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Architecture Note
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The Strategic Approach to the
Architectural Development of the Space
Elevator

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Personal Prolog

This is an Architecture Note. It is the opinion of ISEC's Chief Architect. It represents an effort to document ISEC's ongoing science and engineering discussions, and is one of many to be published over time. Most importantly, it is a sincere effort to be the diary, or the chronicle, of the multitude of our technical considerations as we progress; along the pathway developing the Space Elevator.

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Our Strategic Approach

This is the approach ISEC will use to lead the development of the Space Elevator

Introduction

This Note will introduce idea that ISEC should have a "Strategic Approach" for the development of the Space Elevator. I have spent some time discussing – with several people - how to turn a long-term vision into a long-term "plan". The problem is that a plan usually implies either a specific schedule or a specific budget; usually both. I have settled on the notion of "an approach"; disdaining budget and schedule specifics for now. How much and when are exigencies; the approach is immutable. At this point, many will reach for a dictionary to get a definition of "immutable". Go ahead, I'll wait.

The Strategy

Our "strategy" is to link the Space Elevator Transportation System to the Space Elevator Enterprise System; within a Unifying Vision: ... the Galactic Harbour.

Why we need an approach

For the most part, all of us agree that a Space Elevator will be the transforming transportation project of this century. With it, we can become a space faring people, and support the planet with resources, energy, and so much more. In the International Academy of Astronautics Study #3.24 (jointly being authored by ISEC and Japanese Space Elevator team), ten major categories of space endeavor are enumerated; all enabled after the Space Elevator starts working. The beauty and the importance of the enabled vision is distracting. We have returned to first principles ... first things first!!! Let's start off to get the Space Elevator working as a transportation system and, hence, we need an approach.

How do you form an approach; especially a strategic approach?

Forming an approach is not easy. The notion of “herding cats” immediately comes to mind. Herding scientists and professors is worse, but many – during 2016’s brainstorming session at our Seattle ISEC Conference - were convinced that we needed some order in the chaos. So, at least the “cats” were looking to form a herd!

With some prodding, we realized that the brainstorming participants saw the difference between the elevator and the business done near it and because of it. We had a first level of agreement. We foresaw a “Space Elevator Transportation System”.

After that, business and service functions would become part of a larger whole. The barnstormers were, in effect, cautioning that we needed to be careful that the Space Elevator Transportation System was not a “bridge to nowhere” There are two modern examples of such bridges → https://en.wikipedia.org/wiki/Gravina_Island_Bridge and [https://en.wikipedia.org/wiki/Bridge_to_Nowhere_\(San_Gabriel_Mountains\)](https://en.wikipedia.org/wiki/Bridge_to_Nowhere_(San_Gabriel_Mountains))

The lesson of ‘bridge to nowhere’ is that, though the bridge is a separate engineered entity; it must be built to service the locale in which it is located. It must also help or enable improvement to that locale. In our minds, that means portraying our future transportation system and the enabled businesses within a “Unifying Vision”. The vision is unifying because, though our first chore is to build the transportation system, it must

be built to service the coming industries. Further, the transportation system must be built in a way so that it merges with the entrepreneurial activity; the Space Elevator Transportation System merging with the Space Elevator Enterprise. This latter point is critical. The manifestation of the enterprise is that it is an outgrowth of the transportation system. The transportation system must be able to grow; become part of a thriving enterprise. They are separate but they cannot be segregated from each other.

Small steps first – some technical delineation.

For the most part, all of us agree that a Space Elevator will be an enabling force in this century. The ISEC team will begin a technical baselining activity re how to get to IOC for the Space Elevator systems; both baselines. This activity must have had a good start by the time we gather in Seattle in August 2017. By then we should be able to:

- a. Cite the assignment of building two technical baselines to a small technical, system engineering working group.
- b. Delineate the two baselines:
 - a. Space Elevator Transportation System and
 - b. Space Elevator Enterprise
- c. Outline the Space Elevator Transportation System baseline and cite IOC as the first destination of that baseline. This activity has the highest ISEC system engineering priority.
- d. Outline Space Elevator Enterprise baseline and explain its IOC relative to the Space Elevator Transportation system. This activity must have some system engineering priority.
- e. Explain the connection between the two baselines → “Separate but not segregated” will be the operating principle.

Spread the word -

The leadership team introduced the concept of the Space Elevator in the context of a Galactic Harbour at the International Space Development Conference in Saint Louis. At that conference, we:

- a. Broadly cited the obvious → that a Galactic Harbour is like most any other harbor; a place of interacting transportation, major commerce and business activity.

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- b. Noted the parallel with classic harbors ... Los Angeles / New York / Hong Kong / Singapore. The Port of Los Angeles was cited specifically.
- c. Identified that a classic harbor is a meeting place of two forms of transportation; sea transportation and land transportation.
- d. Our presented example was a quick overview of The Port of Los Angeles vis the Space Elevator; sea faring meets space faring.
- f. Announced the assignment to identify growth approaches of the Enterprise baseline. In August, ISEC will assign this activity to a small group; a small business capture working group.

Ongoing responsibilities -

In August, the business capture working group and the system engineering working group should be formed. The groups should gather periodically to:

- a. Show how we have a technical thrust and a business thrust
- b. Clarify the relationship of the two baselines. e. g. One Master baseline & one slaved to the Master & how they cannot go astray.
- c. Delineate how we will continually integrate the two thrusts.
- d. Working groups meet in Seattle in August and again in November, March and June.

In closing

ISEC sees building a Space Elevator Transportation System as its first responsibility. The Strategic Approach offered keeps that so and avoids a galactic bridge to nowhere. See you next month.

Fitzer