



SBIR Ignite Release Party

Learn more about NASA SBIR Ignite and the technology challenges NASA is looking to solve.

July 13 at 6 p.m. EDT

TRANSCRIPT

Quenton Bonds –

Welcome to the 2022 SBIR Ignite Solicitation Release Party. I am Dr. Quenton Bonds. I am with the SBIR STTR PMO (Program Management Office) and we're here to introduce to you a brand-new program, for a product driven, commercialization firms that we are looking to get into our NASA pipeline.

And you know, I'm so excited about these opportunities because NASA continues to do things, to bring new firms into our pipeline. In this case, you know how this Ignite thing came about, we heard your complaints, or your recommendations, right? We heard that we're only funding the same firms, we heard that our timelines are too long, and a lot of the investors don't like that. We heard that the solicitation itself is confusing, it's very long and it's hard to get into our pipeline using SBIR/STTR. So, our leadership came together and we said, OK, how could we meet the needs of firms that want to get into our pipeline, while also meeting our program goals?

A lot of people don't know one of the strategic goals of NASA is to catalyze economic growth and drive innovation to address national challenges. Basically, what that means is, we want to develop technology, we want to fund the development of technologies, at NASA, that will not only benefit us in space, but also benefit us terrestrially. What that does is, it enables us to hire or fund home-grown, deep tech R&D firms, which puts money back into our economy, which broadens our technology pool, making us stronger as a Nation and it also addresses national challenges.

I don't want to get ahead of myself, but when we get into the topics, some of these topics address wildfires, a lot of the topics are very related to climate change. We want to reduce the carbon footprint with several of the topics of the Ignite solicitation.

And so, what we've done is come up with a streamlined process, and I'm going to get into it. But we want you, to help us. We want our homegrown, deep tech firms to help us with this. Okay?

And, you know, we're excited about it. Because this kind of reminds me of when I was a graduate student, if I could digress a little bit. When I was a graduate student, it was a dream to work for NASA. I mean, I pursued various opportunities with NASA. I mean, I'm a microwave guy, I built RF instrumentation for years. I didn't want to work in defense. No disrespect to defense, but I wanted to work on something that could make a broader impact. And NASA just seemed so difficult. But I said, you know, with all the challenges that I've faced in the past, what do I have to lose by trying to pursue these opportunities with NASA? And I tried.

I remember receiving, fast forward, I remember receiving a call that NASA was making me often. I fell on the floor and cried, just to be honest with you. And I say that, because a lot of firms look at NASA and they say, hey, it's hard to get in. How do I work with NASA? Who do I talk to? Yes, it's very competitive. It was not a cake walk. The work is very hard. But you too can work with us!

Ignite is one of these programs that we changed everything about it. Such that, you don't have to change the go to market strategy. Such that investors will still be interested because we've shortened the timeline. And we're going to talk about that today.

But before I get into that, I need to know who's on the line because, I want to speak to the audience. I don't just want to talk to a screen. I want you all to kind of be engaged. Okay? So, I'm going to give you an assignment starting up on this webinar, all right?

And this assignment has three components. So, if you're a university, if you're a small business, or if you're an investor, or other; I want you to put "U" for university, "SB" for small business, "I" for investor, and "O" for other.

All right so that's the first component, right? The second part is your affiliation, right? So, if you are affiliated with a university, put the university name, if you are an entrepreneur, put the name of the firm. If you want to be entrepreneur, if you're an aspiring entrepreneur, or with a university.

And last, but not least, if you've seen our previous webinar. We had a webinar on June 28 that I'm not going to go over too many of those details. I'm kind of going to expand on that webinar where Max Briggs plays the program exec type role where he gave a general overview of Ignite. I'm gonna add to that providing more details in this particular webinar. And so again, your demographic: "U" for university, "SB" for small business, "I" for investor, and your affiliation. So, it'll be like "U"... for me, NASA and whether you viewed the previous webinar, "I reviewed it", so I say, yes. I don't think you, not sure if you can see my comments on the chat, but I'm going to do it first. I'm "O" other, because I'm with NASA. I'm going to put: "NASA, SBIR PMO, Program Management Office, and yes, I saw the last webinar".

So, I can't see all of your comments because I'm on stage, but hopefully you all are adding putting these things in the chat to kind of stay engaged. It's 6 o'clock in the evening on the East Coast. I think it's around. I think it's around 2 o'clock on the West Coast, but we want you ought to be engaged. I want to see at the end of this webinar some, some letters and some affiliations and if you saw our previous meeting.

So, let's get into it. Let's get into some of the specifics of this. So, the idea of this webinar is not to go through a bunch of details, but to provide a little bit more detail of the solicitation. We released the solicitation yesterday, our SBIR Ignite solicitation. I know many of you, many of the U.S. small business, especially the deep tech entrepreneurs, you guys and ladies, are go getters it. But if you, if you don't have access to the link, someone will put it in the chat before the end of this meeting.

But we want to get, we want you to be able to listen to this webinar or release party and see, is this a good fit for your firm? This is not a webinar such that we are looking to pair or it's not a forum for individual firms to ask us, you know, is my technology a good fit. It's, it's really to provide an overview.

And what we've done with this Ignite solicitation, I feel like it's really cool. So, you'll see by the page count, uh, the, the, we're doing something with a pitch. We're doing a pitch. I think we actually called it a panel review and you submit your slide deck. And at the end, we're going to do a Q&A so after I give the overview, we're gonna do a Q&A at the end so you all can ask questions about Ignite, you can get into specific things about Ignite that you potentially may have questions about, okay?

So, let's talk about, what is the difference between Ignite and SBIR/STTR? So, this is the SBIR Ignite program. So, I want to make that clear starting. Now, this program has all of the guidelines of the normal SBIR program. So to be eligible, you must be a U.S. small business, uh, to be eligible. You must have a U.S. small business has a certain number of employees, I think it's less than 500 employees. You should be incorporated in the United States. It's not for international firms, uh, similar to the SBIR, not the STTR but the SBIR solicitation, all of the rules and guidelines are the same as far as the number of contractors, as far as the things that are typical for SBIRs. However, we've homed in and we've streamlined certain things, okay?

So, let's talk about funding. So, to start out with funding, similar to the normal SBIR, we are providing \$150K, for the Phase 1 and we'll provide \$850K for the Phase 2, so that's the total of \$1M, okay? And the thing that I like about the solicitation, and these are the things I'm going to hit on, we're streamlining from Phase 1 to Phase 2, where at Phase 1 you apply for your Phase 2.

And a lot of people have asked those questions, okay? Well, or the question that has come up in our internal groups, like, how much should we streamline? And that depends on you and the technology development.

We don't want you to just streamline for the sake of streamlining or reducing your timelines in Phase 1 and Phase 2 just to reduce your timelines. We want these to be reasonable according to the technology development. Again, we developed this solicitation for a more product driven, commercialization, focus firms and sometimes those firms move at a more rapid pace for developing a prototype of what we call an MVP, a minimum viable product. And so, from your Phase 1, which is typically a concept study, to a Phase 2, which is typically a prototype, we kind of let you determine what's reasonable. And during our evaluation, we kind of assess, you know, does this make sense? Can the firm do this? Even our review panel is different for Ignite. So, our review panel is not just going to be subject matter experts, but subject matter experts, and potentially reviewers who understand commercialization, understand entrepreneurship, who understands, or has some understanding of what does it take to take the technology to market.

And so, in particular, let's get into the Phase 1, all right? All of the margins, the page count, all those things are in the solicitation. Take a look at the solicitation, but again, I'm just highlighting a few things that I found to be interested, all right?

So, we're using Box for this. Normally, you would submit through another system for those that have submitted. It's called uh, EHB. If you've submitted to that system, we're not using that for Ignite, we're using a different system called Box. Again, if you open up the solicitation in the PDF, we have the link to box where you can submit your proposals.

But check this out, this is really cool for the Phase 1 solicitation, all right? We're doing a white paper not to exceed 7 pages, okay? So we've heard all of your concerns about the SBIR solicitation being, you know, the proposal being too long. By the time I spend as much time writing a proposal for \$150. You know, we're a startup, we're trying to get across the valley of death, so we've shortened the white paper to 7 pages. To supplement that, or to compliment that, we've implemented a slide deck. So you can use a slide deck of 15 pages. And more than likely, if you're one of these types of firms, you already have a slide deck in hand, okay? And the way the process goes, is that we're going to score you based on those 2 things but at the end, the firms that have the highest score, you're going to go before a panel and you're going to propose your work in front of a panel. So, that kind of gives you a similar funding strategy as if you were looking at investors you were going in front of investors, right?

And so, I already know a lot of you all are asking well, what, what's different about the scoring, okay? So, what we've done is that we've weighed the scoring very much heavier towards commercialization. So, in this case, this is also in our solicitation, the commercialization potential is 30% or 30 points rather. The scientific technical merit is also 30 points. So, we're kind of sort of weighing those equally.

Uh, experience, qualifications and facilities, if you've applied for SBIR at any agency, not just NASA, you will know that we evaluate that, evaluate proposers, based on that, uh, across the board, that's 20 points.

And effectiveness of the proposed work plan, there's another 20 points, okay? And so again, that is the scoring.

We score the white paper and based on the scoring from the white paper and the slide deck, if you're one of those high scoring firms, based on our reviewers, this is again for the Phase 1, you will come back and you'll present in front of that panel of subject matter experts that are more commercialization focused, or have an understanding about commercialization and entrepreneurship.

And really, we're weighting your technology on have you planned? Have you done any planning towards going to market? Do you have any investors? Or are there any commercial customers? This is what we want for this Ignite solicitation. We want you to think more of, again product driven commercialization, taking your technology to market, right?

And if you, I know this is a little different from the normal SBIR/STTR program, for those of you that's new. And that's why it's a completely different program, completely separate from SBIR/STTR. So that's the Phase 1, right?

For Phase 2 again, you start applying for your Phase 2 proposal, within the Phase 1 timeline, while you're working on your Phase 1. For the normal SBIR/STTR solicitation, you wait to after the Phase 1 is complete. You submit a proposal. We evaluate that proposal. Even for the Phase 2, what we're doing is a proposal narrative not to exceed 40 pages. So again, a lot shorter than the normal SBIR/STTR solicitation for Phase 2, and a similar process to the Phase 1, where we're going to score that proposal based on those same criteria, rather. Again, weighing heavily towards commercialization. But at the Phase 2, you'll still go in front of that panel, if you're one of the high scoring firms or one of the high-ranking firms.

We can't really get too much into the details of how we do our scoring or even our review process. But we've even streamlined our review process. We removed steps from our review process. We've made certain steps in the review process kind of shortened them such, that even the review process will be faster. So not only can you go to Phase 1 to Phase 2 faster, the award theoretically, should be faster and we're even hoping that our contract negotiation will be a little bit faster. Well, although NASA, we have a pretty, pretty fast contract negotiation, period, okay?

Phase 2 will be Box. I'm just trying to make sure that I've hit on everything in these areas, I think so.

Now, so again, this webinar is going to focus a lot on the topics right? And so we've had most all of our topic authors to record a really short video, to give you a first-hand peek into what are our subject matter experts looking for. Even though NASA may not be the customer for some of these technologies, all of these

technologies are NASA related. And again, for SBIR/STTR, if you don't already know this, we are contracting agency. So, we want to use your technology. We're not a granting agency. We're a contracting agency, so we want you to develop a prototype such that you can use, all right?

So, let's hear from our topic authors. Uh, we're gonna give our team a little time to load the videos and we're going to be able to hear exactly what our topic authors want, and what they have to say. So, I'm gonna take a pause and let the videos for the topic authors to load.

Topic Title: Enabling technologies for the development of a robust Low-Earth Orbit Economy

One of NASA's strategic goals is to lay the foundation for America to maintain a constant human presence in low Earth orbit, enabled by commercial market. We believe that a commercially based economy can ensure that our national interest for research and development in space are fulfilled, while allowing NASA to focus government resources on deep space exploration.

This approach built on the success of NASA's commercial crew and cargo programs. To achieve this goal, NASA is committed to developing a robust LEO economy by enabling both the supply and demand side. As an example, NASA is helping support the development of LEO destinations that are safe, reliable, and cost effective and allows NASA to be one of many customers. These will be commercially owned and operated space stations. All include housing crew and performing commercial research manufacturing and other activities.

One example is the funded space act agreements, signed in December 2021, with 3 U.S. companies to help them develop their designs for commercial destinations. Another is a contract, which was signed with a U.S. commercial company to develop a commercial segment, which would attach to node 2 of the ISS, and would be able to depart later upon the retirement of ISS.

NASA believes such commercial destinations will catalyze additional commercial activity in space to expand opportunities for many large, and small, businesses and universities. And so we are enabling other opportunities such as this subtopic of SBIR. Three areas of interest for this topic are technologies that reduced the cost of transportation of crew and cargo from low orbit, as well as crew habitation for long periods in low orbit. Also, the rapid and reliable cost-effective launch and return of science samples and payloads and materials produced in orbit. And finally, the creation of commercially viable EVA suits for use, by crew in low Earth orbit.

With efforts like this, NASA is hoping to accelerate technologies will be needed for this emerging economy.

Quenton Bonds

Keeping in mind, uh, one of the goals of NASA, that a lot of people didn't realize again, we want to catalyze economic growth, drive innovation and address national challenges. And I think it's super cool that we want to actually, again fund companies, homegrown companies, to develop technologies that are beneficial to commercial LEO destinations.

So, the actual title of this topic in our Ignite solicitation is *Enabling technologies for the development of a robust Low-Earth Orbit Economy*. And so, if we give us a synopsis of what the topic author said, right? Basically, we want to go to and from low Earth orbit, commercial LEO destinations (CLDs). So, we want to go to and from low Earth orbit, commercial LEO destinations in low Earth orbit, and we need technologies that can help our crew with that, right? We need technologies that can help with habitation, but we need those technologies to be reliable. We need them to be cost effective. We need technologies that can aid in reentry and landing. We need different types of payloads that will help us take science samples to the ISS, and we need to lower the costs, right?

We also need EVA suits. So, right now you may not realize it, but NASA is the only provider of EVA suits. However, you can on the news, and you can see it on the TV pretty frequently, that you can see more and more commercial astronauts are going into space, and more and more people want to take the commercial sector to space. And so, these are the reasons why, or when we say private missions to space, I'm saying, take the commercial mission space or have private missions to space, these are the reasons why NASA is funding this, and it accomplished that goal of making it a broader impact at home, or addressing the national need. So, we're talking about EVA suits; rapid, reliable cost-effective launch of reentry capabilities, uh, from science and small payloads and again technologies that reduce the cost of human transport from Earth and low Earth orbit.

All right so that's kind of a synopsis of that particular topic, right? Now you'll hear from the author of the *Low-Cost Photovoltaic Arrays for Space* topic. Give us a couple of seconds to load that video.

Topic Title: Low-Cost Photovoltaic Arrays for Space

Photovoltaics have been powering spacecrafts for over 60 years and there been huge improvements in the amount of power that can be generated for a given cell. Unfortunately, they're real expensive. Over 100 times more expensive than terrestrial cells. This topic aims to develop technologies and processes that will bring down that cost. Starting with materials that go into making the cell, to processes to fabricate devices and erase into cells, and going all the way to how we test and use the cells in space. We're looking at ways to reduce the overall cost.

Between NASA, other government agencies, and the commercial space craft industry, the need for photovoltaics systems is growing. We've seen a large number of constellation systems being deployed for a low Earth orbit, seen many new geostationary communication satellites being launched, and at NASA, we're using solar power spacecraft, all the way from close to the Sun all the way out to Jupiter. On top of that, Artemis, NASA's mission to explore the lunar surface, will be using solar power for many components, including gateway and the human landing system.

It's obvious that both NASA and the commercial spacecraft industry would benefit from having a lower cost photovoltaic system. Some potential solutions may be novel ways to reuse or replace the cell growth substrate; to improve the throughput in cell growth; to increase yield during metallization and processing; and even to improve the way that the cells are integrated into arrays. But these are just a few examples.

We want to hear from you. We want to hear your ideas on how to meet this challenge. This program isn't limited to just organizations that typically produce photovoltaics. Everyone is welcome to propose concepts that will help meet the end goal of a lower cost photovoltaic system.

Quenton Bonds

All right, I think the topic author did an excellent job, so I'm not gonna spend a lot of time on that one. Basically, space grade photovoltaics are very expensive. Orders of magnitude, more expensive than terrestrial, meaning photovoltaics that's developed on Earth. However, as you can see, as I spoke about in the first example, commercial space industry is booming, right? It's, it's growing really fast. We want to privatize space. Uh, even for us, for a NASA perspective, with us putting more assets in space, we need that solar power for habitation, but we also need it for transport, right?

Currently, I think we're only getting about 20-30% transmission efficiency, meaning the energy that we receive, we're only getting to 20-30% of that to our actual assets, for power distribution, and really that affects long term sustainability whether we're talking about moon and Mars. And so, I think for this example, for this topic, you can clearly see the mutual benefit of NASA funding technologies, that will help or advance our technologies in photovoltaics. But we'll also bring a lot of just really awesome technologies here on Earth. I mean, we want to see solar power cars. We want to see more efficiency in our solar panels. As you can see the electric vehicle industry is booming. So we want to have a lot more solar power capabilities, and these technologies that are developed for space applications, can obviously be of a tremendous benefit for Earth.

Okay. So, let's go to our next topic. The next topic is *Electric and Hybrid Electric Systems for Unmanned Aerial Vehicle (UAV) and Aircraft in the 1500 to 5000 lbs. size class*. It's a pretty long title, but I actually

found this to be really interesting. So, let's give our team a few seconds to load this video. And again, you'll hear directly from the topic author.

Topic Title: Electric and Hybrid Electric Systems for Unmanned Aerial Vehicle (UAV) and Aircraft in the 1500 to 5000 lbs. size class

NASA is working with U.S. industry to advance electrified aircraft propulsion through a number of mechanisms. One of them is the NASA SBIR Ignite topic, entitled *Electric and Hybrid Electric Systems for UAV and Aircraft in the 1500 to 5000 lbs. size class*.

The purpose of this topic is to stimulate U.S. entrepreneurship in the emerging markets of electric and a hybrid electric aircraft. Components are sought for integration, ground and potential flight testing, for a 1,500-pound class hybrid electric drone. Proposals should support market introduction to the existing large UAV or emerging electric and hybrid electric aircraft markets. Components sought include, but are not limited to: motors, converters, circuit interrupt devices, cables, turbo generators, batteries, bus capacitors, electrically actuated control surfaces, electrically actuated landing gear, or components that integrate multiple functions, like motors combined with engines to implement a hybrid systems. That evaluation will be based on economic, environmental and technical criteria.

We seek companies that will produce technology and the resultant product in the United States, have an understanding of how their product reduces life cycle, aviation emissions, and have differentiating technology advantage, which has been clearly shown through an evaluation of how the power and weight and efficiency benefits of the technology roll up to aircraft level benefits.

Quenton Bonds

I think our author, uh, the topic author did a great job of explaining the different components, uh, technologies that we're looking for, in this particular topic. Uh, you will see in the solicitation that there's an electric hybrid aircraft that NASA is developing called SUSAN [Subsonic Single Aft eNginE]. So, this is one of the more specific subtopics. Meaning that we've kind of specified components and other materials, particularly for this SUSAN aircraft. However, I think it becomes clear to see that, you know, the broader impact is monumental. Uh, if you haven't thought about it before, our aircraft must go hybrid, or they must go mostly electric in order for us to reduce the carbon footprint here on earth, right? Um, and in addition we just want to want to have a cleaner environment, so we, at NASA, are developing the SUSAN aircraft that should reduce emissions by, I think about 50%. Which again, there's also an industry, terrestrial on earth, of electric, and hybrid electric aircraft systems that can really help us in a lot of different areas with regards to climate change.

And so again, I think the author did a great job. I'm not going to spend too much time on that one. Let's go to the next topic, *Point-of-use Recycling for Optimized Space-Age Logistics*. Let's give our team a little time to load it up.

Topic Title: Point-of-use Recycling for Optimized Space-Age Logistics

Hello, my name is Jeffrey Smith, and I am the element architect for NASA's Deep Space Logistics project and that's part of the Gateway program. Gateway is part of NASA's Artemis architecture, which will take humans back to the Moon and establish a sustainable presence, both on the lunar surface and orbit around the Moon. Gateway, as a part of the Artemis, will be a small human tended platform orbiting the Moon. It'll serve as a staging point for lunar surface missions and for science and technology demonstration that'll set us up to get a little closer to that first, eventual human mission to Mars. Now, the Deep Space Logistics missions are going to be the cargo missions to the Gateway and they'll deliver supplies and payloads to support the crews of the Gateway, as well as support the surface missions to the lunar surface and other destinations in deep space.

So, as the cargo delivery people, our cargo missions for Gateway and Deep Space Logistics are going to be a lot like the cargo missions for the ISS, the International Space Station. Cargo will have to be packed carefully. There's a lot of cargo packing materials and restraints that need to be used so that the cargo and payloads can withstand the high accelerations and vibration environments of the launch. And also, during the transit period.

Also, the cargo will have to be well organized, so the crew can get access to the things they need and pack them away carefully when they're on the ISS or on the Gateway. It takes a lot of materials to do that, but there's also some very important differences between the way we're going to supply the crews for our Artemis Gateway missions and our lunar missions, and the way we do it today on the ISS.

Today on the ISS, we're able to send up a lot of cargo packing materials and then we can take those out with the trash. The relative cost of packaging materials for delivery to low Earth orbit and ISS is quite a bit lower, at least in order of magnitude or two orders of magnitude lower than it will cost for us to send those same materials to the Gateway. So if we're going to begin in any way to create a sustainable presence in deep space, a sustainable human presence, we really needed to take advantage of every single kilogram of up mass material that we can. That includes the cargo packing materials. We don't want to throw those away if we can possibly have an alternative for that. And that's what we really need from you.

We're looking for a point-of-use recycling solutions for common waste streams that we've produced in space, particularly on the Gateway and as part of our Deep Space Logistics missions.

So, we have this this point-of-reuse recycling for optimized space age logistics topic that we'd like to engage small businesses to help us understand the best way, and the best choices to make for cargo packing materials that we'll use to send supplies in cargo to the Gateway. Then once at the Gateway, we'd like to understand how we would recycle those materials into common useful items. The cargo packing streams, we think are very good starting point for this kind of full recycling capability, because the cargo packing stream is relatively clean it won't be very dirty. It consists of some regular materials, nylons for bags and strapping materials. Some hard plastics for containers and cases that are used in the packing materials.

Also, some softer plastic materials, like phones, Ziploc bags are heavily used and other types of plastic packing materials. Some styrofoam's also used. That's what's used commonly today. We're looking to see if there are better packing materials, that are more conducive to recycling and being able to be, for example, be broken down, and then used in 3D printers, which have been demonstrated in space as useful for recycling materials. But there might also be other ways to recycle those waste products from cargo packing materials.

There may also be ways to recycle other waste streams. We're very interested in paper type waste streams that could recycle paper products and turn those into something useful on the ISS, or on the Gateway. And we're interested in food packaging type waste, potentially food waste, but we recognize that may be a taller pole and something for a future solicitation. So, the point-of-use recycling for optimized space age logistics really looks at cargo packing materials for our Gateway, Deep Space Logistics missions as a starting point.

But then we're interested in all kinds of waste streams and how to recycle those and make full use of every kilogram we bring to the Deep Space Logistics missions and bring to the Gateway. Hopefully, that's been useful and I look forward to seeing more from you and understanding the best ways to have NASA recycle those materials and make use of them. Thank you.

Quenton Bonds

Okay, again, the topic author did an excellent job, I think it becomes clear that, you know, the more we want to go to space, to where we want to habitat space, the more we want to travel to space, the more we want to do things in space, the packaging becomes very important.

You know, some materials or some science assets actually have to be packaged a certain way, with certain types of packages, such that we could perform tests in space. And that packaging has to be disposed of, in addition to the fact that we have food. And so, these are various waste streams that must be dealt with and we need creative ways to deal with those waste streams. And I think again, it becomes very clear that also at home, you know, our oceans are being flooded with waste. I think everyone is probably seeing the pictures of the big trash pools in the oceans, they say the size of sometimes a few cities, or even small

continents at times. And so, these are some of the reasons why we chose these topics, because these topics were very important, very critical topics. Not only to us at NASA, but also to the United States and really the world.

And so, uh, because we're running a little long time, let's go to the next topic author. It's the *Commercial Development of Active Debris Remediation in Space*, and let's give them a couple of minutes to load it up.

Topic Title: Commercial Development of Active Debris Remediation (ADR) Services

Hi everyone. As I'm sure you already know, orbital debris is a growing a challenge for space operators. Some pieces of debris are large enough that we can track their trajectories and when needed, maneuver to avoid them. However, these maneuvers burn propellant which reduce the operational lifetime of spacecraft.

Other pieces of debris are too small to track. So, satellites are flying blind with respect to these objects. Damage done by these small degree strikes can be mitigated by clever spacecraft design or added shielding. But again, all these actions incur costs. If your spacecraft does get hit by a piece of debris, large or small, it's going to be a bad day.

Now, beyond just the economic cost I've already mentioned. Orbital debris also threatens the safety of astronauts, limits the ability to launch spacecraft into debris filled orbits, and potentially renders entire orbits unusable for a generation or more. Now to help clean up some of this orbital debris, and avoid the disruptions I just mentioned, NASA is soliciting proposals for innovative systems that can perform commercial debris remediation services.

Debris remediation services are those that move, remove, or reuse active debris, to reduce the risks associated with it. So, in other words, you could deorbit the debris, maybe just nudge it out of the way a little bit to avoid a collision, or you know, salvage dead spacecraft for materials and parts. All these forms of debris remediation are in scope for this solicitation. And I'll tell you that our main concern is the scalability of the approach. So, where moving just one or two pieces of debris isn't enough. Bulk remediation of debris is the key.

So if you have a business idea, that can reduce the risks associated with many pieces of debris in a single mission, or have an idea for an extremely low cost approach, then please consider responding to this solicitation for commercial development of active debris remediation services. Thanks.

Quenton Bonds

Okay, whether we realize it or not, our economy depends heavily on space infrastructure. So, communication satellites, assets use for financial exchanges, uh, national security, transportation, [and] climate monitoring. We have various assets in space, and the more assets we put in space, the more debris which is created because, you know, all of these things have a life cycle. All of them have a shelf life. And so, some of these, some of the debris is kind of left floating around in space, and so we need to clean it up so that the assets that we are using currently don't hit them, and kind of knock things, cutting power and kind of, uh, discontinuing communications and even climate monitoring or even observations for, for various reasons.

And so, as the topic author mentioned, we want technologies that will scale and provide bulk remediation services, substantially reducing the risk of these assets. And so, I think that one was pretty self-explanatory. We're going to go to our last topic of using NASA data to foster climate resilience and you will hear from this topic.

Topic Title: Technologies Using NASA Data to Foster Climate Resilience

So the pace of change in the earth system, due to the accelerating rate of climate change, compels urgency in our actions. NASA's insights about our planet, and the complex interactions within our earth system, allow us to better understand natural and anthropogenic stresses and their impacts. In this focus area, we are seeking new technologies that translate these insights into actionable information, characterizing communities, vulnerabilities and exposure to climate related risks and providing information to guide planning and land use actions.

So can your technology leverage NASA's data in models and enable decision makers to compare robust different future scenarios? Including the impacts of compounding hazards? Can your technology contextualize earth science knowledge, including uncertainties with economic and social frameworks to support real-world at-risk management strategies and actions? And does your technology reflect an understanding of your climate decision making domain? What are the pressing priorities of your specific community members and leaders? And what are the benefits that your tailored solution offers?

For example, are there increased risks of adverse health or environmental outcomes, faced by persons of color, low income persons, indigenous persons, or members of tribal nations in your community of interest? And if so, how does your technology address these challenges? Have you worked with these community members to develop your solutions?

We are excited to see your solutions build upon the newest technological advancements and provide high quality, actionable insights for a complex challenge that can often be confusing and overwhelming to decision makers. Our science is most impactful when it's informing real decisions and actions, and we look forward to exploring this effort with you. Thank you.

Quenton Bonds

Great job, thank you very much. So, one of the examples that Dr. Gupta talked about was addressing concerns in underserved populations, but we also, which I think is fantastic, right? Uh, that's something that has been overlooked for decades. And there are also other areas, like advanced and visualization modeling for rising sea levels. This affects the weather, again it affects climate change, it affects the fisheries, all those different things, protecting our glaciers and icebergs. We also look for technologies in this area that help us with pre- and post-wildfire detection.

And so, some of these topics, as you can see, that was our last topic and for the sake of time, I'm going to kind of wrap up, so you all can have time to ask questions. But as you can see, the topics that we chose, have a broader impact. Some of them have more of a broader impact terrestrially and most of them have a pretty good balance between helping NASA, and also solving or addressing National challenges.

So, the last thing I want to hit on, before we ask questions, before we open it up to questions, is that some of the long-term benefits of applying for Ignite, or winning an Ignite proposal, is you have access to our subject matter experts as you develop your technology.

Again, as I'm going through Ignite, I remember so many, it brings back so many memories of being an intern and wanting to talk to as many people as possible because I didn't have a job at that time. Wanting to understand what is going on at NASA. And I really networked really hard, worked really hard. I talked to a lot of people. I think I ended up interning at three different NASA centers and this is exactly what we're expecting our firms to do, or what I recommended that our firms to do when they get into our pipeline.

Because, you may have opportunities, what we call the post Phase 2 initiatives. Max talked about these post Phase 2 initiatives, but [in] Phase 1, if you have an accelerated timeline of about one and a half years, that's \$1 Million. The post Phase 2 initiatives provide matching funds up to \$2.5 Million. So, in 1 and a half to 3 years, your technology can be funded up to \$6 Million, or more, because we also have the sequential program. Just like the other SBIR/STTR programs, you're also eligible for our Ignite and our TABA programs, or I-CORPS and our TABA programs. I-CORPS helps you develop your commercialization plan and commercialization strategy, preferably for these Phase 2, post-Phase 2 opportunities.

Max talked about all those post-Phase 2 opportunities, but I'll go through them again. The Phase 3, which is a sole source pass through. So, all firms in our pipeline are eligible for Phase 3. Again, this is the reason why I say, once you get into our pipeline, once you meet our subject matter experts, or have access to them, invite other subject matter experts. Find out what else is going on at NASA, invite those other subject matter experts to your, your presentations and your reviews, your design reviews. And they may even want to fund you for what we call the Phase 3, or a Phase 2E, which we provide metric funds up to \$375K, or you also have the CCRPP, which provides the matching funds up to \$2.5 Million. So, there are a lot of reasons why getting into the master pipeline, particularly through Ignite, is an awesome opportunity. Even though the number of topics are less, some of them are very broad. Some of them are, one or two of them are a little focused, but we feel like this is an awesome opportunity that you don't have to change your go to market strategy too much.

And I think we will open it up for questions. And so, I'm gonna introduce to you, Ali George, she's on our Ignite team and I think she's gonna bring the questions out of the chat and ask away Ali. Good to see you.

Ali George

Absolutely, good to see you too. Okay, so we have a lot of great questions.

Quenton Bonds

Oh, wow okay. Great.

Ali George

The first one is, are the awards granted based on just the white papers and are there examples of white papers or slide decks available, perhaps specific to the topics?

Quenton Bonds

Okay, so one of the things that I should have mentioned at the beginning, which Max mentioned in his presentation, is that this is a pilot. Meaning that this is our first time doing it. We've never done it before. So, we don't have any templates. We will consider doing a template, but I think we kind of like to give people the freedom to express their ideas and demonstrate their technologies in the ways that they want to demonstrate them, within certain guidelines. So, you can see those guidelines on our solicitation.

But in addition to that, what was the other part of that question? They asked two things. They asked was there a template and they asked . . .

Ali George

Are the awards granted based on just the white papers?

Quenton Bonds

No, so for the Phase 1, we are granting the award, in the Phase 1, you're given a score based on your white paper and your slide deck. You present a slide deck. After that white paper and the slide deck are scored, the highest scored individuals, with higher score proposals, those PI's will present in front of a panel of subject matter experts that are also commercialization focused. They understand about taking technologies to market and understand about products and being more product driven. So, you're going to present in front of that panel, and based on your score, and the presentation of that panel, you're going to receive an award.

We have an SSO that does the final selection, but those are, in general, the criteria that we're using to award proposals.

Ali George

Okay, great.

Can we submit letters from corporations showing interest in doing a PSC or development project together after Phase 2, instead of an investment?

Quenton Bonds

Say that again, can we submit a POC or what now?

Ali George

Or development project together after Phase 2, instead of an investment.

Quenton Bonds

Okay, so. I think what, uh, the question is, is that instead of an investment, they want to show that they have some commercial interest after Phase 2.

So, yeah one thing that I didn't mention is that, even though you know, letters of intent, or letters of commitment, they don't count against your page count. We accept them. But this is a great example that they're not mandatory.

Any way that you can show that you have commercial interest, commercial potential, or that your product can be mass produced, or it can be commercialized in any shape form or fashion, we will accept that. You just have to kind of sell it to us. And so, we're not putting people in a box about how they demonstrate that they, the technology has commercial potential, but we do ask that it'd be compelling, because normally, NASA solicitations are very competitive.

Ali George

Perfect. Here's another one. It says, is there a communication blackout period from now, until the submission date?

Quenton Bonds

Yeah, so that that's kind of a little bit of a, uh, uh, a squirmy question, right? So, yes, for all NASA solicitations, it's a blackout period. As soon as that solicitation is released, until we announce the award, for every SBIR/STTR solicitation, there is a blackout period. However, we can talk about NASA's needs, right? And so, you can talk to NASA subject matter experts. We don't necessarily provide you the names of those people. But, if you know NASA subject matter experts, and you're talking about their needs in general, as long as they're not saying, hey, we need something on page 57 or 56 of the solicitation, all of those things are allowed. So hopefully, that provided some context about what's allowed, and what's not allowed during blackout.

Ali George

Perfect, here's another one that says, can we submit multiple proposals using the same technology but different use cases?

Quenton Bonds

So, if you submit a duplicate proposal, we will throw one out. If you submit two different proposals of a similar technology, as long as the proposal is different, we will accept it, but there's a maximum of two. We won't accept more than two proposals. But they must be different. You can't submit the same proposal to two different topics. But if they're different, and the core technology is similar, as long as what's built

around them, that's allowable. And again, a maximum of two. We're not accepting more than two proposals from any one firm.

Ali George

Perfect. And about submitting proposals, what is the timeline on Phase 1 and Phase 2? Do we submit proposals for both Phases simultaneously?

Quenton Bonds

And that's a good question. So, uh, the Phase 1 is open I think until September 1. So, it's open from yesterday [July 12], yes, until September 1, right? Uh, during your Phase 1 proposal, there will be a time that you submit your Phase 2 proposals. So, you don't have to wait until your Phase 1 proposal is over.

Sometime during your Phase 1, hopefully, after you've done some preliminary studies that you can demonstrate that you can be successful at Phase 2, you can submit your Phase 2 proposal. And that's how we streamline that process from Phase 1 to Phase 2. Whereas in the normal SBIR/STTR solicitation, people resubmit... or firms or PI's resubmit after the Phase 1.

Ali George

Okay.

Quenton Bonds

Good questions.

Ali George

If I apply, how long will it take until I find out if we are selected?

Quenton Bonds

Yeah, yeah, so that's a, I, I figured we would get that question. And I'm gonna start it with this disclaimer. Uh, this is a pilot. Due to the fact that, you know, are reauthorization, we just received it. There's some things that, you know, kind of slowed us down, right? But we're hoping that it's faster than the normal SBIR/STTR program. So, I think once you apply, I think it's around two months, or something like that, and

then you go through contract negotiations. So, contract negotiation, even though you may propose something, we may go back and forth with you a little bit to see what's reasonable. But, that will also depend on our funding.

So, hopefully, I know it was kind of a squirmy answer, but we're hoping that it'd be faster than the normal Phase 1 and Phase 2 process.

Ali George

Okay, and we might be close to time. So we have a couple more questions.

Quenton Bonds

Okay.

Ali George

But, um, here's one. Do you have an estimate when Congress may authorize the continuation of SBIR/STTR that's currently set to expire September 30? Is this item something actively moving forward, or on hold?

Quenton Bonds

So, we don't. And that's kind of what I was alluding to in the previous question, that Congress may affect this as well. We don't have, we don't have, we don't know. So, I, I think that's the best answer I can give you.

Ali George

Perfect. Let's do one more. How many applications can I submit?

Quenton Bonds

At most, two.

Ali George

And then I, I have a couple more.

Quenton Bonds

That's cool.

Ali George

Would software be viable for this solicitation, or would this be a hardware specific topic?

Quenton Bonds

No, 100%, 100%. Software is allowable. I mean, I, I don't want to put your, you know, put your technology in a certain category. But the first thing that comes to mind is the solicitation about expanding the use of NASA's data. Let me get the proper name for it: using NASA data to foster climate resiliency. It's almost impossible to do that without, without software. So, software is totally allowed. For all of our topics. But again, it must make an impact, right?

Ali George

Perfect. All right, well, we are at time for the broadcast, but greatly appreciate your time and the subject matter experts speaking with us.

Quenton Bonds

All right, thank you. All, thank you all so much for joining. Uh, it's been great. We're looking to see more product driven, commercialization, focus firms. Thank you very much.