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**Architecture Note**  
**#4**  
**December 2016**

**We need a Baseline.**

*Michael A. Fitzgerald*  
December 2016

## **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.

*Michael A. Fitzgerald*

### **We need a Baseline.**

**The Baseline of the Space Elevator is still changing and that is a good thing; but only for now.**

#### **Space Elevator baseline – We don't have one and we might need two**

I have pondered this subject a bit ... and my rule of life is rule #36 – “There is always a baseline; though you may have to look for it.” In other words, we are ok now, but we really should specify what is needed for a solid space transportation system. In system engineering talk that specification process is called baselining. It is an assessed agreement of defining what is part of the Space Elevator transportation system, and also what is not part of that transportation system. The delineation of one versus the other is important. It also looks like we need two baselines. One baseline is the Space Elevator transportation system and the other baseline is the Space Elevator Enterprise. Like the rule #36 says – we should look for it now; twice.

#### **Space Elevator Transportation system – Baseline #1**

The Space Elevator Transportation system is the core of our vision. The transportation system will provide affordable and reliable access to space. Currently, we see the transportation system made of five segments. The Apex Anchor, The Climber, The Tether, The Earth Port, and the Headquarters / Principle Operating Center (HQ/POC). Each of these five pieces needs to be described in explicit and finite terms with ascribed performance. How strong the Tether, how fast the Climber, how mobile the Earth Port, and how aware the HQ/POC; and more. We should start the baseline documentation process simply; by lifting information from

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completed documentation we have in hand. From several experiences, I can assure you that baseline building is a hit and miss iterative process; a bootstrap miracle. Baselines are built by trial and error mixed with sweat and tears. We must do it.

### **Space Elevator Business Enterprise – Baseline #2**

The Space Elevator Business Enterprise will be all that we imagine it to be. If asked, my position would be to start now examining how extensions can be added to the transportation baseline. We need to see the Enterprise in the near term (as in, soon after IOC) and in the longer term. As I suggested in Arch Note #1, the enterprise will come in modular steps. I think if we reach out to our customers and clients and ask them what they might need ... we will get astute responses. They will offer their version of which steps to take, which modules to do next. They can tell us what they would expect and need when we deliver their product or service to space. Remember, these customers, clients, and entrepreneurial investors have visions today of what sort of businesses they would like to conduct on orbit.

### **Space Elevator Business Enterprise – Baseline relationships**

This last sentence in the paragraph above is important to understand. The Space Elevator Business Enterprise will be all that our customers, clients, and investors imagine it to be. I think we should start examining, bit by bit, the various “Arts of the possible and profitable” with these new partners. These new partners may be the ones we know now; Boeing, Lockheed, Orbital ATK; the biggies. I also think there will be smaller outfits; perhaps specialized spinoffs. They will see refueling, repair, or situational awareness as some of several niche businesses to operate the Enterprise profitably. They will see much more than we see.

You see, we might be our own smart investor and a good strategic partner with our customers and clients; large and small.

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### **In closing**

Given all that...the rule that applies is rule #42 – “Dreams and visions tell us where we are going; education tells us where we are; hard work is the road between.” We need to work hard on the baselines. Happy New Year!!

*Fitzer*