



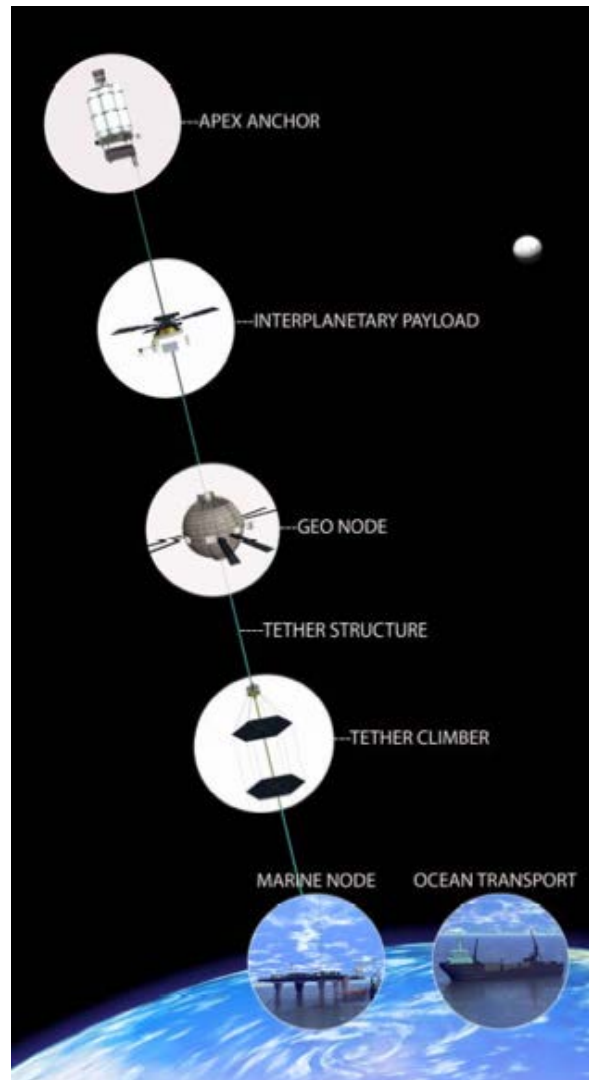
### *Space Elevator Academic Challenges – 2024 – <https://www.isec.org/>*

**Can you Imagine?** And then – contribute to the future of humanity with great ideas developed from recent discoveries? When we think about great achievements of the past, many come to mind, such as the Pyramids, canals or airplanes. We need to dream big and develop concepts and ideas that will help save the planet and enable us to move towards the moon and Mars. How about dreaming of engineering projects enabling us to provide the Green Road to Space while moving off planet on an efficient permanent infrastructure “tossing” payloads towards exotic destinations? Naturally, in delivering the greatest engineering project in all of human history, many questions must first be answered. YOU and YOUR TEAM can help us to answer them! Now imagine a Space Elevator system, which will stretch from the surface of the Earth to a quarter of the distance to the Moon! By building these elevators near the Equator, they will enable a whole new economy—a real, thriving space-and-Earth economy, delivering to humanity abundant clean power and raw materials, new places to live, and eventually even building starships on bridges to space. The transformation to this revolutionary future is yours to build. This could be YOUR future. YOUR legacy.

#### **What is a Space Elevator Transportation System?**

Imagine an advanced lift system which moves not the 20 tonnes of payload to GEO of current launchers, or the 50 tonnes to GEO of advanced Falcon Heavy launches, but a permanent space access infrastructure capable of moving 170,000 tonnes to GEO and beyond every year, and with no atmospheric pollution. Also, imagine this making it possible for *everyone* to visit space in the decades ahead, by taking a leisurely and scenic journey from the Equator to orbit. Imagine this making it possible for us to build lush, green, and beautiful space habitats with artificial gravity, so people can finally live and work in space, removing population pressures from our precious ecosystems. Forever. Imagine this making it possible to provide clean, abundant energy. Yes, all of that can become possible by building and operating one or even *multiple* Space Elevators as permanent transportation systems of the near future – doing for us what rockets cannot!

**Two Challenges Await You:** Naturally, in delivering the greatest engineering project in all of human history, many questions must first be answered. YOU and YOUR TEAM can help us answer them! These Academic Challenges asks you to investigate (1) the surprising aspects of a Green Road to Space as they apply to your selected missions while (2) incorporating remarkable Artificial Intelligence (AI) technologies into future implementation of missions across global space visions and explain how Space Elevators will enable them. For example, if you decide to focus on a novel use, you could consider a full-scale ‘Starship Enterprise’ in orbit, without warp engines or beamed teleportation. It could serve as a nuclear-powered cruise ship for the solar system ([www.buildtheenterprise.org](http://www.buildtheenterprise.org)); or, how would AI technologies assist within the Space Elevator to make this possible; or, how would the “green technologies” ensure acceptance of these concepts?





### *Identifying the Major Strengths of the Green Road to Space*

The first challenge focuses upon the strengths of Space Elevators – the **Green Road to Space**. You are encouraged to assess the strengths of Space Elevator by applying its principles to hypothetical future missions, while illustrating the major characteristic of being the Green Road to Space.

### *Utilizing AI Technologies for Space Elevator Missions*

The second challenge encourages you to expand your imagination by exploring the use of **AI technologies** towards particular aspects of Space Elevators. Either of these challenges should be something that excites YOU.

**Submission Guidelines:** Select one “Mission” that would be important for humanity’s future and which would be enormously enhanced by Space Elevators. The first challenge asks you to assess your selected “Mission” in terms of the robust and “green” access to space being proposed while the second challenge asks you to explain how AI technologies, within Space Elevators’ transformational characteristics, will achieve your chosen “Mission.” These range from on Earth, the journey to orbit, in orbit, or further out into space. You or your team can enter either challenge; however, they will be evaluated at two levels - either high school or university. You can either enter as an individual or as a member of a team (up to four students). YOU can enter one or both of the challenges. This contest is for high school and university students from around the world. Imagination will be rewarded – but remember that everything in your submission must be based upon well-researched facts. We’re counting on YOU to help make it happen!

**Selection Process:** This challenge has three rounds: Abstract, Paper, and Video. Abstracts submitted in the initial round will be selected to advance to the semi-final round. Semi-finalists will be asked to write a paper and selected semi-finalists will be invited to advance to the final round to create a 10-minute video.

a. High School: **1<sup>st</sup> prize = \$2,000USD, 2<sup>nd</sup> prize = \$1,000USD, 3<sup>rd</sup> prize = \$500USD**

b. University: **1<sup>st</sup> prize = \$2,000USD, 2<sup>nd</sup> prize = \$1,000USD, 3<sup>rd</sup> prize = \$500USD**

*(Prize money equally divided among team members and delivered by PayPal)*

Submissions will be judged based upon

- Your insight into future possible uses of (1) green technologies or (2) AI technology towards missions for Space Elevators, depending upon which challenge YOU accept.
- Your insight into the impact of the transformational strengths of Space Elevators with respect to Green Road or AI.
- Your presentation of the arguments in favor of Space Elevators.
- Your creative concepts for using Space Elevators that lead to a better future for humanity.

### **Submission Format**

1. Cover Letter - must be in this format: Title of Submission, Team Member Name(s) (up to four), Team School(s)/University(s), Team Mentor(s) (clearly delineated on application), and one Email contact (lead student’s email, not mentors’).

2. Initial submissions may be up to 400 word abstract, in PDF format, and in English. Initial submissions sent to: [spaceelevatorchallenge@isec.org](mailto:spaceelevatorchallenge@isec.org)

3. For semi-finalists, up to a 15-page paper submitted in English, in PDF format. *Semi-finalists will be provided with access to the ISEC Zotero library to assist with further research for their papers.* Picture of Team Member(s) clearly identifying students (pictures will be used in final awards). Photo of student ID. Academic Challenge submissions sent to: [spaceelevatorchallenge@isec.org](mailto:spaceelevatorchallenge@isec.org)

4. For finalists, an audio/video (MP4) will be submitted. Audio/video must be 10-mins or less and sent to: [spaceelevatorchallenge@isec.org](mailto:spaceelevatorchallenge@isec.org)

5. Top winners will be invited to present their papers at the National Space Society’s International Space Development Conference (Los Angeles, 23-26 May 2024), <https://isdc2024.nss.org/>.



### **Submission Process and Timeline**

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|--|-------------------|
| 1. Announcement of Space Elevator Academic Challenge       | 15 September 2023 |
| 2. Abstract submission                                     | 15 November 2023  |
| ○ Semi-finalist selections (top 25 of each challenge)      |                   |
| ○ Notification of selections                               | 15 December 2023  |
| 3. Semi-finalists' paper submissions                       | 01 February 2024  |
| ○ Finalist selection, notification (top 10 each challenge) | 15 February 2024  |
| 4. Finalists' audio/video submission                       | 01 April 2024     |
| ○ Final Selections (top 3 of each challenge)               | 15 April 2024     |
| 5. Invitations to attend NSS Conference                    | 23-26 May 2024    |

**Evaluation Criteria:** Evaluation criteria for the abstract, paper, and video submissions can be found here:  
<https://www.isec.org/s/ISEC-Academic-Challenge-2024-Evaluation-Criteria.pdf>

**Winners:** Winning submissions will be published on the ISEC YouTube channel and other social media. - Winners will be invited to present at the National Space Society Conference 23-26 May 2024 in Los Angeles, CA.

**Questions?** Write to [spaceelevatorchallenge@isec.org](mailto:spaceelevatorchallenge@isec.org)

**Information about Space Elevators:** Go to the website of the International Space Elevator Consortium,  
<https://www.isec.org/>.