

SUITS Frequently Asked Questions 2025

General:

- 1. What should we include in the CONOPS section?**
 - a. The Concept of Operations section should specify how your design addresses each of the challenge requirements by detailing how the design evaluator interfaces with your device during each step of the procedure outlined in the mission description. Be as specific as possible about how you display telemetry and other information throughout.

- 2. Can we attach videos to our proposal via YouTube links?**
 - a. Assume the people reviewing your proposal will not watch them. However, you may include a video as an additional way to communicate your proposal. *Advice: keep it short.*

- 3. Are international students able to participate in this challenge?**
 - a. International students can participate and contribute at their institution. However, they cannot be badged to enter NASA's Johnson Space Center (JSC) in Houston, where the test week will take place.

- 4. Is there a team size limit?**
 - a. No, however, most teams are comprised of 8-15 people. Each team member should contribute within a defined role on their team. Teams will be limited to eight persons badged for onsite test week (seven students and one faculty member). We recommend large teams split and submit separate and unique proposals.

- 5. Do you want system architecture flowcharts in UML 2.0, SysML, etc.?**
 - a. Use whatever your team feels best describes your architecture.

- 6. Can students under the age of 18 participate?**
 - a. No, unfortunately all participants must be 18 to sign the Statement of Rights and attend test week.

- 7. If we have previously submitted a proposal for NASA SUITS, can we extend this or should we start from scratch?**
 - a. If aspects from your previous design can carry over to this year's challenge(s), then you can use those elements. Make sure you are addressing this year's specific requirements first and foremost. We want to see unique ideas.

- 8. Are international students allowed to be team leads?**
 - a. This is a little tricky. STEM Gateway limits team leads to U.S. Citizens. However, we are happy to interact with and help anyone contacting us. Therefore, you could have two co-leads, one a citizen, and one that is an international student. Only U.S. citizens and Legal Permanent Residents (LPRs) will be badged to participate in the onsite culminating event.

- 9. Does our faculty advisor have to be from our institution or an active faculty member?**

- a. Yes, your faculty advisor is acting on behalf of the university, so they need to be in a position recognized by the university. You can get advice from anyone, so you may have more than one faculty member helping you.

Technical/Devices:

10. Can our team use whatever devices we want?

- a. The SUITS team strives to be device agnostic. If you use an HMD in the field during the test, it must be a pass-through AR device. This is for safety purposes as they will need to see the ground to walk safely.

11. What language is the telemetry stream server (TSS) in?

- a. Most of the TSS is written in JavaScript and TypeScript.

12. How do you receive data from the TSS?

- a. All TSS data is sent via WebSocket protocol using ws and is in JSON/GeoJSON format.
- b. During testing, you will change the TSS IP to the IP of the device where you plan to host the TSS.
- c. During test week, NASA will deploy the TSS on a local network (SUITSNET) at the test site. Teams will need to update the server IP address on their devices to match the SUITS host server IP.
- d. The TSS will have two distinct branches, one for the spacesuit/EV and one for the PR team. Those teams will need to share data using their own interoperability protocols.

13. Can we use phones as peripheral devices?

- a. Teams need to state all peripheral devices their design includes as well as any requirements they might need from the NASA SUITS team (internet, time outside of the scheduled testing for set-up, etc.) during the design review in the spring. The SUITS team will either grant approval for the devices or contact teams for additional follow-up before allowing the external devices on-site.

14. Can you explain the Spectrometer RFID?

- a. We will use a mockup of an X-ray fluorescence (XRF) spectroscopy scanner for geologic study that will use Radio Frequency Identification (RFID). Teams will scan rocks tagged with RFID throughout the rock yard. The provided scanner will transmit data from the scan via the telemetry stream.

15. Can we design our own custom hardware interface?

- a. Yes, be sure to include a mock-up of the design and how it interfaces with the augmented reality device in the proposal. If accepted, at the spring design review, we will require teams to present all external devices before receiving approval from the NASA SUITS team to bring them on-site.

16. For the spectrometer, do we place the point of interest, or are they given when the astronaut returns to the airlock?

- a. Having the ability to tie the geology data to the location of the sample would be a useful feature.

17. When will the telemetry stream become available?

- a. The SUITS team's goal is to provide the telemetry stream to selected teams in mid-December.