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Final

Architecture Note
#15
Published February 2018

The Galactic Harbour's Full Operational
Capability

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January 2018

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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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The Galactic Harbour's Full Operational Capability

...a muse or amusing?

Introduction

It is a classic scene. The youngster is sitting in the back seat, breathing in huffs and puffs, and pondering how to escape the prison of the seat belt. Finally, - wait for it – the youngster offers, in a high-pitched whine; “Are we there yet”? The driver responds, portraying undue patience and wisdom; “We will be there before you know it”. The fact that they were barely to the freeway was a fact that need not be mentioned. Mentioning that would only bring a minor amount of despair to the youngster. The truth was that we would get there when we get there; what with traffic and all.

Last week, I had a parallel thing. I was asked about when the Space Elevator would reach FOC and does it really need “person rated facilities”. I wanted to respond like the driver in the car, but, we are faced with the same truth the youngster was going to deal with. That is, we will reach FOC when we reach FOC. Something about that answer – as truthful as it is – had me pondering.

Let's form a better answer

First, let us recall our definition of FOC in terms of a development phase. The Full Operational Capability (FOC) is achieved after Initial Operational Capability (IOC) is achieved AND after adding some functions to the Space Elevator via Step 7 in the Sequences; the On-Ramp Step. For those new to the game, "Sequences" are the 8 steps we intend to go through to attain an operational Space Elevator:

Space Elevator Developmental Phases The Sequences

1. Pathfinder
2. Seed Tether,
3. Single String Testing
4. Operational Testing,
5. Limited Operational Capability (LOC),
6. Initial Operational Capability (IOC),
7. Capability On-Ramps leading to FOC
8. Full Operational Capability (FOC)

In practice, the On-Ramp Development Phase is → add More functions; → improve with Better functions ; and then → grow with New functions. In every sense of truth, phase 7 and 8 continue and continue. At some point the practicalities force a decision. Should we continue adding More/Better/New functions to this elevator; or go make another elevator or two? (See Graphic) As the wise driver would say: Maybe. "We will be there before you know it".

Even now, ISEC is having discussions about the long-term future. Those discussions first led us to define our Architecture in a bi-modular fashion. Our Architecture is composed of a Space Elevator Transportation System and a Space Elevator Enterprise System unified within a Galactic Harbour. As that vision matures, we are now seeing the SE Transportation System serving enterprises akin to those satellite missions now operational along the Geosynchronous Belt.

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We see that Architecture growing via the On-Ramp activities; → More/ Better/ New functions. From these, we see a drive to have the SE Transportation System support other enterprise domains; solar power production, construction, research, tourism, and more.

The early SE Transportation System and SE Enterprise System will be operated robotically. We expect robotic functionality to improve remarkably over the coming decades. But eventually, the SE Enterprise System will need human experience, skills, or wisdom on-orbit. Perhaps at the GEO Node. Perhaps at the Apex Anchor. But When?

Let's ask the wise driver. "Are we there yet"? ... portraying undue patience and wisdom; "We will be there before you know it."

In closing

So, Are we there yet? Do we need "person rated" facilities on the Galactic Harbour? → Yup,

Fitzer

