

Who will build the first, earth-based Space Elevator?

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The Space Elevator Blog

<http://www.spaceelevatorblog.com>

July 20th, 2008

“It’s difficult to make predictions, especially about the future” – Yogi Berra

“The Americans are good about making fancy cars and refrigerators, but **that doesn't mean they are any good at making aircraft.** They are bluffing. They are excellent at bluffing.”

Hermann **Goering**, Commander-in-Chief of the Luftwaffe, 1942.

“There is practically no chance communications space satellites will be used to provide better telephone, telegraph, television, or radio service inside the United States.”

T. Craven, FCC Commissioner, in 1961 (the first commercial communications satellite went into service in 1965).

“Nuclear-powered vacuum cleaners will probably be a reality in 10 years.” — Alex Lewyt, president of vacuum cleaner company Lewyt Corp., in the New York Times in 1955.

Purpose of this presentation

- To make an educated determination as to WHY the first earth-based, Space Elevator will be built
- To make an educated guess as to WHO, based on motivation and capabilities, will attempt to build the first one

Major Points

- The benefits of a Space Elevator
- The risks associated with building the FIRST Space Elevator
- Identify who could accomplish this task, based on an “earliest construction date of 2025”
- Identify the key motive, the driving force to building the first one
- Identify those who are most likely to be the first to attempt this project

Benefits of a Space Elevator

- Cheaper launch costs by at least an order of magnitude
 - Launch & maintain Earth orbiting satellites, including Solar Power Satellites (SPS)
 - Space Exploration, both manned and robotic
 - Asteroid mining
- Less traumatic travel between Earth and Space
 - Handling delicate cargo, including human space tourists
- Less risky travel between Earth and Space

Building the FIRST Space Elevator will be RISKY

- New technologies
 - Nanotube ribbon
 - Power beaming
- Lack of experience in key areas
 - Space construction techniques
 - Ribbon moving and tuning
- Failure modes to plan for
- Legal issues to deal with
- Unknowns

How to build one?

- 7 “technical capabilities” needed
 - Build elevator components
 - Launch elevator components
 - Construct & maintain Space Elevator
 - Build & maintain Earth Port
 - Build & maintain Climbers
 - Build & maintain Power Beaming system
 - Defend the Space Elevator against terrorist attack

Who could accomplish this?

	Private Enterprise	USA	Russia	EU	India	China	Japan
Build/buy elevator components	2020	2020	2020	2020	2020	2020	2020
Launch elevator components	2020	Today	Today	Today	2015	2015	2015
Construct & maintain SE	2025	Today	Today	2020	2015	2015	2015
Build & maintain Earth Port	Today	Today	Today	Today	Today	Today	Today
Build & maintain Climbers	2020	2020	2020	2020	2020	2020	2020
Build & maintain Power Beaming	2025	2025	2025	2025	2025	2025	2025
Defend it against terrorist attack	Never	Today	Today	Today	2015	2015	???
Earliest date possible	Never	2025	2025	2025	2025	2025	???

Bottom Line

- Several groups will have an equal chance to build the FIRST Space Elevator



What won't be the ultimate driver of the First Space Elevator?

- Savings on launch costs
 - This is nice, but costs are going to come down anyway
- Solar Power Satellites
 - Unless efficiencies get at least an order of magnitude (or two) better, not enough capacity can be lifted into orbit to make a real dent in the problem
- Tourism
 - By itself, just not enough

What will be the ultimate driver of the FIRST Space Elevator?

Money makes the world go 'round... and will make the first Space Elevator go up



Big profit potential

- Governments & corporations will be glad to save money on satellite launch costs, including SPS, once the technology is proven
- Governments will also take advantage of reduced launch costs for research
- Space Tourism will be an added revenue stream
- Significantly reduced launch costs bring more “exotic” future projects such as asteroid mining and Lunar & Martian colonization within reach

Most likely builders...

- Business consortium, most likely American companies, in partnership with the US Government
 - Stairway to Heaven, Inc.
- Joint venture between the governments of Dubai (United Arab Emirates) and India
 - ThirdWorld Ventures, Ltd

Stairway to Heaven, Inc.

- Why private enterprise?
 - Willing to take significant risks for potentially significant payoffs
 - Flexible, adaptable, and able to quickly respond to changing conditions
- Why American private enterprise?
 - Long history of entrepreneurship
 - It's already starting (LiftPort, Black Line Ascension, etc.)

ThirdWorld Ventures PLC

- Why Dubai (UAE)?
 - Have the funds
 - Have the vision and the risk-taking attitude
 - Are already developing revenue stream for the time when their oil & gas runs out
- Why India?
 - Developing military and technological capabilities, including space-faring technologies
 - Would vault them past China
 - Direct sea lanes to 2 potential Earth-ports, including a favored one off the west coast of Australia

Who will be first?



Dark-horse candidate

- Japanese state-owned venture
 - Rising (to the) Sun PLC
 - Must deal with elevator defense issues
- Joint US-Japanese state-owned venture
 - Clever name needed here...

More remote possibilities

- Russian state-owned venture
 - “Tsar-way” to Heaven, Corp.
- European (EU) companies and the ESA
 - “EU-rope” to Heaven, PLC

Wild cards

- Additional reasons to build a space elevator
 - New application arises, probably military in nature
- Reasons a Space Elevator may not be built
 - Technology doesn't prove out
 - No government will sponsor it
 - Dubai/UAE loses the capability to “think big”
 - Unforeseen environmental side effects from carbon nanotubes
 - Radical new lift/launch capability discovered, making a Space Elevator obsolete before it is ever built

Review

- A Space Elevator will benefit all of us in several ways
- Building the FIRST Space Elevator will be RISKY
- Based on an “earliest construction date of 2025”, there are several groups that could accomplish this
- Only the Profit motive will be enough of a driving force to make this happen
- Stairway to Heaven, Inc. & ThirdWorld Ventures, Ltd. are the most likely to try and be the first

For more info...

- Books

- The Space Elevator (Edwards, Westling)
- Leaving the Planet by Space Elevator (Edwards, Ragan)

- Websites

- <http://spaceward.org>
- <http://spaceelevatorblog.com>
- <http://spaceelevator.com>

