NASA TechLeap Robotically Manipulated Payload Challenge Virtual Information Session

June 18, 2026

Cameron Fox (00:05):

Welcome everyone and thanks for joining the NASA TechLeap Prize Robotically Manipulated Payload Challenge Information session. I'm Cameron Fox. I work with Luminary Labs. We're a strategy and innovation consultancy administering this prize and supporting NASA and I will be your host today. A couple of quick housekeeping things before we start. First, this session is being recorded, and we will make that recording available to everyone afterward. Second, please submit your Q&A any questions you have via the Q&A function at the bottom of your screen and we will work through them during the Q&A portion at the end of this. And we'll also drop helpful links in the chat as we go along. All right, let's jump in.

(01:03):

So, over the next hour, we'll start with introductions and a quick program overview, you know, who we are and where this challenge fits. Then we'll move into talking about the challenge itself, timeline, the awards, and what your payload needs to do. After that, we'll talk about how submissions will be evaluated. My NASA colleague, Danielle McCulloch, will walk through the criteria. Then we'll talk about how to enter, talking about registration, eligibility, and what goes into a submission. And lastly, we'll save plenty of time for questions that we receive via the Q&A. Starting with some quick introductions, I will go ahead and turn it over to my colleague Bo at NASA to give an overview of the program overall. Bo, over to you.

Bo Naasz (02:07):

Thanks, Cameron. Yeah. Hi, my name is Bo Naasz. I'm the In-Space Servicing, Assembly, and Manufacturing Capability Lead at NASA and I'm the project manager for a lot of the activities that are going on around this TechLeap Prize. We're building a space robot right now for a mission called the Fly Foundational Robots and that mission will launch in October 2027 and includes a seven degree of freedom robot arm that can be used to manipulate payloads. It also has power and data interfaces and, is launching with one modular payload that we've referred to as an orbital replacement unit. That system is gonna be made available in several ways. We're real excited about demonstrating this robotic capability, this commercially provided robot from, from Motiv Space Systems. We have two challenges active right now, actually.

(03:11):

Easy to get a little bit confused. This one is the, TechLeap Prize for Robotically Manipulated Payload Challenge will award an opportunity to fly actual, actually fly hardware to meet up with this FFR space robot, and to use that robot to manipulate these payloads. So that's the one we're talking about here today and we'll give you all kinds of details on that. That's through the, NASA TechLeap Prize that comes out of Danielle's group, actually. And so, Danielle will talk later. We also have a Space Roboticist Challenge that's active right now. We're not gonna talk about that today but just wanted to make sure everybody's aware that there are two different things going on. This one is the Robotically Manipulated Payload Challenge that provides opportunity to put hardware on orbit.

(04:03):

The other one is an opportunity to use the robot on orbit and run software and scripts and robotic activities, but not with hardware. I think that's a probably a good brief introduction and we'll stay on and answer questions throughout. I think I'm handing it back over to you, Cameron.

Cameron Fox (04:24):

Yep. Thanks so much, Bo. Great. Now we will go into a few more specifics about the program itself and give an overview there. For most of spaceflight history, we have operated on one assumption. When a spacecraft launches, it has to carry everything it will ever need. There's no going back to fix it, refuel it, or upgrade it. That one and done paradigm is starting to change. NASA's In-Space Servicing, Assembly and Manufacturing missions, ISAM, are built on a different premise. By developing systems that can service, assemble, and manufacture in orbit, ISAM is expanding what's possible in space and this challenge is about advancing the persistent infrastructure that makes that possible.

(05:21):

So, this is the robotically manipulated payload challenge as Bo said. It is the fifth challenge in the NASA Tech League privacy, prize series, it's really a competition to advance that persistent infrastructure for In-Space Servicing, Assembly and Manufacturing. Specifically, NASA Flight Opportunities is inviting all of you to propose a payload that can be manipulated by a robotic arm in low earth orbit. Over the rest of the session, I'll cover exactly what that means, what you can win, and how to enter. First, let's get into about the challenge itself. Now, starting with the full arc here, so we launched open submissions on May 20th. We're here today at our virtual information session and folks will have until August 12 to submit though do note you need to register for the challenge by July 29th, so make sure that you don't miss that. At the end of Phase 1, we will select up to three winners.

(06:32):

We'll go into prizes here in a second. Those winners will move into Phase 2, final design and initial build from September to December of this year. After that, up to three winners will move to

Phase 3 where they will complete build for integration through May of 2027, ending with a potential flight test opportunity.

(07:00):

Now, in terms of awards, up to three winners will receive up to $500,000 each to develop a flight-ready payload. The up to three winners of Phase 1 will each receive $200,000, another $200,000 after Phase 2, lastly, at the end of Phase 3, an additional $100,000. Beyond that, NASA intends to provide each Phase 3 winner with a hosted orbital flight test at no additional cost. This will enable their payload to interact with the robotic arm in low earth orbit above the Fly Foundational Robot's spacecraft. Now, jumping into some specifics on Phase 1. So, this is the application period. It's about a 12-week window for you to get your proposals in. Like I mentioned before, two dates that you should really keep in mind, first, you must register by 5PM EST on July 29th and your submission is due by 5PM EST on August 12th.

(08:12):

These are separate steps, so make sure that you register before you submit. After submissions close, a panel of expert judges will score each valid submission across four criteria and Danielle will walk through those in a minute and like I said, up to three winners will each receive $200,000 and advance to Phase 2 where they will be announced in September.

(08:42):

In Phase 2, the winners of Phase 1 will get three months to finalize their design and begin building their payloads. You won't be on your own there, you will get support from NASA subject matter experts to make sure your design is fully compatible with the mission parameters and the FFR robotic arm. At the end of Phase 2, field judges will conduct onsite visits to evaluate progress against the Phase 2 criteria and teams can earn an additional $200,000 to continue to Phase 3. We'll announce the winners of Phase 2 in December of this year. Lastly, Phase 3, completing build for integration. This is the final five month stretch to complete your payload and again, you'll have NASA subject matter expert support along the way. There will be another visit from field judges to your site in spring of next year to evaluate your payload's flight readiness and then up to three winners of Phase 3, will each receive an additional $100,000 and the, and as we said, NASA intends to provide flight tests to those winners at no additional cost and we will announce those in May of 2027.

(10:10):

Now, I wanna explain a little bit about the hardware that your payload will work with. So, the robotic arm is developed by Motiv Space Systems, and it operates aboard the Fly Foundational Robots or FFR spacecraft. The arm anchors to the FFR payload deck and can "walk" end-to-end across it, repositioning both itself and the orbital replacement units, ORUs, in microgravity. And in terms of how it plays out in orbit, a delivery vehicle will, with the winning payloads, will rendezvous with the FFR spacecraft so it will go up after FFR is already in orbit. The arm will

grab each payload off the delivery vehicle and install it onto the FFR platform and then the arm will interact with, manipulate or reconfigure your payload according to the demonstration plan that your team designs.

(11:13):

So, the real question here is what does your payload do once the arm installs it? We've listed here a few examples, you know, robotic inspection and diagnostics, modular payload swapping, structural assembly, sensor deployment, materials processing, and we genuinely welcome novel demonstrations. These are just a few examples. One thing to keep in mind is that your demonstration needs to be designed around the arm physically interacting with the payload. Simply having the arm carry an instrument from point A to point B would not count as manipulation for this challenge. So now getting into some of the technical details starting with the interface. So, every payload must include a separable interface so the arm can mechanically dock to it and manipulate it. You design the specs for the FFR payload separable interface document, which is linked from our technical guidelines page on the website. NASA will provide one of three interfaces to you, ISSI or Intelligent Space System Interface, which is active, or one of two passive options, either the CrossLink cleat or FuseBlox.

(12:37):

You may propose your preferred interface in the application but note that the final assignment will be made at the start of Phase 2 based on your preferences and NASA's assessment of your proposed design and flight demonstration plan.

(12:55):

Second, I wanna talk about size, weight, and power, or SWaP. Your payloads dimensions need to fall within the maximum cross section defined for whichever interface you propose. Again, those are in the separable interfaces document that you can find on the website. Allowable height will depend on where the cross-link fleet sits relative to the arm's workspace and just to note, winning teams confirm their exact configuration with the FFR team before finalizing the design so that you won't be, you know, designing blind. Lastly, a few additional requirements. First, your payload must survive launch loads and the low Earth orbit thermal and radiation environments for the full mission. It shouldn't create any debris hazards, so any deployable elements need to be tethered or otherwise retained. Third, it needs to comply with the range safety and launch vehicle requirement, requirements that apply to the delivery vehicle. And lastly, you are responsible for making sure your design doesn't interfere with the FFR spacecraft systems or the other payloads on board.

(14:16):

So, with that, I will hand it over to Danielle to go into how submissions will be evaluated.

Danielle McCulloch (14:24):

Thanks, Cameron. Thanks everyone for joining us today. I'm Danielle McCulloch. I am the program executive at NASA for the Flight Opportunities Program, and we're excited to be partnering with our friends working on ISAM for this challenge. Talking about evaluation, we do have three different phases. So, Phase 1 is essentially the application phase of this competition. The applications will each be evaluated by a panel of judges that are carefully selected for their knowledge in this area both of ISAM as well as flight test. Each of those judges will score the assigned submissions on a scale of one to five for each of the four criteria, which you can find on the website, and provide comments, as well. Each submission will be judged by five different judges and then those results will be statistically normalized to take care of the differences in approach across the different individual judges.

(15:20):

And then the selection committee will review the top scoring submissions and select up to three winners based on the results of that judging panel as well as various programmatic considerations.

(15:33):

There are four evaluation criteria in Phase 1 when we are looking at those applications. So, there is potential impact — to what extent would successful on orbit manipulation of this payload advance ISAM capabilities and does the submission have really clear success metrics? Technology alignment is looking for a little bit more detailed to the particular technology. Does it identify a particular technology capability gap in ISAM and show that use of a robotic manipulation would actually help advance the capabilities for that particular technology and address those capability gaps? Looking at the technology design — to what extent does that payload have proposed design that is technically sound, compatible with the mission requirements, which are outlined in the technical guidelines and build on good practices for systems engineering. And then finally, the project plan.

(16:41):

Is your plan feasible? Is it clear that you've thought through the development timeline, the steps of development, you understand what you need to get to flight readiness? You can demonstrate the requisite capabilities, experience, and resources for your team, as well.

(16:57):

At the conclusion of that phase, we will select the winners. So that brings us to Phase 2, which is the evaluation process for the initial design phase. At the end of this phase, field judges from NASA and subject matter experts will actually visit each payload team, and we will be scoring you on a rubric. Each team must receive 80 points to get the additional $200,000 prize for this phase. So, the submissions are scored out of 100 points, and again, you need 80 points during this visit to receive the second prize. The criteria for this phase in Phase 2, we are looking for

evidence that the finalized payload design has been completed and documented, and that it includes key decisions for design, trade studies and rationale for the chosen approach.

(17:58):

Along the way of Phase 2, you will be in contact with NASA folks, as we guide those finalization of the requirements for the payloads. We'll also be looking for evidence that the payload design is mechanically, electrically, and dimensionally compatible with the assigned FFR interface, the ORU dimensions, and the FFR software architecture. So, does it adhere to the requirements? We'll also be looking for evidence of a credible development and testing plan that has clear ties to those system requirements. The plan should verify interface capability, the functionality of the payload and safety, with very clear milestones of how you plan to evaluate that, along your development timeline. And finally, we are looking for evidence that the team has conducted sufficient analysis as well as early prototyping to validate some of your critical design assumptions, including structural integrity, functionality under orbit conditions as well.

(18:59):

So, our, our goal is that all three winners would then advance from that stage onto Phase 3 and again, at the end of Phase 3, we do have field judges visiting each of the teams in person to evaluate the progress that has been made. Teams will need to get 80 out of 100 points to receive that additional $100,000, prize for this phase. So, in this phase, we are looking at, determining if

(19:31):

evidence that the payload build is complete because at this point, you should be ready to fly, and that it is on track for on-time delivery to the flight provider and integration into the host spacecraft. We'll be looking for evidence that the payload has been built to the requirements of that spacecraft as well as, for the requirements for the robotic arm interactions. I will look for evidence of testing and analysis that have anticipated the flight conditions that are likely to be experienced and that the results indicate that that payload is ready for flight. And then finally, evidence that the potential risk for flight has been considered and mitigated, and that these mitigations can also be put in place prior to flight. So, in between the end of this phase and the integration. All right, back to you, Cameron.

Cameron Fox (20:18):

Thanks, Danielle. All right. So now we will go into some of the details about how to actually enter. So, four steps that you should all be aware of. First, make sure to review the materials. Everything is at rmpc.nastechleap.org, including the technical guidelines, evaluation criteria, and the submission form so you know exactly what's expected. Second, register, do that at rmpc.awardsplatform.com, or you can just click register and submit on the main site. You'll want to create your account and as we said, make sure you complete your registration by 5PM ET on July 29th. Third, prepare your submission. We'll go into more details of what that entails in a

second, but just to flag again, if you get stuck at any point, feel free to email us at hello@nastechleap.org with any questions. And lastly, submit. So wanna finalize and submit your application by August 12 at 5PM ET and we'll run Phase 1 evaluations through September and announce winners that same month.

(21:43):

Now going into the application itself, it has six sections with several questions in each of them, but this is a high-level overview. First, an introduction. So here, you'll be asked to give a short title and description that introduces your proposed payload. Second, about you or your team. Here, you'll talk about your capabilities and size, plus eligibility and insurance confirmations. Third, your payload demonstration. This is really the core of the application where we want to understand what your payload will do and how it advances ISAM priorities. After that, you'll be asked to upload a 90-second video pitch that describes your payload and why it should be selected. We don't expect professional videography here or something on, you know, an iPhone or an Android is totally fine. Next, project plan and budget. So, want to know your plan, timeline, and what the budget is to build a flight-ready payload in about eight months from selection.

(22:54):

And lastly, submission checklists. So here want final confirmations and agreements before you submit.

(23:03):

Now, a quick word on eligibility, though I will flag that the full eligibility rules can be found on the rules, terms, and conditions page on the site and also on the FAQ page there's some helpful answers there. But at a high level, NASA welcomes individuals, teams, and organizations that have a recognized legal existence and are in good standing with a few restrictions. First, individuals must be US citizens or permanent residents and be 18 years of age or older. Second, organizations need to be entities incorporated in and maintaining a primary place of business in the US. Third, teams must be composed of otherwise eligible individuals or organizations and led by a US citizen or permanent resident of the US who's 18 or older. Lastly, foreign citizens may participate with some restrictions and again, I would encourage you to check the website for all the details there but note that they cannot win a prize.

(24:16):

All right. So now we are going to move into our Q&A portion and as I said, we should have plenty of time for this. I know that a lot of y'all have been submitting them as we've been talking. So let me just pull those up and see what we have. Alright.

(24:39):

So first one here, can companies collaborate with universities to submit a TechLeap proposal? Yes. Applicants may partner with other organizations including a company collaborating with the

university as long as every participant meets the eligibility rules and the lead is a US citizen or permanent resident or US incorporated organization with its primary place of business in the US. You'll want to describe the team and IP ownership in the application and as I said, the rules, terms and conditions have all the details there.

(25:21):

Is the capability expected to operate outside or inside a station or habitat? Good question. So, the FFR is a free flying spacecraft, so payloads operate externally in space in a low earth polar orbit, not inside a station or a habitat. Encourage you to look at the technical guidelines for more info on the expected flight environment.

(25:51):

Does the payload need to include any additional sensors or fiducials beyond the interface to aid installation onto the FFR? Nope. The payload is not required to incorporate supplemental fiducials or sensors to enable latching or docking. The arm and the FFR sensors handle that. So, sensing for your own experiment is a design choice that is up to you.

(26:22):

Is the $500K just for the payload or does it need to cover the integrator? It's up to each applicant to set an appropriate budget and prize funds may be used however the winner sees fit. It's important to remember this is different than a traditional grant. It is up to you how you use those funds. The budget may be more than less than or equal to $500,000. It's used to judge whether the plan and budget are reasonable in essence. So, you can exclude flight test costs. NASA intends to provide the flight test at no additional cost to Phase 3 winners.

(27:09):

What sensors are most crucial to ensure the robot does not damage fragile cargo during the moving process? NASA doesn't specify which sensors to use the sensing and handling approach is the solver's design choice and NASA isn't prescribing how you verify or protect the payload. So, encourage you to map your approach to the evaluation criteria.

(27:42):

Are there any in situ or remote sensing measurements that would be deemed valuable for this opportunity such as space weather? So, there is no preferred operational scenario or measurement type including space weather. Any demonstration is welcome as long as it does something meaningful with the payload, connecting it to future mission needs, you might look at the latest fiscal year '26 Civil Space Shortfall prioritization list and strengthens the application.

(28:18):

What are the requirements of the payload and is this intended to be a test of the arm or of the payload itself? The challenge is really to do something with the payload. The arm and the

interface are the means for installing and supporting it, but not the object of the test. As we said earlier, simply moving the payload to the platform wouldn't qualify here. Again, encourage you to look at the technical guidelines for requirements and the evaluation criteria for how submissions will be assessed.

(28:55):

Is it possible to participate in the challenge individually or is it strictly required to be part of a team? As we said, you can enter as an individual, a team or an organization, a team is not required. Individuals have to be US citizens or permanent residents, 18 or older. Again, the RTCs have a lot more info on that.

(29:23):

What is the expected TRL at submission? So typically, in past TechLeaps, teams have a working benchtop model or a prototype at the time of application, so really enable you to develop a payload within the period of the competition. It's important to remember that just eight months between winning Phase 1 and the end of Phase 3. So, if your technology can be matured, de-risked or otherwise benefit from flight testing status regardless of TRL, we encourage you to apply. Also good to review the scoring rubric to learn more about how we define a strong proposal there.

(30:08):

Okay, so related to that last one, are conceptual designs accepted or is a functional prototype required? So, both a conceptual idea and an actual payload are required, but at different times during the competition. During Phase 1, you're submitting a proposed design and plan while during Phases 2 and 3, the winners of Phase 1 will first finalize their designs in Phase 2 and then actually build them in Phase 3.

(30:41):

Are international participants allowed? So foreign nationals may participate as part of a US-led team but cannot personally receive a prize. The lead needs to be a US citizen or permanent resident or US incorporated organization. Country eligibility and export control rules also apply and again, refer y'all to the rules, terms and conditions for more on eligibility requirements. And if anything is unclear, as we said, you can always email us at hello@nasatechleap.org.

(31:25):

Right. Does the FFR platform have end effectors and if so, what are those? Yes, it does. The robot arm has two active end effectors, one on each end. They're both active CrossLink interfaces.

(31:47):

For a serviceable ORU triage demo, the arm grapples the payload at one feature and births it at a separate doc position, which appears to need two distinctive interfaces, grapple cleat plus a birthing interface, yet the guidelines state that each payload incorporates on separable interface and NASA provides one per winner. So, two questions there. First, is a two-interface solution configuration supported? And if so, does NASA provide both or does the team source the second? And two, for the ORU side specifically, what are the interfaces? The good, detailed question there. Each payload will have two interfaces, on the arm to grasp, the passive CrossLink, and one to stow the payload onto the FFR deck. Proposers may request one of the three deck interface options. We said earlier there's the CrossLink, ISSI, or FuseBlox. And NASA will determine which deck interface is assigned each payload during submission.

(33:03):

When supplying power and data through the active end effector, is it expected that payloads remain static while powered or is powered manipulation during active reconfiguration within scope? Yeah, power manipulation is in scope for this challenge.

(33:26):

Can a team include a non-engineering project, or systems lead plus engineering contributors? Absolutely. Teams can include members with whatever skills you believe will be necessary to accomplish this challenge and it's really up to you to put together the team that you need. Do note that all team membership must meet the eligibility requirements for the challenge which find on the RTCs page.

(33:58):

What level of proof is expected for the claim that a payload can be flight ready in eight months? Great question. Responses to the application should provide enough detail in both the description of the payload and flight test plan as well as the project planning and budget sections such that judges have evidence that the team can sufficiently, has sufficiently thought through the timeline and payload development steps and has the expertise required to adhere to the proposed project plan.

(34:35):

Are there recommended ways for individuals to find teams or partners? We do not have any recommendations for finding teams or partners, but, you know, you can feel free to work on that on your own end.

(34:59):

How strict are the forthcoming mass thermal and power constraints likely to be? So, it's likely that the mass thermal power constraints will need to be adhered to pretty closely as the requirements are derived from the requirements of the spacecraft and launch providers and it will be critical to successful mission operations.

(35:33):

Can the demonstration payload take up multiple interfaces on the platform during the test or demo? No. Teams can't use multiple interfaces on the platform. Each team will be limited to using only one interface during the test, flight test.

(35:56):

What is the relationship between the opportunity and the generic flight opportunities IDIQ. Specifically, if selected for this TechLeap Prize, does that open up all future opportunities within Flight Opportunities IDIQ? So, this challenge is only seeking payloads. NASA intends to procure services for these payloads to be hosted aboard an orbital spacecraft via the flight providers currently on contract with Flight Opportunities, but this challenge does not include opportunities for additional providers to on-ramp to the program's IDIQ contracts. If you have more questions about that, you can contact nasa.flightopportunities@mail.nasa.gov for more information about becoming a flight provider for the program.

(36:59):

Are the submissions restricted to group design projects or individual entries also permitted? As we said earlier, individuals, teams of individuals and organizations are all eligible as long as they meet the other requirements that we discussed earlier that you can find on the rules on the website.

(37:23):

Let's see. What telemetry from the robotic arm is available to the test team during demonstration? We are working on the details of available telemetry now, but we'd ask you to include what you would request in terms of telemetry in your proposal.

(37:48):

Are these challenges under a specific space center and funded by Earth and Science? Maybe the Earth and Science Office at NASA? Because I'd say this challenge is sponsored by NASA's Flight Opportunities program and you can find out more about Flight Opportunities at the website NASA.gov/STMD-flight-opportunities.

(38:20):

Is there an age limit for this challenge? Yes, as we said, you must be 18 or older to participate. no maximum age though.

(38:36):

Can we design a custom gripper for the arm? Yes, you can absolutely design a custom gripper for this challenge.

(38:48):

You mentioned that NASA will provide one of three interfaces. Is that hardware or just reference designs that we need to manufacture? Yeah. NASA will provide each team with the interface hardware. Teams can propose the interface that they would prefer to use, but as we said, NASA will make the final determination on the interface for each winning team and provide each team with the dis- assigned interface hardware.

(39:24):

Okay. How will the arm be available to use after the payload is placed? Does it have a gripper or just a cleat interface? The arm does not include a gripper. It has an active end-effector, which can interface with payloads via a CrossLink interface. Payloads may provide their own gripper or tool provided it's compliant with the end effector's interface requirements.

(39:55):

Does the orbital payload unit need to contain active actuation? Can the FFR interact with it by moving around passive components on the ORU? I assume that should be ORU. The payload may have active actuation or be passive, can do either.

(40:21):

Will each guest roboticist have access to all payload interfaces on the FFR task board or only a subset? Just to clarify, I think Bo mentioned this at the beginning. The Guest Roboticist Program is completely separate from this, you know, they're both involved with this arm, but this is not about the Guest Roboticist Program. You can direct your questions to spaceroboticist@floor23digital.com.

(40:57):

Will robotic arm and/or spacecraft telemetry be available to guest roboticist? Same answer. I would direct to the new email there.

(41:14):

How many applications are you expecting to receive? We don't have an anticipated number, but I will say given the number of questions and number of y'all on, I would expect robust interest in this challenge.

(41:36):

Are candidates permitted to utilize software under free or open-source licenses during the initial design phase of the project? Additionally, could you clarify which software applications are prohibited and whether there are any restrictions on the use of specific design tools? So as part of your application, you will need to explain who owns the intellectual property of your proposed

payload and any components used to build it. If you are building on existing or off-the-shelf technology, you will need to detail the permissions that you have to use that technology.

(42:31):

Sounds like the FFR will move all three of the payloads from the delivery platform to the FFR at the start of the demonstration. Is that true or will the arm move a payload over, test/demonstrate it, return it to the delivery platform, and then move on to the next payload? So, the current mission concept will transfer all of the payloads from this challenge to the FFR spacecraft for manipulation and testing.

(43:13):

The technical document on the TechLeap website shows a camera calibration board but no information on cameras. Are there cameras on the arm and/or on the bus/deck? There are cameras on each end of the robot arm and context cameras on the corners of the deck. More information on these is available in the guest robot assist capabilities brief and the technical guidelines on the website.

(43:52):

Is this slide deck going to be posted online as well of the recording? Yep, absolutely.

(44:06):

Can an individual register now and add team members or an organization before submission? Yes, absolutely. And we would encourage you to register early as soon as possible. Please do have your team membership identified prior to submission of your application and ensure that everyone meets the eligibility requirements.

(44:34):

Is the payload demonstration a live demo? No. Demonstrations will be executed via script or autonomously and telemetry data and video will be downlinked on a subsequent ground station pass.

(44:57):

What does control over the FFR platform attitude control look like? Will teams be able to choose whether the platform is passive during experiments? The platform attitude system will maintain an inertial attitude with the payload facing anti-sunward, shaded.

(45:23):

Is the video part of the submission like an elevator pitch? So, we just need to verbally pitch our demo, no visuals? So, the video is part of the submission and if you go to the submission form, you'll see some general suggestions for delivering a high-quality video pitch. At a high level, you

know, we want you to introduce yourself and your organization or your team, describe your payload demonstration, including what's unique about it, explain how you will know when you've achieved success and we would ask that you don't simply read a slide deck, you know, try to connect with your audience here who is ultimately the judges that we'll be evaluating.

(46:19):

What kind of gripper is attached to the end of the arm? Yeah, I think we answered this earlier, but the end effector is the active half of the CrossLink interface.

(46:42):

Do payloads have access to thermal radiators? No. They just provide their own thermal accommodations.

(46:57):

Can winning payload hardware remain on the FFR platform after the demonstration? That is to be determined. We're not sure how long the payloads will remain attached. It's possible they'll be removed to allow other payloads to be attached, but we'd encourage you in your submission to include a rationale for what duration makes most sense for your demonstration.

(47:29):

Is there an interpayload power sharing architecture on FFR or can payloads expose power outputs to other deck residents? Nope. If a payload wants to pass power from FFR through itself to another payload, it'll have to provide all power switching or distribution circuitry as well as new power interface to the payload.

(48:01):

Does pursuing orbital edge accelerator funding for the underlying battery system create a conflict with TechLeap for the ORU demonstration? I would encourage you to email us at hello@nastechleap.org for, with more details because there are a few nuances there that would, affect our answer.

(48:29):

How are team members beyond the lead defined, compensated and evaluated in Phase 2 and Phase 3 site visits? Your initial application should detail the team members will work on the development of the payload and remember that all team members need to meet eligibility requirements throughout the challenge. There is no compensation or evaluation of the team members. It is your payload that's being evaluated.

(49:13):

Does NASA provide TechLeap winners access to TVAC vibration or radiation testing facilities? And if so, at what cost and through what NASA, which NASA centers? No, NASA will not be providing that.

(49:40):

How do payloads get to the FFR? Are they launched with it or delivered via another spacecraft? Yeah, like we said earlier, the payloads will be delivered to the FFR spacecraft via a follow-on rendezvous mission, so they will not go up at the same time. Platform will already be in orbit and then your payloads will be delivered.

(50:07):

Can our proposal include two smaller payloads within the SWaP requirements and demo the manipulator arm assembling the two smaller payloads? Yes. Note the FAQ discussion on requirements for separable interfaces within the payload to reduce risk of inverted release.

(50:40):

What TRL are the Phase 1 winning submissions expected to be when selected? Yeah, so as we said earlier, we don't have a specific TRL that we're targeting and we'd encourage you to focus your application on describing how you intend to get your payload to flight readiness within the challenge timeframe.

(51:09):

It is not clear if individuals involved in the challenge having applicable standard health insurance is sufficient or if in our case, the company entity must actively have additional workplace insurance for all participants. Is individual insurance sufficient for Phase 1 for early startups? So, the insurance requirements, the requirements for liability insurance must cover all team members and it has to be liability insurance. You can find specific details about that on the website on the insurance guidelines page.

(51:57):

Are support letters for commercial pathway required/nice to have/aren't accepted? No requirements for support letters in the application.

(52:18):

Does an Active Space Act agreement with the NASA Center help or disqualify participants? Yeah. An Active Space Act agreement will not influence the outcome of the challenge in any way. Again, I'd encourage y'all to look at the evaluation criteria. That is what the judges will be, using to decide.

(52:47):

If selected as one of the three finalists during the prototyping build stage, will NASA or the National Labs provide a lab or facility, or is funding supposed to cover building/space rentals? There is no funding provided aside from the prize purse itself.

(53:11):

Is it possible to reach out during Phase 1 for technical insights? In the interest of fairness to all participants, we won't be able to provide technical guidance on any specific application but certainly refer to the technical guidelines page on the website.

(53:38):

I was an ISAM expert at NASA, but I no longer work for NASA as a federal employee, but I recently joined a contracting company that does work on non-ISAM related technology inside of a NASA center. And in the meantime, I founded another company that is still working on ISAM related stuff. Are I and my ISAM related company eligible to enter? I'd encourage you to email the hello@nasatechleap.org inbox with more details there so that we can give you a clear answer.

(54:29):

Can an androgynous interface be proposed in place of the ISSI and other interfaces referenced? Payloads may include their own internal interfaces if desired, but they must use the specific interfaces to be mounted or powered by FFR. I'd refer you to the FAQ page, the portion that discusses requirements for separable interfaces.

(55:11):

Just looking through here.

(55:22):

Has the launch spacecraft and its environment been defined? So, the host spacecraft for the payloads for this challenge has not yet been selected, but winning teams will receive more details regarding the host spacecraft and mission environment and requirements after selection.

(55:49):

Could you clarify the intended role of the payload we are being asked to design? Is the payload primarily intended as a test article for evaluating the robotic arms manipulation and servicing capabilities, or is it expected to be an operational device instrument or spacecraft that performs its own mission objectives while also serving as the target of robotic manipulation activities? The goal of the challenge is to demonstrate use of the robotic arm to interact with the payload and perform a particular task or action. Proposers should develop their own objectives for testing their payload using robotic manipulation of the payload as part of the test.

(56:43):

It sounds like the FFR will move all three of the payloads from the delivery platform to the FFR at the start of the demonstration. Is that true or will the arm move a payload over, test/demonstrate it, return it to the delivery platform, and then move to the next? I think we answered a very similar one earlier, but the current mission concept will transfer all of the payloads from this challenge to the FFR spacecraft for manipulation and testing.

(57:23):

Can you give some examples of payloads so we know we are aligned? yeah, I think we shared a few examples earlier in the slide deck and on the website, you can also see some other examples of types of payloads that could be a good fit, but it's really not an exhausted list and we encourage participants to be creative in their responses to this challenge.

(58:08):

Great. Looking through these. Thanks for all the great questions, y'all.

(58:20):

Is there a preferred or recommended shortfall among the ones listed or are all shortfalls equally weighted by the judging panel? Yes, I think you're referring to the NASA Civil Space Shortfalls list and the answer there is that none of the shortfalls are considered more important than others.

(58:54):

Okay. Is allowed to have a NASA center department as a partner? No, NASA centers cannot, NASA centers or departments cannot be a partner here.

(59:14):

All right, folks. I know there are many, many questions that we didn't get to, but we are coming up on the top of the hour, so we're gonna have to leave it there for now. Really appreciate all of the questions and for those that we didn't get to or weren't able to answer live, we'll be discussing those and definitely watch the FAQ page on the website where we'll post new answers and as we said, feel free to email us at hello@nasatechleap.org,

(59:50):

We're gonna close now. Really appreciate it, everyone, and best of luck. Bye.