CTE Mission: CubeSat

September 1, 2020

Agenda

Note: This session will be recorded.

- Introductions
- Background
- Challenge details
- Q&A

Introductions

Albert Palacios
U.S. Department of Education
Office of Career, Technical, and Adult Education

Cindy Hasselbring
White House Office of Science and Technology Policy

Diane DeTroye
NASA Office of STEM Engagement

Mahala Pagán
Luminary Labs

Ed Prizes background

Ed Prizes is a series of challenges run by the U.S. Department of Education in collaboration with innovators across the country.

These challenges strengthen the competitiveness of the American workforce by preparing learners for the careers of today and tomorrow.

Reach Higher Career App Challenge

Launched October 7, 2015

The Reach Higher Career App Challenge called upon app developers, educators, and data mavens to submit mobile solutions that help students navigate education and career paths, and increase the capacity of career counselors to serve students.

VISIT CHALLENGE SITE

CTE Makeover Challenge

Launched March 9, 2016

The CTE Makeover Challenge called upon high schools to design makerspaces that strengthened career and technical skills through making.

VISIT CHALLENGE SITE

EdSim Challenge

Launched November 2, 2016

The EdSim Challenge called upon the virtual reality, video game developer, and educational technology communities to submit concepts for immersive simulations that prepared students for the globally competitive workforce of the 21st century.

VISIT CHALLENGE SITE

RURAL TECH PROJECT

Rural Tech Project

Launched June 30, 2020

The Rural Tech Project is a national challenge to advance rural technology education. The U.S. Department of Education invites high schools and local educational agencies to propose technology education programs that use competency-based distance learning.

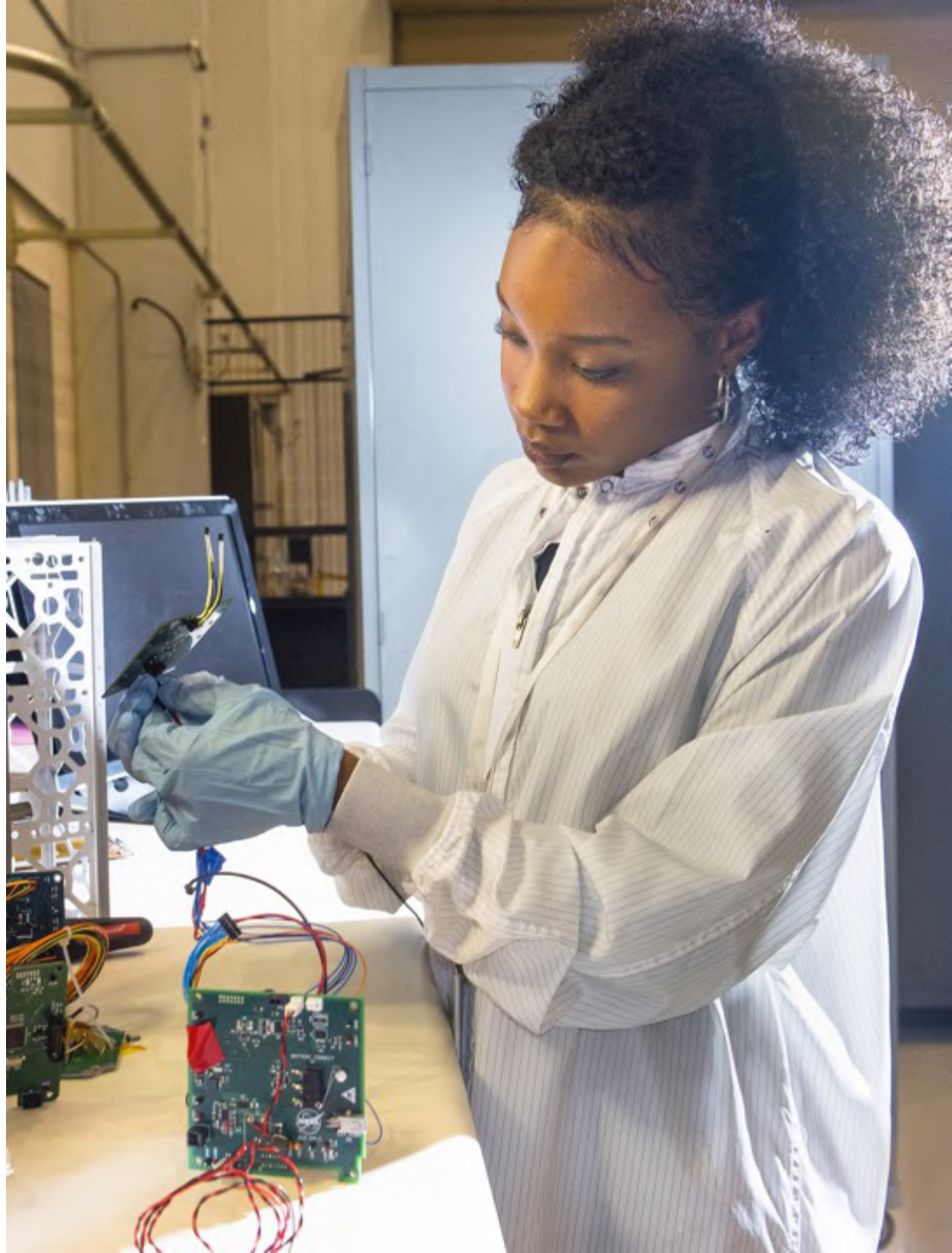
VISIT CHALLENGE SITE

Background

Why CTE Mission: CubeSat?

As the boundaries of our missions in space continue to expand, so do the opportunities to explore a wide range of related careers in space.

CTE Mission: CubeSat is a national challenge to build technical skills for careers in space and beyond.



What is a cube satellite, or CubeSat?

A $10cm^3$ small satellite that can house a variety of scientific tools, such as sensors or cameras, to conduct “missions” in orbit.

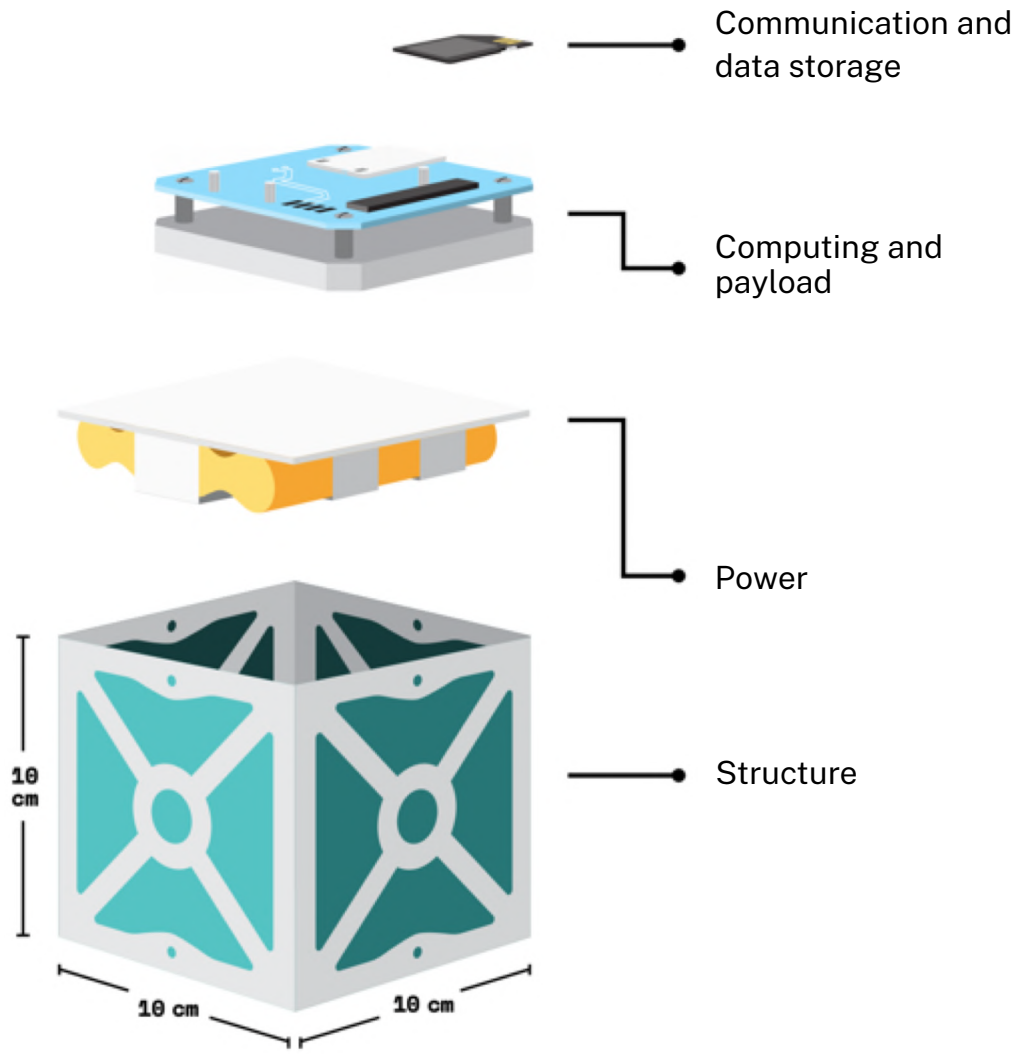
CubeSats have been used to answer many scientists’ questions, such as:

- What does near space sound like?
- How does the color of the sky change at different altitudes?
- How has climate change impacted animal herd migration?

What is a CubeSat prototype?

Prototypes are a model of a CubeSat, **built to the same 10cm³ dimensions and approximately the same weight**, that are more accessible for students to build and launch.

Prototypes empower students to learn creative, collaborative and technical skills involved in the CubeSat development process.



Why build a CubeSat prototype?

STUDENTS

Gain exposure to the jobs of the future

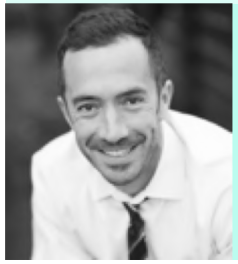
“I was never a person who wanted to go into engineering, but I found out there are more than just engineering aspects. The CubeSat program changed the way I viewed school. It introduced me to such a big community.”

Rojan Javaheri
Former Irvine CubeSat student
CTE Mission: CubeSat Judge

TEACHERS

Lay a foundation for professional development

“It absolutely changed my trajectory, pretty much everything I do now as a teacher stems from that first project.”



Dr. Matthew Shields
Charlottesville City Schools teacher &
Shields Lab founder

Challenge details

CTE Mission: CubeSat is a national challenge to build technical skills for careers in space and beyond.

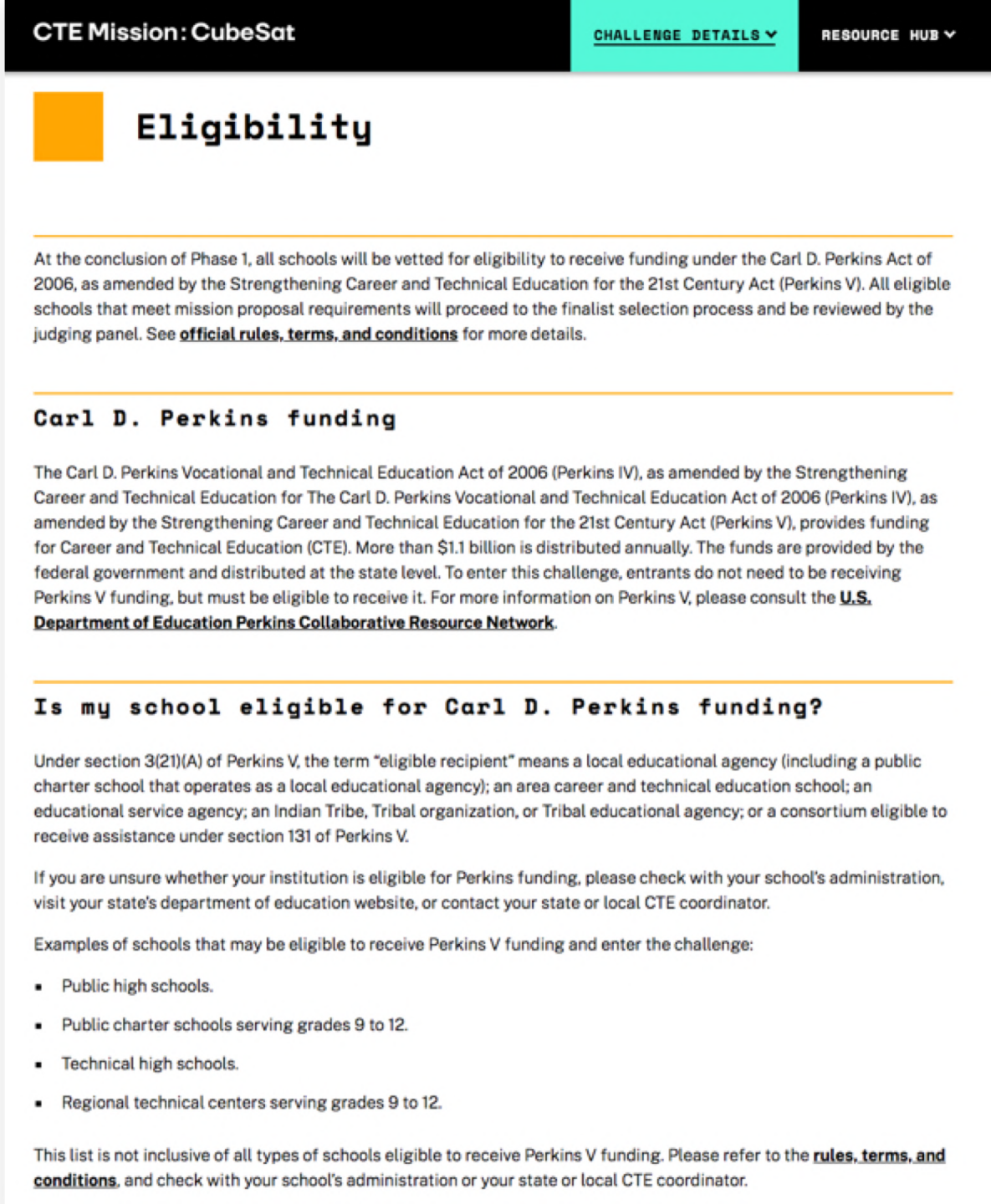
The U.S. Department of Education invites high schools to design and build CubeSat prototypes.

Eligibility

To participate, your school must be:

- Eligible to receive Perkins V funding
- Examples of schools that may be eligible to receive Perkins V funding:
  - Public high schools.
  - Public charter schools serving grades 9-12.
  - Technical high schools serving grades 9-12.

Note: Each team will need to identify a team lead who is employed as a CTE teacher or CTE coordinator by the submitting school.



CTE Mission: CubeSat

CHALLENGE DETAILS

RESOURCE HUB

Eligibility

At the conclusion of Phase 1, all schools will be vetted for eligibility to receive funding under the Carl D. Perkins Act of 2006, as amended by the Strengthening Career and Technical Education for the 21st Century Act (Perkins V). All eligible schools that meet mission proposal requirements will proceed to the finalist selection process and be reviewed by the judging panel. See **official rules, terms, and conditions** for more details.

Carl D. Perkins funding

The Carl D. Perkins Vocational and Technical Education Act of 2006 (Perkins IV), as amended by the Strengthening Career and Technical Education for The Carl D. Perkins Vocational and Technical Education Act of 2006 (Perkins IV), as amended by the Strengthening Career and Technical Education for the 21st Century Act (Perkins V), provides funding for Career and Technical Education (CTE). More than $1.1 billion is distributed annually. The funds are provided by the federal government and distributed at the state level. To enter this challenge, entrants do not need to be receiving Perkins V funding, but must be eligible to receive it. For more information on Perkins V, please consult the **U.S. Department of Education Perkins Collaborative Resource Network**.

Is my school eligible for Carl D. Perkins funding?

Under section 3(21)(A) of Perkins V, the term "eligible recipient" means a local educational agency (including a public charter school that operates as a local educational agency); an area career and technical education school; an educational service agency; an Indian Tribe, Tribal organization, or Tribal educational agency; or a consortium eligible to receive assistance under section 131 of Perkins V.

If you are unsure whether your institution is eligible for Perkins funding, please check with your school's administration, visit your state's department of education website, or contact your state or local CTE coordinator.

Examples of schools that may be eligible to receive Perkins V funding and enter the challenge:

- Public high schools.
- Public charter schools serving grades 9 to 12.
- Technical high schools.
- Regional technical centers serving grades 9 to 12.

This list is not inclusive of all types of schools eligible to receive Perkins V funding. Please refer to the **rules, terms, and conditions**, and check with your school's administration or your state or local CTE coordinator.

Timeline and phase overview

1

August – December 2020

Phase 1: Mission design

Teams will have access to curated virtual resources as they develop and submit mission proposals. A panel of judges will review mission proposals and select up to five finalists who will receive cash and in-kind prizes.
The deadline for mission proposals is 5:59 p.m. ET on Friday, October 16, 2020.

2

January – May 2021

Phase 2: Mission build and launch

Finalists will receive mentorship and additional virtual resources as they build their prototypes, and plan flight events to launch their prototypes in spring 2021. Following their flight event, each finalist will submit a flight report. At the end of Phase 2, winners may be selected from the group of finalists based on submitted flight reports.

Submissions in each phase

CURRENT PHASE

Phase 1

Mission proposals will include a detailed description of objectives, materials needed, plans for prototyping, proposed flight method, and team profile.

No in-person collaboration or prior experience with CubeSats is required to complete a mission proposal.

FUTURE PHASE

Phase 2

Flight reports will include elements such as a detailed description of the flight experience, lessons learned, flight data, a project budget, and visual documentation (photographs and/or videos).

Prizes and sponsors

At the end of Phase 1, up to five teams will be selected as finalists.

The following prize pool will be distributed to finalists:

- $25,000
- 10 LEGO® MINDSTORMS® Education EV3 Core Sets
- 10 XinaBox kits
- Five Arduino kits
- Five Club for the Future Space Mail kits

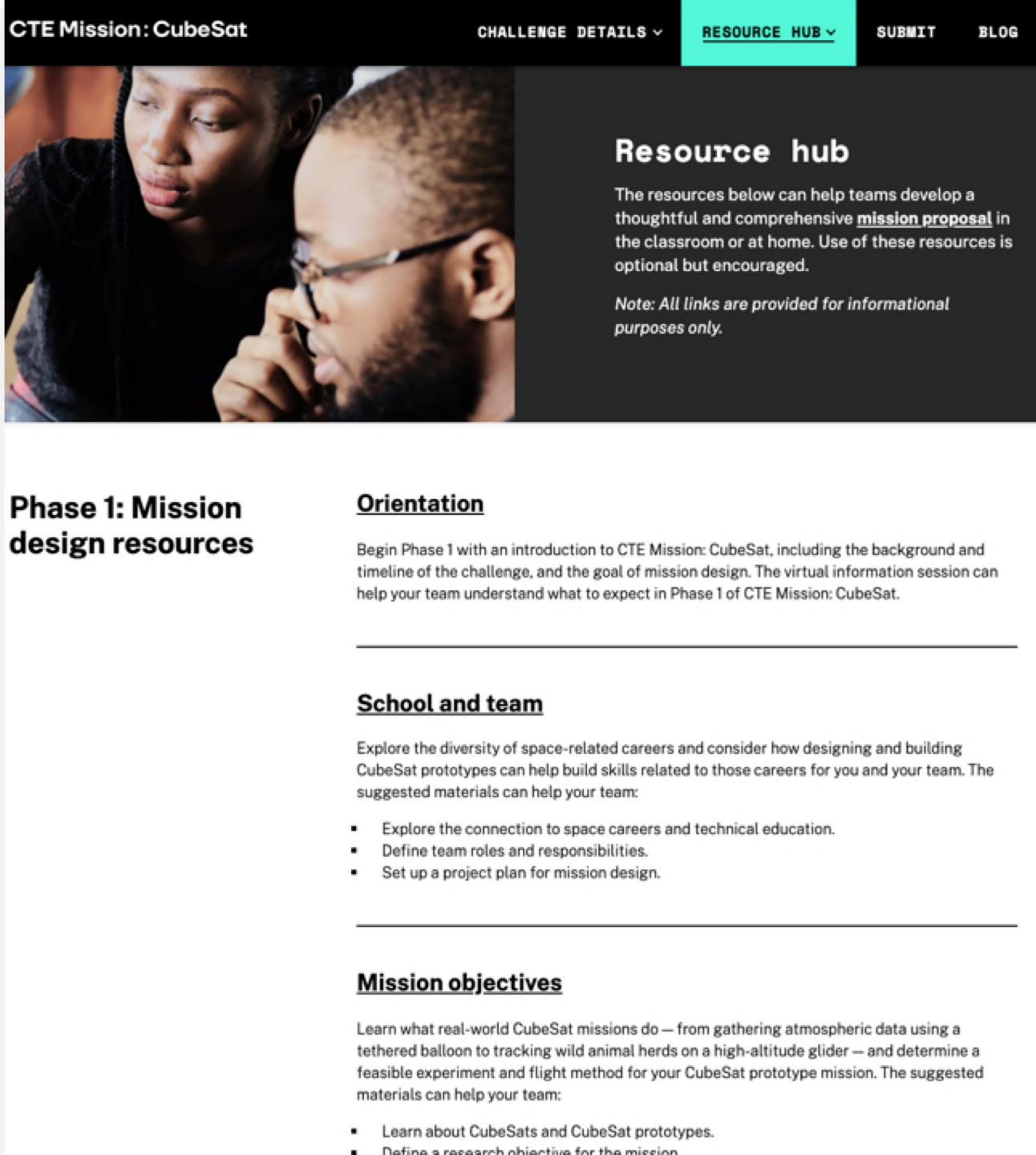
Sponsors

- Arduino
- Blue Origin
- Chevron
- EnduroSat
- LEGO Education
- Magnitude.io
- MIT Media Lab Space Exploration Initiative
- XinaBox

Resource hub

We have curated a set of virtual readings and resources organized into the following sections to help you complete your mission proposal:

- **School and team**
- **Mission objectives**
- **Subsystems**
- **Mission planning**



How to submit in Phase 1

Identify your Team Lead

Schools will identify a CTE teacher or coordinator as the team lead, and obtain proof of permission to participate from a principal or district-level administrator. A school may collaborate with another school or schools on a mission proposal; however, the mission proposal must identify one team lead employed by the lead team's school.

Register for the challenge

When you click "Submit" on the challenge site, you will be directed to Luminary Lightbox™, Luminary Labs' proprietary online challenge platform, to complete the mission proposal submission form.

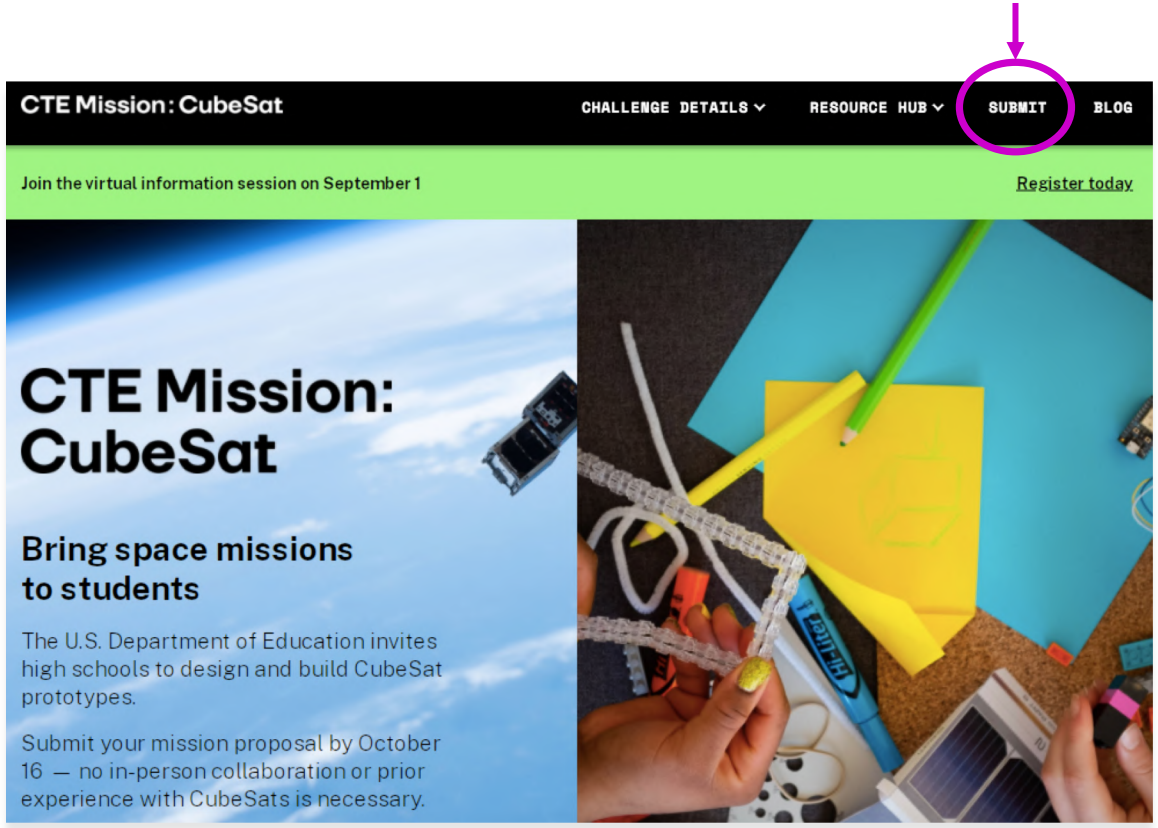
Submit your mission proposal by the deadline

To complete your mission proposal on the challenge website, you will need to submit the form by **5:59 PM ET on October 16**.

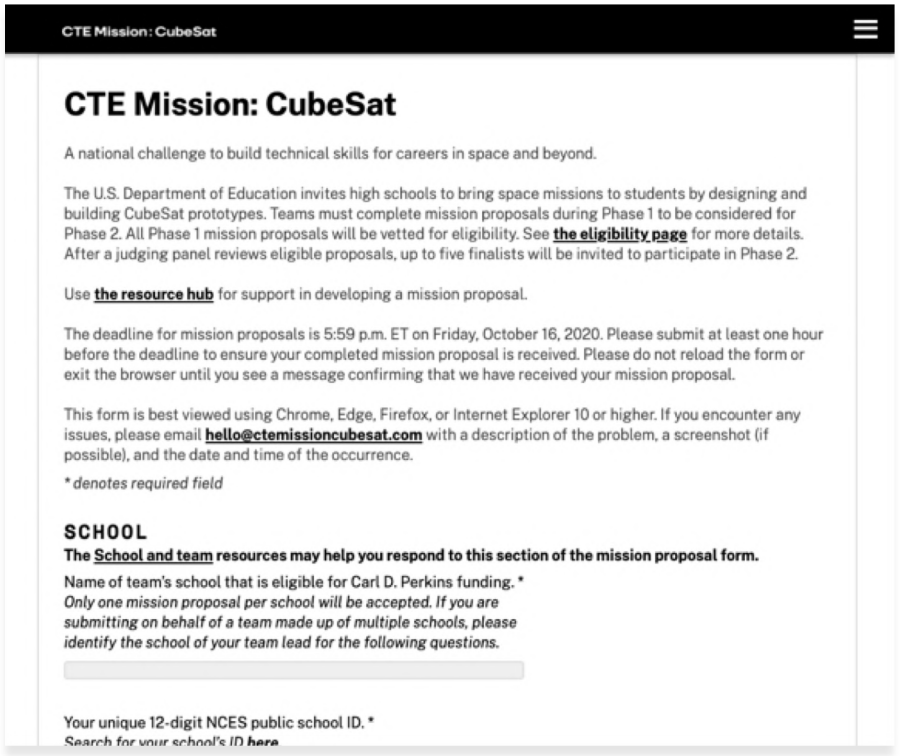
Note: Teams must complete mission proposals during Phase 1 to be considered for Phase 2.

Mission proposal submission form

Where to find the submission form on the site



The submission form



Finalist selection criteria

At the conclusion of Phase 1, five finalists will be selected based on the following criteria:

- ❑ **Community engagement**
- ❑ **CTE connection**
- ❑ **Learning outcomes**
- ❑ **Mission feasibility**
- ❑ **Team composition**

Finalist selection criteria

At the conclusion of Phase 1, five finalists will be selected based on the following criteria:

- **Community engagement**

  The extent to which the mission proposal provides a vision of how the entrants will engage their broader student body and the local community.

- **CTE connection**
- **Learning outcomes**
- **Mission feasibility**
- **Team composition**

Finalist selection criteria

At the conclusion of Phase 1, five finalists will be selected based on the following criteria:

- Community engagement
- **CTE connection**

  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.
- Learning outcomes
- Mission feasibility
- Team composition

Finalist selection criteria

At the conclusion of Phase 1, five finalists will be selected based on the following criteria:

- Community engagement
- CTE connection
- **Learning outcomes**

  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.
- Mission feasibility
- Team composition

Finalist selection criteria

At the conclusion of Phase 1, five finalists will be selected based on the following criteria:

- ❑ **Community engagement**
- ❑ **CTE connection**
- ❑ **Learning outcomes**
- ❑ **Mission feasibility**

  The extent to which the mission proposal outlines a preliminary project plan that is clear and considers implementation challenges schools may face, such as cost and potential technological constraints.

- ❑ **Team composition**

Finalist selection criteria

At the conclusion of Phase 1, five finalists will be selected based on the following criteria:

- ❑ **Community engagement**
- ❑ **Mission feasibility**
- ❑ **CTE connection**
- ❑ **Learning outcomes**
- ❑ **Team composition**

  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 and students with disabilities.

Finalist selection criteria
Bonus points

Judges may assign **up to five bonus points** during finalist selection in based on the following criteria:

- **Addressing need**
  The extent to which the student population served by the eligible entity is low-income, as defined by the percentage of students enrolled in free and reduced price lunch programs under the Richard B. Russell National School Lunch Act (42 U.S.C. 1759), as amended through P.L. 116–6.

Q&A

How to stay up to date

Email

Add hello@ctemissioncubesat.com to your address book to make sure challenge emails are not filtered as spam

Newsletter

Head to our website to sign up for the CTE Mission: CubeSat newsletter for updates: ctemissioncubesat.com/blog/

EdPrizes.com

Visit EdPrizes.com to learn more, and sign up for the Ed Prizes newsletter and follow on social media to receive updates on future challenges.

Q&A

Please submit questions in the chat window within Zoom.

Questions and responses will be posted on the challenge blog, as well as a recording of this webinar.

If you have additional questions, please email: hello@ctemissioncubesat.com

Thank you!

CTE Mission: CubeSat