CTE Mission: CubeSat

Information Webinar Transcript

Mahala Pagán:

Welcome, everyone, so we are at 2:00 now. I'll just repeat one more time that you are more than welcome to introduce yourself on the chat. If you're a teacher, share your name and location and let us know how long you've been teaching and if you're a student, please don't share your name, but let us know what grade you're in.

Albert Palacios:

I think all systems are go.

Mahala Pagán:

All right, let's go ahead and get started. So, I am going to turn it over to Albert Palacios from the U.S. Department of Education.

Albert Palacios:

Thanks, Mahala, and thank you everyone for joining. I see more participants are adding by the second, so as they join, I'll introduce myself. We'll start with some introductions and then we'll continue on into the background and some of the challenge details. And first, I want to talk about how the background of kind of where we got to, how we arrived, where we are.

Albert Palacios:

So, my background is in Career and Technical Education and I've been in... just a moment. Okay. I've been in Career and Technical Education. I grew up in Career and Technical Education. I took business education in high school and have worked in a variety of both Workforce Development and Career and Technical Education fields here in Washington with Departments of Labor and Department of Education.

Albert Palacios:

I'm excited to work here with the U.S. Department of Education in the Office of Career, Technical and Adult Education and what we do here is we work on Perkins funding and we try to bring innovation into Career and Technical Education. As I mentioned, I grew up in CTE, so I can understand the capacity and programs that are in CTE and how students can really excel given their opportunity to demonstrate their hands-on learning.

Albert Palacios:

So, with that, I want to start with a couple of introductions and I'll turn it over to Cindy Hasselbring to introduce herself. Cindy. Are you unmuted?

Cindy Hasselbring:

Hello. Yep, now I am. Sorry about that.

Albert Palacios:

Here you're at.

Cindy Hasselbring:

Albert, we're just doing introductions just to make sure, right now?

Albert Palacios:

That's correct.

Cindy Hasselbring:

Cool. Okay. Good afternoon, everyone. My name is Cindy Hasselbring. I serve as Assistant Director for STEM Education at the White House Office of Science and Technology Policy and I had the pleasure of teaching high school mathematics in Michigan for 16 years previously and used space exploration as a context for math and STEM as much as possible, thanks to what I learned at NASA teacher workshop. So, it's a pleasure to be with you all today.

Albert Palacios:

And Diane, can you introduce yourself, please?

Diane Detroye:

Hi, everyone. I'm Diane Detroye. I'm with the NASA Office of STEM Engagement in Washington D.C. and my office offers all kinds of opportunities for students from K through 12 up to undergraduate and graduate as well as to institutions and universities and I've been working for NASA for probably over 35 years now.

Albert Palacios:

That's great and we're excited to bring that expertise and background of both NASA and the White House and the other federal agencies to this challenge.

Albert Palacios:

Mahala, would you like to introduce yourself and kind of discuss a bit about how, discuss how Luminary Labs is working to power this challenge?

Mahala Pagán:

Absolutely. So, my name is Mahala Pagán and I'm an Engagement Manager with Luminary Labs. So, as Albert mentioned, we've been contracted by the U.S. Department of Education to run this CubeSat challenge, but we also have worked with Albert and his office at the U.S. Department of Education since 2014 on a series of challenges that are referred to as EdPrizes and Albert will go through and share what some of those have looked like in the past.

Mahala Pagán:

But we know that several of you on the line today may have participated in the CTE Makeover challenge back in 2016, that was looking at makerspaces. You may have heard of the ED Sim challenge as well. So, Luminary Labs has been powering many past challenges with Ed. And so, for the past few years now, we've been looking into CubeSats with Albert and his team and we're so thrilled to be able to finally bring this thing to life today and be able to meet all of you and we're looking forward to seeing what you all submit.

Albert Palacios:

Thanks, Mahala. So, to give you a little bit of background on EdPrizes, EdPrizes is a series of challenges that we've run through the Office of Career, Technical, and Adult Education and this is the fourth challenge, actually the fifth challenge in a series of the EdPrizes portfolio. So, it started with the Reach Higher Career App Challenge that sought to bring better career guidance to students via mobile apps. And then we had the CTE Makeover Challenge which brought more makerspaces to high schools through CTE. And then our Ed Sim Challenge it brought next generation augmented and virtual reality into CTE.

Albert Palacios:

Just recently, in June, we launched our Rural Tech Project and that seeks to bring technology and competency-based education through distance learning methods to rural communities. So, the closing date for that one is October 16, I'm sorry, October the 8 or 6. I think I got that date mixed up, coming up here in October. And we're looking forward to the solutions that come through that. But we're here to talk about the CubeSat challenge. Before we get in the challenge, I'm going to get into a little bit about why we're pursuing this challenge.

Albert Palacios:

So, around 20 years ago, the CubeSats were developed to increase access to satellite technology, especially for educators and students by standardizing the form factor and reducing the time and cost to launch and over the years, more standard technologies, more standard platforms have evolved and in fact, XinaBox, one of the CubeSat challenge sponsors, CTE Mission: CubeSat sponsors is providing a prize as part of the prize package for the finalists with the XinaBox kits.

Albert Palacios:

It became clear as I was talking to some of the other agencies, such as NASA and NOAA, National Oceanic and Atmospheric Administration and Environmental Protection Agency and the U.S. Geological Survey that the technical skills to develop CubeSats are the same technical skills that are already evident in Career and Technical Education. And so, we wanted to bring and expose more students to these technologies and the capability of getting into space careers through Career and Technical Education. And we wanted to create that creative confidence and technical empowerment, so that students would begin to see themselves in the space industry.

Albert Palacios:

So, we're excited to see how the high schools across the country are going to tackle these projects. Now, these aren't going to necessarily be the easy projects, but they are going to

be exciting and interesting, and we hope that the educators that are on the line and the students that participate will really dive into this and learn new things. And educators if you're not familiar with CubeSats, I saw on the chat that some have already been immersed in this and been doing similar projects, it's not CubeSats. But don't feel you have to be an expert in CubeSats in order to participate in this challenge.

Albert Palacios:

This challenge is open to all levels of expertise and knowledge as it relates to CubeSats and we encourage educators and students to learn about CubeSats sets where you might not have even been exposed to this before, been aware of what a CubeSat is. I think it's a great opportunity to enter into space exploration and space technologies in a way that can be done in your local community.

Albert Palacios:

Now, we know that the conditions now are not real favorable for group projects, but we are excited to see how the high schools in the local areas are going to be tackling these projects and we know many of you are going to be remote, but we want to see how remote collaboration and the design process is going to work throughout this. And we understand we have to be flexible, you have to be flexible in the build and launch process, but we want to see what interesting and exciting solutions the high schools, your high schools can bring to the competition. So, if you've never heard of a CubeSat before, this is a great starting point as I mentioned.

Albert Palacios:

So, a CubeSat, as you can see on the screen, is a 10 by 10-centimeter cube and NASA, and this was developed out of Stanford, I believe and they proposed a standard format for a satellite and I have one model here. This is the actual size of a CubeSat, so you can see it's around four inches by four inches cube and that's the whole satellite. And inside, if I can get my video to work properly, you have circuit boards, you have a bus in there, circuit bus and you have a lot of different circuitry and boards and power supplies such as a battery and you can't see that detail. But it's a standard form factor that allows you to include sensors like cameras or other sensors within the CubeSats to conduct experiments, such as you see on the screen: What does near space sound like or how does the color of the sky change at different altitudes?

Albert Palacios:

So, they can carry different payloads or experiments into orbit. For this one, we want to make everyone aware of what a CubeSat is, but what we're doing is we're going to be, as part of this challenge, developing CubeSat prototypes. So, what is a prototype? A prototype is something that is the same size, but might not be, well, will not be likely something that's certified to fly into space. So, there after you develop a prototype and make sure it's operational, there's significant testing procedures that you go through before it actually gets on a rocket and goes into space.

Albert Palacios:

Understanding that we want to do this on a much shorter timeframe like in one academic year, we are looking for schools to develop prototypes and the prototypes can be built out of anything you can imagine. It could be a 3D printed frame, it could be wood, balsa wood, or even Legos or something that you feel is conducive to fit the form factor, the 10-cm CubeSat form factor and can contain all of your components.

Albert Palacios:

So, we are looking for creative ways also for you to what we say launch them and launch where it could be an amateur rocket, it could be a drone, it could be something that you develop in your own school or we hope you'll think creatively about what launch looks like and it could be maybe there's a hot air balloon in your local community, maybe there's a weather balloon that you can access, maybe your local news helicopter or police helicopter might be able to help your school get one into the sky, so that you can do some preliminary testing and test the communications and the data acquisition and some of the other functions. And just check to see if your prototype is working as you expect and can fulfill your experimental goals, but we encourage you to be creative and collaborative and learn technical skills along the way.

Albert Palacios:

So, there are some measurable benefits to deploy in the CubeSat program at your school for teachers, students and the school district. So, we want students to gain exposure to jobs of the future and we want teachers to explore different avenues for professional development and for hands-on learning and applied learning in the classroom. So, this is a great way to integrate your theory and your practice into some hands-on learning and the hope is also that you'll create some more interdisciplinary partnerships within your school systems or across schools.

Albert Palacios:

So, for example, your physics teachers might begin to work with your, I saw this in the chat, an automotive teacher. You can think about all the different varieties of how satellites are impacting various technologies such as automobiles with GPS or other tracking products and applications for cars and logistics or whatever you feel is a problem that needs to be solved with satellite technology. These are the new ideas and creative ideas that we're hoping that students and teachers can bring to the table.

Albert Palacios:

So, you can see a couple of quotes from a teacher and a student who have been involved in developing CubeSats and we encourage you to also, as you're going through this, document and we'll get into a little bit more in a moment about what's going to be contained in your entry and that's due on October 16. I want to reassure you that, and I saw a message in the chat about this is a really short turnaround time, but we are looking to make sure that it's not too burdensome to get into the challenge. We want to hear your ideas. We want you to be able to provide some creative solutions and your best thinking on your solution. But we understand this is a short turnaround. We're not in our normal environments as far as our teaching and learning environments, but we're looking for more creativity from the field and see what cool ideas can you come up with.

Albert Palacios:

So, with that, I want to turn it over to Mahala to go over the challenge details.

Mahala Pagán:

Great. Thank you so much, Albert. Yes, so now we're going to jump into some more details on what you can expect over the next few weeks of this first phase and beyond. So, hopefully you have seen this call to action by now on the challenge website, but I'll just go ahead and read it, so that we're all on the same page about what this is. CTE Mission: CubeSat is a national challenge to build technical skills for careers in space and beyond. So, Albert gave you a little bit of background about that call to action and how it came to be. But with this challenge, the U.S. Department of Education is inviting high schools to design and build CubeSat prototype.

Mahala Pagán:

So, your first question, and we've already heard a couple of these questions asked in the chat and in email is, is my school eligible? So, the best thing to do to answer that question is really ask "Is my school eligible to receive Perkins funding?" Now, your school doesn't need to currently be receiving this funding, but rather, if you are eligible to receive that funding, then you are eligible to participate in this challenge. So, that applies to Public, Comprehensive and Technical High Schools and there's some more information on the website on the eligibility page that you can look at to help answer this question for yourself personally.

Albert Palacios:

Yeah, yeah, Mahala, real quick. I just want to add if you're uncertain if your school is eligible for Perkins funding, I encourage you to reach out to your district Perkins coordinator, every district will have one, and check with your current Technical Education Coordinator to determine whether your school's eligible. Again, as Mahala said, you may not be actually receiving funding, but you must be eligible for funding.

Mahala Pagán:

Exactly. A few other things to keep in mind for your own team. Beyond Perkins eligibility, we do ask that every team have a team lead that is either a CTE teacher or a CTE coordinator employed by your school. So, that is something we'll also be looking for when reviewing the mission proposals submitted. So, we do want to note that there are some situations that people have questions about.

Mahala Pagán:

For example, if you are not part of an eligible school, if you're a museum, if you're an informal learning or after school program, a nonprofit while you might not be personally eligible to participate, you can certainly partner with an eligible school. So, as long as the team is led by an eligible school and eligible team lead, you can certainly be a part of that effort through your own organization.

Mahala Pagán:

And we do also want to note that it is allowed for schools to partner with each other, so you're welcome to form a joint team with some other schools, as long as you have selected one team lead and you have a lead school that you can indicate on your submission.

Mahala Pagán:

So beyond eligibility, the next thing you'll want to know is the general overview of this challenge and how its structured. We have broken this challenge out into two phases. The first phase is really emphasizing mission design, so we know that for many of you this is your chance to learn what a CubeSats is and what a mission is, and quickly put together a mission proposal. So, the emphasis on this phase is that you're working towards that written mission proposal and we have made several resources available on the challenge site to hopefully help you develop this mission proposal.

Mahala Pagán:

So, we'll show you a little snapshot of what the resource hub looks like if you haven't seen it yet, but on the challenge website, you will find a variety of open and free resources that you're welcome to use to help you develop that mission proposal. Once those mission proposals have been submitted, which we'll continue to reiterate this deadline, it is October 16, we will then review all mission proposals. We'll have a judging panel, which we'll get out soon, who will be reviewing these and selecting up to five finalists. Those finalists will then receive a variety of cash and in-kind prizes that are intended to help as they proceed to phase two.

Mahala Pagán:

So, one thing we do want to underscore is that phase two is only open to finalists. So, we really encourage you to participate in Phase 1 and you will have to do that, you will have to submit a mission proposal if you wish to be considered for Phase 2. So, please go for it, so don't hold back on Phase 1. We would love to see as many of you coming through this phase as possible and that is the progression there.

Mahala Pagán:

Then in January, once the finalists have been announced, Phase 2 will begin. And the emphasis of Phase 2 is on building out those prototypes that you described in your mission proposal and flying them in the way that you propose to fly them. So, in this phase, you will be receiving the prizes that you won as a finalist, but you will also have access to additional virtual resources. You'll have some mentorship to support you along the way and this is meant to help you with building out your prototypes and planning a flight event.

Mahala Pagán:

Albert, do you want to say a little bit more about flight events? I know you touched on this a bit earlier.

Albert Palacios:

Yeah, the flight events were obviously first and foremost, we want them to be safe, but we also want you to come up with your own creative solutions on how you can fulfill your mission with your local launch, so again, you have a variety of options you can choose. We

want you to come up with the best solution for your school, for your entry or your team and come up with the best various ways to, I mean, if you look at the objective. The objective is to get your satellite to be able to capture the data that you intended to capture, so it depends on how you intend to do that. Well, no pun intended, but is the sky's the limit on how you can choose to launch it.

Albert Palacios:

I did notice in the Q&A that somebody mentioned high-powered rockets, mid-power and high-power rockets. Perhaps that's an option if you have a rocket club at your school or have one in your community. Again, as long as the CTE teacher and the Perkins eligible school is the team lead, you can find any other resources in your community, clubs, organizations, local companies that might help you achieve those launch goals.

Mahala Pagán:

Absolutely. So, creativity is certainly encouraged with those side events and we look forward to seeing you propose what you'd like to study and also how you'll plan to fly it. That's certainly a big part of the challenge.

Albert Palacios:

So, one thing I'll add on this, the mission design and mission launch, so understanding that this is a quick turnaround for the mission design, you may not have your final mission, sorry, your launch vehicle or your launch plan in place, we'd like to know what you'd like to do. And then if you become a finalist, the part of that Phase 2 is to figure out how to get there and if you are not able to do what you had originally intended, that's all part of the design process.

Albert Palacios:

You have to figure out how are you going to solve that problem and how are you going to reach your goal. So, don't be concerned if you think, "Oh, we don't have any rockets in our local neighborhood, or we don't have any helicopters or drones." We encourage you to come up with what you'd like to see and then something that's attainable in your local community and come up with the best solution that you feel you can provide by if you were to move on to Phase 2.

Mahala Pagán:

Absolutely. So, once you do complete your flight event, you will submit a flight report, which would be reviewed by judges and winners may be selected at the conclusion of that process.

Mahala Pagán:

And I'll just go into a little bit more detail on the two terms I just mentioned here: mission proposal and flight report. So, your mission proposal will be a combination of written and visual description and illustration of what you are hoping to study and how you plan to fly it. So, this could include a detailed overview of your mission objectives, a list of the materials you expect to have or that you expect to need and discretion, your planned flight method.

Mahala Pagán:

And then we would also love to hear a little bit more about your team, so there's a section on that where we do ask you to provide more of a team profile, telling us about the kinds of students and teachers and potential partners that you have involved in this effort. And as we mentioned before, partnerships with local organizations or local academic institutions are certainly encouraged and that's the sort of thing we'd love to also hear about in your mission proposal.

Mahala Pagán:

So, two things I'd like you to know about mission proposals. First, as Albert mentioned, we know these are uncertain times, so we do want to reiterate that no in-person collaboration is required to submit this mission proposal. We know that many of you will be working on this remotely, so this can be submitted entirely virtually and it's possible to work on this entirely virtually with your teams. And then as far as costs for creating this mission proposal, it's possible that you may incur some costs in developing your mission proposal, but that's really up to you. If you'd like to purchase the materials and tinker with them in order to figure out your idea and make sure that you want to move forward with that. That is one way that you may incur cost, but it is not necessary to develop the mission proposal.

Mahala Pagán:

And then in Phase 2, as Albert described, you're welcome to go forward and do these creative flight events where you're testing your prototypes out, flying them the way you proposed. And then we'll ask for a combination of a written capstone report that will be paired with some sort of visual portfolio that kind of shows us and recaps your flight experience. So, that's the place where you can share your lessons learned, your results, some photos you may have taken from the flight experience or video. So, it will be kind of a combination of those things that will help to bring that flight event to life. And that is the flight report that you would be submitting at the end.

Mahala Pagán:

And one thing also to note on flight reports and cost is that this is an area where it may incur some costs for sure, but it is also a point at which finalists will have received a variety of in-kind gifts and a cash prize that are certainly meant to help mitigate any costs incurred in Phase 2.

Mahala Pagán:

So, we'll segue there into our list of amazing sponsors who are just as excited about this effort as we are. You can see on the right, it's a really exciting group of companies and technology and aerospace and education and CubeSat, so we're so thrilled to have these amazing sponsors on board. And on the left, you can see that we have a really interesting prize pool that includes cash prizes and a variety of in-kind gifts that should help you to kind of tinker and get started with your prototypes in phase two. And this prize pool will be evenly distributed to up to five finalists.

Albert Palacios:

So, just to piggyback on that. One, I want to thank Ted of Magnitude.io. He just answered a question in the chat about the high-powered rocket or the six-inch diameter rocket, so thanks for that, Ted and thanks for helping out as a sponsor for this challenge.

Albert Palacios:

Just one specific note about the $25,000. That will be distributed to the five finalists, so each if we award five finalists, which we expect to award five finalists, each of them would get an even portion of that, which would be $5,000 each. So, hopefully that will offset some of the costs that you might incur in developing your prototypes. But in addition to that, the XinaBox kits distributed evenly, each finalist would get two XinaBox kits as well as an Arduino kit and the LEGO MINDSTORMS kits.

Albert Palacios:

So, there'll be some tools or some things that you can tinker with to get your prototype, help develop your prototype. And then the Club for the Future Space Mail kits is a great package also from Blue Origin, so we're excited to be able to offer this prize package to the finalists.

Mahala Pagán:

Absolutely. All right. So, the resource hub if you haven't checked it out yet, we encourage you to go take a look on the challenge website and you'll be able to see that it has been organized into sections that mirror what you'll find on your mission proposal. So, by working through the resource hub and seeing some of the things made available there, we hope that will help you as you're developing your mission proposal.

Mahala Pagán:

We do also at this point want to let you know that there will be a Q&A panel towards the end of September that will be announced soon where you'll have a chance to hear directly from some of our sponsors and ask questions and learn about space careers and it will be really interesting. You'll find information about it on the resource hub, but if you're not signed up for our newsletter, that's a great place to get these sorts of updates of upcoming events in your inbox. So, we'll have more information towards the end about signing up for the newsletter, but we highly encourage everyone who's interested to do that.

Mahala Pagán:

So, hopefully, after hearing a little bit about the challenge and the resources available, you're at the point where you're ready to get started. And if you're wondering what to do next, the first step, as we mentioned is to identify your team lead, so this should be a CTE teacher or a coordinator. And really, you'll need one team lead even if you're doing a joint team, so that is the first step, but then we will also ask that you obtain permission from your principal or district level administrator. That's going to be something that we'll be asking you for in the mission proposal.

Mahala Pagán:

We know that many of you are not in school right now, so it's not as easy to just go to your principal's office and get a handwritten signature. So, this is something that you can submit

as an email, so if you get an email from them, stating that you have permission to participate, you can upload that as part of your submission and that's just a good way to make sure that you have buy-in from all levels at your school.

Mahala Pagán:

The next step would be to go ahead and register for the challenge. So, when you go to the website, you'll see the button to submit. You can view the mission proposal form there and you'll need to create an account on Luminary Lightbox, which is our submission management platform in order to submit. And you can create that account before you're ready to hit that final submit button, so you don't need to wait until the very end to go and create that account and register.

Mahala Pagán:

But once you are ready to submit your mission proposal, as we have mentioned a couple of times, the deadline is October 16 at 5:59 Eastern Standard Time. And we want to strongly encourage that you submit at least an hour before that deadline just to ensure that there are no technical issues and we have received your submission, no problem. And there's an email address hello@ctemissioncubesat.com where you can email us if you encounter any final issues with technical uploads, but we always encourage everyone to leave a bit of buffer for that submission.

Mahala Pagán:

All right and here's a quick screenshot just to make it as visual as possible. Here is where you can find the submit button at the very top of the website and when you click that, you can see on the right that the form will look a bit like this. It will look like this and it's a written form with a few areas where you can upload some visual illustrations of what you're talking about, but it's all done virtually.

Mahala Pagán:

So, once you do complete your submission and send it in, what happens next is that the panel of judges will review all mission proposals and they will be reviewing against these criteria, which you can find on the challenge website and refresh at any time. These criteria are all weighted equally, and they will be scored in a way that it will add up to 100 points, so 20 points per criteria that judges will be evaluating your submissions again.

Albert Palacios:

So, Mahala, I just wanted to add that we're happy to entertain questions after this and during the chat here in the Q&A and understand that not everyone can see the chat, so we'll have to figure that out in a moment. But if you send me an email afterwards or you send at the hello@ email address on the challenge website and email, we're happy to answer any questions about the rules, terms and conditions or the process with you, but we're not able to tell you "Is this a good project or does this make sense?" or any sort of evaluation of your project to be the questions, but feel free to ask any other questions, just as far as like, "Am I eligible? I'm not sure if my school is eligible, I can't find my CTE administrator," whatever the question is about the rules or eligibility, please feel free to send it to us.

Mahala Pagán:

Absolutely. And I'll take this opportunity to also just announce, we are recording this session. Our recording will be posted on the challenge website and the slides will be made available. The Q&A will also be finalized and so, if we don't get to your questions live today, we are certainly keeping track of every question we're receiving and it will all be collected and published in a response document on the challenge site. So, have no fear that this is not the only chance to ask questions or to review the answers. And if you are submitting questions in the chat, there's also a Q&A box, so please feel free to move over to that Q&A box for your question.

Mahala Pagán:

So just to go quickly through the criteria, these are all on the challenge website. I think we can move pretty quickly through these, but community engagement is the first one, which is the extent to which the mission proposal provides a vision of how the entrance will engage their broader student body and local community. So, we're hoping to see you either form partnerships or invite local organizations or community members to be a part of your project and your process.

Mahala Pagán:

CTE connection. We do want a CTE teacher to be your team lead and we want CTE to play a role in your project. So, we'll be looking at the extent to which the mission proposal demonstrates an ability and intention to incorporate available CTE programs and CTE students at the school into the mission.

Mahala Pagán:

Learning Outcomes. A little more self-evident, but the extent to which the mission proposal demonstrates an ability and intention to improve students' knowledge and hands on exposure to technical skills, and multidisciplinary content.

Mahala Pagán:

Mission feasibility, which we're really just looking for the extent to which your proposal outlines a clear and systematic plan that considers your implementation challenges and some potential constraints, you might face, so we know that you'll have a chance to figure out your mission more in practice as you onto phase two, but we're just looking for a good plan upfront.

Mahala Pagán:

And then last but not least, is team composition, so the extent to which the proposed team demonstrates involvement from a broad cross-section of students, including but not limited to students in various grade levels, students with disabilities and so on.

Mahala Pagán:

And then once all those criteria have been reviewed, there is an opportunity for judges to assess some bonus points and that would be based on whether or not the submission addresses need, which would look at the extent to which the student population served by

the eligible entity is low income as defined by the percentage of students enrolled in the free and reduced price lunch program.

Mahala Pagán:

So, I know that's a lot of information. We've already been getting lots of great questions from you all. Before we jump fully into the Q&A section, a quick housekeeping note that we encourage you all to add this email address hello@ctemissioncubesat.com to your address book, so that when we reach out about future events or the deadline, it doesn't go to your spam and sign up for our newsletter, that's the best place to get timely updates on things to come.

Mahala Pagán:

And then just a last announcement to check out EdPrizes. We do have other active challenges now and maybe in the future, so it's a good place to know what's going on in a broader sense when it comes to challenges event.

Albert Palacios:

So, just to quickly add, for those of you who are not able to see the slide, the email, you can send your questions and it's hello@ctemissioncubesat.com and that's the address that if you add it to your address book to, that will help it from being diverted to spam. And then the newsletter address is ctemissioncubesat.com/blog and then EdPrizes is EdPrizes.com, so if you want more information on any of those, feel free to visit those websites. The main challenge website is ctemissioncubesat.com.

Mahala Pagán:

Yes, thank you, Albert. All right. So, I will reiterate, I know that it's been said in the chat just now that we really, we would encourage you please to use the Q&A box for any questions. The chat has some different selections that you can choose who you're sending it to and it's not as visible to everyone and it's easier for us to sort through the Q&A section, so please use that to submit your questions.

Albert Palacios:

So, I'm going jump on a couple of these questions. And I've seen a few of these come in that talk about how do you know if you're a CTE teacher, who are the CTE teachers? So, CTE is Career and Technical Education. It's a specific program funded under the Perkins Career and Technical Education Act, and if you're not sure, ask your principal or as I mentioned, the district should have a CTE administrator. And if you're, for example, a science teacher in biology or environmental science and you're not a CTE teacher, we encourage you to find a CTE teacher and if you don't have one at your school, find another school that might have a CTE teacher to partner with him.

Albert Palacios:

The reason for this is we want to encourage career pathway development in CTE, in Career and Technical Education in space industries and space technologies and aerospace careers. So, the intent here is to ensure that your environmental sciences or your physics or your biology and other disciplines are beginning to work in an integrated fashion with your

Career and Technical Education Program. So, if you check around and you're still not able to find it, please send in an email to hello@ctemissioncubesat.com or send me an email via the challenge website as well.

Albert Palacios:

Let's see. So, the lead, yeah, I mentioned the CTE teacher should be the lead. We want to make sure that this is directed through the CTE programs. I'm going to move this screen to here, so I'm not looking off to the side. Okay.

Albert Palacios:

Is there a minimum or maximum of students that can be on one team? No, really, we are encouraging you to make your teams as big as you hope they could be within reason obviously and you need to coordinate all of this. You don't have to have all of your team organized and signed up by October 16. You do have to describe them in the mission proposal, but for example, you may have external partners that you are not quite sure if they're on board yet or you don't have specific agreements from them, not that you have anything real formal, that's up to you.

Albert Palacios:

But for example, if there's an automotive dealership, let's say down the road, and they want to be part of it, you don't have to have them have any sort of letter from them or something for it to include them as a team member. And if that comes afterwards, if you become a finalist and they get on board, that's good, too. So, we're leaving it up to you as to how you form your team, what students you have on your team, and how many and we're hoping, as I mentioned before, to have students from across grade levels and disciplines.

Albert Palacios:

So, from your science and engineering students to your current technical education, automotive technology, electronics courses, computer programming courses, whatever your courses are, that you feel are going to need to be brought together, we would want to see those as part of your team and part of your proposal. So, the more the merrier. I think there's enough work for everyone to get involved in it and if you want to parse out some of the work, for example, your computer science students might work on some of the coding functions while your manufacturing courses may work on fabricating the frame. So, there's a lot of different roles that people can play.

Albert Palacios:

Also, as it relates to Career and Technical Education, we're also looking for, for example, how is your Business and Marketing Career and Technical Education programs, how are they getting involved? This is a great opportunity to draw more external partners from your local community in on this and it might be your business and marketing courses that are able to bring more external companies to donate to your local school. So, this is an opportunity to again go across academic disciplines and excite students to get involved and teachers and the community to rally behind these projects and really make them as big as you are able to achieve. I hate to use the term sky's the limit, but it is. It's not stratosphere orbit.

Albert Palacios:

Okay. Let's see. Are the students creating the mission proposal or are the adults creating the mission proposal? So, the team lead is the one who submits it, but we encourage all participants and team members to have a role if possible. Obviously, if there's a lot of people, you can't have everybody writing the proposal, but we hope that everyone will have a role in having some input into the mission design and development of the proposal. So, you do what makes sense to you.

Albert Palacios:

Okay. What experience should students have with aerospace technology leading to projects? So, we're looking at this as an entry point so you don't have to and I noticed in the chat that some schools and some students already have a lot of background in aerospace and space technologies, that's great, but you don't have to have that. There are resources on the resources hub, on the website and there are a lot of online resources available if you do some searches that you can find some learning content to get you started.

Albert Palacios:

So again, these are just prototypes. These aren't the highly technically rigorous satellites that are going to be flown into space. So, we want you to do the best you can and we want to see, we encourage... part of this is to learn and develop the skills. And so, our hope is that if the teachers aren't up to speed on CubeSats, that the teachers are learning right along with the students, I mean, it's a great way to expand the capacity of the teaching workforce as well as expand the offerings for the students in these career pathways. So, we're open to your ideas and your best solutions that you can bring to this to expose more students to the next generation of both career and the workforce.

Albert Palacios:

The flight event, so the flight events, yeah, it's kind of up to your own interpretation, so the finalists, and I guess I'll take one step back. So, we're going to choose five finalists. And if you're not chosen as a finalist, that doesn't mean you can't move forward with your project. It's just that you're not going to be part of the finalist cohort that's going to be competing or will be receiving the prizes. We hope everybody continues with their projects if they're able to and you identify what we're calling a launch event. In essence from an orbital standpoint, a launch event is going to be when you see a big rocket ticket up into space and it gets deployed off the space station or off of an orbital rocket. That's great, but that's not what we're doing here.

Albert Palacios:

We're trying to just get it in some form or fashion in motion or off the ground, so it could be again, if you have a drone or a drone club, get them to lift it and capture data that way. You can think kind of the way some rudimentary launch vehicles or launch apparatus were developed like catapults or trebuchets or slingshots. Whatever will work for your experiment, we hope you develop something creative and something that suits your needs.

Albert Palacios:

If there are things like personal aircraft, if there are smaller craft in your local rural community that are used for various purposes, utilitarian purposes, maybe you're able to get to talk to one of those pilots and see if you can somehow make that work for you. Check with your local first responders to see if there's a way to get them to help you with their helicopter. News helicopters. There's a variety of aircraft in your local community that might be able to help.

Albert Palacios:

And sometimes, it's just a matter of making a phone call, sometimes there may be a little more involved than that. There are, obviously, safety and liability concerns, so we want to make sure you're doing this safely, but we're also open to creative solutions. So, again, going back to what Ted at [inaudible 00:56:31] Magnitude mentioned, if you're looking at, I guess it's a high-power rocket, amateur rocket, it's going to be at least a six-inch rocket, but there might be other balloons. No telling how much helium it would take to do a balloon that's not a tethered balloon or a high-altitude balloon, but come up with your best idea and be sure to document it, videotape it, photograph it. And we encourage you to continue to work on it.

Albert Palacios:

There's a question on here, which I think is an important one and it's from Doug. "I can see students wanting to continue on to the prototyping phase, even if you don't win as finalist." I completely agree and I think it'd be great for you to be able to share your experiences, so we encourage you to, to post online in social media and document your successes or your failures. Part of the learning process are the failures, so we want to we want to see everybody's failures as well, because those are important learning points in the process of design and build.

Albert Palacios:

So moving on, "How many teams can a school have?" I think you're not limited, but you need your principal sign off, so you can have multiples but you have to come up, make sure you understand what's best for your school and that you have the capacity in your school to be able to handle multiple teams. We also encourage multiple schools to team together. So, for example, maybe one school has a fabrication lab or a Fab Lab, and they are able to do a lot of the physical fabrication whereas another school might have a computer science program and maybe one school is focusing on the coding and the software, the other one is more on the hardware and circuitry. So, we encourage multiple, wherever your areas of expertise are, we hope you'll bring in more partners to help you and get more students involved as you can

Albert Palacios:

Let's see. I've been talking for a while. Mahala, do you want to answer some?

Mahala Pagán:

Sure. So, I think that the most obvious one we said it a couple of times, but yes, the recording for this will be posted and we will also make the Q&A fully available.

Mahala Pagán:

And let's see which ones, the duplicate. Okay. "Would the students need to collect data once the CubeSat is launched and analyze that data?" So, in short, yes. The hope is that you are using your CubeSat prototype to collect data that speaks to your mission proposal and what you set out to observe, so that would be based on your mission objective and this experiment that you are planning to conduct.

Mahala Pagán:

And as Albert mentioned, the journey is just as important as the data and results. So, if let's say you have this mission planned and it doesn't go as planned and you don't end up collecting all the data that you set out to collect, that would still be a great thing to write about in your flight report. And we can learn quite a bit from the failures of this process. So it's really about the journey and giving it a try and the experiment that you set out to accomplish and we recognize that things don't always go as planned when it comes to CubeSat certainly, but also prototypes.

Mahala Pagán:

Let's see.

Albert Palacios:

So, I wanted to just chime in on one of the other questions that I saw pop up and it goes back to eligibility and someone says, "I've approached our administration and no one can tell me if we're eligible for Perkins funds, should we still apply?" What I would encourage you to do is send an email to the hello@ email address that was mentioned earlier, and with your specific school and district and then we can let you know. We are able to access that information, so if you're not quite sure. For the most part, if you contact your district they typically know, but if you're not able to tell whether or not if you're eligible, then please feel free to send us an email and we can look it up.

Albert Palacios:

After everyone enters, after we get those phase one proposals, we're going to be validating your eligibility, so we're going to ensure that you are eligible. So, it's better to kind of get that information beforehand, before you apply, but you can still apply, you just wouldn't be deemed eligible after the fact. So again, feel free to send us an email if you have questions.

Mahala Pagán:

So, another question we see here is "How many teams can a school have?" So, the rules don't prohibit multiple teams from a school, so it is permissible to have more than one, but just as a reminder that you would still need your principal sign off on any team that does participate.

Albert Palacios:

So, CT connection. So, this is the final list selection criteria. So, what we mean by CT connection is and the actual criteria is on the website, but we want to make sure that this is connected to CTE, that's kind of redundant, but we want to make sure that Career and Technical Education is serving a role, so some of the functions, some of the career pathway,

so for example, you may have a business and marketing career pathway in a program of study in your school or in your district and if that may serve as your lead entry, teacher and program at that school, but then you'd be able to participate on that team.

Albert Palacios:

For example, maybe there's an Ag Ed or Agricultural Education program in your school, those are typically CTE, Career and Technical Education and talk to them. Talk to them about the types of programs that they have and how they are CTE and maybe they can take lead for you in the new proposal.

Albert Palacios:

So, I'm sorry, we're not able to get to all of the questions, but I appreciate all of the interest and everyone that has joined and we see a lot of excitement here on the questions and the answers in the chat. We encourage you to sign up for the newsletter and get updated on everything that is going on with the challenge and get news and updates as they're released. So, with that, I'll turn it back over to Mahala.

Mahala Pagán:

Yes. So, as Albert mentioned, signing up for the newsletter is the best way to stay up-to-date and we do have a few upcoming announcements. We will soon be announcing our judging panel, so you'll be able to see their information on the website and we'll be sending out an email as well. And then we do also have a Q&A panel in the works that will be in later September, where we'll have a really exciting lineup of panelists and you'll have a chance to send questions in advance that we can use to inform the session, but there also will be a chance to ask some questions live in that panel as well.

Albert Palacios:

So, one last thing and it came in the chat, but it didn't come up, we didn't mention it is XinaBox is hosting a free workshop tomorrow to share more information on how they can support and provide schools and students participating in the challenge. So, if teachers are interested in joining the webinar, there's a link in the chat. I hope you can see it. If not, we'll distribute it somehow to all others who are signed up to the newsletter. Am I correct, Mahala? Can we do that?

Mahala Pagán:

Yes, we can do that. Yes.

Albert Palacios:

Since that will be useful.

Mahala Pagán:

And this is not your only chance to ask questions. So, as we've mentioned, we have an inbox it's hello@ctemissioncubesat.com and the inbox is always open. If you have any questions, we will do our best to answer them. As Albert mentioned, we can't advise on projects, but we can certainly answer any technical questions you have about the challenge and how to

go about submitting. So, please feel free to reach out if there's anything we can do to help and we're really hoping to see as many of you participating by October 16 as possible. No prior experience at CubeSats is necessary to jump in on this and we hope you learn a lot as you go off and start working on your mission proposals.

Albert Palacios:

Thank you very much all and we look forward to seeing the creative solutions that you provide by October 16, Eastern Daylight Time, and good luck and we are excited about getting this launched.

Mahala Pagán:

All right.

Albert Palacios:

Thanks for joining and have a good afternoon.

Mahala Pagán:

Thank you.