

# FOILING SuMoth CHALLENGE

DREAMED-CRAFTED-EXECUTED

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## 2025 Foiling SuMoth Challenge RULEBOOK v25r1.2

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## ABBREVIATIONS

<b>3R</b>	Reduce Reuse Recycle
<b>11HR</b>	11th Hour Racing
<b>CF</b>	Carbon fiber
<b>CFRP</b>	Carbon fiber reinforced polymer
<b>CAD</b>	Computer Aided Design
<b>CFD</b>	Computational Fluid Dynamics
<b>FEM</b>	Finite Element Method
<b>FSMC</b>	Foiling SuMoth Challenge
<b>GFRP</b>	Glass fiber reinforced polymer
<b>IMCA</b>	International Moth Class Association
<b>LCA</b>	Life Cycle Assessment
<b>MS360</b>	Marine Shift 360
<b>SM\$</b>	SuMoth dollars
<b>SuMA+</b>	SuMoth Association

# 1 GENERAL

## 1.1 Introduction

The Foiling SuMoth Challenge is a competition dreamed, crafted and executed by SuMA, the SuMoth Association (SuMA+). The concept is inspired by the need for more sustainable and efficient sailboat designs, along with coherent manufacturing methods.

The ultimate goal of this competition is to foster and promote sustainably oriented practices by challenging daring universities and higher education students in a friendly, technical, and athletic competition.

## 1.2 Challenge application

### 1.2.1 Accessibility

The Foiling SuMoth Challenge invites students worldwide to participate in a uniquely innovative, competitive, and dynamic event. To ensure an inclusive and balanced competition among teams, a standardized budget system is applied to the manufacturing process for each boat. In the predominantly male-dominated sport of sailing, female sailors in the foiling community are few. To address this and encourage greater representation of women in sailing, as well as to support sailors from countries historically underrepresented in the [Olympic games](#), the Foiling SuMoth Challenge features an adapted scoring system.

### 1.2.2 Sustainability

Business models within shipyards and the naval industry often prioritize economic gains in production, frequently opting for lower-cost labor markets with weaker environmental regulations to maximize profits. These decisions, however, come with significant social and environmental consequences. The SuMoth Association (SuMA) envisions that a student-led competition provides a unique opportunity to explore, design, and implement innovative and untested ideas that are rarely applied in traditional industrial settings. Future naval architects and engineers play a pivotal role in shifting the industry away from profit-driven practices toward more sustainable approaches.

To counteract conventional 'business-as-usual' models, the Foiling SuMoth Challenge embraces the "**3R**" principles—**Reduce, Reuse, Recycle**—alongside the core pillars of sustainability: environmental, social, and economic responsibility.

### 1.2.3 Sustainable Practices

Sustainability in this context means achieving a balanced approach that integrates environmental, social, and economic performance:

- **Environmental:** Foiling SuMoth boats are crafted with a commitment to low-carbon production methods, prioritizing bio-based materials and the recycling or upcycling of outdated components to minimize ecological impact.
- **Social:** The competition encourages teams to consider the social implications along the entire production chain, from sourcing materials to the manufacturing processes used in creating the boats.

- **Economic:** With a standardized manufacturing budget in place, the Foiling SuMoth Challenge not only limits spending but also ensures a level playing field, fostering fair competition among participants.

Guided by these core elements, the Foiling SuMoth Challenge aims to inspire greater awareness of sustainable innovation in high-performance sailboat design and production, driving future practices towards eco-conscious and socially responsible advancements in the naval industry.

### 1.2.4 Safety

SuMoth teams must carefully consider the sailing environment and recognize the critical importance of safety in high-speed sailing. Foiling technology has ushered in a new generation of sailboats capable of reaching unprecedented speeds, along with heightened risks of accidents and injuries. As a result, awareness and commitment to safety must now be at an all-time high, setting a new standard for the future of high-performance sailing.

### 1.2.5 Sustainable Development Goals (SDGs)

The SuMoth Challenge involves the [United Nations \(UN\) global goals for sustainability](https://www.un.org/sustainabledevelopment/).





## 1.3 Concept application

The *Foiling SuMoth* concept is applied as a three (3) stage competition where; **boat design**, **boat manufacturing & performance** as well as **on-water racing** are evaluated.

The stages are correlated, meaning that the first stage “S1” needs to be completed before engaging on the second stage “S2”. There is no obligation to engage into a subsequent stage. On Stages S1 and S2 a subdivision is made to separate the new and upgraded SuMoth Concepts, defined as “**NEW**” and “**UPG**”

A block diagram version of the challenge process can be found on [APPENDIX A](#)

### 1.3.1 S1 - Design

The teams engaged in the S1 Stage will create a **SuMoth concept** "on paper". Being fully conceptual, the S1 Stage allows for the teams to explore different designs including the geometrical, engineering, performance and material aspects.

The concept will comply with requirements on the budget and produce a report.

### 1.3.2 S2 - Manufacturing & Performance

While the ultimate goal of the SuMoth Challenge is to compare the concepts on a racecourse, this might not suit all schedules or teams' capabilities to travel.

The S2 stage is a “standalone” competition where each team will test and record their performance on the water on a defined weather conditions range.

### 1.3.3 S3 - Racing

The racing stage is the ultimate goal of the SuMoth Challenge. The teams will meet to test their boats against each other.

## 1.4 Number of teams

The number of teams admitted to participate in the Foiling SuMoth Challenge is limited, with priority given to teams having previously competed in the FSMC and complied with the rules.

### 1.4.1 S1 - Design

The total number of teams will be limited to 15, including both new and upgraded projects.

### 1.4.2 S2 - Manufacturing & Performance

10 teams will be admitted to conclude the S2 stage during the FSMC event while 5 additional teams will be allowed to complete the stage on home waters.

### 1.4.3 S3 - Racing

10 teams will be admitted to compete in the S3 stage.



## 2 PARTICIPATING TEAMS

The Foiling SuMoth Challenge is open to all students from any school, university or association and from any grade, with **the ability of designing, building and/or sailing their own concept safely**. The registration and participation does not involve any fees.

The participation of a team at any stage of the Challenge is subject to approval and validation by the Organising committee, once the registration request document is accepted and team leaders interview completed.

All communications between the teams and the SuMoth Challenge Organization will be **exclusively made via the [SuMoth Discord Server](#)**. It is each teams' responsibility to be active on the communication platform to remain informed of all news and relevant information. Access to the platform will be granted to all members once the registration is completed. All official documents can be found on the [SuMoth website](#).

### 2.1 Teams requirements

The teams willing to compete in the Foiling SuMoth Challenge event:

- Shall be fully composed by students, with the exception of the team manager. with no restriction on the career or degree.
- School alumni, graduated the year prior to the competition and who were involved in the process are allowed to integrate the team.
- Shall have a "S3" competition team of up to 10 students. with no restrictions on the number of team members in the design and manufacturing process.

### 2.2 Team roles

Teams must assign four (4) roles by the time of the registration, being: Team Manager, Team Captain, Communications Officer and Logistics Officer. The Team Co-Captain role is optional. Each person can occupy a maximum of two (2) roles. The Team Captain can only be responsible for a single role. The skipper(s) can be decided during the competition and must be students at the time of the competition or alumni from the previous year's graduation. Please refer to "[APPENDIX B – Team structure example](#)" for a graphical representation.

#### 2.2.1 Team Manager

The Team Manager must be formally related to the institution or association (i.e. Teacher, Professor, Assistant, Postdoc, Association president, etc.). The Team Manager will be responsible for the students involved in the project during the design, manufacturing and competition phases, remaining the maximum authority and responsible figure towards the organisation.

#### 2.2.2 Captain

The team Captain must be a student. This person will be in charge of the team, remaining the main contact point with the event organisation.

The Captain will be responsible to provide the Technical Report and Presentations needed to evaluate the SuMoth concepts.



In the case of multiple Foiling SuMoth concept boats in the same team, each Concept must have one dedicated Captain with the possibility of sharing the Communications and Logistics officers as well as the skippers.

### *2.2.3 Team Co-Captain (optional)*

While not mandatory, the Team Co-Captain (if any) will share the responsibility of the team on specific aspects different from the Captain.

### *2.2.4 Logistics Officer*

The Logistics Officer will be in charge of the arrangements of the team prior and during the competitions (accommodation, transportation, etc.). The person in charge will be in direct contact with the organisation management.

### *2.2.5 Communication Officer*

The main tasks of the Communication officer are to promote the teams' advancements and achievements during the design and manufacturing phases as well as during the competition. It will be the main point of contact for all communications deliverables

### *2.2.6 Skippers*

Skippers shall be announced prior to the respective S2 and S3 stages and can be changed at any stage and moment.



### 3 TECHNICAL REQUIREMENTS

#### 3.1 General

To participate in the *Foiling SuMoth Challenge*, boats shall meet all the technical requirements specified in this section.

#### 3.2 IMCA box rule

All foiling SuMoth concepts must meet the [IMCA](#) (International Moth Class Association) “box rule” specifications, as seen on Table 1.

<b>Max. length overall</b>	3355 mm
<b>Max. beam overall</b>	2250 mm
<b>Max. luff length</b>	5185 mm
<b>Max. mast length</b>	6250 mm
<b>Hull weight</b>	Unrestricted
<b>Rigged weight</b>	Unrestricted
<b>Max. sail area</b>	8.25 m <sup>2</sup>
<b>Restrictions</b>	Multihulls/trapezes/movable seats/sailboards
<b>Advertising</b>	Category C (Unrestricted)

Table 1 IMCA box rules

The following IMCA rules also apply and will be checked during the measurements:

- Stem fitting is removable and does not extend more than 500 mm beyond LOA limits.
- Rudder fitting is removable and does not extend more than 500 mm beyond LOA limits.
- Rudder fitting is at least 30 mm away from the transom and outside of structural connection points.
- Hull has at least 2 separate buoyancy sections or independent tanks.

#### 3.3 Manufacturing budget

The Foiling SuMoth Concept must be designed and manufactured complying with the manufacturing budget, where the prices are evaluated in “SM\$” (SuMoth dollars).

This virtual currency is used to standardize the cost of materials for all participant teams. The manufacturing budget is capped at **10,000 SM\$**, including all boat elements and spare parts to comply with the challenge rules.

The calculation of the manufacturing cost must be made according to the “Standardized Cost” tables referred in [SECTION 4](#).

The use of the Upcycled Foils Loan Program (UFLP), allowed non-team-made parts or help from industry will have an impact on the SM\$ budget as well as on the handicap points as described in [SECTION 4](#)

### 3.4 Buoyancy

All boats shall remain unsinkable at all times and under all circumstances with greater buoyancy than its mass plus the skipper (85kg).

### 3.5 Challenge branding reservation

From 2025, all new boats shall reserve a 750mm x 300mm area on both sides of the hull from the bow to the stern. This area is to be used for the challenge sponsors and branding as shown on Figure 1.

Boats that have been manufactured before the FSMC 2025 that did not respect this requirement shall exceptionally reserve the same area from the stern to the bow.

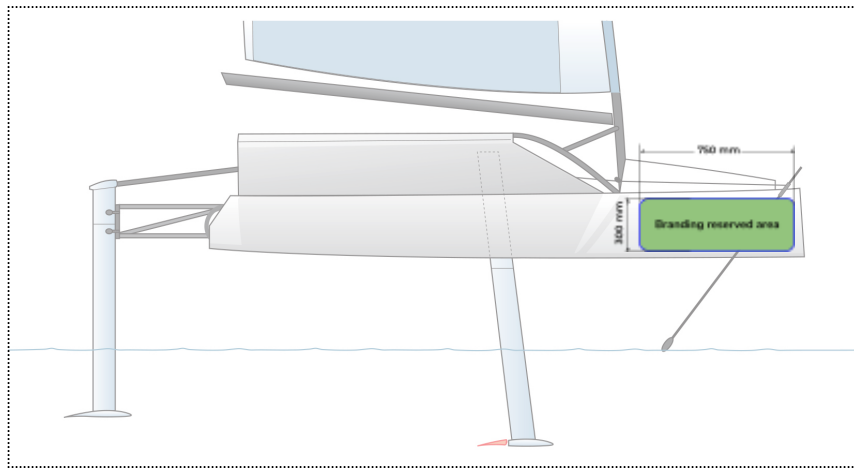


Figure 1 - Branding reservation area on SuMoth Challenge concepts

### 3.6 Manufacturing constraints

The SuMoth Challenge encourages the use of as little carbon fiber and other high CO2 impact materials as possible, in favor of more sustainable alternatives. Along with IMCA boundaries, the following components have a mass cap in kg on the amount and source of carbon fiber contained in them, observed on Table 2.

	Hull Structure	Hull Wings	Main Vert.	Main Hor.	Rudder Vert.	Rudder Hor.	Gantry + Cassette	Rig	Other parts
<b>Carbon Fiber Composite(CFRP)*</b>	2.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	0.50
<b>Carbon Fiber (dry CF)</b>	1.00	0.50	0.50	0.50	0.50	0.50	0.50	1.00	0.25
<b>Recycled CFRP</b>	3.00	1.50	1.50	1.50	1.50	1.50	1.50	3.00	0.75
<b>Recycled CF</b>	1.50	0.75	0.75	0.75	0.75	0.75	0.75	1.50	0.38
<b>Upcycled CFRP</b>	25.00	5.00	3.00	1.00	2.50	1.00	2.00	1.00	1.00

Table 2 Carbon fiber composites limitations in kg.



Please note the difference between CF (dry fiber only) and CFRP (fiber + matrix). The quantities, and volume and mass fractions must be calculated using the rule of mixtures and considering the pre-process volume fractions.

Stacking information (thickness, areal density, material, etc.) as applied into the mould must be taken into account, not the trimmed projected surface.

A supporting document to generate the calculations and obtain the quantities is to be found in the SuMoth [Manufacturing Calculations spreadsheet](#).

Teams should also provide an as-built mass breakdown of:

- Hull
- Wings
- Horizontal foils
- Vertical foils

The mass breakdown shall include fiber, resin, core (plus estimated resin uptake), and any other materials used such as inserts, adhesives, etc.

Where carbon fiber is absolutely required, the SuMoth Challenge encourages teams to manufacture components in-house using recycled and upcycled materials, defined as:

- **Upcycled:** the material is reused in its current state, needing minimal processing or modifications to be used for a different purpose. Some examples are:
  - The use of broken windsurfing masts to construct the wings or internal structure of the hull.
  - Cut-off composite panels from an obsolete structure
- **Recycled:** Any waste that went into a process to become again a raw material, some of the most common examples are:
  - Recycled thermosets and thermoplastics
  - Recycled reinforcements (fibers)

### 3.7 GPS Tracking bracket support

Each boat shall be fitted with a Vakaros Atlas unit for S2 evaluation. Boats shall feature a designated mounting location for this unit.

### 3.8 Electronics and sailor assistance

Data acquisition, measuring and control systems are allowed at all times. In the case of battery powered electronics, the compartments used for this purpose must remain fully waterproof (i.e. IP67) and firmly fixed to the boat.

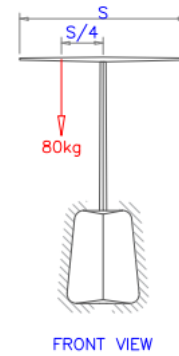
**The organisation reserves the right to test and ensure the safety and hazard of such systems.**

### 3.9 Structural requirements

Teams shall provide evidence of the structural integrity of their boats to minimize the chance of breakages during the competition. The following component-level structural tests must be carried out and documented with photos.

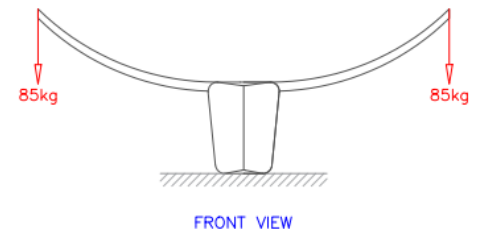
### 3.9.1 Main foil

- Hull secured upside down
- Main vertical connected to hull as per design
- Main horizontal connected to vertical as per design
- Load applied to horizontal at 0.25x span from the root
- Main foil should withstand a total applied load of 80kg



### 3.9.2 Wingbars

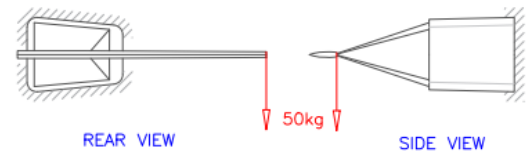
- Wingbars connected to the hull
- Loads applied simultaneously at longitudinal midpoint of the wingbars
- Wingbars should withstand a total applied load of 170kg (85kg per side)



### 3.9.3 Rudder and gantry

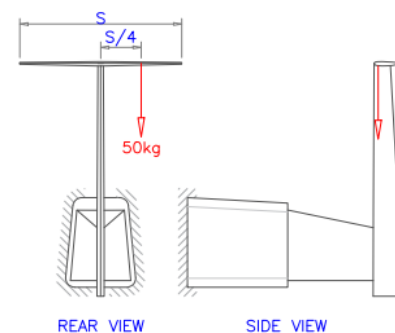
#### Lateral test

- Hull secured on its side
- Gantry connected to hull as per design
- Rudder vertical connected to gantry as per design
- Load applied at tip of rudder vertical
- Gantry shall withstand a total applied load of 50kg



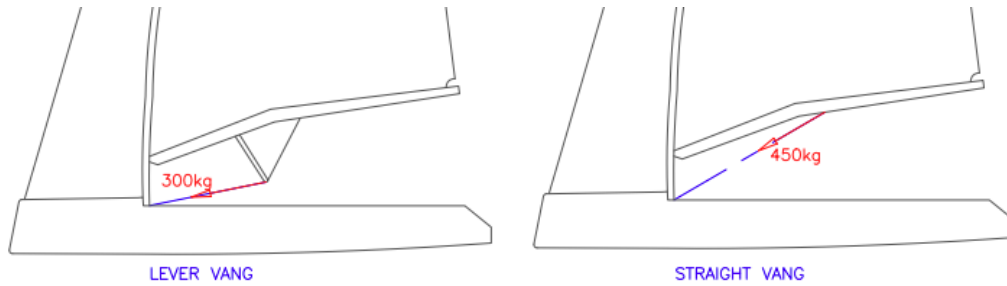
#### Vertical test

- Hull secured upside down
- Rudder vertical connected to gantry as per design
- Rudder horizontal connected to vertical as per design
- Load applied to horizontal at 0.25x span from the root
- Rudder and gantry should withstand a total applied load of 50kg



### 3.9.4 Rig tension

- Rig, sail and hull fully assembled as per design
- Boat should withstand a total vang load of 300kg for a lever vang and 450kg for a straight vang
- Applied load may be measured indirectly using a dynamometer at the end of the vang cascade and multiplying by the total vang purchase



## 4 STANDARDIZED COSTS (SM\$) AND HANDICAP

The standardized cost tables define the price in SuMoth dollars (SM\$) that the materials used for the manufacturing cost for the competition evaluation. In the table, the eco-friendliest materials have a cheaper SM\$ cost, than those considered less sustainable. All bio-materials, such as natural woods (i.e. Balsa Wood, Paulownia), have **0 SM\$** cost.

### 4.1 Manufacturing raw materials and processes

The materials and processes types and related standardized costs can be found on the [2025 FSMC Standardize Costs Table](#). If a material is not present in the document, the team shall contact the organization via the dedicated SuMoth Discord Server to assign a cost and add it to the document.

### 4.2 Blocks, tacks and pulleys

The cost of these elements in SM\$ will be considered equivalent to the standard manufacturer's suggested retail price (MSRP) costs in USD (excluding taxes and shipping). The value of each element needs to be provided in the Technical Report as per manufacturing standard prices.

### 4.3 Recycled elements and materials

#### 4.3.1 *Obsolete artifacts and boats (upcycling)*

The use of upcycled elements from old obsolete or broken artifacts (i.e. Lowrider IMCA, recycled boats or parts, etc.) is allowed and will have a 0 SM\$ cost in the budget calculation. Every element coming from an obsolete artifact must be itemized with the origin description and the intended transformation involved in the SI Report.

The materials used to turn an obsolete part into a SuMoth part must be itemized in the manufacturing budget calculations (e.g., repair on broken mast).

If a “classic” IMCA boat (or other class) hull or part is used, the team shall make sure that this part does not belong to the history of such class and, as such, has historical value.

#### 4.3.2 *Excess, waste and upcycled material*

- **Industrial excess**  
The use of materials coming from industry excess is allowed and encouraged. The budget cost of such material will have a 25% reduction in the cost calculation.
- **Out of shelf life**  
In the case of using out of shelf life materials (i.e. prepreg, epoxy, etc.) these materials will have a reduction of 50% in the cost calculation.
- **Upcycled**  
Using upcycled elements is highly encouraged and has a 100% reduction in the cost calculation.

### 4.4 Handicap System

All teams may use industry manufactured foils (verticals and horizontals) for stages S2 and S3. Whether these come from a donation, purchase, or UFLP ([see SECTION 4.5](#)), they will carry an impact on the SM\$ cost and handicap points at every stage.



#### 4.4.1 Used parts (Rig elements and foils)

Used IMCA boat parts are allowed. Teams must provide the year of production of each part in their SM\$ cost breakdown. The following SM\$ budget and handicap impact applies for the first year of use. **For foils, subsequent participation years will see a doubling in the handicap points reduction.**

		Year of production (handicap points)					SM\$ Cost
		Pre 2015	2015	2016	2017	Post 2017	
<b>Foils</b>	Main Vertical	-20	-22	-24	-26	-50	1500 SM\$
	Main Horizontal	-15	-17	-19	-21	-30	500 SM\$
	Rudder Vertical	-15	-17	-19	-21	-30	1500 SM\$
	Rudder Horizontal	-10	-12	-16	-18	-20	500 SM\$
<b>Rig</b>	Sail	0	-5	-10	-15	-20	0 SM\$
	Mast	0	-5	-10	-15	-20	0 SM\$
	Boom	0	-5	-10	-15	-20	0 SM\$
	Spreader	0	-5	-10	-15	-20	0 SM\$

Table 3 Handicap points on non Upcycled Foil Loan Program elements and SM\$ Cost

## 4.5 Upcycled Foils Loan Program (UFLP): Upcycled industrial Hydrofoils

New teams, registering for the first time to the Foiling SuMoth Challenge, may access the UFLP for the year of the registration. This program will allow the new team, willing to compete in S2 and S3 to focus on the design and manufacturing of the hull structure and its components (foil cassette, gantry, wingbars, wand, etc), ensuring its functionality and reliability.

### 4.5.1 UFLP Handicap system

The use of hydrofoils from the UFLP will have an impact in the Dynamic stages (S2 and S3) depending on the number of elements used (Main Vertical, Main Horizontal, Rudder Vertical, Rudder Horizontal), refer to APPENDIX C. The handicap applies to every sub-stage.

### 4.5.2 SuMoth \$ Budget impact

The use of parts from the UFLP will have a direct impact on the budget (see Table 3)

### 4.5.3 Loan period

The use of parts from the UFLP are for **ONE SuMoth Challenge period**, from reception to the end of the Foiling SuMoth Challenge of the year the UFLP was requested. A team may borrow one or multiple parts for one participation only. The parts shall be returned in equal or better condition than when they were received.

### 4.5.4 UFLP Responsibilities

The UFLP parts belong to the FSMC organization. It is the full responsibility of the team borrowing them to use them in the best possible way. In the case of breakage under normal use of the parts, the team is responsible to repair to the highest possible standard before returning the parts to the organization and making them available to new teams.

### 4.5.5 Shipping & Costs

Teams are responsible for the cost and logistics of obtaining and returning all UFLP components.



## 5 CHALLENGE STAGES

The SuMoth Challenge is divided into 3 stages. Each stage is evaluated based on specific deliverables outlined in this section. All reports shall be made using the reporting guidelines included and providing scientific writing standards.

For deadlines and formatting requirements, refer to [Section 6](#).

### 5.1 “S1” STAGE - Design

The design stage of the SuMoth Challenge is the cornerstone of all concepts. At this stage, each team will develop their unique design following the technical requirements of the competition (Section 3). The evaluation will be done on the following deliverables.

#### 5.1.1 S1 Report and Presentation

The S1 Report is the technical report on which the jury will evaluate each team’s concept. The goal of the report is to present the team’s design process from global design and performance objectives to detailed part design and optimization. The report shall also present the intended build methods and any testing done to determine them, but not the actual build process which is part of S2. The report shall contain the following sections.

#### Engineering and design

This section will provide the team’s methodology to achieve their Foiling SuMoth concept. Global design and performance objectives should come first, followed by detailed part design and optimization. Drawing views should be carefully selected to illustrate explanations. FEM and CFD analysis is encouraged as long as it is justified.

- From the 2025 FSMC, each section of the report will be evaluated independently and subdivided into sections defined in the provided template.

#### Manufacturing and cost analysis

Within the limits of the “Manufacturing Constraints” (Section 3.5), each team will provide a detailed analysis of their path to manufacture their concept using both new and recycled materials, as well as upcycled obsolete elements. Intended build methods must be presented. The cost analysis, following the “Standardized Cost” (Section 4) must be provided in a chart using the appropriate template. **Materials and quantities shall be listed as per design, not build.**

#### Sustainability analysis

In this section, the team will provide a Life Cycle Assessment (LCA) of the materials and elements used in the design of their boat, made with **MarineShift360 LCA Tool**. From the molds to the final parts, this section will justify the choices made to achieve the concept with a sustainability approach.

The associated MS360 report shall be included alongside the S1 report.

**Team members in charge of sustainability are required to attend all webinars proposed by MS360. Specific questions related to the LCA shall be posted on the #ms360-q\_and\_a channel on the [SuMoth Discord Server](#).**





### 5.1.2 S1 Design VLOG

Along with the report, a 3 to 5 minutes video will be delivered containing the key elements of the concept, from the innovations to the sustainability aspects .

### 5.1.3 Popular vote

The S1 stage assigns **50 points** to the team obtaining the most votes from the public. To vulgarize their project each team will provide a 1 page (A4) summary of the project and a 60 seconds (+/- 15 seconds) video teaser. The metrics are obtained on the SuMoth Challenge social media channels.

## 5.2 “S2” STAGE - Manufacturing and performance testing

This stage is where the magic happens! Based on the design work done in S1, the teams will proceed to manufacture their SuMoth concepts with innovative sustainable materials and methods. The performance trials in this stage can be achieved both at home during the year and during the SuMoth Challenge event for attending teams.

### 5.2.1 S2 report

During the “Manufacturing”, all processes and their respective variables (time, materials, results) will be registered to include in the “**S2 Manufacturing Report**”. Alongside these elements, a Marine Shift 360 LCA analysis will be provided.

A manufacturing report shall be delivered, showing how the boat was manufactured, the methods used and the deviation from the original Design on the previous stage.

### 5.2.2 Mechanical testing report

Tests specified in Section 3.7 must be carried out on each component to be used in S2 and S3. The Mechanical Testing Report shall document this process with details on the following elements.

- Test setup and fixturing
- Load calibration and application method
- Observed deflections

### 5.2.3 Performance trials

Following the testing schedule, a team will request for the “S2” evaluation. This process will be accepted upon receipt of at least a video proof of the boat sailing steady and under control.

#### Boat measurement

The SuMoth concepts, fully finished, will be measured by a local IMCA measurer at the team base for dimensional compliance with the class and safety.

#### Performance testing

Once approved by the measurers, the teams will have a period to record their performance with a GPS tracker (provided by the organization). Each team will have unlimited test runs up until the end of the period. The best runs will be then collected and compared against all other teams.

#### Course specifications

A “run” consists of a 2 minute path that:



- 1) Start from a steady sailing mode below 6 knots of boat speed in any chosen direction.
- 2) Foils into a maneuver (tack or gybe)
- 3) Finishes the performance with at least the 20 last seconds on the foils.

Please refer to [APPENDIX E](#).

#### Course evaluation

- The average speed will be calculated over a 2 minute period with the manoeuvre set at the 1 minute mark.

#### Performance showcasing

- A video of at least 3 performance runs (5 to 7 minutes), showcasing the SuMoth concept shall be delivered.

#### *5.2.4 Team poster*

A graphic representation of the key elements of the team in a conference A0 size poster fashion including:

- Team information
- Key achievements
- Technical showcase, research and innovation
- Conclusion

The poster template will be available in the Repository.

### **5.3 “S3” STAGE - Racing**

The course racing will be a fleet race governed by IMCA, RRS, event, and club rules.

#### *5.3.1 Fleet racing*

The format of the fleet racing regatta will be at the discretion of the race committee for the event.

#### *5.3.2 S3 Social Media Diary*

The Social Media Diary during S3 shall include small clips, stories, clips and interviews with the team, other teams' colleagues or visitors and spectators at the event.

## 6 CHALLENGE DELIVERABLES SUMMARY

The [2025 FSMC DELIVERABLES & GUIDELINES](#) document in its latest version and the overall [2025 FSMC TIMELINE](#) remain the official reference for the challenge.

Both documents can be found at <https://sumoth.org/>

### 6.1 Technical stages

Deliverable	Due Date	Format	Submission method
S1 Report	April 7, 2025	Template 40 pages max.	SuMoth Repository
MS360 Report	May 21, 2025	Generated using MS360 Template	SuMoth Repository
S2 Report	May 21, 2025	Template	SuMoth Repository
Mechanical Testing Report	June 2, 2025	Template	SuMoth Repository

### 6.2 Communications

Deliverable	Due Date	Format	Submission method
Social Media Posts	One per month <b>Minimum</b>	REFER TO DELIVERABLES DOC	Teams Social Media channels
Blog post A	January 27, 2025	Template	SuMoth Repository
S1 Vlog	March 3, 2025	REFER TO DELIVERABLES DOC	SuMoth Repository
Blog post B	April 20, 2025	Template	SuMoth Repository
Poster (A0)	May 28, 2025	REFER TO DELIVERABLES DOC	SuMoth Repository
Public vote video + text	May 18, 2025	REFER TO DELIVERABLES DOC	SuMoth Repository

## 7 QUALIFICATIONS, MEASUREMENTS AND SAFETY

Prior stages **S2** and **S3**, each boat shall be measured upon the box rules on Table 1 to comply with the IMCA. Once measured and complying with IMCA rules, the Foiling SuMoth boats will be allowed to race in the IMCA regattas (if all electronics are disengaged or removed).

A structural and buoyancy examination will be made on each Foiling SuMoth concept boat to ensure safety for all participants.

## 8 COMPETITION & SCORING

The **Static phase**, composed by the “S1” Stage, is where the judges will evaluate the “on paper” technical attributes of each development. The **Dynamic phases**, composed of “S2” and “S3” stages, are where the sailors will compete in standalone and fleet races.

### 8.1 Scoring system

A total of 10000 points will be possible to obtain over the three stages as presented below, on Table 3.

A detailed table on positions and scoring is presented on [APPENDIX C](#)

<b>S1 Stage (5000 points)</b>	<b>S2 Stage (3000 points)</b>	<b>S3 Stage (2000 points)</b>
<ul style="list-style-type: none"> <li>- Design report (3500p)</li> <li>- Design presentation (500p)</li> <li>- S1 VLOG (500 p)</li> <li>- Popular vote (500 p)</li> <li>- Scientific publication (bonus 500p)</li> </ul>	<ul style="list-style-type: none"> <li>- Performance (1000p)</li> <li>- Mech. Test report (500p)</li> <li>- Manuf. report (1000p)</li> <li>- Poster (500p)</li> <li>- Equality (bonus 500p)</li> </ul>	<ul style="list-style-type: none"> <li>- Fleet racing (1000p)</li> <li>- Fairplay (500p)</li> <li>- Cohab (500p)</li> <li>- Equality (bonus 500p)</li> </ul>

Table 4 Competition scoring

### 8.2 Fairplay points

The SuMoth Challenge is, first of all, a community of individuals pushing for a common objective.

The competition format is used to push the limits and challenge each other to raise the bar on the sustainability and engineering aspects without forgetting to have as much fun as possible while respecting and helping each other. By default, all teams will be awarded the maximum points.

### 8.3 Points deduction (S2 & S3)

The full respect of the rules of conduct is mandatory. The non compliant of such guidelines (i.e. respect of rigging and storage zones, use of PET bottles at the Event premises, etc) will result in a deduction of points.

### 8.4 Handicap & SM\$ budget impact (Stages S2 & S3)

To promote the self-built of all SuMoth concepts parts, a Handicap system described on [APPENDIX D](#) is applied for those teams using external help.



## 8.5 Equality points (bonus points)

To encourage the participation of female sailors as well as those students coming from countries where sailing is not a common sport, “Equality points” will be awarded for both Dynamic phases S2 & S3.

The points given will be:

1. **Female** = +250 points
2. **Student from non OG participation nation** = +250
3. **Points (1) and (2) combined** = +500 points

## 8.6 Scientific Publications (bonus points)

To valorize the work achieved by the teams during the Challenge stages, additional points will be awarded to the teams submitting and publishing in the Journal of Sailing Technology (<https://onepetro.org/JST>)

1. **Submitted** = 150 points per article
2. **Accepted for conference** = 150 points per article
3. **Published** = 200 points per article

The submissions must be of a high standard scientific publication. For the submitted and not accepted/reviewed papers will be evaluated by the Jury for points consideration. If a paper is accepted after the Stage 3 (S3) of the SuMoth Challenge, the points will be added to the following year FSMC.

## 8.7 Venue

The venue for the SuMoth Challenge “S3” stage will be held at:

Fraglia Vela Malcesine (FVM)  
Via Gardesana 205  
Frazione Navene – 37018  
Malcesine, Italy

# 9 BOATS TRANSPORTATION TO EVENT

## 9.1 Import Logistics

Each shall manage their own logistics duties and bureaucracy.

The FSMC organisation can provide support for contact on venue reception but is released from any responsibility on customs clearance

## 9.2 Logistics Support

Pindar by Manuport is the official logistic provider for the Foiling SuMoth Challenge. All teams will receive the most competitive quote which can include options for greener shipping solutions and carbon offsetting. Please contact the operations team at [diogo@pindar.co](mailto:diogo@pindar.co).

## 10 EVENT

### 10.1 Schedule

The 2025 event will be held from June 16 to June 23 2025.

### 10.2 Event organization

The **6<sup>th</sup> Foiling SuMoth Challenge** will be held during **at *Fraglia Vela Malcesine***

### 10.3 Organizer

<b>SuMoth Association</b> Av. de Severy, 13 1004, Lausanne, Switzerland	<b>WeAreFoiling</b> C.so di Porta Romana 63 20122 Milano, Italy
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### **Contacts**

Registration: [registration@sumoth.org](mailto:registration@sumoth.org)

Bruno Giuntoli, Foiling SuMoth Founder & Class President - [bruno@sumoth.org](mailto:bruno@sumoth.org)

## 11 INSURANCE

Each participating boat shall be insured with valid third-party liability insurance with a minimum cover of €1.500.000 per incident or the equivalent in other currencies.

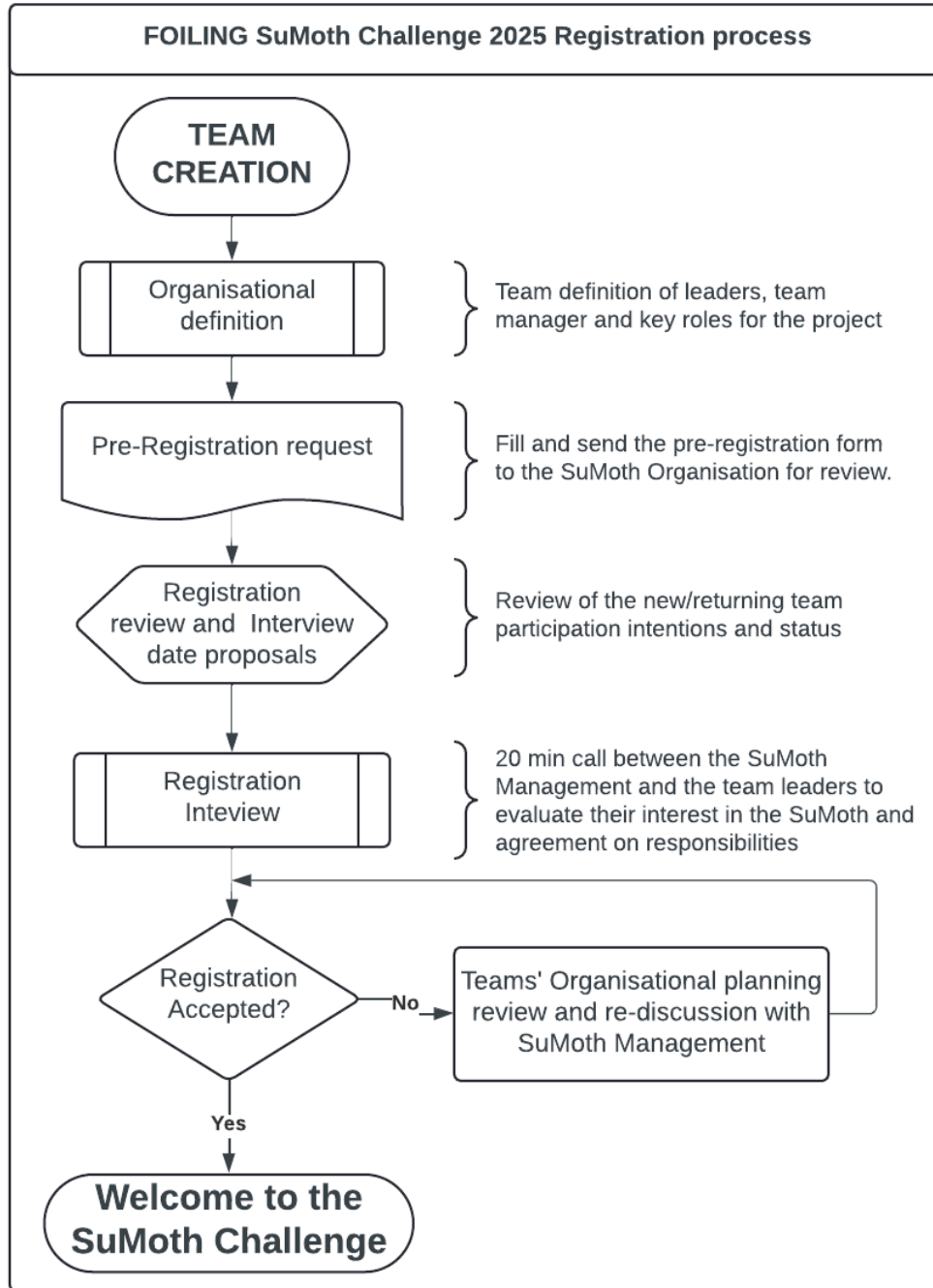
## 12 GRANT ALLOCATIONS

When available, Teams completing ALL requirements in time and place, can request the grant allocations. Details will be shared on the Discord server.

## 13 AWARDS AND PRIZES

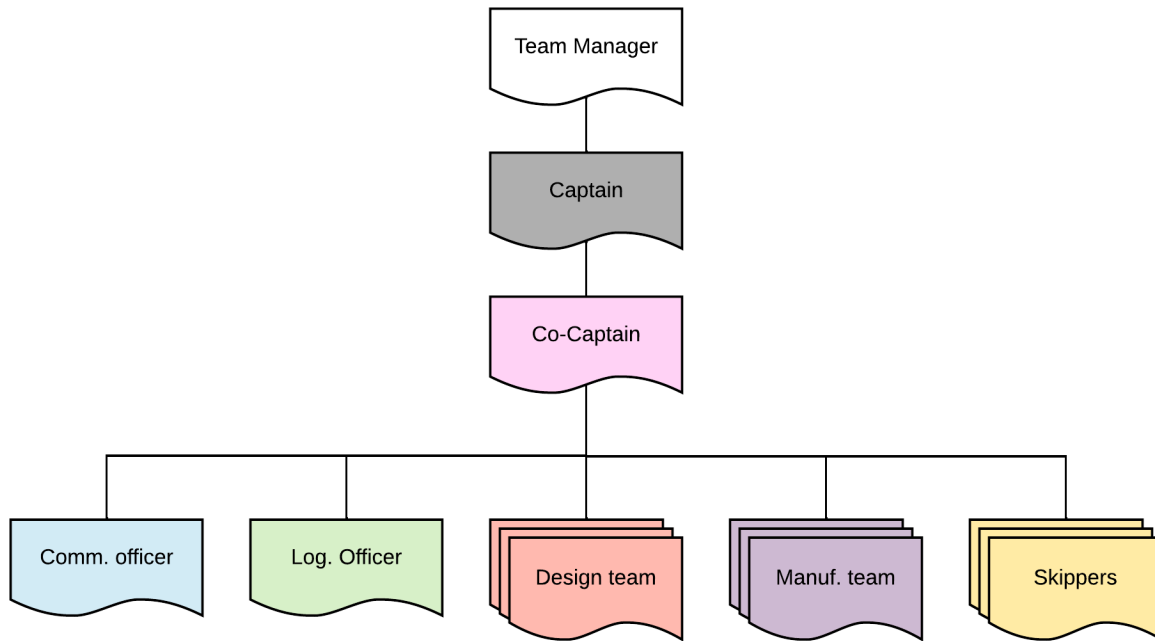
When available, Teams completing ALL requirements in time and place, can request the Prizes and Awards. Details will be shared on the Discord server.

# 14 APPENDIX A - CHALLENGE PROCESS BLOCK DIAGRAM





## 15 APPENDIX B – TEAM STRUCTURE EXAMPLE





## 16 APPENDIX C – DETAILED SCORING SYSTEM

The scoring system presented shows an estimate of the maximum possible points for every sub element on every Stage. The Handicap points are applied per Stage when applicable.

STAGE S1	Max Points	Points per Section
<b>Design S1 report</b>	<b>3500</b>	
<i>Abstract</i>		150
<i>Introduction</i>		100
<i>Section #1 - Eng. &amp; Design</i>		1000
<i>Section #2 - Build Methods</i>		1000
<i>Section #3 - Sustainability</i>		750
<i>MS360 Report</i>		500
<b>Design presentation</b>	<b>500</b>	
<i>Delivery (on time)</i>		100
<i>Format respect</i>		100
<i>Content</i>		200
<i>Time respect</i>		100
<b>REGULAR TEAM PROGRESS</b>	<b>100</b>	
<i>Delivery (on time)</i>		100
<b>BLOGPOST A</b>	<b>100</b>	
<i>Delivery (on time)</i>		50
<i>Format respect</i>		50
<b>BLOGPOST B</b>	<b>100</b>	
<i>Delivery (on time)</i>		50
<i>Format respect</i>		50
<b>S1 VLOG</b>	<b>400</b>	
<i>Delivery (on time)</i>		150
<i>Format respect</i>		150
<i>Content</i>		100
<b>Popular vote</b>	<b>300</b>	
<i>Delivery (on time)</i>		100
<i>Format respect</i>		100
<i>Content</i>		100
<b>Scientific pub. (bonus)</b>	<b>500</b>	
<i>Submitted</i>		150
<i>Accepted</i>		350
<b>TOTAL MAX. POINTS</b>	<b>5500</b>	



STAGE S2	Max Points	Points per Section
<b>Performance</b>	<b>1000</b>	
1st		1000
2nd		900
3rd		800
4th		700
5th		600
6th		500
7th		400
8th		300
9th		200
10th		100
11th-15th		0
<b>Mech. Test report</b>	<b>500</b>	
Delivery (on time)		100
Format respect		100
Methodology compliance		300
<b>Manuf. Report</b>	<b>1000</b>	
Delivery (on time)		100
Format respect		200
Content		700
<b>Poster</b>	<b>500</b>	
Delivery (on time)		100
Format respect		200
Content		200
<b>Equality</b>	<b>500</b>	
Female Sailor		250
Non-OG participant		250
<b>TOTAL MAX. POINTS</b>	<b>3500</b>	



STAGE S3	Max Points	Points per Section
<b>Fleet Racing</b>	<b>1000</b>	
1st		1000
2nd		900
3rd		800
4th		700
5th		600
6th		500
7th		400
8th		300
9th		200
10th		100
11th-15th		0
<b>Fairplay &amp; Cohabitation</b>	<b>1000</b>	
<i>On-Off water Peers respect</i>		500
<i>Rules conduct respect</i>		500
<b>Equality</b>	<b>500</b>	
<i>Female Sailor</i>		250
<i>Non-OG participant</i>		250
<b>TOTAL MAX. POINTS</b>	<b>2500</b>	

## 17 APPENDIX D – HANDICAP POINTS

		Team-made					Upcycled Foil Loan Program
		In-house Built			Industry supported		
		Self-made 100%	Up(re)cycled	Industrial moulds	Self made moulds	Industrial moulds	
<b>Hull</b>	Main structure (internal)	0	5	-5	0	-10	NA
	Hull (shell/external)	0	10	-10	0	-20	NA
	Gantry	0	5	-5	0	-10	NA
	Bowsprit	0	5	-5	0	-10	NA
	Mast base & Bang	0	0	-5	0	-10	NA
<b>Wings</b>	Structure	0	5	-5	0	-10	NA
	Covers	0	5	NA	NA	NA	NA
<b>Foils</b>	Main Vertical	0	10	-10	0	-20	-20
	Main Horizontal	0	0	-5	0	-15	-15
	Rudder Vertical	0	5	-5	0	-15	-15
	Rudder Horizontal	0	0	-5	0	-10	-10
<b>Rig</b>	Sail	0	5	NA	NA	NA	NA
	Mast	0	5	-5	0	-20	NA
	Boom	0	5	-5	0	-20	NA
	Spreader	0	5	-5	0	-20	NA

Table 5 - Handicap deduction points for parts and appendages

## 18 APPENDIX E – STAGE 2 COURSE

