



## **PoliTo Rocket Team**

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POLITECNICO DI TORINO

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### **Vittorio Emanuele II Subteam Guide**

*Approved by the Chief Engineer Edoardo Viglietti on 29 October 2023*

*This Guide is valid until the introduction of a team regulation*

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# 1 Aims

This guide contains the basic principles for being able to work as one team on the project. This document aims to regulate all the internal management of the Vittorio Emanuele II Subteam, and it is intended as an internal regulation of all the activities of the Subteam. Every member must respect and know all the procedures and guidelines presented in this document.

Any violation of the rules here reported can be considered more or less serious, also the procedure to be followed in this case is reported in this Guide.

*Legum omnes servi sumus, ut liberi esse possimus.*

- Marco Tullio Cicerone

## 2 Mission

The Mission of the Vittorio Emanuele II Subteam is to design, build and launch a solid-propelled rocket, with a variable target altitude and mission profile.

The main goal of the project is to develop reliable systems which can be used to integrate other Team's projects, also by participating in international competitions. The closure of the project will be achieved with participation in the EuRoC 2024 (European Rocketry Challenge) competition or with integration with the Efesto engine.

### 2.1 Roles and Liabilities

The head of the Subteam (SUB) Vittorio Emanuele II (VES) has the role of Chief Engineer (CE).

The Organizational Chart is filled and updated exclusively by the CE, who decides as many times as necessary the names and the structure of the Divisions. The updated Organizational Chart is reported in the next section.

A person is considered a member of the PoliTo Rocket Team if he/she has signed the NDA, is present in the internal registry and is assigned to a role on the Discord server.

Under the responsibility of CE are the divisions. Each division is commanded by a Division Lead (DL). The CE must guarantee the respect of the goals assigned by the President. The CE is in charge of assigning the tasks, budget, and deadlines to the DLs.

The DL is responsible for making the division end the tasks on time while respecting the budget assigned. The DL **must** prepare and review technical reports, check and approve the documents issued in the fields of competence, manage data and records, ensure the dissemination of documents in the areas of competence, organize the education and training of personnel under their responsibility (if requested). DL **must** update the documents present in their area of competence, ensuring that the relevant versions of the documents are available at the places of use, preventing the inadvertent use of outdated documents, adopting adequate identification and segregation if they are to be retained for some purpose obsolete documents.

The team members **must** proactively work and respect the deadlines given by the DL to make the team's work proceed.

A separate category in the roles present in the Subteam is the Advisors. Advisors are usually former leads or highly qualified personnel (e.g. PhD candidates, legal representatives) who offer their advice or help in their fields of expertise. Each DL must be aware of their presence and their skills. The Advisors can be contacted directly and exclusively by the DLs, the CE or the President. An Advisor does not necessarily have to be a member of the Polytechnic of Turin, unlike all the remaining members of the team. A former project member can become an Advisor if proposed to him by the CE at the end of his career in the team.

### 3 Organization Chart

Under the responsibility of CE are the divisions:

- Avionics (AVN)
- Finite Element Analysis (FEA)
- Design and Additive Manufacturing (DAM)
- Recovery (RCV)
- Mission Analysis (MSA)

In the following we will refer to DIV as the three-letter acronym shown here for each division.

### 4 Communication

The official communication channel of the PoliTo Rocket Team, as of 2023/2024, is the official Discord server. Each division has its own text channel, which is visible only to the division members, DL and CE. In these channels, technical topics can be discussed and leads can be contacted. Additionally, members of other divisions or subteams can be allowed to visualize text channels of the VES Subteam's divisions with the approval of the CE. The DLs and CE have their own private text channel, in which general topics related to the whole project will be discussed. External messaging apps are not official communication channels but can be used for informal communication or if some of the members cannot be contacted via Discord. Privately messaging the DL and the CE should be avoided in most cases, since any information regarding the Subteam is preferably shared between DLs and CE, to better organize the project.

It is also important that no file is shared via email since it would be hard to keep track of each one and some important documents might be missed.

#### 4.1 Communication procedure (bottom-up)

Members **must** always report to their immediate DL and no one else, even if he has a higher role in the team, as the DL must always be aware of the work received and the progress of their members unless otherwise agreed with their DL and CE.

Members can communicate with DLs of other divisions, but they **must** include in their communication their own DL.

Members/DLs can communicate with members of other Subteams, but they **must** include in their communication their own DL (if applicable) and their CE.

Cooperation at any level between the Subteams is extremely welcomed, however, the CE or Coordinator of each Subteam **must** approve and be informed about the nature of the communications.

## 4.2 Internal communication (top-down)

In this category, all the communications need to be spread within the entire Subteam. Into this category falls all the internal reorganizations (DL changes, organizational changes, etc.), all HSE (Health, Safety, Environment) procedure changes (e.g. new procedures for lab facilities access and usage), and all changes in internal communication procedures and regulation.

## 4.3 Meetings and Leads Calendar

The division or leads meetings can be online or face-to-face. A weekly division or leads meeting is highly recommended, but it **must** be at least once every two weeks. During the meeting, all the necessary tasks and issues can be discussed and one person present at the meeting must be assigned to write the Meeting Minute, as will be mentioned in Chapter 8.2.

The DLs **must** keep the Subteam Leads-reserved calendar updated, as of 2023/2024 on Google Calendar, indicating the date, time and precise location of the meeting or gathering at any hierarchical level. Every DL from all the Subteams, the CEs and the President should have full access to this calendar.

# 5 Distinction and Demerit

To work best in a hierarchical structure, a formal environment with a merit recognition system must be present.

If the interested party of the measures is the CE, only the President will have decision-making power on this matter.

## 5.1 Distinctions

The candidature for the mentions of merit can be presented to the CE (if applicable) by the direct supervisor (typically the DL) of the candidate. Two marks of honor can be assigned in Project VES:

- Distinguished by Sense of Belonging (DSB): This is the highest mark in the Subteam. A DSB-awarded member has demonstrated an extraordinary sense of belonging through actions at the highest level of dedication, which demonstrated courage and determination to achieve results for the team while putting himself in uncomfortable situations from an emotional, legal, personal or physical point of view.
- Distinguished for Commitment (DC): A DC-awarded member stood out for the effort given to the team over a prolonged and constant time, going beyond the tasks assigned to him and making the project grow technically or in other similar ways.

The mark will be delivered by the CE (if applicable) in the presence of the direct supervisor of the awardee. Together with the mark, the CE or the President must

draft a motivational letter dedicated to the winner of a maximum of 500 words. A member with one of these marks will have to be treated with greater care and respect, also in light of future promotions or his ambitions inside the team.

## 5.2 Demerit

A Note of Demerit (ND) is assigned to anyone who does not comply with the regulations reported in this Guide, violating it deliberately and seriously or repeatedly (e.g. violation of the **"must"** reported in this document in bold).

Every case of assignment of ND must be reported by the direct supervisor of the contested member and carefully evaluated by the CE (if applicable). Each ND will be communicated through a face-to-face interview with the member concerned, in the presence of his direct supervisor.

The second ND must be evaluated not only by the CE (if applicable) but also by the President. If the member receiving the second ND holds any role of responsibility (e.g. DL, others) then, only in this case, it is within the powers of the President and the CE (if applicable) to decide together on a demotion of the member, removing him from one or more responsibility or role.

At the third ND, the team's quit procedure will be carried out automatically, without the possibility of appeal by the contested party.

In the event of very serious misconduct or serious violation of the state law, while representing the team, the CE (if applicable) and the President can decide together on the immediate expulsion of the member for demerit, without the member having necessarily already received two NDs. This possibility is, however, a resource to be used in cases of extreme emergency and proven severity.

## 6 Resignation Procedure

An internal document shared between CE and DLs and named "Resignation Procedure" indicates the procedures in case of a quitting member, in the case of a voluntary decision (via written communication by the member to one of his supervisors) or for demerit. Entry and exit operations from the team are managed by the Human Resources Specialist (as of 2023/2024 the Recruitment Manager).

The quitter will no longer be considered a member of the team since he no longer has a role in the Discord server and is not present in the team's internal registry.

## 7 File sharing

The official medium for file sharing is, as of 2023/24, Google Drive. The Google Drive folders are one for each division, plus one for the Project management. The DLs decide the internal folder organization, but there **must** be at least the Reports folder and the Meeting Minutes folder (unique for the division). The report folder **must** be named "VES-DIV Reports", and the meeting minute folder **must** be named "VES-DIV Meeting Minutes". Some folders may be shared across multiple divi-

sions, which collaborate more, but sharing **must** be approved by all the DLs of the concerned divisions.

## 8 Workload

### 8.1 Gantt

The project management makes use of a Gantt chart to keep track of the workload of each member. In the Gantt are reported each task for each member and DL, with its timeline and deadline and final Technical Report. Each DL should have reading access to the chart, while only the team management and CE can edit it.

### 8.2 Meeting Minute

Every Meeting Minute **must** be written in .docx format on Google Drive and follow the official PoliTo Rocket Team template. The template is available in the Google Drive folder of each division in "VES-DIV Meeting Minutes". Completed and updated meeting minutes must be uploaded to this same folder.

The Meeting Minute **must** be written and uploaded to the Google Drive folder of the division **every time** a meeting internal to that division takes place. The same must be done for a Leads meeting, or any other meeting. Anyone present at the meeting can write the Meeting Minute, but it has to be approved by the Lead in charge.

Each Task reported in the Meeting Minutes must have a deadline and a status. The status can be:

- **Assigned:** the task is new and has just been assigned during the meeting;
- **In progress:** the task had already been assigned during a previous meeting and was present in a previous Meeting Minute (the title must be unchanged) but there are changes in the nature of the task or a change in the deadline, which must be reported;
- **Completed:** the task is considered finished and the final report has been written and approved by the CE.

The CE, DL, division members, and the eventual team management responsible for the Gantt must have full access to the Google Drive folder that includes the Meeting Minutes.

### 8.3 Tasks

The workload is divided into Tasks, which are constantly updated on the Gantt through the Meeting Minutes or directly reported to the team management by the DL if necessary.



## 9 Report

For almost every Task to be considered completed in a Meeting Minute, a report must be submitted and approved.

### 9.1 Format

Every report **must** be written in LaTeX and follow the official PoliTo Rocket Team template. the LaTeX file folder with the template must be available in the "DIV-SUB Reports" folder in the division drive. The main.tex file can't be changed without the CE's consent and every field **must** be filled with respect to the indications in the LaTeX code.

It is highly recommended to write in LaTeX via Overleaf, but in any case, the report file **must** be available via the Overleaf link, which must be updated with the latest LaTeX writing of the report.

### 9.2 File name and report code

The format for the PDF file name is "VES-DIV-NUM-VERSION\_Title". Other special file name formats can be used for special reports only with the approval of the CE. The file name **must** be decided only by the DL or CE during the approval process and **must** follow these guidelines:

- NUM: three-digit number starting from 001 and indicating the chronological number between reports of the division;
- VERSION: starting from V1, indicates the version of the report. Any update to the report after the final approval requires updating this field incrementing the number by 1.  
A newer version of a report is requested or by the CE or directly by a DL. Any new version requires the change of approval or verification dates of the supervisors, as well as those of the authors. Any version of a report **must** not be deleted but it must be uploaded as will be mentioned in chapter 9.4;
- Title: title of the report, it can also be reduced with respect to the title given on the title page of the report but must describe the content in a clear and concise manner;

The first part of the file name which comprehends VES-DIV-NUM-VERSION is the **report code**, which must be written in the apposite section on the first page of the report.

### 9.3 Language and content

The report **must** be proofread and edited for grammar, spelling, sentence construction, and overall coherence before submission to the CE. Furthermore, the report's authors must review the document's contents, to ensure that they are accurate, complete, and in compliance with the Team's regulations before submitting it for approval.

### 9.3.1 Language and form

All reports **must** be written in English, with the exception of special reports approved by the CE. The reports must be clear and concise in language and expression, using proper grammar, punctuation, and spelling. The use of technical terms must be sufficiently defined.

The report must be well-organized and structured, with a clear introduction, body, and conclusion. The introduction should state the purpose of the report, while the body should provide details of the study, test, or research conducted. The conclusion should summarize the findings, recommendations, and lessons learned.

Headings and sub-headings must be used to aid the reader in navigating the report and locating important information quickly.

### 9.3.2 Figures, tables, and appendices

The report must demonstrate the correct use of conventions such as units of measurement, date format, and other technical specifications relevant to the field of engineering.

Where appropriate, graphics such as graphs, charts, diagrams, photographs, and schematics must be included in the report to aid comprehension and understanding of the content. All images or figures must be accompanied by a brief caption, that must be linked to the report's list of figures.

Tables should be used where appropriate, with clear labels, headings, and units of measurement included. All tables must be accompanied by a brief caption, that must be linked to the report's list of tables.

Where necessary, technical information and data supporting the report may be included in appendices, with clear headings and labels used.

### 9.3.3 Plagiarism and Artificial Intelligence

Plagiarism is strictly prohibited in PoliTo Rocket Team's reports. All information sources must be cited and referenced, including charts, graphs, and figures. Any ideas or content that is not original must be appropriately attributed.

The use of artificial intelligence (AI) and other automated systems is permitted with conditions in writing technical reports. Copying and pasting entire sections of unreviewed text from pre-written AI responses, reports, or other sources is not allowed. It is required that all text generated by AI systems must be reviewed and edited for clarity and accuracy both language-wise and content-wise. As AI chatbots are reliant on algorithms and other automated processes, they are prone to errors and inaccuracies and lack the ability to incorporate judgment and intangible factors into their analysis. AI chatbots do not always have the ability to understand the engineering language and do not provide the accuracy that is required for the specific engineering information and data of the Team's reports. The use of AI without precaution will lead to inaccurate or misleading analysis, which will negatively impact project outcomes.

### 9.3.4 Sources

Scientific articles, papers and books that were used must be mentioned in the specific part of the report, using the symbol which refers to the material on the References page. All the material used must be uploaded together with the report itself, to make the review process easier.

## 9.4 File management

Each report that is initiated **must** be reported with all the required data, including its Overleaf Link, in an Excel sheet shared by the CE with all the DLs. This Excel **must** be constantly updated by the DL during the report writing, approval waiting, post-approval and new version update request phases.

The reports on Overleaf (or other LaTeX editors), if approved, must be converted to a PDF file, which **must** be uploaded on the specific Reports Google Drive folder "DIV-SUB Reports". All the division members, DL and CE must have access to this folder. The DL is also responsible for keeping track of all the Overleaf links of the reports of his/her division.

## 10 Delegated power

The executive management of the team can delegate to the CE and DLs the proxy to communicate with companies and partners. It can also delegate HSE (Health, Safety, Environment) letters of appointment or letters of appointment in general. The delegated person can delegate to one of his employees the letters of appointment if necessary.

Letters of appointment should always refer to specific regulatory guidelines. For example, the safety responsibilities of a division can be delegated to the DL through an HSE letter of appointment that references the "Hazardous Materials Management Regulations." Once the DL receives the letter of appointment, they are responsible for ensuring compliance with the regulations and using their own judgment when the regulations are unclear.

## 11 Approval process

The report can **only** and **must always** be approved by the CE of the Subteam or by supervisors. For instance, if a member wrote the report, the DL can verify it but not approve it. In this case a specific section in the report **must** be added and must indicate that the DL has verified the report. If a DL writes the report, only the CE can approve it. The names of the supervisors **must** be under the section "Approved by" followed by the approval date.

Unless differently specified by the CE, the default for every report should be "Disclosable within the Subteam", which means everyone working on the project has access to it.

## 11.1 Technical Approval

The Subteam CE has to approve all Reports internal to the Subteam, except the ones in which the CE took part as an author.

The approval should take into account the current situation of the team's capabilities, facilities, resources, and activities planning.

Every change in the project design must be approved first by the Subteam CE.

## 11.2 Financial Approval

The finance manager, as of 2023/2024 the President, must approve **every expense** indicated in the report.

The DLs have no decision-making power on financial approval. Expenses include every external order, and also: materials usage (e.g. 3D printing consumables), manufacturing jobs, components or manufacturing processes requested by technical partners, etc. The CE is responsible for providing a detailed Funds Request when and if requested by the President, on this occasion the CE should confront all the DLs.

# 12 Test and Launch Missions

Typically missions are intended as a flight campaign, inside or outside an international competition. Everything must be done by the team management to give all those who worked on the Project the opportunity to participate in the missions with the minimum possible personal expense. The missions must be approved by the Department of Aerospace at the Polytechnic of Turin and are therefore covered by the related insurance.

The organization of the mission is independent of the Subteam, as members of other Subteams will also be able to participate for different reasons. Therefore each mission requires a separate Organizational Chart and the designation of the Team Leader, typically the CE at the head of the Subteam on a mission, designated by the CE and the President. This temporary structure and reorganization of team roles will only be active for the duration of the mission approved internally by the team.

The specific organization of each mission is under the direct responsibility of the Team Leader in charge, who must communicate clearly and effectively with the members involved and is responsible for the outcome of the mission, which must always have an objective in terms of stated expected results.

# 13 Team Uniform

Each member should have at least one piece of the team uniform, consisting of a t-shirt and windproof jacket. During the institutional team meetings, which will be communicated through the Discord server, it will be **mandatory** to participate with at least one of these two pieces, unless a clear justification is reported. It is equally

highly recommended to participate in every team meeting at any hierarchical level with at least a piece of the team uniform. It is **not** permitted to alter any team apparel in any way.

Below are also the compositions of the three official team uniforms:

- **Formal:** suit with jacket and official team pin applied in the buttonhole on the lapel on the upper left part of the jacket.
- **Academic:** team T-shirt and jacket with long sober trousers.
- **Operational:** competition T-shirt (issued only to members who have at least participated in one team launch mission) and jacket with long trekking pants. Mountain boots are highly recommended.

## 14 Image of the Team and Project

Any social or public interaction that involves the interests of the team must respect the rules of common sense. Any statement by a member representing the team must remain polite and extremely professional, no tolerance will apply on this point. Photos and videos portraying project material components or spaces, especially during missions, **can't** be published unless otherwise specified by the supervisors or mission leadership (e.g. Team Leader). Failure to comply with this last rule could result in a violation of the NDA, signed by each member.