

# **ISEC Research Activities**

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# ISEC Research Committee Objectives

- Give advice to potential collaborators
- Ease the entry of new participants
- Promote a consistent set of assumptions between different projects
  - Based on the recent book – the IAA Study
- Conserve resources by avoiding duplication of research work

# Not-for-Profit Foundation

- We hope to establish a Research Foundation
  - Directing funds from donors to promising areas of research
  - Selecting suitable teams to carry out the work
    - Universities or elsewhere
  - Overseeing projects with suitable checkpoints
  - Conducting peer reviews of completed subprojects
  - Deciding whether to renew funding

# Topics Requiring Major Investment

- Tether materials development, testing and manufacture
- Tether climber design
- Tether climber power source
- High stage one

All involve laboratory or engineering work that produce materials or prototypes

# Topics Requiring Intermediate-level investment

- Tether dynamics
- Tether electrodynamics
- Radiation environment of the tether and climbers

All involve simulations producing tools for others to use

# Summary of Cost Estimates

## US\$ thousands

Years from start:	1	2	3	4	5	6
Tether Materials	1300	1400	1300	1300	1400	1300
Climber Design	100	600	1400	1900	2600	2500
Climber Power Source	400	1000	1500	2600	10,900	20,800
High Stage One	610	510	320	1710	1580	590
<b>Total - Major</b>	<b>2410</b>	<b>3510</b>	<b>4520</b>	<b>7510</b>	<b>16,480</b>	<b>25,190</b>
Tether Dynamics	100	200	300	500	800	1000
Tether Electrodynamics	400	500	740	800	560	400
Radiation Environment	360	560	760	780	600	400
<b>Total - Intermediate</b>	<b>860</b>	<b>1260</b>	<b>1800</b>	<b>2080</b>	<b>1960</b>	<b>1800</b>

# Unclassified Topics

- Management

- Systems operations
- Law
- International policy
- Marketing
- Finance

- Technology

- Hazards to tether and tether climbers
- Hazards caused by the space elevator
- Tether maintenance
- Laser interference with existing satellites
- Marine node design
- GEO node design
- Apex anchor design
- Human/robotic trade-off
- Comms mechanisms

# Conclusion

- Consistent structure and style for research-topic descriptions
  - Teams and individuals capable of performing the work
  - Outline costings
- Rational basis for determining size and scope of a research program
- Accelerate progress towards realization of the first space elevator