



OLYMPUS ROVER TRIALS

2025-26

BASIC
STREAM

STATEMENT OF WORK

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UKSEDS OLYMPUS ROVER TRIALS 25-26

Statement of Work ORT-SOW-001



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Version	Changes	Date
ORT-SOW-001	Initial Release	19/10/2025





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1. ACRONYMS & REFERENCE DOCUMENTS

1.1. Acronyms

Acronym	Description
ECSS	European Cooperation for Space Standardisation
SOW	Statement of Work
ORT	Olympus Rover Trials
UKSEDS	UK Students for the Exploration and Development of Space
PDR	Preliminary Design Review
CDR	Critical Design Review
TRR	Test Readiness Review

1.2. Reference Documents

1.2.1. Competition Documents

There are two other documents related to the competition to make a total of **three regulatory documents**. The three documents are as follows:

ID	Document	Description
ORT-RB	Rulebook	Outlines the overall competition rules, funding, team structures and so on - the competition logistics.
ORT-SOW	Statement of Work	Outlines the main deliverables teams shall be expected to deliver - the competition project requirements.
ORT-RS	Requirements Specification	Outlines the technical requirements the rover must be designed to meet

1.2.2. Useful Reference Documents

No.	Document	Description
1	ECSS-M-ST-10C Rev. 1	Space project management - Project planning and implementation
2	ECSS-S-ST-00-01C	Glossary of Terms - A list of commonly used terms in ECSS documents





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2. INTRODUCTION

The Olympus Rover Trials (ORT) challenges student teams to design, construct and operate a rover for an analogue space mission. Students create a rover concept, trade off performance parameters and pass through a rigorous review process with panels of engineers from the space sector. The competition aims to:

1. Challenge students to perform a complex, systems engineering task of the development of a vehicle to a set of real space mission requirements;
2. Enable students to apply taught technical skills and learn new ones relevant to a job in the space industry, through a practical project;
3. Provide students with an opportunity to develop and practise other important and transferable skills, such as teamwork, leadership and project management;
4. Foster interest in the activities of the space sector, especially in space engineering and robotics.

2.1. Scope

This document reports expected activities and deliverables within the scope of the Olympus Rover Trials for 2025-2026. This document captures the mission, which teams are expected to focus on throughout the year, with context provided behind the mission.

2.2. Organisations Involved

2.2.1. UK Students for the Exploration and Development of Space (UKSEDS)

UKSEDS is the UK's national student and early professional space charity, founded in 1988. As a registered charity with 4,600+ current members, 40+ university branches, and 20,000+ followers across social media platforms, UKSEDS provides a nationwide platform for skills development, networking, and career advancement in the space sector. As a dedicated team of 100+ student and early-career volunteers, UKSEDS delivers national and regional events and projects, including conferences such as the National Student Space Conference (NSSC), skills workshops, outreach programs, five annual national competitions spanning rocketry, rovers, satellites and ISAM, and more. Through these initiatives, UKSEDS works to inspire, upskill and enable the next generation of the UK space workforce.

Our partner organisation, www.SpaceCareers.uk showcases students and recent graduates with opportunities within the space sector, and has been hailed as "a crucial service to thousands of people across the country" by the former Prime Minister, Theresa May.





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2.2.2. Airbus

Airbus pioneers sustainable aerospace for a safe and united world. The Company constantly innovates to provide efficient and technologically-advanced solutions in aerospace, defence, and connected services. Airbus is the global leader for modern and fuel-efficient airliners and associated services. Airbus is a European leader in defence and security and one of the world's leading space businesses. In helicopters, Airbus provides the most efficient civil and military rotorcraft solutions and services worldwide. Airbus Defence and Space is the UK's largest space company with turnover in excess of £1 billion and is the third largest aerospace and defence employer in the UK with more than 3,500 highly skilled employees. Airbus Defence and Space makes up over 70 per cent of the UK's space industry, providing a vital national industrial capability; and leverages its capability as a system prime to develop SME supply chains, maintain links with UK and global academic institutions, and bring forward the next generation of talent for a future STEM-based workforce both in the space sector and beyond.

2.2.3. RAL Space

RAL Space is the UK's national laboratory advancing the understanding of space and our environment for the benefit of all. They carry out world-class science research and technology development with significant involvement in more than 210 instruments on missions to date. RAL Space works with UK and overseas agencies, universities and industrial companies on space and ground-based space projects. Our unique position between industry and academia enables us to strengthen the UK space community. We do this through scientific research, technology development, providing cutting edge facilities, and strategic advice to external partners.

RAL Space has over 60 years of experience and expertise in space programmes. Our experts work throughout the lifecycle of space missions: leading concept studies for future missions; developing bespoke innovative scientific instrumentation; providing space test and ground-based facilities; operating ground-stations; processing and analysing data.

RAL Space employs more than 335 highly skilled staff in the heart of the Harwell Space Cluster and at the Chilbolton Observatory. They provide a graduate training programme, apprenticeships and placement student opportunities, as well as opportunities for engineers, scientists and technicians throughout their careers.





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3. STATEMENT OF WORK OVERVIEW

This section provides a description of all the major components of the competition, and includes references to additional material where necessary.

3.1. Mission Background and Scenario

Characterising the geology of Mars remains a key area of scientific interest. With the commercialisation of Low Earth Orbit (LEO), the great space agencies of the world have shifted their sights towards resuming the efforts of human exploration that were paused some 50 years ago. NASA and ESA are leading these efforts with the Artemis missions, which will return humans to the surface of the Moon and pave the way for future crewed missions to Mars.

These missions will require an in-depth understanding of the Martian environment if future settlements are to be established. Transporting all the materials required for a settlement from Earth remains economically infeasible due to the sheer volume and mass of such a payload, and so one possible avenue proposed is In-Situ Resource Utilisation (ISRU). This would involve using local resources to replace materials brought from Earth; thus, a detailed understanding of local geology is vital.

Your team is being asked to take part in a study for a scientific mission called TERRA (Terrain Exploration and Remote Reconnaissance for Analysis), which is being planned for operations on the Martian surface. The rover is expected to operate within a crater of key geological interest, where it shall:

"Explore and survey the surrounding terrain, taking images of features of interest to be sent back to Earth."

The rover must be capable of performing these operations remotely, as these operations must be performed before the arrival of crewed missions on the surface.





3.2. Mission Objectives

The challenge of the competition is to design, build and operate Scientific Research Rover which is capable of exploring and imaging a variety of locations defined as points of interest on an analogue Martian surface.

The primary mission objective for the competition is to take a series of high quality images of the geology at several points of interest, and return these images. The sites will be arranged with varying difficulty depending on the surface conditions needed to be navigated to reach the site. The rover will then 'broadcast' the stills it takes to the competition organisers, where they will be scored based on the quality of the photograph.

Further details on how these tasks are marked will be contained in [Section 3.4.8 Scoring](#). The competition itself consists of two components; an attempt to complete the objectives, and a vibration test.

3.3. Team's Requirements

Each team may have a **maximum of 10 members and minimum of 2**. All **members of the team must have a [UKSEDS membership](#)**. Changes to teams should be communicated to the UKSEDS through the **mandatory** monthly report documents (Discussed in [Section 3.4.2](#)) and optionally to the UKSEDS point of contact. Please note that the last time to make changes/updates regarding your team and team members is **30 days¹ before the competition**.

Teams must do a significant majority of the work submitted throughout the competition. Teams found reusing work from previous year entries or have members outside the registered team contribute to their designs will be considered plagiarising and will be penalised at the UKSEDS organisers discretion.

¹ Subject to change - Teams invited to competition day will need to register details of each individual. After registration, only members who have sent their details will be allowed to attend Competition Day.





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3.4. Description of Work

3.4.1. Timeline

The project shall follow the **ESA Project Lifecycle structure** as shown in Figure 1. It should be noted that phase A relates to analysing the feasibility of a mission, which has been omitted from this competition's requirements, and should be treated to be performed by the UKSEDS organisation team before competition launch. Templates for each will be made available on the competition website for guidance.

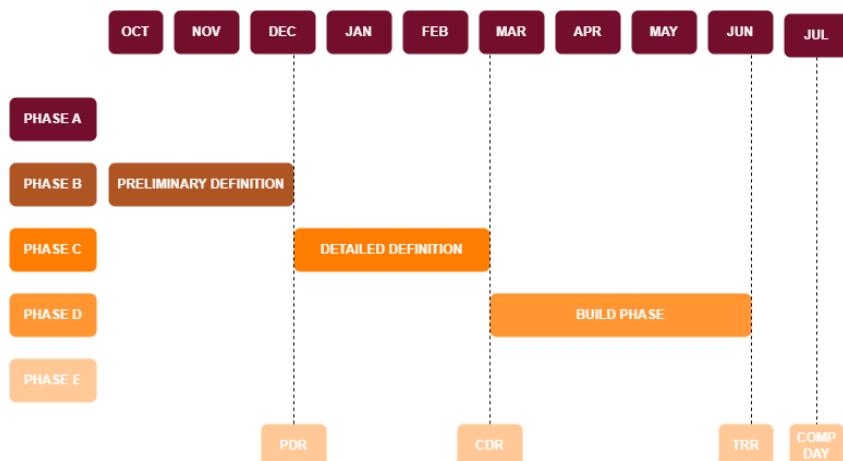


Figure SOW-1 – ORT 2025/26 Timeline

Each Phase is completed through the submission of a document, detailing the design of your system. Further details of the deliverables can be found in the following sections with a summary shown in the table below. Templates for each deliverable will be made available on the competition website for guidance.

Table SOW-1: Preliminary Competition Schedule

Deliverable	Due Date ²
Monthly Report	First Monday of every month
PDR Submission	12th December 2025
PDR Feedback	12th January 2026
CDR Submission	9th March 2026
CDR Feedback	31st March 2026
Public Engagement Submission	30th June 2026
Technical Readiness Review	23rd-30th June 2026
Competition Day	In the month of July 2026 ³ .

² Dates are subject to change and will be communicated accordingly to participants.

³ Date will be confirmed and communicated to teams at a later date.





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3.4.2. Monthly Reports

Teams will need to fill out a single page report and email the UKSEDS Point of Contact. Reports are to give updates on progress and highlight issues or concerns within the team (technical, management, etc) and are a mandatory submission. The report is due on **the first Monday of every month**. If a monthly report is not received, it will be assumed the team has dropped out of the competition. The template can be found [here](#), or on the website.

In the reports, teams will describe: work achieved in the previous month, work to be done in next month, and challenges/issues/concerns that the team would like to raise with UKSEDS organisers. The main purpose of this report is to enforce communication between teams and UKSEDS organisers. The template provided gives more detail, and teams are encouraged to email the UKSEDS organisers with any questions they may have.

3.4.3. Public Engagement Submission

Throughout the year, your team may take part in activities to showcase the work that has been done. Further, teams may also take part in education activities, such as workshops, lectures or school visits, to talk about Space, Engineering or STEM. Aligning with the European Space Agency, UKSEDS also believes [Space is for All](#) and actively encourages teams to spend some time engaging with the community around. The team determined to have the best public engagement will win **250 points** and their **own trophy presented** at competition day. More information can be found in [Appendix SOW-3: Public Engagement Award](#).

DUE DATE: 30th of June, 2026





3.4.4. Phase B – Feasibility & Preliminary Definition

The main deliverable at the end of Feasibility & Preliminary Definition Stage is the **Preliminary Design Review (PDR)**. This is normally held at the end of Phase B of the project process defined in the space project management standard (ECSS-M-ST-10C Rev. 1). The following excerpt is taken directly from this document, and describes what is expected in a PDR.

The deliverable expected at this stage is the **Preliminary Design Review (PDR)**. The primary objectives of the PDR are:

- Verification of the preliminary design of the selected concept and technical solutions against project and system requirements.
- Release of management, engineering and product assurance plans
- Release of product tree, work breakdown structure and specification tree
- Release of the verification plan (including model philosophy)

It is therefore expected that you present methodology resembling this format. The primary deliverables for the project at this stage shall be:

- Project Management
 - Assigned Roles
 - Preliminary Work Breakdown Structure
 - Preliminary Timeline
 - Preliminary Budget
 - Project Risks and Mitigation
- Preliminary Concept
 - **Derivation of more requirements from the initial ones provided**
 - Preliminary system architecture
 - Functional definition of the subsystems
 - Evidence of trade-offs and explanation of decisions made

Note, a mark will not be provided for the PDR, as the primary function is to provide initial feedback on teams design and document communication ability.

DUE DATE: 12th December 2025





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3.4.5. Phase C - Detailed Definition

The deliverable at the end of the Detailed Definition Stage is the Critical Design Review (CDR). **Team performance in the CDR shall directly contribute to a team passing through to the TRR phase.** It is normally carried out at the end of Phase C (detailed definition) of a project, and according to ECSS-M-ST-10C Rev. 1 should address the following objectives:

The primary objectives of the CDR are:

- Assess the qualification and validation status of the critical processes and their readiness for deployment in phase D
- Confirm compatibility with external interfaces
- Release the final rover design
- Release assembly, integration and test planning
- Release flight hardware/software manufacturing, assembly and testing

The expected deliverables for the CDR are:

- Project Management
 - Assigned Roles
 - Complete Schedule
 - Complete Budget
 - Project Risks and Mitigation
 - Initial Test Procedure
- Critical Design
 - Complete description of System design
 - Complete description of Electronic design
 - Complete description of Mechanical design
 - Complete description of Software design
- Requirements Verification
 - Indicate new requirements and/or pivots from the PDR.
 - Indicate how **all** requirements have been met by the design. It is expected that teams physically verify requirements during the CDR (i.e. have made physical prototypes to test), and demonstrate the rover complies with the mounting interface requirements.

The Critical Design Review should be to a level of detail where the proposed rover design is ready to build in its entirety.

DUE DATE: 9th March 2026





3.4.6. Phase D – Manufacturing & Qualification

Upon completion of the CDR teams shall be able to begin the final build of their rovers. Once completed, teams shall be required to demonstrate the key features of their rover to demonstrate that they are able to safely perform the tasks required of them on competition day. **The Manufacturing process is often underestimated in the amount of time it can take and therefore should be planned accordingly by the team to maximise their efficiency, given the deadline.** The deliverable at the end of this stage is the Test Readiness Review (TRR). In the TRR teams shall be invited to a live video call during which they will be required to confirm the following:

- Demonstration of functioning kill switch.
- Demonstration of rover under user remote control, moving on a gravel or similarly granular surface.
- Visual demonstration of batteries and wires being protected and not exposed.
- Demonstration of the image collection system
- Demonstration that commands can be sent and received successfully to the rover from at least 10 m
- Demonstrate the rover's ability to connect to the vibration table

The TRR shall not be graded but be based on a “pass” or “fail” system. In order to be guaranteed to be deployed in the Mars Yard, the rover must “pass” the TRR. If the rover upon review is considered to pose a threat to safety, or shows significant technical deficiencies, it may not be permitted to participate on the competition day.

In addition to the demonstrations of their working rover, the teams will be required to deliver a 10-15 minute presentation during the call covering the method and process for deciding on the final rover design, what could be improved, and what the next steps will be. This shall be a chance to gain some feedback from people in industry, and so teams are encouraged to fully engage with this task. Furthermore, we advise teams to aim for a slide a minute to stay concise and engaging to the audience.





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The list below provides the key points to focus on when presenting:

- Quality of presentation deck
- Content of the presentation (two categories to score)
 - Evolution of the project
 - The main challenges faced
- Performance of the presenter/s

Teams shall also be required to make a mandatory submission for the Public Engagement Prize at the same time as the TRR. More details can be found in [Appendix SOW-3: Public Engagement Award](#). If teams have not made any efforts towards public engagement, they shall not be penalised but a submission stating this is still required.

DUE DATE: 23rd-30th June 2026

3.4.7. Phase E – Utilisation (Competition Day)

The competition day shall consist of the rover test run followed by a vibration test. Each team will have one attempt to complete the objective. The attempt may involve more than one traversal between geological points of interest and the starting area. Subsequently, the rover will be tested on the vibration testbed. An area will be provided for teams to prepare their rovers, carry out any repairs, and otherwise spend time. The following sections include some information on key aspects of the testing process.

The competition day shall consist of the rover test run followed by a vibration test. More information on the vibration test can be found in [Appendix SOW-1](#) and [Appendix SOW-2](#).

Each team will have one attempt to complete the objective. The attempt may involve more than one traversal between geological points of interest and the starting area. Subsequently, the rover will be tested on the vibration testbed. An area will be provided for teams to prepare their rovers, carry out any repairs, and otherwise spend time. The following sections include some information on key aspects of the testing process.

Competition Trials Area

The test runs shall be carried out in RAL Space's Yard. This is a predominantly gravel-based terrain with larger rocks scattered. It is also predominantly flat though the nature of the surface is uneven and this shall have to be considered in the design of the rover. An example arrangement of the RAL Space Yard is shown in Figure SOW-1. The teams shall be set up to the side of the yard shown in Figure SOW-2.



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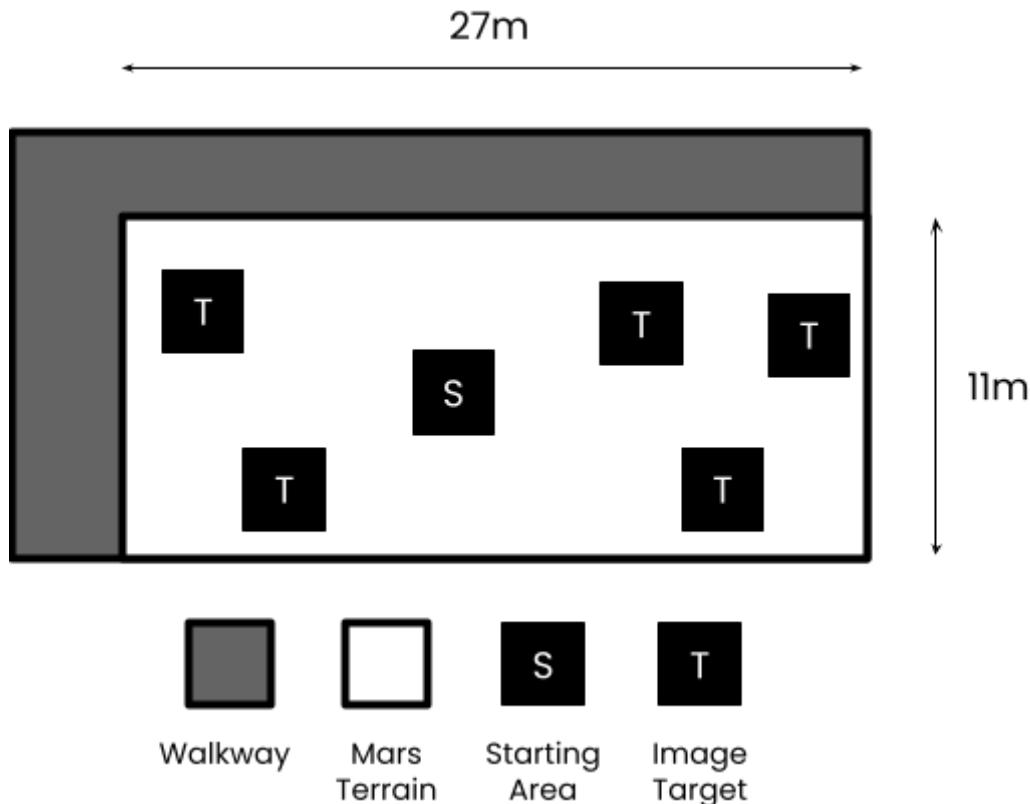


Figure SOW-1: RAL Space Yard – Example Architectural Schematic (the actual location of the targets and the starting area will only be released on the competition day)



Figure SOW-2: RAL Space Yard surface conditions



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Test Format

There is a 30-minute time limit for each test run. Each team will make one or more traverses from the starting area to a geological point of interest, where they will collect images to be submitted. A single rover team will be on the yard at any one time. Teams will be able to control their rover from a control room. Teams **will not** have a line-of-sight view from the control room, the target areas may be up to 30 metres away from the control room. It is therefore advised to have an adequate camera(s) and/or sensor(s) for navigation.

Teams must have a method of controlling their rovers wirelessly from behind a screen.

There will be a separate preparation area near the yard. No charging will be allowed for the rover during the test.

All image submissions need to happen within the 30-minute time limit for the test run. No submissions will score points after the 30-minute mark. It is advised that the images be submitted as soon as they are taken at each geological point of interest. More detail on how the points for the images are awarded and how the submission of images is expected can be found in [Section 3.4.8 Scoring](#).

Following this, the rover will be mounted on the vibration test bench, as shown in Figure SOW-3. The vibration specification for the rover is described in [Appendix SOW-1](#), and mechanical specification in [Appendix SOW-2](#).

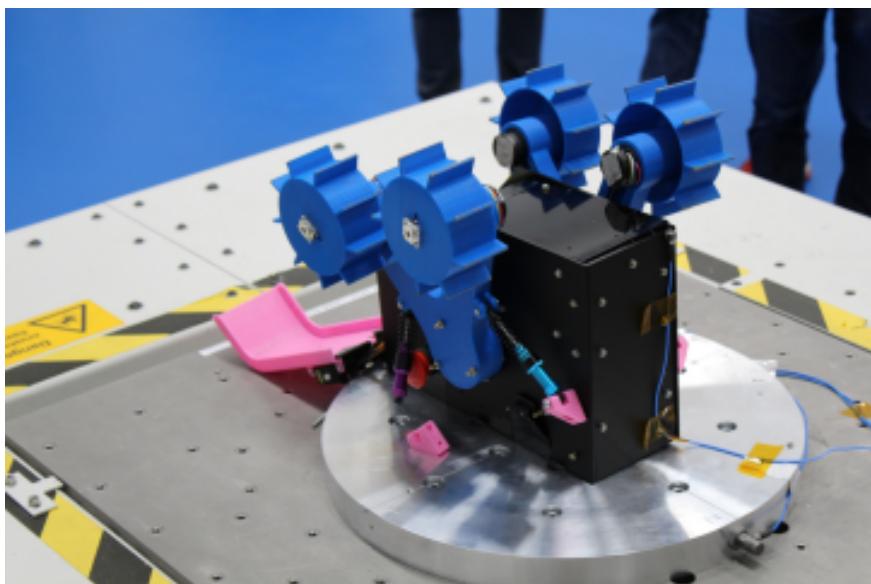


Figure SOW-3: Vibration Testbench Setup



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Test Restart or Repairs

During the test, a team may wish to restart or make emergency repairs to their rover. These will be allowed, but the 30-minute clock will not be paused or reset. If a repair is made, the rover will restart from the starting area. If the rover run is reset one or more times there will be a corresponding points penalty. There will be a competition judge on the yard to return the rover to the starting position if required.

Image Collection

5 geological points of interest will be distributed around the yard. Each point of interest (a rock in the yard) shall have a set of QR codes arranged on its faces, with the QR codes to be imaged. Each QR code will be no more than 20cm raised above the ground, nor will they be obscured behind other features. An example arrangement of QR codes is shown in Figure SOW-4.

Teams shall not be expected to collect or retrieve any samples of the points of interest aside from taking images.



Figure SOW-4: Example QR code arrangement

QR codes

Each QR code on a point of interest will be a different size. Points shall be awarded based on the smallest QR code that teams can extract information from (scan).

Note QR codes may not necessarily all be visible from certain perspectives.

Example QR codes shall be released prior to the CDR.

Each QR code will contain information to be extracted describing the rock's composition.





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3.4.8. Scoring

3.4.8.1. Test Run

A team gets a maximum of 2000 points for the test run. Each team has the opportunity to take images of the 5 points of interest. A team may take as many images as they would like in a test run, however, they may only submit one unique photo of each site to be judged for 'Information Extracted' (described below) for a maximum of 5 submitted images.

Each site will have a number of available raw points, scaled based on the assessed difficulty. Each target location will vary with the terrain to reach it.

The available raw points for each site are then combined and a scaling factor applied to get the total number of scaled points.

$$\text{available points} = \text{distance} \times \text{difficulty} \times \text{scaling factor}$$

The total number of available points will be scaled so that up to 1700 points can be collected for completing all image collection tasks. Each site will be scored separately, as follows:

Table SOW-1: Ratio of points available for each site

Scoring component	Ratio of site points available
Image of QR code has been submitted	10% of available points
Information Extracted	90% available points

Points will be awarded for teams simply submitting an image of a point of interest's QR code(s). Showing an image to a judge shall be sufficient as a 'submission'. However, the majority of available points are awarded for the information extracted from the QR codes. The smaller the QR code the information is extracted from, the more points shall be awarded.

The teams will be allowed to use their mobile phone cameras to scan and read the QR codes from their images. To save on time, it is suggested for the teams to explore making an automatic reader. However, this is not a requirement, and no points will be deducted for doing it manually.





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Teams may either submit the QR information along with the image, or only submit an image to be scanned by a competition judge. Note that judges shall only scan any one image once (even if an undesired QR code is scanned instead), and it shall also be up to their discretion whether or not an image can be scanned. If an image is deemed not able to be scanned it shall earn no Information Extracted points.

There will also be one checkpoint at the opposite end of the yard to the start point. Simply reaching the checkpoint will gain the team 300 points, and this can be done at any time during the 30 minute run. These are not bonus points, but part of the 2000 available during the run – the image collection will make up the remaining 1700.

3.4.8.2. Vibration Test

A team can earn a maximum of 1000 points for vibration if the rover is operational, from which points will be subtracted depending on the level of damage as described below. Negative marking is at the judge's discretion. Negative points will be given for the following types as described below:

Minor/No impact on performance (i.e. loss of fasteners of non-mission critical part) -50

Loss of one function (i.e. driving, communication, sand collector abilities) -250

Loss of multiple functions (i.e. at least 2 of driving, communication, sand collection abilities) -500

Catastrophic Loss of mission (i.e. rover non operational) -1000

Vibration plate Interface Penalties:

Securing of appendages through external means (e.g. tie-down moving parts) -250

Adaptation of vibration plate interface to allow a safe run (e.g. cloth under one unsecured corner of the rover) -250

Test Engineer deems rover unsuitable for environmental test (e.g. it contains sand that has not been cleaned) -1000





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The vibration test is intended to represent the conditions experienced during a launch vehicle ascent. Hence the rover shall be expected to remotely unstow itself from the configuration it is in during the vibration test e.g. being able to unstow a camera from a folded configuration. **If a functionality cannot be demonstrated, it shall be taken as a loss of function of the associated components.**

It may be that a rover's components are able to be remotely unstowed, but the mechanism is deemed too unstable by the vibration table operators to safely hold the components during vibration. In this case, the mechanisms will be tied down at no point penalty, depending on judge discretion. Orientation of the rover shall be assumed to be as needed for the mission (no need to demonstrate the rover doing a backflip!).

3.4.8.3. Prizes

For each prize, excluding the Best Rover Award, teams shall be ranked on their relative performance and the best performing team being given the corresponding prize. Teams shall be given points based on their ranking with a maximum of 250 points per prize won. A full list of potential prizes that can be won are noted in ORT-RB. For example, a team may have the following points scored:

Table SOW-4: Example Rover Scoring

Scoring component	Points scored example	Points available
Test run	1200	2000
Vibration Test	750	1000
Best Public Engagement	250	250
3rd Best Automation	100	250
2nd Best CDR	175	250
4th Best Innovation	50	250
Total:	2725	4000

As a result, the Best Rover Award shall be awarded based on all factors of the competition, not just the Test Run and Vibration Test.



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3.5. Extensions

If your team requires an extension, contact your competition point of contact. Please state clearly the reason for your request for an extension, at least 7 days before the submissions deadline. Note that extensions are considered on a case-by-case basis and submitting a request does not automatically guarantee an extension, so it is advised to continue working towards the original submission until you have received a verdict. Please be aware that providing an extension is at the discretion of UKSEDS. Unless explicitly stated, please assume that if the extension has been granted, it is an extension of 7 days from the original submission date.





4. CODE OF CONDUCT

In the code of conduct, participants refers to individuals or teams that are participating in a UKSEDS organised competition. By doing so, participants accept to follow the code of conduct as outlined below. Teams or individuals who are found to not follow the code of conduct, will be removed from participation with the potential penalty to be removed from further competition cycles.

1. Plagiarism through Artificial Intelligence

Participants agree to not use any form of Artificial Intelligence in the process of producing any of the deliverables. Artificial Intelligence cannot be used to determine design decisions or determine the design process the team uses. Further, Large Language Models (LLMs) will not be used in the making of deliverables or producing text to be placed within the deliverables.

Teams may use Artificial Intelligence as part of their design, i.e. a computer based vision detection system which uses Artificial Intelligence for object tracking.

Participants should reach out to UKSEDS organisers to address any questions or concerns over Artificial Intelligence use.

2. Plagiarism through Reuse of Previous Work

The purpose of the competition is to give students the opportunity to develop their technical, team working, and project management skills. Participants agree to not reuse material from previous competitions and correctly reference and credit work. Teams are allowed to take inspiration from previous years, but must ultimately produce work that is their own. Work which is considered plagiarised will be investigated and a decision will be made by UKSEDS. Plagiarism could result in heavy penalisation or disqualification, and the decision is at the discretion of UKSEDS.

Participants agree that a significant majority of the work submitted was produced from members registered in the UKSEDS competition. Members not registered within the team are allowed to provide feedback and reviews to designs, but play no active role in the decision making being the design or analysis performed. Participants agree to contact UKSEDS organisers if they have any questions or concerns about what is allowed.



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3. Conflict of Interest

Participants agree to not compete while being an active member of the UKSEDS Competitions team. Participants which are involved in UKSEDS in any capacity, even if not within the UKSEDS Competitions Team, shall notify UKSEDS prior to competing, and a decision will be made regarding the conflict of interest. Any participant which is found to be a UKSEDS volunteer who has not declared the conflict of interest will be removed from both the competition and UKSEDS. The team they participated in will also be disqualified from the competition, with the potential to be disqualified for further competitions at the discretion of UKSEDS.

Participants should avoid engaging in any activities or relationships that could create a conflict of interest with their role within the competition. This includes personal or financial relationships that may compromise their objectivity, impartiality, or decision-making processes related to the organisation. Any conflict of interest should be notified to UKSEDS and clearly disclosed in the conflict of interest declaration within the competition registration form.

4. Unfair Advantage

UKSEDS organisers agree to share any information with all teams at the same time, or within acceptable margin, such that not one team or group of teams get an unfair advantage. Participants agree to not seek information from UKSEDS unofficially, and participants that are found to do so can be subject to the same consequences laid out in **point 3**.

5. Respectful and Inclusive Behavior:

All participants are expected to be friendly, kind, and respectful at all times, and to help create a welcoming and inclusive environment for everyone involved. Discrimination, harassment, bullying, exclusionary, or disrespectful behaviour will not be tolerated. This includes, but is not limited to: threats of violence, insubordination, discriminatory, excessive, or inappropriate jokes or language, sharing sexually explicit or violent material, personal insults (especially those using racist, sexist, or otherwise offensive terms), unwelcome sexual attention, posting others' personal information, or encouraging any of these behaviours. Any complaints or concerns raised by UKSEDS, participants, or external parties will be handled in accordance with UKSEDS policies, which may include removal.





6. Social Media and Public Communications:

When discussing or representing UKSEDS on social media platforms or in public communications, please remember to maintain a positive and respectful tone. This includes being mindful of the content posted, respecting the privacy and confidentiality of others, and promoting a positive image of the organisation. Avoid sharing confidential, personal or sensitive information.

7. Social Events and Gatherings:

During in-person events hosted by UKSEDS (e.g. competition day), participants are expected to conduct themselves in a respectful and responsible manner, adhering to UKSEDS guidelines.

8. Professionalism and Dress Code:

Participants are expected to adhere to a professional and appropriate dress code for in-person UKSEDS organised events. Dress neatly and modestly, maintaining cleanliness and good personal hygiene. Dress codes may vary depending on the nature of the activity.

9. Safety and Security:

Your safety and the safety of others are of utmost importance to us. Follow all safety guidelines, procedures, and instructions provided by UKSEDS or designated safety officer. If you notice any potential hazards or unsafe conditions, please report them immediately.

10. Compliance with Laws and Regulations:

Participants are expected to comply with all applicable laws, regulations, and policies. This includes but is not limited to health and safety regulations, privacy laws,

11. Integrity

Participants must avoid placing themselves under any obligation to people or organisations that might try inappropriately to influence them in their work. They should not act or take decisions in order to gain financial or other material benefits for themselves, their family, or their friends. They must declare and resolve any interests and relationships.





12. Accountability

Participants are accountable for their decisions and actions and must submit themselves if any negative impacts occur towards any stakeholder of UKSEDS competitions.

13. Openness

Participants should be open about any situations or decisions which could have an impact on the competition, other participants, or UKSEDS volunteer members. This can range from engineering risks to public engagement relating to the competitions. UKSEDS organisers shall communicate information in a fair manner across all teams so that no single team gains an unfair advantage. Further, any information which could impact the teams ability to compete in competitions shall be communicated in a timely manner.

14. Honesty

Participants should be truthful and exhibit these principles in their own behaviour and treat others with respect. They should actively promote and robustly support the principles and challenge poor behaviour wherever it occurs.





Appendix SOW-1: Vibration Specification

The rovers should be built to withstand a vibration test on a shaker table, as with any qualified spacecraft hardware. Vibration tables are used to simulate the conditions of a rocket launch and a propulsive landing on Mars. Teams shall build their rovers to withstand the mission vibration environment described here. It is recommended that teams take into account both the mechanical and electrical/electronic problems associated with vibration.

Table SOW-4: High Sine Test

Frequency range	Amplitude	Sweep
5 – 7.7 Hz	25mm	2 octave/min
7.7 – 100 Hz	3g	2 octave/min

Table SOW-5: Random Test 60 seconds

Frequency	Amplitude Spectral Density g ² /Hz
20 – 80 Hz	+6 dB/octave
80 – 500 Hz	0.025
500 – 2000 Hz	-6 dB/octave
Overall	4.5 G_{RMS}





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Appendix SOW-2: Mechanical Interface Specification

To attach to the vibration testbed at RAL Space, the rover must have an appropriate mounting mechanism. If this requirement is not fulfilled, the rover will not be attached to the vibration table, and the rover will not be able to score points for the vibration test as it will be treated as a total system failure. In the scenario, the rover never reached Mars. Either it was refused launch by the launch vehicle provider due to safety concerns, or else it was launched but unsecured and loose in the rocket's payload fairing, and disintegrated during take-off.

If the mounting mechanism is deemed insufficiently secure, the RAL Space Test Manager may refuse to test a rover to avoid damage to onsite equipment. This shall also be considered a total failure.

The rover must be attached to the RAL Space mechanical vibration interface plate with M5 threaded holes (note RAL Space cannot provide M5 bolts for teams). It must be mounted directly, **without** any additional components that do not exist on the rover during nominal use. The engineering drawing is shown in Figure SOW-5. The interface plate is fixed to the machine, and cannot be lifted – i.e, the rover shall be bolted down onto the plate, bolts cannot be passed from underneath the plate.

There shall be a minimum of three attachment points. The rover will be accelerated in only one lateral axis (i.e. in the plane of the table). The teams are free to choose which lateral axis in which the rover will be vibrated, and design accordingly. When attached to the vibration bench the rover shall not touch anything apart from the interface plate.

Note that holes identified as "Shaker attachment holes" in Figure SOW-5 are not available for use by teams when attaching the rover to the interface place.



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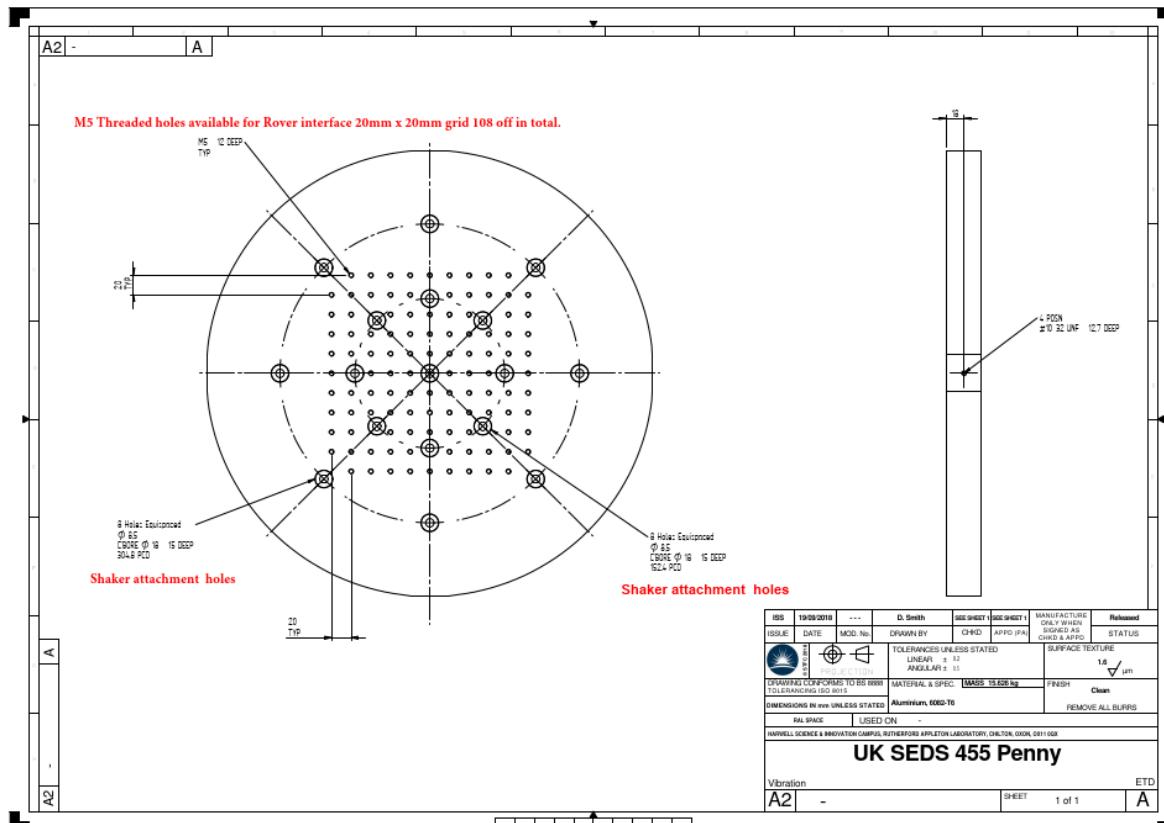


Figure SOW-5: RAL Space Vibration interface plate





Appendix SOW-3: Public Engagement Award

One of the most important parts of our roles in this industry is public engagement. Whether that's inspiring future generations to look at STEM areas for career opportunities or to inform the general public on the importance of STEM. Therefore, we want to encourage teams to perform public engagement through their entry into the competition. Each team has a **mandatory** submission alongside their TRR outlining a summary of their public engagement activities with examples. This shall take the form of a video up to 5 minutes in length, along with an evidence table with any relevant links. Teams shall **not** be penalised for having made no efforts towards the public engagement prize, however a submission stating this is still required.

What should be in the video:

Teams should describe their public engagement goal - whether that's gaining funding, promoting their society, or maybe educating people about space. Teams should then state who their intended audience(s) is. Teams should also explain any content they've produced and how it aligns with their goal, as well as any activities that have been carried out. **Assessment for the public engagement prize shall then be based on the following criteria based on the evidence provided in teams' submission:**

Criteria	Description	Scored out of
Activity Breadth & frequency.	How many different avenues have been taken? e.g. running an Instagram page, hosting in person events at university, going into schools to do talks. How often has an activity been done? e.g. hosting multiple events, frequent posting	5
Quality of activities	Information provided and clarity of communication. How appropriate is it for the intended audience? How engaging is the content? How directly relevant is it to the team? Are activities directly driven by the team?	10
Quality of submission	How well have the team presented their engagement efforts and how clearly have they summarised what they have done? Does the evidence table provide useful links to back up what they have done?	3





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What counts as an 'activity'?

Anything! As long as teams can justify how it is relevant to their goal anything goes - anything from Instagram posts and TikToks to hosting society talks and going into schools. Below are examples of two teams' submission for the Public Engagement Award and how they would be marked:

1. Team A is aiming to promote their university space society to fellow students. They have an Instagram page with photos of their rover and project updates to show off the work they've done to encourage people to check out the society. In their submission they show example posts from their Instagram and describe generally how the posts are primarily to show off the work they've done. In their evidence table they link to their Instagram page.

Breadth and frequency of activities: 2/5 – they only have an Instagram page but have evidenced a range of posts from the design updates of the rover, how they do project management to showing off rover testing.

Quality of activities: 4/10 – information in Instagram posts is clearly presented and clearly intended for university students. An appropriate level of detail is provided in posts. Content is limited in how engaging it is. Directly relevant to the team with them showing off their own journey, and the team clearly run the Instagram page themselves and make all the content.

Quality of submission: 3/3

2. Team B is aiming to promote working in the space industry and working in STEM in general. Their intended audiences are primary school children and university students.

They have registered with STEM UK and have hosted two events in their local primary school. Firstly, they had a talk on space as well as showing off their rover and how it works. They then had an interactive workshop where they got the children to make a model car. At their university, they have hosted similar events such as talking about their rover and collaborating with other societies to host an Arduino coding workshop. Their Instagram is managed by a wider space society. In their submission, they present Instagram posts, pictures of talks and marketing of said events. They also show pictures from the primary school workshop with evidence of presentation slides, instructions, and the model cars that were made. They briefly describe their engagement approach, events they've hosted throughout the year, how they planned and catered their events and also describe feedback and comments from the schools. In their evidence table they provide all relevant links to back up what they've done.



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Breadth and frequency of activities: 5/5 - they have done multiple events for different audiences as well as promoting their events and team on Instagram. They have produced a range of content from workshops to marketing material.

Quality of activities: 10/10 - All content is well thought out, appropriate for intended audiences and they have taken steps to make content engaging (in person events, Instagram votes to influence their rover appearance, etc) Content ranges from being directly relevant to the team to also having a wider scope of the space industry. Although their Instagram was handled by people not in the team, it is clear that the team must have been involved from the detail provided of their rover - the team is also clearly at hosted events, as well as having organised and planned the events.

Quality of submission: 3/3

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