

FrontierX Technology LLC 

**E-Sat Platform
for
TELECOMMUNICATIONS SYSTEM**

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Preface

- The Future is not some place we are going to but one we are creating. The paths are not to be found but made. And the activity of making them changes both the maker and the destination.
- The path to Future is the most important elements in our lives depend on knowledge gained through communication.
- E-sat Platform for Learning, Library and Public Health as the communication tool is trendsetter not the trend follower, and we must not accept anything else.
- But half of the world has no way to connect & communicate. E-sat Platform is on a mission to create an affordable global communication.

Overview

We All Need Access

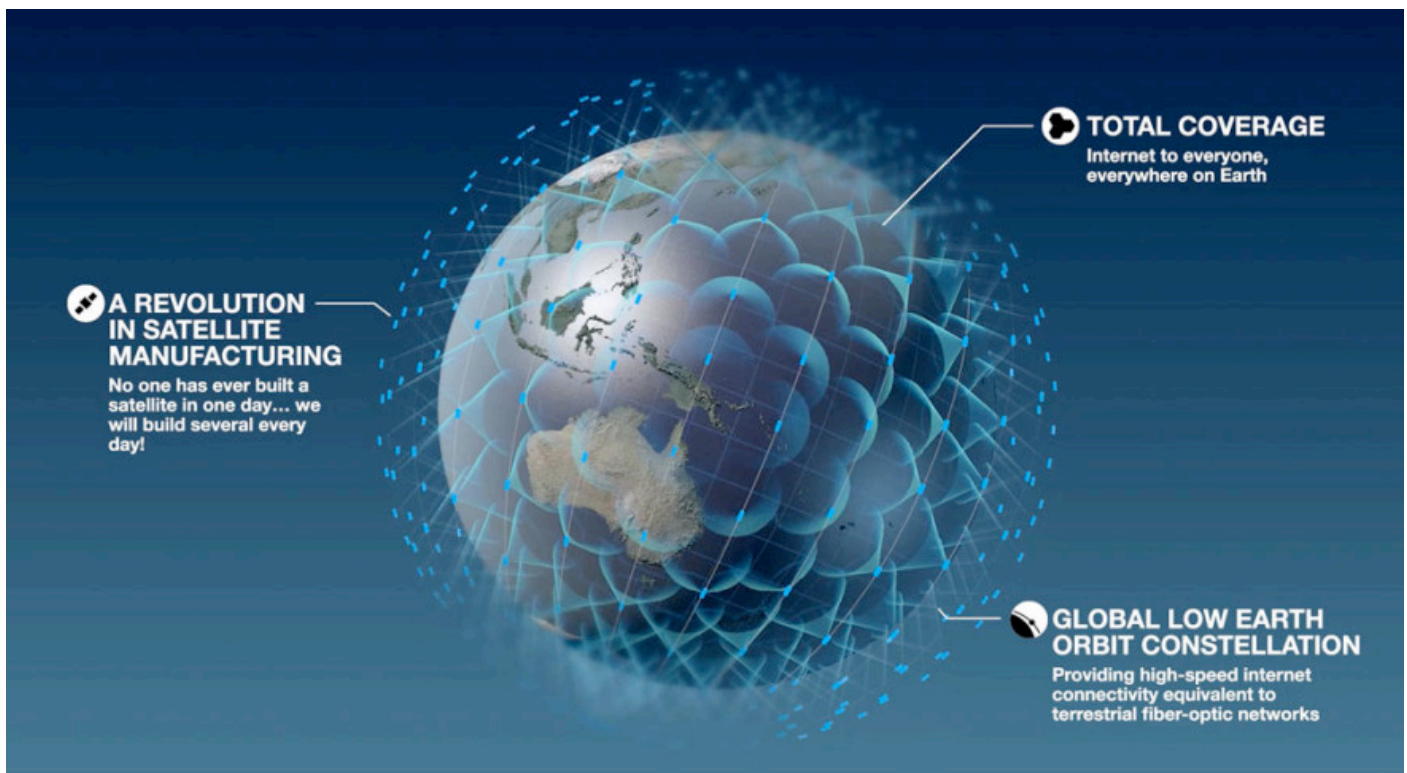
The most important elements in our lives depend on education and knowledge.

- **Education:** Knowledge brought by communication gives people the tools to solve their own problems.
- **Creativity:** The free flow of ideas creates jobs and stimulates economic growth.
- **Relief:** In emergency disaster or humanitarian crisis the ability to communicate saves lives.
- **Equality:** Everyone deserves the same advantage. It's time to even things out by leveling the playing field and making the education and knowledge available to everyone.

Solution

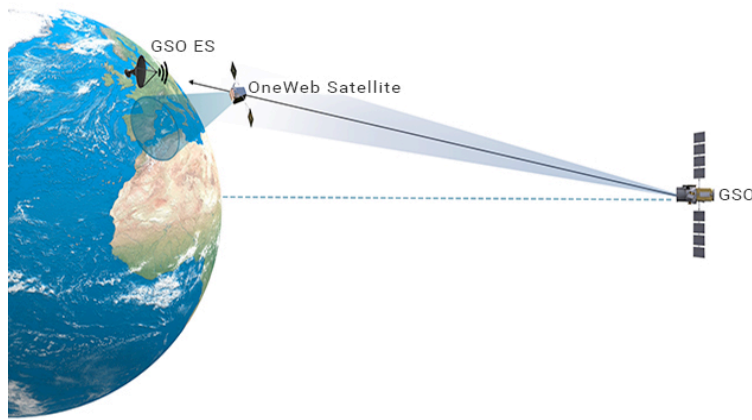
Satellites Make It All Possible

- **Constellation of Satellites:** Constellation of LEO (Low Earth Orbiting) satellites that are manufactured economically, circling the Earth continuously will enable affordable system access, at Ku-band and radio frequencies. Operating at LEO is beyond the jurisdiction of the International Telecommunication Union (ITU). Noting that through an advance technology the use of the spectrum will not interfere with GEO satellites transmissions that are operating at higher orbit above.



Global Citizenship in Space and Earth

Space is shared, as are natural resources that must be protected. Since the Micro Satellites operating in LEO locations are frequently replaced, hence the disposals & debris must be handled responsibility.



Faster: LEO operating satellites will be closer to the Earth allowing for better performance complimented with VSAT ground station.

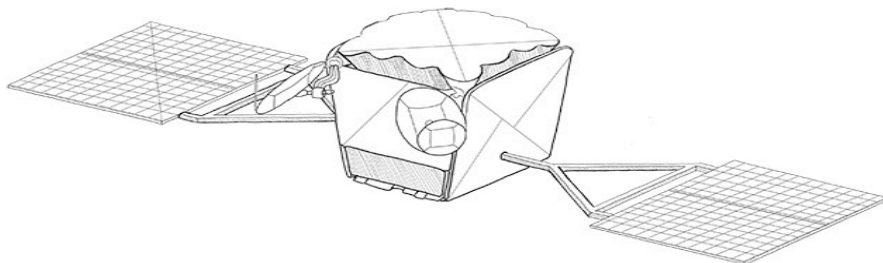
Coverage: The LEO constellation of satellites will logically interlock with each other to create a coverage footprint over the entire planet.

User Terminals: Small, low-cost user terminals (VSAT) will connect to the satellites and emit LTE, 3G and WiFi to the surrounding areas, providing high-speed connectivity to cell phones, tablets and laptops with no change in latency during satellite handovers to ensure excellent voice and web experience. These terminals are small, affordable and efficient that includes solar panels and batty packs.

Manufacturing of LEO Constellation Satellites

What does not work: Several concepts offering 600 to 700 operating constellation satellites with spare satellites at 900 are currently being considered at very expensive cost. Although theoretically (academically) possible, it is not practical. This is a nightmare of operation that ultimately requires several satellites launched daily, orbital operations, deorbiting process regularly, and around world ground control stations & coordination, etc. just to name the obvious. Historically, even few dozens constellation satellites were not successful.

What does work: Regionally dedicated (less than dozen) constellation satellites in LEO operation as Micro- Satellites that are mass manufactures at high quality same as medical and avionics equipment with: fewer components, lighter weight, hence easier to manufacture and cheaper to launch. One reason that Micro- Satellites are cost effective is that they are piggyback to existing flights. Required daily launch this type of operation is eliminated.



Launching

Consider launching of satellites will be aboard Russian Soyuz rocket either by the Europeanized or Russian versions.

Ground Stations

VSAT services to: Homes, Small Business, Enterprise, Government, Service Providers, etc.

VSAT services to: Retail, Restaurant, Petroleum, Gas & Oil, Media, Finance, Manufacturing, Communications On The Move, etc.

Typical Terminal Basic Function Variations

	Type 1	Type 2	Type 3	Type 4	Type 5
Ethernet Ports	Two	One	Two	Two	One
Max Transmit Rate	3.6 Mbps	3.2 Mbps	1.6 Mbps	1.6 Mbps	1.6 Mbps
Max Throughput	60 Mbps	60 Mbps	45 Mbps	45 Mbs	45 Mpbs
Frequency	Ku & Ka C & xC	Ku & Ka C & xC	Ku & Ka, C & xC	Ku & Ka,	Ku & Ka,

Terminal	Terminal Rate	Typical Antenna	Port
Type 1	128, 512 Kbps & 2 Mbps	0.74 m	One Ethernet
Type 2	128, 512 Kbps & 2 Mbps	0.98 m	Two Ethernet One dial backup
Type 3	n x 16 Mbps	3.5 m	