

Project Handbook, communications infrastructure

Deliverable 8.1

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1 Executive Summary

This document provides the definition of the Consortium operating procedures of the project, the formal responsibilities, liaising with the EC regarding reporting, progress reporting and deliverables (prepare, check and issue), control of the overall milestones and reviews according to the Description of Action (DOA) and Consortium Agreement (CA). The application of the presented material will ensure that all processes are in line with effective and efficient management principles, which will permit a good project execution.

The deliverable D8.1 Project management handbook serves as a guideline for all partners to ensure productive project processes.

This document contains:

- the management structure with TraceBOT's two management pillars,
- the general operational procedures concerning meetings and decision making,
- the reporting and reviewing deliverables
- the objectives and their measures of success and milestones and their means of verification



2 Introduction

The Project Management Handbook gathers the practices proposed to ensure a good management, a swift interaction and decision-making mechanism. These rules must be shared with all partners, to ensure a good collaboration in the consortium.

This document details the management structures, together with the formal responsibilities associated. It also defined the main reporting processes with the Commission, as well as the procedures and template used for the production of the deliverables. Finally, the main project objectives and milestones, which will be used to monitor the advancement of the project, are compiled in the document.

The information contained in this handbook is recompilation of statements from the Description of Action (DoA) and the Consortium Agreement, as well as additional management structure to date. With the objective of maintaining a management model adapted to the need of the project, it is possible to adapt and adjust this document according to the development of the project and the needs of the consortium. Should this document be updated because of changes in the management structure and processes, all partners will be informed about the changes.



3 Management structure

As stated in the DoA, the management structure of TraceBOT is designed to:

- track and monitor the good execution of the objectives,
- detect early-on any plan deviations to mitigate them, provide efficient decision-making mechanisms, and
- ensure good interaction with the external stakeholders that can impact and or benefit from the project outcomes

The organizational structure of the Consortium relies on two pillars: the first one focuses on the internal project development and management, while the second connects the projects with the external stakeholders, through the dissemination strategy, and the interaction with our advisory board. The overall structure is presented in the following diagram.

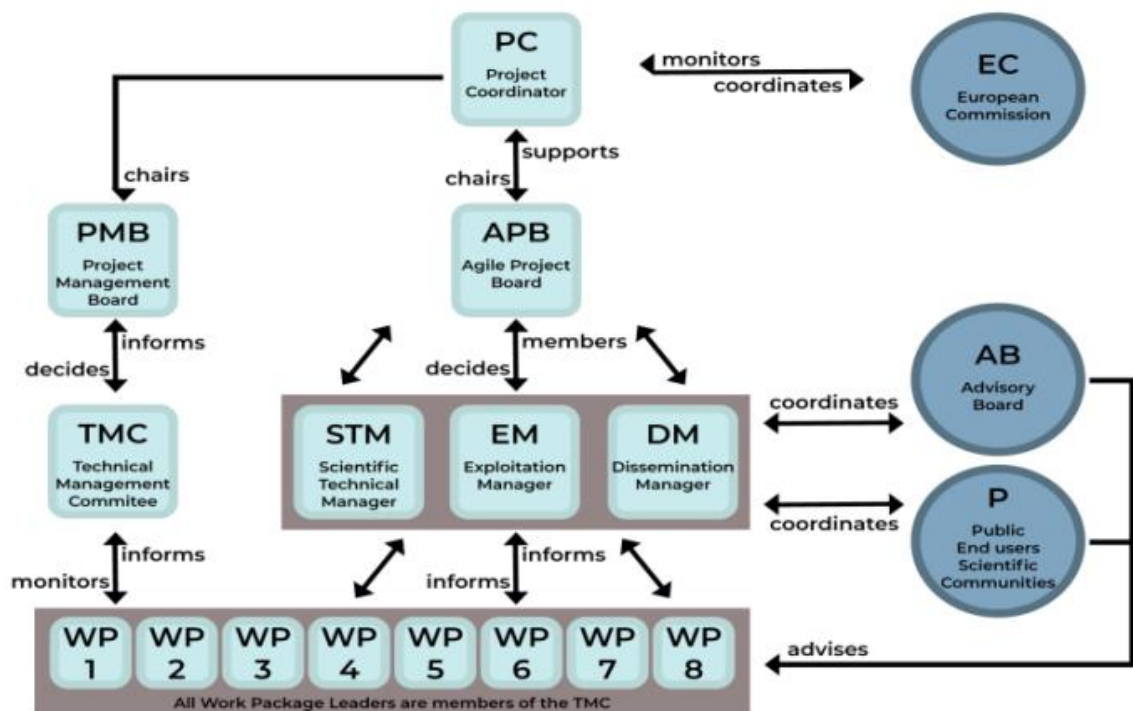


Figure 1: TraceBOT management structure

3.1 Management Pillar 1: Agile Project Management

The project management structure involves the following representatives:

1. **The Project Coordinator (PC)** coordinates the overall project direction. The Coordinator is the legal entity acting as the intermediary between the Parties and the Funding Authority. The position is held by Maike Neumann (BIOL). The Coordinator is responsible for:



- ensuring the global objectives of the project are completed
 - handling contractual issues and cost calculation at the project level
 - collecting and submitting reports, other deliverables and specific requested documents to the Funding Authority
 - keeping the address list of Members and other contact persons updated and available on a shared document platform.
2. **The Project Administrator (PA)** is responsible for all legal, financial and administrative actions. The position is held by Verena Welling (BIOL)
 3. **The Science and Technical Manager (STM)** is responsible for the overall scientific guidance of the project, supporting the Project Coordinator by monitoring the technical objectives, responsible for the day-to-day monitoring of the work and progress in the work packages. Furthermore, he revises the project plan as necessary. He appoints peer reviewers for the deliverables, and he is responsible for the finalised deliverables. The position is held by Anthony Remazeilles (TEC)
 4. **The Dissemination Manager (DM)** is in charge of making sure that communication and dissemination objectives are achieved. Through the activities detailed in Work Package 7, the DM coordinates all actions targeting at promoting the outcomes of the project. The position is held by Carlos Lange (BIOL)
 5. **The Exploitation Manager (EM)** is responsible for meeting the commercial objectives especially in the laboratory area. He will lead the technology exploitation team taking care of IP and knowledge management issues. A close interaction with the Dissemination Manager is needed to maximize the impact of the project. The position is held by Carl-Helmut Coulon (INV)
 6. **The Work Package Leaders** keep track of the activities and progress within their work package, and possibly identify any issues that require attention. The WP leaders encourage timely interaction within and across the work packages to ensure a productive collaboration. Based on internal meetings with participants to the Work Package tasks, the Work Package Leaders can suggest adjustment of tasks that must be approved by the Technical Management Commission, and, if necessary, agreed by the project Management Board. They coordinate the WP advancement, by gathering the technical advancement for periodic reporting. They make sure deliverables are produced on time and assess their outlines as provided by the deliverable editor.

The WP leaders are:

- WP1: Carl-Helmut Coulon (INV) - WP5: Michael Beetz (UOB)
- WP2: Mathieu Grossard (CEA) - WP6: Matt Neidhardt (AST)
- WP3: Anthony Remazeilles (TECN) - WP7: Carlos Lange (BIOL)
- WP4: Markus Vincze (TUW) - WP8: Maike Neumann (BIOL)



7. **The Agile Project Board**, led by the Project Coordinator, involves the Project Administrator, the Science and Technical Manager, the Dissemination Manager and the Exploitation Manager. His role is to:
 - provide to the Project Coordinator a swift support on any aspect of the project,
 - gather all internal decision-making actors, responsible for conducting and monitoring the execution of the project, while maintaining all internal and external stakeholders informed.

8. **The Technical Management Commission (TMC)** is composed of all the Agile Project Board extended with all Work Package leaders. This operational commission makes decisions focussing on the technical aspects in the project, such as monitoring technical progress and revising the project planning according to the achieved results and issues encountered. It develops and updates the risk registry. The TMC is chaired by the Project Coordinator, but the TMC meetings are prepared by the STM. By analysing the overall advancement of the project per Work Package, the TMC can validate task replanning suggested by the WP leaders in agreement with all partners involved in the affected tasks. TMC meetings take place at least every trimester. All Commission members must be represented, and any researcher involved in the project can join.

9. **The Project Management Board (PMB)** is the ultimate decision body of the consortium. It is chaired and prepared by the Project Coordinator and involves per partner one authorized delegate able to make legally binding decisions. The PMB ensures that the overall progress of the project plan is in line and that there are no violations regarding the guidelines. The financial status and reallocations of budgets, work and project plan, the risk assessment and the deliverables are reviewed and approved by the PMB.
 The PMB is responsible for:
 - resolving partner disagreement with a change, contract issues towards the Commission, consortium or consortium agreement changes.
 - ethical and gender issues

Once solicited, PMB meetings must take place within a monthly time frame.

3.2 Management Pillar 2: Connection with external stakeholders

The Advisory Board aims at catalysing the activities of TraceBOT, by contrasting the project advances with the vision of experts with scientific and or business backgrounds. The board membership includes representation from two major groups: manufacturers, service providers (a group of commercial labs offering testing services, clinical and environmental testing), as well as an institute working on emerging therapies, and on Covid vaccines which also acts as national regulator. Membership will be assessed and updated as needed.

The expert of laboratory automation Patrick Courtney (tec-connection) will chair the advisory board, while the interaction with the advisory board will be organized by Carlos Lange (BIOL). The meetings will be arranged in accordance with the delivery of new developments.

Invitations will be in conjunction with internal project meetings, estimated in a yearly cycle.



Finally, the permanent spread and exchange of information with the other external entities, such as the public sector, the industrial stakeholders or the related public research projects is also crucial to create and consolidate the network of laboratory automation. Collaborative exchange with leading European projects is therefore an activity of the external public relations as well. The definition of a dedicated Manager, the Dissemination Manager emphasizes the importance of this activity, and will enable to bring to the strategic and operational boards any recommendations or guidelines that could be raised through this dissemination and communication activity.

The Dissemination plan will be detailed in the context of the management of the Work Package 8, within the deliverables D7.2 and D7.3 detailing respectively the communication and dissemination plans.

3.3 General operational procedures

3.3.1 Representation in meetings

Any Party should be present or represented, may appoint a substitute to attend and vote at any meeting.

3.3.2 Preparation and organization of meetings

The following table summarizes the characteristics of the PMB and TMC meetings. The Agile Project Board (APB) is an informal meeting intending to provide swift interaction and follow-up in between the coordinator and the main project figures. The APB meeting is totally informal, and the board has no power of decision. Any action requiring decision making must be brought to the two formal boards TMC and PMB, depending on the subject. We are proposing handling the APB meeting on a weekly basis, for discussing any item brought to the board through an agenda document. APB meetings can be cancelled if no item to process are mentioned, or if none of its members is available on the selected time-slot.

TABLE 1: PERIODICITY OF THE PROJECT MEETING FOR THE TWO MAIN BOARDS OF THE PROJECT

	Ordinary meeting	Extraordinary meeting	Notice of a meeting	Adding items to the agenda
Project Management Board	At least once a year	At any time upon written request	Ordinary meeting: 45 calendar days Extraordinary meeting: 15 calendar days	14 calendar days, 7 calendar days for an extraordinary meeting
Technical Management Commission	At least every trimester	At any time upon written request of the PC	Ordinary meeting: 14 calendar days Extraordinary meeting: 7 calendar days	2 calendar days



The TMC meetings are prepared by the STM, while the PMB meetings are chaired and prepared by the Project Coordinator, TMC meetings can be used to discuss PMB issues. The agenda and minutes (taken by the chairperson of a Consortium Body) for these meetings will be uploaded to a shared document platform. Any Member may add an item to the agenda, in the delays indicated in the table above. When the meetings are not presential, the videoconference are recorded and made available to the whole consortium.

3.4 Decision-making

The decision-making process is hierarchical and depends on the severity of the decision to take, according to the committee entity to which the decision has to be taken.

At the bottom level, any decision can be taken at the level of the work packages as long as it does not affect the overall objectives and timing of the project.

If consensus is not obtained, or if the topic is beyond the WP leader responsibility, the WP leader must inform the STM, and bring the item to the TMC for getting a decision. Depending on the urgency of the topic, the WP leader can ask the PC for the organization of an extraordinary TMC meeting to discuss and solve the issue.

If no consensus is obtained through discussion during the TMC meeting, a majority vote can be conducted (one vote per TMC member, not cumulative, with a 2/3 quorum, and a casting vote for the PC). Any decision affecting the WP objectives and timing must be brought to the PMB for confirmation. Also, any consortium partner can contest decisions taken by the STM and bring the topic to the PMB.

If needed, a simple majority vote can be conducted, where each partner representative has to participate and has one vote. In case of tie, the inclusion of the Project Coordinator's vote will be a casting vote. No veto is envisioned. If changes decided by the PMB affects financially a consortium member, this member can bring in within four weeks after decision new contributions to the project with a new financial plan including the budget reallocation. The decision in this special case will be made by 2/3 of the majority of the GA.

All decisions will be recorded and documented, providing this way full transparency in front of the consortium, the different boards, as well as the Commission. It is up to the responsibility of the PC to decide whether any conflictual decision has to be shared with the Project Officer. Nevertheless, decisions that may affect the projects objectives and timing, taken by consensus or not, must be shared with the Project Officer, as the request for change must be accepted in that case by the Commission.

Any decision may also be taken without a meeting if the Coordinator circulates to all Members of the Consortium Body a written document, which is then agreed by the majority (two-thirds (2/3) of the votes cast with the exception of any amendment to the Grant Agreement which shall require a unanimous vote) of all Members, or if no Member has sent an objection within the deadline.



3.5 Internal Project Communication

This section covers the internal communication means put in place to ease the interaction within the consortium.

Several **mailing lists** have been created:

- A global mailing list that contains all participants to the project, to be used for any general announcement.
- A Work Package-related mailing list, to share information relevant for all participants of a given Work Package.
- A Mailing list for the PMB members. It should contain at least two contacts per partner.

The Coordinator maintains the overall project contact lists and is able to adjust the mailing list recipients on request.

A **SharePoint space** has been allocated to the project by TECN. It is accessible to all project partners. This space is used to store any type of document and it should be considered as the preferred platform for sharing documents within the consortium. Although the structure and file organization may be subject to change, we can highlight the following general structure:

- Consortium contact info: folder with all consortium participants contact information
- Contractual: all legal documents (Grant Agreement, Consortium agreement)
- Deliverables: to contain all working and final version of deliverables
- Logos: TraceBOT logos to be used for project related communications
- Meetings: Material related to consortium or group meeting (kick-off, APB, TMC & PMB meetings), included agenda, minutes, presented material
- Template: Consortium document and presentation skeletons
- WP material: folder per WP organized to the convenience of the WP participants.

Regarding the **videoconferencing** tools, the consortium is using Microsoft Teams for hosting the meetings. Nevertheless, depending on the persons involved any other tools can be used for the convenience of the participants. When possible, and if relevant, the meeting should be recorded and stored onto the SharePoint space.



4 Reporting

4.1 Internal Reporting

The internal reporting will be conducted through the TMC meeting taking place on a trimestral basis. During these meetings, each work package leader will provide an overview of his WP advancement, highlighting the technical progresses, the result obtained, the compliance with the work programme, as well as the advancement of the deliverables associated.

4.2 External reporting

The coordinator must submit a periodic report (technical and financial) within 60 days following each of the Reporting reviews, at Month 15, 33 and 51 (see the following table). The coordinator will request each WP leader to gather appropriate information to report the technical advancement of each task of his Work Package, while the main partner representatives will be requested to support the preparation of the financial report.

TABLE 2: SCHEDULE OF PROJECT REVIEWS

Review number ¹⁹	Tentative timing	Planned venue of review	Comments, if any
RV1	15	tbc	First periodic review
RV2	25	tbc	Technical review
RV3	33	tbc	Second periodic review
RV4	51	tbc	Final review

The reports provided to the Commission will contain the following information:

- Periodic technical report
 - explanation of the work
 - overview of the progress
 - summary for publication
- Periodic financial report
 - Financial statement (individual and summary)
 - Explanation of the use of resources
- Final report
 - Final technical report:
 - Summary for publication
 - Overview of the results and their exploitation and dissemination
 - Conclusion of the action
 - Final financial report
 - Summary financial statement



4.3 Reviewing Deliverables and Reports

The list and dates of deliverables are detailed in the DoA, and also provided on a shared document platform. The deliverable template (see Annex 1) and shall be used for all deliverables, to ensure a uniform structure and appearance.

A partner is assigned as deliverable leader for each of the deliverables within the DoA. It is usually the partner leading the task(s) to which the deliverable is associated to. The Deliverable leader has the responsibility to coordinate the deliverable preparation with all the partners involved in it (once more, according to the partners involved in the task the deliverable refers to). The content of the deliverable is responsibility of the author(s).

The Science and Technical Manager (STM) is responsible for the appointment of peer reviewers for the deliverables, and he is responsible for the finalised deliverables/ reports.

After consultation with the STM, the person responsible for the deliverable / report will transmit the final document to be reviewed to the two consortium members appointed by the STM, at least two weeks before the official deadline set by the EC.

The reviewers shall edit the document using track-change. The reviewers shall send their feedback within one week to the author for correction and STM.

The final document shall be transmitted to the PC to be uploaded 3 workdays before the official deadline for the submission.

All submitted documents will be also stored into the SharePoint structure.

The deliverable template is designed to contain the following characteristics:

- the cover page containing:
 - the Title and ID of the project,
 - the logo of the project and the H2020 Programme
 - the title of the document
 - the related Work Package(s)
 - the related task(s)
 - the author(s)
 - the dissemination level,
 - the due and actual submission date
 - and abstract
- all pages except the cover page are numbered
- the Document identification number is present in the header



- the page layout (headers) should be consistent
- a table of contents, and an Executive Summary should follow the page cover
- a list of abbreviation can be included but is not mandatory
- potential scientific and / or temporal deviation, detailing the mitigation procedures implemented, if needed
- the conclusion should be followed by a reference section, if needed.
- Additional technical details may be provided through annexes.

The Deliverable template has been used for generating this document file. It is made accessible to the consortium through the SharePoint space previously mentioned. Additional templates are being prepared and uploaded to the SharePoint upon need. (E.g., PowerPoint presentation template)



5 Objectives and Milestones

To track the good progress of the project, several objectives and milestones have been defined in the DoA. They are reminded in the following.

5.1 Objectives and measure of success

Each objective is covered by one Work Package, and the tasks within the Work Packages reflect the key developments we seek to achieve for the objectives.

TABLE 3: TRACEBOT OBJECTIVES AND RELATED KEY DEVELOPMENTS

Objective	Key developments
O1 – Traceable manipulation actions	Traceability framework and set of checking actions Tools to record and replay all actions Creating a skill set for checking actions
O2 – Manipulating medical products	Tactile dextrous grippers for medical products Multimodal sensor integration for robust manipulation Semantic perception-action traces of actions
O3 – Rapid adaptation to novel products and tasks	Rapid set-up of laboratory automation cell Robot skills for medical products Rapid intuitive programming of novel task using skill set
O4 – Safe and failure-resistant operation	Detecting failure cases in assembly processes Replanning of actions to achieve the process goal Adhering to domain-relevant safety regulations
O5 – Creating the regulatory audit trail	Implementation tool for domain regulations Reasoning over semantic traces of checking actions Automatic delivery of audit trail
O6 – Sterility testing	Demonstrating robot skills in sterility testing Guidelines of laboratory part design for robotics Best practices of laboratory automation for deployment in other domains
O7 – Ecosystem building and sustainability	Engagement workshops and industry events Assessment and exploitation plan with Advisory Board

The measures of success associated to these objectives are the following:

O1 – Traceable manipulation actions.

Measure of success: creating an audit trail to allow understanding of manipulation actions such that the robot is able to describe semantically what it is handling and to determine success or failure of the action.



02 – Manipulating medical products and checking skills.

Measure of success: handling a complete family of sterile products (nine task steps with the selected sterility testing device). Handling success rate: 90% in the near real environment specified by INV.

03 – Rapid adaptation to novel products and tasks.

Measure of success: enable task programming without using the traditional robot teach panel or teach pendant in order to achieve laboratory tasks as a sequence of manipulation skills. Evaluation by comparison with present devices (target of 85% first pass success rate), and programming time (target reduction of 50% compared to conventional tools).

04 – Safe and failure-resistant operation.

Measure of success: A robot control system that creates semantically annotated execution traces that provide the necessary information for failure-resistant action analysis and execution.

05 – Creating the regulatory audit trail.

Measure of success: creating an audit trail that contains security-relevant historical information about processes in a way that allows regulatory approval as assessed by qualified and independent auditors.

06 – Sterility testing.

Measure of success: demonstrate sterility testing to the relevant pharmaceutical stakeholders according to the KPIs (traceability, checking actions, audit trail, rapid task teaching, recovery); the delivery of a design guidebook for the creation of robot-friendly and GMP-compliant toolset compatible with laboratory practice.

07 – ecosystem building and sustainability.

Measure of success: a clear path to industrial sterility testing and positive feedback from engagement activities with the industrial partners and stakeholders beyond the project partners and advisory board. All of the scientific objectives listed above are aimed at realising the fundamental enabling technology that will allow the automation of regulated test laboratories flexible, robust and easily deployable. In addition to the achievement of scientific objectives, TraceBOT also aims to demonstrate the concrete feasibility of the automation technology in a realistic setting. This will serve as a milestone for measuring project outcomes, and also act as a first step in the exploitation of project results.

The advancement on each of these objectives will be contrasted with the Commission at each review process.



5.2 Milestones and means of verification

Five milestones represent the main control points of the work plan and will be used to monitor the progress of the project and its intense integration effort.

TABLE 4: TRACEBOT MILESTONES

Milestone number	Milestone title	WP number	Lead beneficiary	Due Date (in months)
MS1	Traceable Semantic Twin & Initial Integration.	WP1-7	8 - INV	11
MS2	First demonstration: proof of concept of integrated sterility test case	WP2-7	4 - CEA	23
MS3	Intermediate demonstration: sterility test, realistic environment	WP2-7	5 - TUW	35
MS4	Final demonstration: same footprint and setup as potential product	WP2-7	2 - TEC	47
MS5	Release of exploitable results: software, data, guidelines	WP5-7	6 - UOB	50

MS1: This milestone assesses the first full development of the overall system concept of the Traceable Semantic Twin that will be used throughout the project. The implementation will include mock-up modules in lieu of functionalities still to be developed. All parts of the architecture will be considered in the implementation (checking actions and perceptions, traceability structure and reasoning, and audit trail creation). Communications infrastructure will be available in TST (ROS messages, topics and services), and a realistic simulation infrastructure for specific use-cases will be provided.

MS2: The second milestone measures the achievement of the first integration of core abilities, checking actions and perceptions, traceability structure and reasoning, and audit trail creation. The mock-up modules developed in the initial integration will be substituted with the first prototypes of real functionalities. An initial hardware setup will exhibit the ability to perform unimanual manipulations, and the tactile sensing perception will be presented on a demonstration finger. A first implementation of the traceability representation will showcase the types of medical assemblies that can be modelled.

MS3: The intermediate integration will focus on achieving a full integration of integrated reasoning, as well as the consolidation of the perception, part handling, and checking actions. This demonstrator will show the manipulation programming through the interface, with first implementation of the manipulation demonstration in it. It will demonstrate bi-manual manipulation with one dexterous hand and a standard gripper.

MS4: The final technical milestone assesses the results of the project based on the requirements stipulated in WP 1. The capabilities of the entire system will be showcased in a final demonstration



to occur at project completion. The demonstration will use a real size assembly station as defined in WP1 and WP6, to maximize impact with a realistic setting towards penetrating the market. It will combine all core abilities to run the sterility testing device in an isolator environment (either adapting an existing one, or proposing to collaborate later on with isolator manufacturer to design an appropriate one), taking into account the footprint of existing isolators currently dedicated to the manual workflow.

MS5: All software developed in the TraceBOT project will be subject to open-source licenses. In order to maximise the exploitability of TraceBOT results, selected technologies will furthermore be packaged and made public as SourceForge, GitHub repositories, publicly available ROS stacks and/or ready-to-install software packages. The attainment of these activities will be measured through visit counters on download pages, search engine ranking and any product development initiative stemming from the released results.

The report uploaded at the Milestone due date will contrast the delivered work with respect to these initial expectations



6 Deviations from the workplan

No major deviation has been detected, and the document has been delivered on time.



7 Conclusion

This document provides a summary of the management structure of the TraceBOT project. The roles and responsibilities of each figure and board has been described, together with the decision making and the periodicity of meeting, as well as reporting requirement and practices. The consortium can apply the procedures and processes described in this document to their structure, to maintain common project operation.

The methodology stated in this document is the policy the project is starting with. It may be adapted during the project lifetime, in case more suitable strategies are identified, and within the margins of the CA and the DOA requirements.

