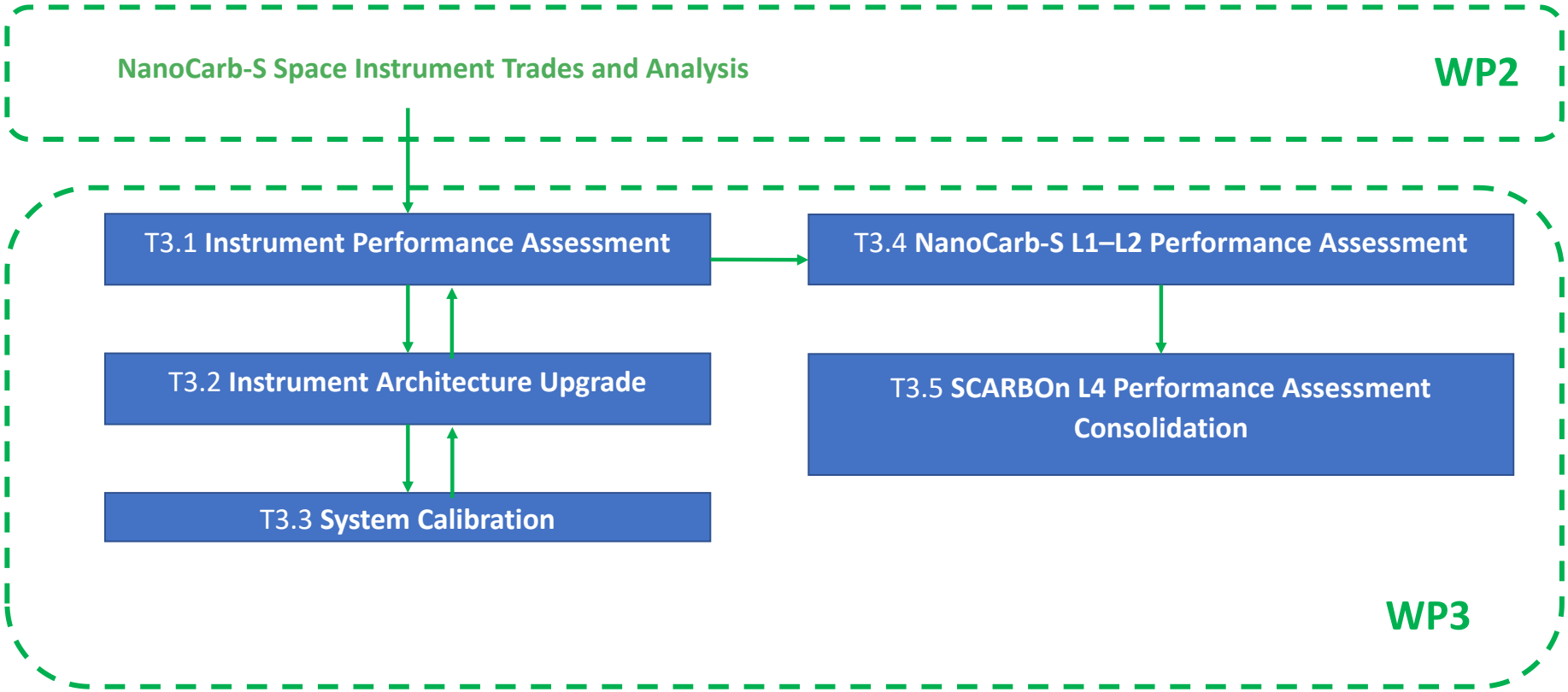

Figure 8 – WP3 detailed architecture

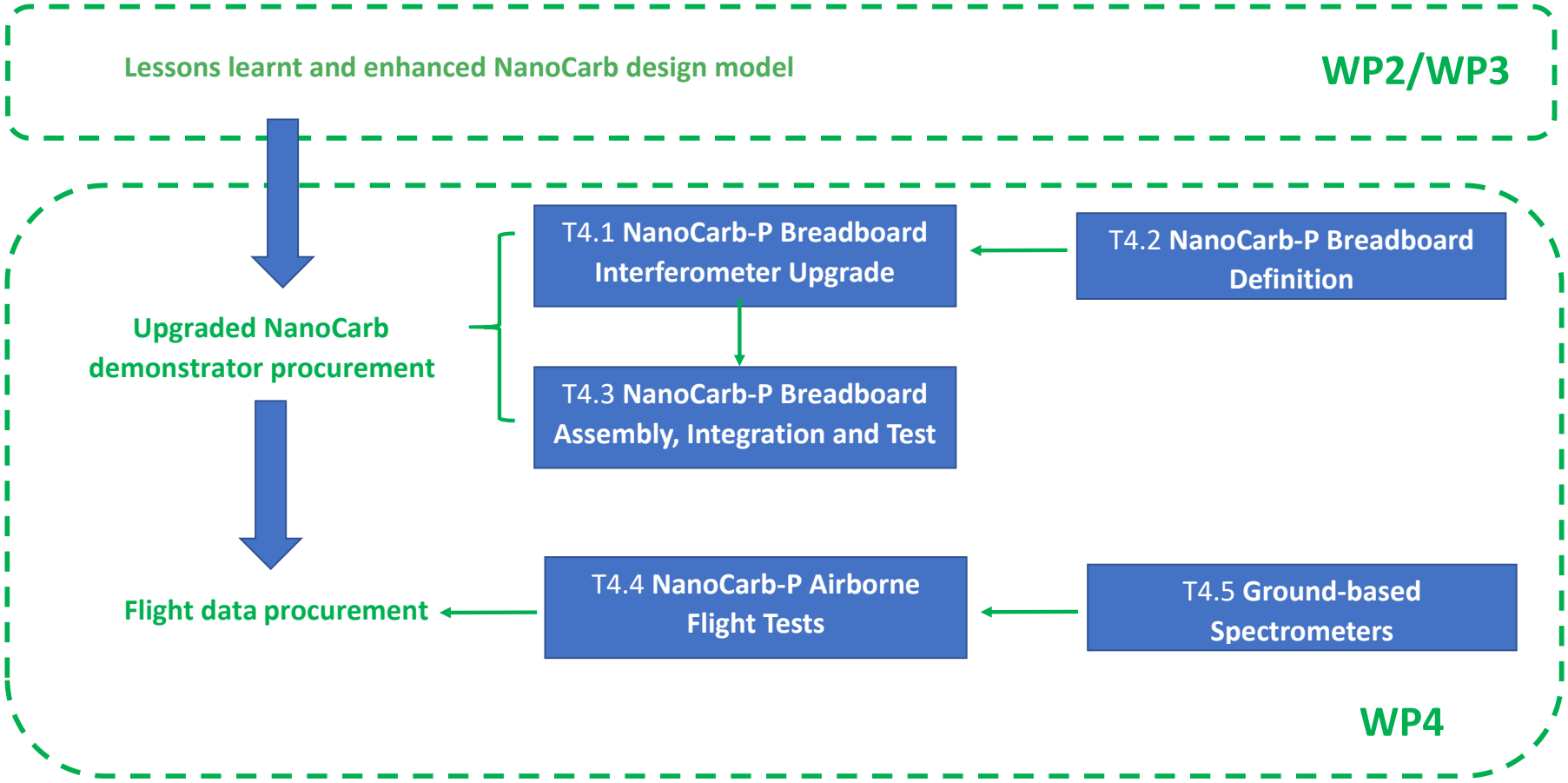

Figure 9 – WP4 detailed architecture

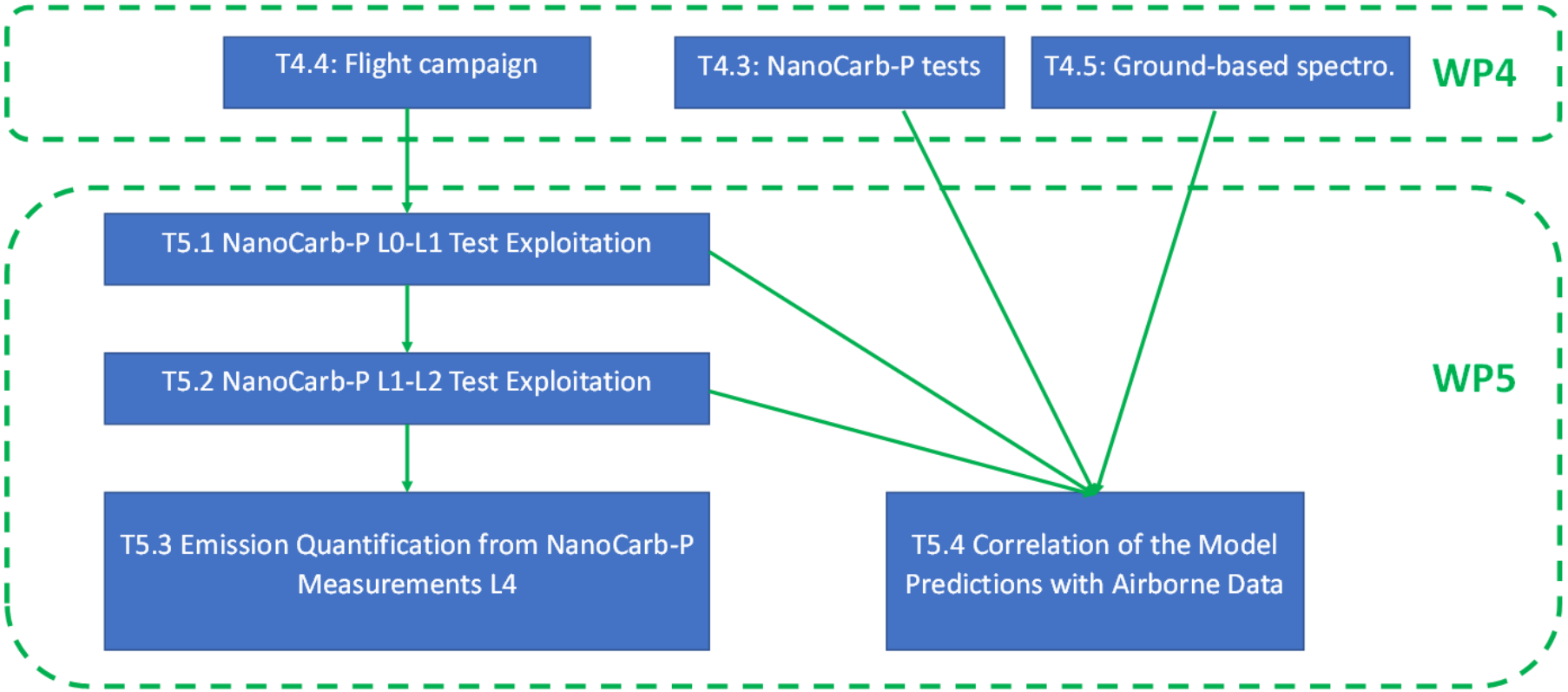

Figure 10: WP5 detailed architecture

5 List of deliverables

The following list of deliverables is already reported in the Grant Agreement of the SCARBOn Description of Action. The main reports to be published from the project will present the results of the various technical and communication activities.

The following tables give the list of the deliverables, consolidated from the individual WP forms. Note that deliverables are associated to Milestone defined in next chapter.

All deliverables will be structured in two parts:

An executive summary, highlighting the main results, findings or recommendations. As far as possible, this first part will be this first part will be destined for further public dissemination (by project channels) and should not include any sensitive information. This solution will allow a wide dissemination of high-level information, while most of the detailed information will have a restricted access.

A second part with annexes, containing detailed and possibly confidential information.

NUMBER	DELIVERABLE NAME	WORKPACKAGE NUMBER	TYPE (*)	DISSEMINATION LEVEL (**)	DUE DATE (MONTH)
D1.1	Project Management Plan	WP1	R	PU	2
D1.2	Project internal repository	WP1	DEC	SEN	2
D1.3	Interim progress report I	WP1	R	SEN	10
D1.4	Interim progress report II	WP1	R	SEN	20
D2.1	SCARBOn Roadmap	WP2	R	SEN	3
D2.2	NanoCarb-S Architecture design	WP2	R	SEN	17
D2.3	Technological rules for NanoCarb production	WP2	R	SEN	27
D3.1	NanoCarb-S performance assessment and specifications	WP3	R	SEN	28
D3.2	NanoCarb-S Architecture design upgrade	WP3	R	SEN	26
D3.3	L4 performance assessment consolidation	WP3	R	PU	30
D4.1	NanoCarb-P design report	WP4	R	SEN	10
D4.2	NanoCarb-P test report	WP4	R	SEN	20
D4.3	Flight campaign report	WP4	R	PU	20
D4.4	Ground-based FTIR data	WP4	R	PU	22

(*) R = Document, report; DEC —Websites, patent filings, videos, etc
(**) PU = Public; SEN = Sensitive

Table 3 – SCARBOn list of deliverables part 1

NUMBER	DELIVERABLE NAME	WORKPACKAGE NUMBER	TYPE (*)	DISSEMINATION LEVEL (**)	DUE DATE (MONTH)
D5.1	L1 performance test report	WP5	R	SEN	25
D5.2	L2 performance test report	WP5	R	PU	30
D5.3	Emission quantification from NanoCarb-P measurements	WP5	R	PU	30
D5.4	Conclusions and recommendations from NanoCarb airborne campaign	WP5	R	PU	30
D6.1	SPEXone definition data pack	WP6	R	SEN	18
D6.2	SPEXone exterior CAD file (*.stp)	WP6	OTHER	SEN	18
D7.1	SCARBOn Mission outlines	WP7	R	SEN	24
D7.2	Production and tooling guidelines	WP7	R	SEN	18
D8.1	Report on the visual identity and online profile of the project	WP8	R	PU	6
D8.2	Plan for the Exploitation and Dissemination of Results (PEDR)	WP8	R	SEN	6
D8.3	IPR strategy and the Data management plan	WP8	R	SEN	6
D8.4	Future exploitation strategy	WP8	R	SEN	30
D8.5	Final workshop	WP8	R	SEN	30
D9.1	Technical Final Report	WP9	R	SEN	30

(*) R = Document, report; DEC —Websites, patent filings, videos, etc
(**) PU = Public; SEN = Sensitive

Table 4 – SCARBOn list of deliverables part 2

6 Project Milestones and Project Meetings

The progress and the evaluation of results at each main project milestone are very important indicators for the project management.

The figure below shows the milestones at project level:

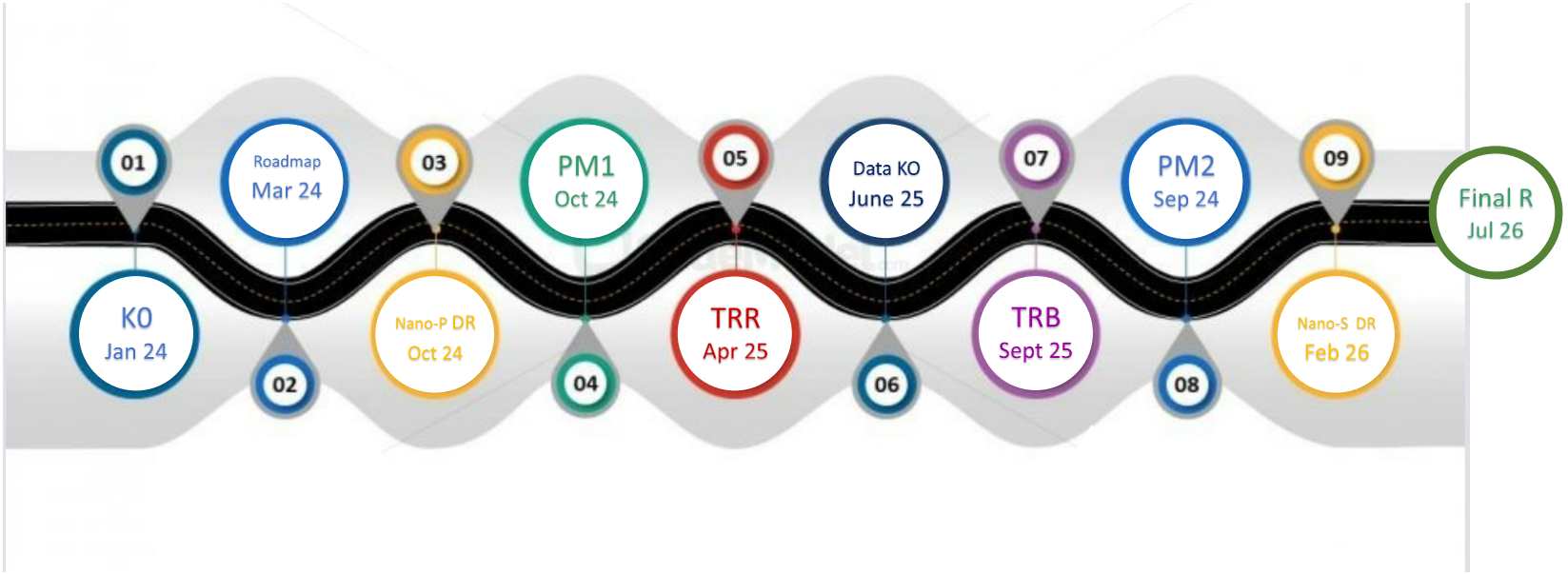

Figure 11 – SCARBOn Project Milestones Timeline

The table below shows the project milestones as identified in SCARBO Grant Agreement:

NUMBER	MILESTONE NAME	RELATED WP	DUE DATE	MEANS OF VERIFICATION
MS1	Kick-off meeting with EC	WP1	1	Minutes of the kick-off meeting
MS2	SCARBOn roadmap review	WP2	3	SCARBOn roadmap is shared and agreed with all partners
MS3	NanoCarb-P design review (N-PDR)	WP4	10	Internal meeting supported by NanoCarb-P key components analysis and specification to kick-off manufacturing
MS4	Interim progress review I with the EC	WP1	10	Interim progress report I
MS5	Test readiness review for airborne campaign (TRR)	WP4	16	Internal meeting to check that NanoCarb-P is ready and all facilities consistent with the documents provided for the certification.
MS6	Airborne Data Exploitation kick off	WP5	17	Internal meeting to be held once science flights are completed and L0 data are available
MS7	Test review board for airborne campaign (TRB)	WP4	20	Internal meeting Airborne campaign objectives achieved.
MS8	Interim progress review II with the EC	WP1	20	Interim progress report II
MS9	NanoCarb Design Review	WP2	24	Internal meeting to check that results provided about NanoCarb definition in WP2 are compliant with the expected inputs of T3.1
MS10	Final Review with EC	WP1/WP9	30	The final report + deliverables submitted

Table 5 – SCARBOn milestones

Three Review Meetings with the HADEA/EC are foreseen during the life-plan of the project, respectively at M10, M20 and the Final Review at M30.

7 Project Monitoring and Reporting

SCARBOn has a single reporting period that run from M1 to M30 but intermediate reports (Interim Progress Report I and II) will be issued M10 and M20. A final periodic report shall be submitted within 60 days after the end of the reporting period.

The objective of Periodic Reports is to provide the Project Officer with an overview of the results achieved during the reporting period as well as of the activities planned during the following one.

The Reports to be sent to HaDEA shall provide the SCARBOn Project Officer with an accurate overview of the status of the project. Each report shall notably include a publishable summary of the progress towards the objectives of the project.

In the context of Lumpsum Grant Agreement, no detailed cost statement will be issued but a overview of each Work Package accomplishment will be provided by each partner and communicated to the Project Officer at M10 and M20 as specified by the EC rules.