



AUSTRALIAN
ROVER
CHALLENGE

AUSTRALIAN ROVER CHALLENGE

RULES AND REQUIREMENTS
SYSTEM ACCEPTANCE REVIEW GUIDELINES
VERSION 1 17TH OF NOVEMBER, 2023



THE UNIVERSITY
of ADELAIDE

**make
history.**

About This Document

This document is to be read and interpreted together with the Rules and Requirements document for the 2024 Australian Rover Challenge. It sets out the requirements for the System Acceptance Review, a deliverable of the challenge that is detailed in Chapter 6 of the Rules and Requirements document.

Contacts

For *any* general enquiries about the challenge, please feel free to use the general inbox which is monitored by a range of the staff involved with the challenge.

Australian Rover Challenge – General Inbox

e: auroverchallenge@adelaide.edu.au

Participants in the challenge are also welcome to get in touch with any of the key contacts below via email. Additionally, team leaders have access to the organising team via Slack.

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Changelog

Date	Version	Change notes
17/11/2023	V1	V1 release. Please read carefully in its entirety. Future versions may be issued if any errors are found or areas of clarification are needed.

Requirements

1. This document sets out the requirements for the System Acceptance Review (SAR), a deliverable for the 2024 Australian Rover Challenge (ARCh) specified in Chapter 6 of the Rules and Requirements document.
2. The purpose of the SAR is to communicate in report format to the review panel your system design, planned operation, safety features and supporting evidence of testing. Your report shall include an indication of performance from the Distributed Field Test (DFT) along with any additional testing undertaken. Your aim should be to convince the judges that your system has passed, or will soon pass, the tests (acceptance criteria) you have defined to evaluate successful rover deployment.
3. Teams will receive a mark for the SAR. This mark will contribute a maximum of **70 points** to the team's 2024 challenge score.
4. Format and submission details:
 - 4.1. SAR reports shall be limited to 14 pages with the following restrictions:
 - 4.1.1. Page 1 shall be a cover page which identifies the competing team's name, university, the student team lead(s) and their contact details, and the academic/university supervisor and their contact details.
 - 4.1.2. Page 2 shall discuss your team's *execution* of your approach to the system development life cycle for your system to date that you outlined in your Critical Design Review.
 - 4.1.3. Pages 3–11, the body of the report, shall contain text and graphics (images, figures, etc.) The points to cover in the report are discussed in rule 6.
 - 4.1.4. Page 12 shall contain written descriptions of each test or demonstration in the accompanying video. Descriptions should include timestamps so that judges know exactly which steps are being referred to. Teams can refer to more detailed testing plans or results in the body of the report, where appropriate.
 - 4.1.5. Page 13 shall discuss your team's planned activities to prepare the rover for the challenge, making reference to the schedule on page 14 where appropriate.
 - 4.1.6. Page 14 shall contain a schedule of activities (Gantt chart or similar) depicting the expected activities to be carried out by the team from the due date of the SAR (12 February 2024) until the competition. Tasks on the critical path should be highlighted. Page 14 may be A3 in size to accommodate more detail, however it should be concise, neat and with a font size that is readable at normal levels of zoom.
 - 4.1.7. Pages of references in your elected referencing format do not count toward the page limit. Please only include a reference list, not a bibliography.
 - 4.1.8. Pages should be A4 paper size (except page 14 may be A3 paper size) with margins no smaller than 2cm, contain page numbers, use text in Calibri or similar 11-point font, and be single spaced.
 - 4.1.9. You may choose how to structure the body of the report (e.g. style of headings, titles of

sections, etc.) freely, so long as it follows some standard technical/academic practice, and your report comprehensively covers every point in rule 6.

4.1.10. All content and ideas not created by the submitting team must be cited in a standard referencing style (i.e. Harvard, IEEE, or similar) on the pertinent page where appropriate or in a references section. Reports must comply with expectations of academic honesty at your host university. Plagiarism concerns are taken very seriously and are grounds for disqualification.

4.2. A supporting video no longer than 1 minute in duration from your DFT (or equivalent) shall supplement the report with the following restrictions:

4.2.1. Videos must contain new footage, filmed in the weeks leading up to the submission and not previously submitted to any other competition.

4.2.2. Footage for the video should be collected at your team's DFT, where possible.

4.2.3. Videos should be simple, contain little editing, and cover as many points as possible in rule 8.

4.2.4. The video shall be accompanied by written descriptions in the report, including video timestamps, which describe what is being shown, as detailed in rule 4.1.4.

4.3. Electronic submissions are required for both the report and supporting video. Reports are required in PDF file format, while videos are required as a YouTube link (which may be unlisted).

4.3.1. Files will be uploaded via a form on the ARCh website that will be sent directly to team leads.

4.3.2. SAR reports and supporting videos must be submitted no later than 23:59 Australian Central Daylight Saving Time (ACDT) UTC+10.5 on the due date (12 February 2024) and may be submitted at any time before this point.

4.3.3. Multiple submissions are allowed. The most recent submission before the deadline from each team will be judged.

5. The aims of the SAR and DFT are as follows:

5.1. To ensure that the rover produced by a team is of the expected level of maturity and readiness to safely compete in the 2024 Australian Rover Challenge.

5.2. To convey the technical maturity of your rover, and its current state of readiness.

5.3. To demonstrate that the rover has met, or intends to meet, your acceptance criteria.

5.4. To provide teams with a benchmarking opportunity for rover operation.

6. The report shall, in an order of your choosing:

6.1. Convince the panel that your *integrated system* has met the requirements for the challenge. While your rover needs to meet *all* the rover requirements in the latest version of the challenge rules,

visibly see the rover.

7.1.4. Have teams located in the same city hold their DFTs at the same time and place, to foster collaboration and community.

7.2. Activities completed during the DFT should include:

7.2.1. Rover and base station set up.

7.2.2. Simple rover remote operation (drive forwards, turn, capture imagery using the vision system).

8. The SAR supporting video (of no more than 1 minute in length) is intended to accompany and support the SAR report. Ideally, it should contain:

8.1. Simple rover remote operation as described above.

8.2. Evidence of subsystem or system level testing outlined in the SAR report. Note that this is not all encompassing (not all tests listed in the report need to be shown, there is not enough time for this in the video). Rather, the tests performed at the DFT that demonstrate the most progress of the system at the time should be presented. For example:

8.2.1. A fully integrated rover could demonstrate full system tests such as testing communications range in competition conditions.

8.2.2. A rover which has not had its drive subsystem integrated into its chassis subsystem may demonstrate velocity control of a wheel unit, separate from the rover, to confirm that the wheel unit has met the team's requirements.

8.3. Any other footage that supplements key details presented in the SAR report such as E-STOP operation, safe carry, and size and weight restrictions.