



## **ISM FabLab Question and Answer (Q&A) Industry Forum Log**

The following are questions received and answered during the open Q&A window of NASA's [FabLab Solicitation](#), from May 3-June 2, 2017.

**1. Q:** Will slides be available? Will there be a recording of the presentation?

**A:** Yes, slides are available at the NextSTEP website: [www.nasa.gov/nextstep](http://www.nasa.gov/nextstep). There is no recording available for release.

**2. Q:** Are multiple proposals allowed?

**A:** An entity can only be lead/prime on one proposal, but may serve as partners on multiple proposals.

**3. Q:** How precise does cost need to be?

**A:** For Phase A, the costs need to be as precise as possible based on Basis of Estimates since these costs will become the fixed price of any resultant contract awarded. For Phases B and C, the costs, the proposal may contain estimates of lower fidelity, but NASA expects these estimates would become more precise particularly since the follow-on efforts were expected to be awarded on a fixed priced basis.

**4. Q:** What does 20% minimum corporate resources mean?

**A:** Proposers must show a minimum of 20% corporate contribution or matching (10% for a Small Business as defined by SBIR small business eligibility) made within the last five years that is directly relevant to the proposed effort. See section 3.2 of the BAA Appendix B for more specifics on corporate contributions. 50% of the Corporate Contribution must be invested coincident with the period of performance of this effort. Corporate contribution may be in the form of direct labor, travel, consumables or other in-kind contributions. Also, other reasonable forms of corporate contribution may include investments in special facilities or equipment, tooling or other prior private investment, and internally funded technology maturation such as Independent Research and Development (IRAD) are deemed acceptable for this effort.

**5. Q:** Do state and local funds count?

**A:** State and local funds can count towards Corporate Resource if the funds comply with the other criteria in the BAA. Please refer to the Section 3.2, Corporate Resources



**6. Q:** What about corporate sponsorship passed through from the Government?

**A:** No, these would not count toward corporate resources.

**7. Q:** If they have partners (non-government), will their contributions count?

**A:** Yes. Non-government co-proposers contributions count as corporate contributions.

**8. Q:** Please clarify use of specialized government facilities.

**A:** Please provide a letter of commitment that indicates agreement and availability for use of government facilities. The specifics of using government facilities will be addressed in negotiations after selection and prior to award. Any proposed use of a Government facility will be treated as Government resources and will need to be offset in the corporate resources area. See section 4.1.1.10 in Appendix B for further details.

**9. Q:** is there a statute of limitations on how long the investment in facilities counts?

**A:** Yes. Please refer to the Section 3.2, Corporate Resources.

**10. Q:** Are universities eligible to fill the role of the private partner?

**A:** Yes, refer to the Section 3, Eligibility Information.

**11. Q:** Can NASA civil servants or JPL employees participate in any way with a non-Government U.S. Institution on their proposal? Can NASA civil servants or JPL employees be funded (e.g., via a Space Act Agreement) by the proposal submitted by a non-Government U.S. Institution if they are selected?

**A:** Yes, refer to the Section 3, Eligibility Information. Any proposed effort from a Government team member will be treated as Government resources and will need to be offset in the corporate resources area.

**12. Q:** Is the prior investment rule for the entire proposal, or, will each organization participating in a proposal need to claim some sort of cost or in kind contribution or investment?

**A:** Please refer to the Section 3.2, Corporate Resources. The corporate resources is based on the entire proposed effort.

**13. Q:** Can prior government investment be counted toward the 50% rule?

**A:** No. Please refer to the Section 3.2, Corporate Resources.

**14. Q:** Can prior investment of internal Center funds be counted toward the 50% rule?



**A:** No.

**15. Q:** Private matching funds seem to be given strong consideration in this BAA. Private funding can vary significantly over the course of 3 or 4 years and can be difficult to predict in advance. Can the milestone funding profile or project scope initially proposed to this BAA be flexible in future years to take advantage of any additional private capital investment that might accelerate the schedule or enhance the scope?

**A:** The costs need to be as precise as possible since these costs will become the fixed price of any resultant contract awarded. The proposal may contain estimates of lower fidelity for follow-on phases, but NASA expects these estimates would become more precise particularly since the follow-on efforts are also expected to be awarded on a fixed priced basis.

**16. Q:** Please clarify eligibility requirements relative to NASA CS, and FFRDC's. Yes/No – can NASA CS's, and DOD FFRDC employees participate in a proposal? Is the prohibition related to leading a proposal, or are they not eligible, in any manner or form, to participate as team members in a proposal?

**A:** Please refer to the Section 3, Eligibility Information as well as the answer to question 11.

**17. Q:** The eligibility clause states prior IRAD funds are deemed acceptable for this effort. Is there a time window allowing credit of prior IRAD spending? 1 year? 5 years? Or can the credit be applied to all prior relevant IRAD projects that contribute to this proposal?

**A:** Yes, Section 3.2 of the BAA indicates to count as part of a corporate resource prior investments need to occur within 5 years of the award under the BAA.

**18. Q:** Are SBIR funds also applicable towards this 20% corporate contribution requirement, and if so, is there a time limit on those?

**A:** SBIR funds originating from previous federally funded efforts are not applicable toward private corporate contributions. Any corporate resources devoted to an SBIR effort would count toward the 20% requirement if those resources were provided in the last five years. See the section 3.2, Corporate Resources.

**19. Q:** Can Questions and Answers be viewed by all participants, and if so, is there a link to which you can direct us?

**A:** Yes, and here is the link: <http://www.nasa.gov/nextstep>

**20. Q:** Regarding the above referenced BAA, page 10 indicates Page Limitations by Proposal Section. If an offeror does not use the full-page allocation for a specific



section, can they use the ‘unused’ delta in another section? For example, if we only use 2 of the 3 pages for The Proof of Eligibility (Section II), can we use the 1 page we didn’t use in Sections III-IV System Concept & Technical Approach?

**A:** No.

**21. Q:** For a foreign participant in a US led proposal, can the “funding/sponsoring institution” (ref paragraph 3.1) be the foreign company itself? That is, can a foreign company participate with a US led team by contributing (self-funding) work in coordination with the US led team?

**A:** Yes, foreign participants are eligible to respond to the BAA, but must comply with the Guidelines for Foreign Participation which require there be no-exchange-of-funds. See section 3 of the BAA for more specifics on eligibility information and guidelines for foreign participation.

**22. Q:** Since proposals may include proprietary or competition sensitive information, will NASA accept proposal submittal via a secured information exchange email, with the proposer providing a password for access? If so, will NASA allow for pre-coordination of secured email exchange prior to submittal?

**A:** The NASA email exchange server is approved for proprietary or competition sensitive information in encrypted files. NASA will allow for pre-coordination of password access prior to submittal.

**23. Q:** Section 5.2 of the BAA describes the process by which NASA will evaluate and potentially award contract(s) to one or more winning proposals. If a company proposes a set of related but distinguishable and severable pieces of a partnership effort, will NASA evaluate the parts individually, and therefore potentially allow for negotiations to select for award those of greatest value to NASA, or must NASA make an “all or nothing” evaluation before any negotiations on the specifics of an award?

**A:** The desired capabilities are divided into Minimum Target capabilities, which all Phase A proposals must address in the additional design, and Objective Target Capabilities, which are highly desired.

**24. Q:** Section 1.3 (pg. 4) states that partnering is strongly encouraged. Can you elaborate?

**A:** Proposals must reflect all Minimum Targeting capabilities and proposals should reflect as many Objective Target Capabilities as possible. Therefore, it is anticipated that the development of the desired capabilities within a singular facility will require the integration of multiple enabling technologies. Thus, partnering between industries with complementary technologies, as well as with



academic research units, will result in the most competitive proposals and is strongly encouraged.

**25. Q:** In section 2.1 (pg. 7), it is stated that, “upon selection, awardees will be provided a NASA interface consultant with expertise in designing payloads to meet the NASA unique requirements with the intent of streamlining the flight integration process for the awardee and mitigating cost and schedule risks due to a steep learning curve of NASA processes”. What does this really mean?

**A.** While the FabLab will ultimately have to meet NASA interface, safety, and operational requirements for flight on ISS, proposers are not expected to have expertise in these areas. NASA will provide this consultant to provide insight and guidance into these processes

**26. Q:** Section 4.2.1.2.7 (pg. 16) references “NASA policies and regulations”. Is this referring to the development/compliance with a SHE Plan or something else?

**A.** This requirement would be satisfied by submitting a Safety and Health plan complying with 48 CFR 1852.223-72.

**27. Q:** Section 4.2.1.3 (pg. 17) indicates the Government may buy a limited number of “prototypes”. Do prototypes mean one-of-a-kind, non-production units in this case?

**A:** Refer to section 2.1 (pg. 7), “NASA Procedural Requirements NPR 7120.8 defines a prototype as: “A high fidelity unit that demonstrates critical aspects of the engineering processes involved in the development of the operational unit. Engineering test units are intended to closely resemble the final product (hardware/software) to the maximum extent possible and are built and tested so as to establish confidence that the design will function in the expected environments.”

**28. Q:** Are the proposal reviews done by Civil servants or will NASA also have reviewers from external community?

**A.** Any individuals participating in the review by anyone other than NASA civil servants will have non-disclosure agreements in place.

**29. Q:** Can you clarify the level of funding potentially available under this solicitation for a foreign-based company that either: (a) leads a consortium for the FabLab project; or (b) is part of a consortium on the FabLab project, where such consortium is being led by a US based company.

**A.** Section 3.2.1 in the Umbrella BAA provides that NASA funding through this BAA may not be used to support research efforts by non-U.S. organizations at any level. NASA funds may be used for the direct purchase of supplies and/or services that do not constitute research from non-U.S. sources.



**30. Q:** Question about the weighting – why isn't recycling a higher priority than anything else?

**A:** The minimum objectives for this FabLab solicitation do not include recycling. We are working on that, but we are not focusing on recycling for this solicitation.

**31. Q:** Are selectees automatically guaranteed the full 18 months of performance if selected for Phase A? Is the continuation review at the end of the 12 months to determine if performers go on for the final six months?

**A:** Selectees are guaranteed the 18 months. The purpose of the continuation review is to prepare for a Preliminary Design Review (PDR) and help us to prepare for the type of approaches that we will receive at the end of Phase A. This, in turn, will help us to infuse proposals into the Phase B criteria. This is the primary reason that we are encouraging partnering – so that performers can get as close to an integrated system as possible.

**32. Q:** You used the term 'loosely coupled' for NextSTEP Appendix A (habitation) and B (FabLab). Is that 'loosely coupled' as defined in the 7120.5E, or specific to the research and technology requirements for NextSTEP?

**A:** It means that habitats eventually will have the FabLab capabilities in them. There is no direct interaction between Phase A and Phase B performers. Our Appendix A performers are taking FabLab requirements into consideration to ensure that in the future, we can accommodate FabLabs in deep space.

**33. Q:** You mentioned that you had been trying some technologies already, and you know to some degree what works. Are you looking for integration with those technologies you've already had success with? Or are you looking more openly at new ideas and approaches?

**A:** What we've focused on the last several years has been very foundational, specifically process-oriented and focused on polymers. We have a phased roadmap that shows our goals to increase production to multiple materials. The foundational work so far has all been completed through SBIR, so we want to broaden the solicitation through this BAA to all of industry and academia.

**34. Q:** Do you have an expectation of how many awards you will make?

**A:** No, it depends on type of proposals we receive. The more integrated proposals are better, but those that come in focused on specific areas of the capability will require us to mix and match our selections to ensure that the full capability can be reached.

**35. Q:** You've expressed interest in nickel-based alloys like aluminum, titanium. Given the fact you're going to be in a microgravity environment, can you allude to what is motivating your desire for high-strength materials?



**A:** Design flexibility is the goal, but we'll still have structural tools. We are looking at all aerospace grade metallics to support all subsystems including very complex ones aboard future habitats, such as life support systems, where we still need aerospace-grade performance.

**36. Q:** Is there a chance that there will be only one award?

**A:** Yes, there is a chance of one, zero, or multiple awards.

**37. Q:** Is there a general scope of funding for Phase A – how much has NASA allotted for Phase A?

**A:** There is a range listed in the solicitation. We have the budget flexibility to do multiple awards.

**38. Q:** Can you expand on the EXPRESS Rack constraint? Is it size of drawers, the entire rack, power, or everything?

**A:** Attachment 1 shows the constraints. The volume, the power in particular (2kW), and the mass are shown in Attachment 1. We will provide a NASA integrator who can provide guidance in this area.

**39. Q:** Will the attendance list be posted for teaming? Are the complementary industries joint ventures arranged by NASA?

**A:** While NASA strongly encourages teaming, we do not propose to recommend any specific partnerships at this time. NASA is providing a list of parties attending industry day at <https://www.nasa.gov/nextstep> in an effort to facilitate potential partnerships.

**40. Q:** Will NASA consider creating a collaboration portal so those of us interested can collaborate together?

**A:** We'll take that under consideration. If you have an example of a collaboration portal, please submit it to the email address.

**41. Q:** For the bench-top prototype is it mandatory to use aerospace grade electronics?

**A:** No, but you need to show a maturation path for evolution to aerospace grade electronics.

**42. Q:** Educational institutions are eligible, but the nature of this solicitation suggests that the University professor should not necessarily be the Principle Investigator (PI). Can you comment on your anticipation of who would be leading these efforts?

**A:** That's within your teaming structure to define. We are not constrained by NASA's science rules for PIs under this solicitation.



**43. Q:** With an emphasis on capabilities - what kind of role do you see for modeling or predicting capabilities for Phases B and C of FabLab? Roll of simulating what will be capable?

**A:** Modeling is ~~absolutely~~ one way that you can show your TRL maturation path from Phase A to B.

**44. Q:** How does NASA does NASA pay for or honor preexisting Intellectual Property (IP)?

**A:** We have a specific area in the Appendix that governs for IP/data rights, so noting in your proposal the prior work completed is a requirement. And because this is a public-private partnership, and there are resources coming to the table, the IP clause does come into effect, so please review those sections on IP, data rights, inventions carefully.

**45. Q:** Once you've gone beyond the 6x6x6 work envelope, are you looking to build something with larger structures?

**A:** There is no maximum print sizing as long as the EXPRESS Rack constraints are met, but we've highlighted the build volume minimum. We are looking at increasing sizing over time, but that is outside the scope of this solicitation. FabLab is restricted to internal, pressurized volume work

**46. Q:** Do references count towards page limit in each section of the proposal?

**A:** Section 4.1.1 in Appendix B of the NextSTEP-2 BAA sets forth the page limitations for proposals. The actual page number of a reference citation shall not be included in those sections of the proposal which have page limitation. However, NASA does not expect proposers will rely on references since NASA's evaluation will be limited to the pages in the proposal. Proposer are to include additional attachment in accordance with section 4.1.1.0 in Appendix B, a section that is not page limited. The information to be provided in section 4.1.1.0 does not envision the use of references to provide supplemental evaluated material.

**47. Q:** For 50% contribution during the proposal effort: is the 50% a minimum amount or an exact number?

**A:** 50% (at a minimum) of the Corporate Contribution must be invested coincident with the period of performance of this effort.

**48. Q:** Given a US institution (LLC) established as a subsidy of a foreign institution, is this juridical form considered foreign?

**A:** If the Lead institution is incorporated in the US (even if subsidiary of a partnered Foreign Firm), it is considered a US institution.



**49. Q:** For a foreign company, is it critical to have an agreement with an US institution?

**A:** The lead institution must be a US Institution. Any number of foreign institutions may partner with the US Lead Institution. See the Section 3.1 on eligibility in the NextSTEP Umbrella BAA.

**50. Q:** What documents should contain the proof of eligibility? Are AS9100 certifications considered an advantage?

**A:** Section 3.2 in the Appendix for FabLab contains the eligibility requirements and explains how offerors satisfy the requirement for corporate contributions. There is no solicitation requirement for AS9100 certification. Demonstration of the relevance of such certification to achieving NASA's objectives might potentially be a strength.

**51. Q:** NASA consultant will be assigned on policy or technical support/integration

**A:** The NASA consultant will provide Technical support/integration relative to NASA specific requirements per Section 2.1, page 7.

**52. Q:** How is intellectual property handled between foreign companies?

**A:** As long as ITAR and Foreign Export Control rules and reporting requirements are adhered to, Intellectual Property handling between partners is not a concern of NASA.

**53. Q:** Is there a list of standards compliant materials that we should look closely into using for Additive Manufacturing?

**A:** Please refer to Sections 5.2.1.3 and 5.2.4.2 for identification of the "range of metals for in-space applications" since metals are required. There are no identified standards for plastics in the FabLab BAA.

**54. Q:** Are there use cases or a list of currently required operations/materials on ISS (for repairing ISS component parts for example)?

**A:** Please refer to Sections 5.2.1.3 and 5.2.4.2 for identification of the "range of metals for in-space applications" since metals are required. There are no identified standards for plastics in the FabLab BAA. Also refer to Section 4.2.1.2.5, Figure 2 for an example complex component associated with the challenge build.

**55. Q:** Can we use issued patents for specific materials developed by NASA but with no additive manufacturing machinery developed to date?

**A:** The solicitation requires development of a FabLab design by the proposer. Offering up NASA patents is not in itself sufficient to be responsive to the requirements of the FabLab BAA. However, proposers may utilize NASA owned patents and/or computer software in connection with their development of a



FabLab. Any such inventions or computer software should be identified in the proposal. Note that any commercial use of NASA technology will require a Patent License Agreement or Software Usage Agreement from NASA.

**56. Q:** What documents are needed from software? (SWArchitecture, SWDesign, SWUnitests?)

**A:** Please refer to Sections 4.2.1.2.4 and 4.2.1.2.8 for identification of the software and documentation required for Phase A. The software and documentation to be provided to NASA in support of the Phase A activities should be the minimum required to allow the operation/demonstration of the prototype(s) identified in Section 4.2.1.3.

**53. Q:** What coverage is needed for the delivered software? (if wanted)?

**A:** Please refer to Sections 4.2.1.2.4 and 4.2.1.2.8 for identification of the software and documentation required for Phase A. The software and documentation to be provided to NASA in support of the Phase A activities should be the minimum required to allow the operation/demonstration of the prototype(s) identified in Section 4.2.1.3.

**54. Q:** Will critical use cases will be given?

**A:** As described in the solicitation in Section 4.2.1.2.5, selected proposers will be required to execute a "Challenge Build" of five (5) different use cases. Details of the Challenge Build will be provided during the conduct of Phase A.

**55. Q:** Test specifications will be done with the help of NASA consultant? (use cases, critical cases)

**A:** See the answer to question above for the Phase A "Challenge Build." For Phase B and C planning, the NASA consultant will be available to describe ISS integration use cases and limitations.

**56. Q:** Shall we have simulation environment integrated, or we shall have guidelines how to test the software closer to real life use cases?

**A:** Please propose your desired approach to your simulation environment, keeping in mind the threshold and objective NASA mission objectives.

**57. Q:** Do we have standard procedures for software reset /update?

**A:** The NASA consultant will advise selected proposers about ISS requirements for software reset and update in Phase B and C.

**58. Q:** NASA's Fab Lab requirements involve Express Rack compatibility, a goal to maximize ISM build envelope beyond the 6x6x6 minimum, and the intent to apply resulting capabilities in the context of Deep Space missions. Beyond-LEO



exploration architecture is unlikely to accommodate Express Rack-scale assemblies. Shall proposals express concepts that preserve ISM capabilities while conforming to the constraints expected from beyond-LEO architecture?

**A:** The express Rack is not the end-state functionality for FabLab capability, but is rather a step along the way. Please adhere to the desired Express Rack compatibility requirements.