

GeoComm Life Extension Using the ViviSat Mission Extension Vehicle (MEV)

February 2012

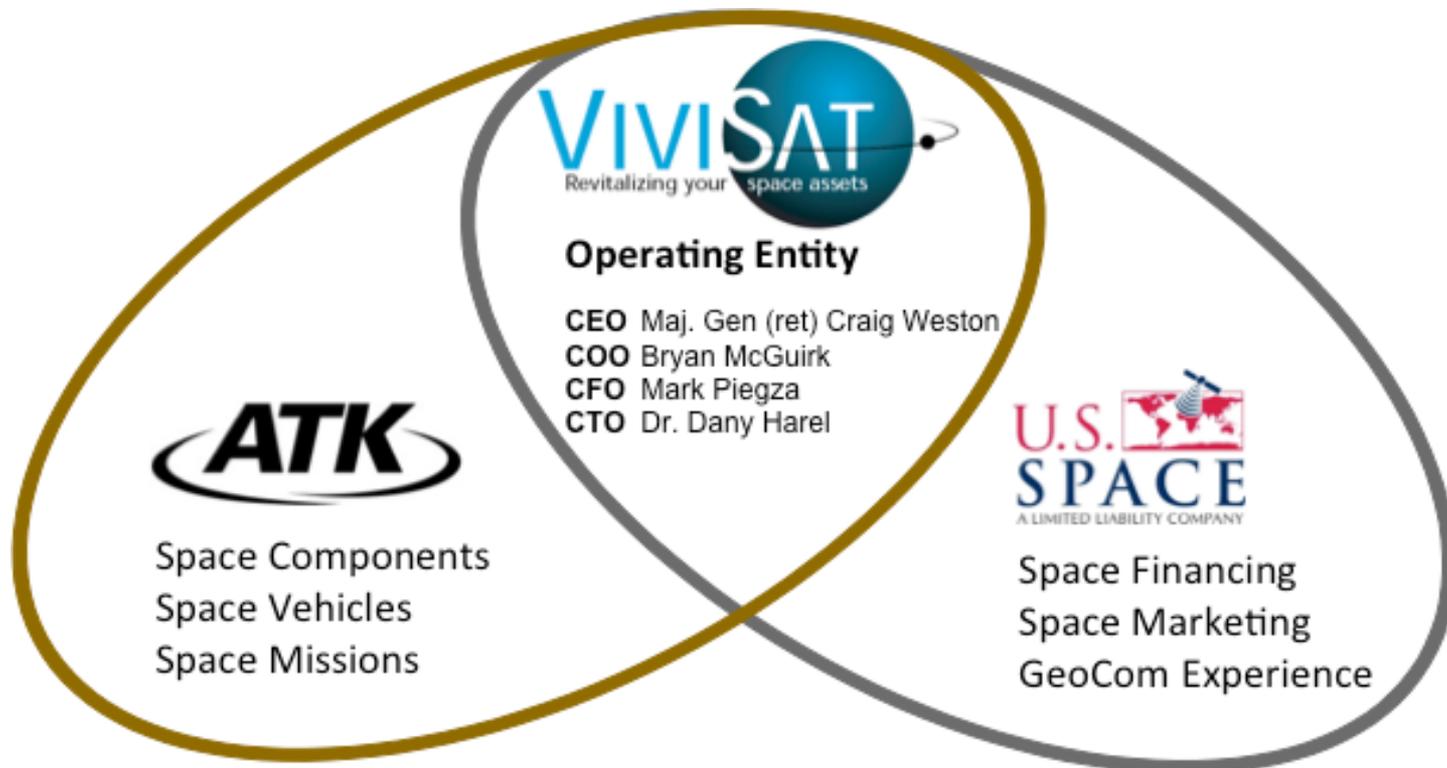


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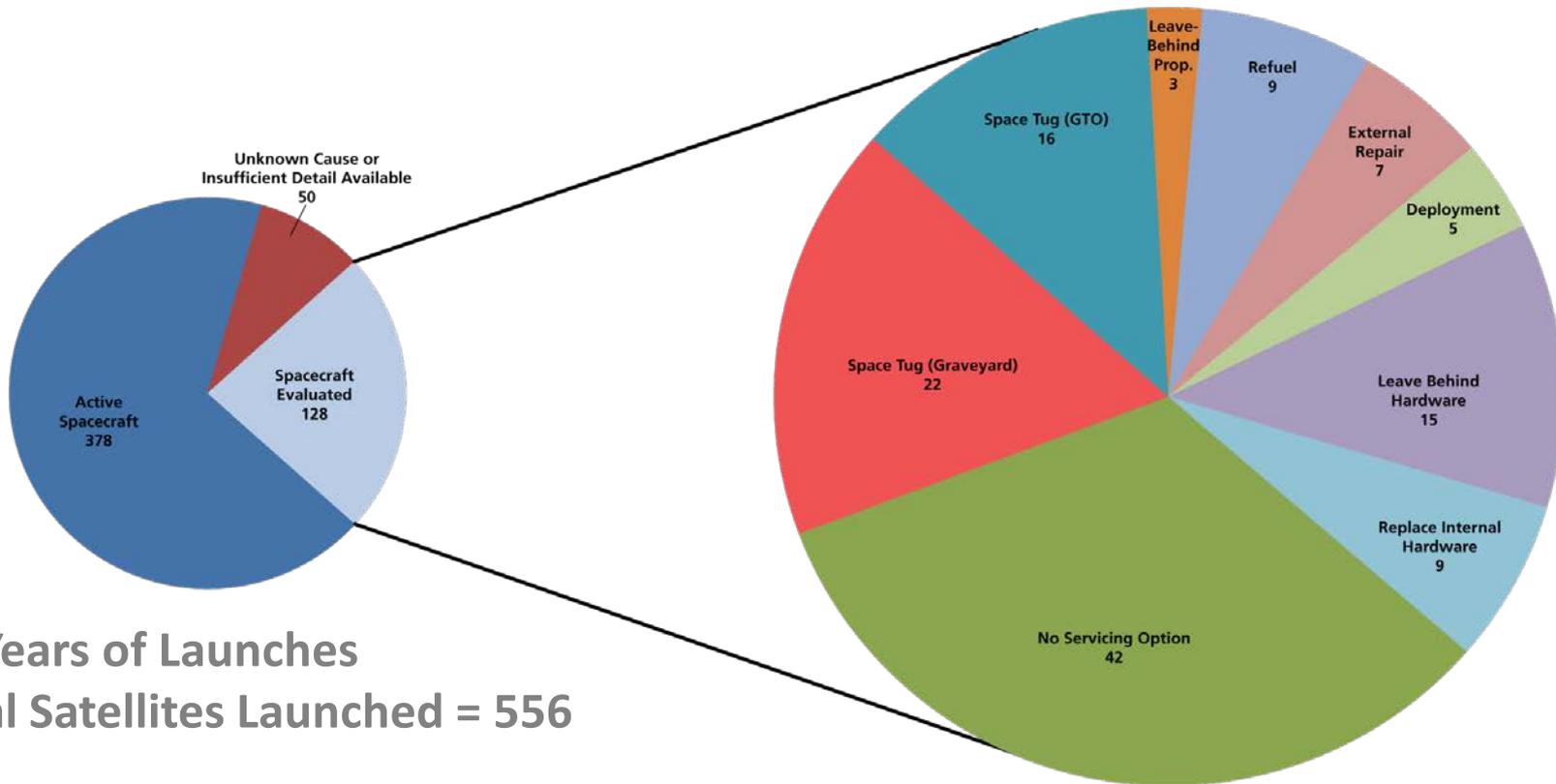


ViviSat is an in-orbit satellite life extension service providing a game-changing leap in:

- Operating flexibility,
- Risk mitigation possibilities,
- Financial flexibility, and
- Business model options



Spacecraft Servicing Market Is Significant



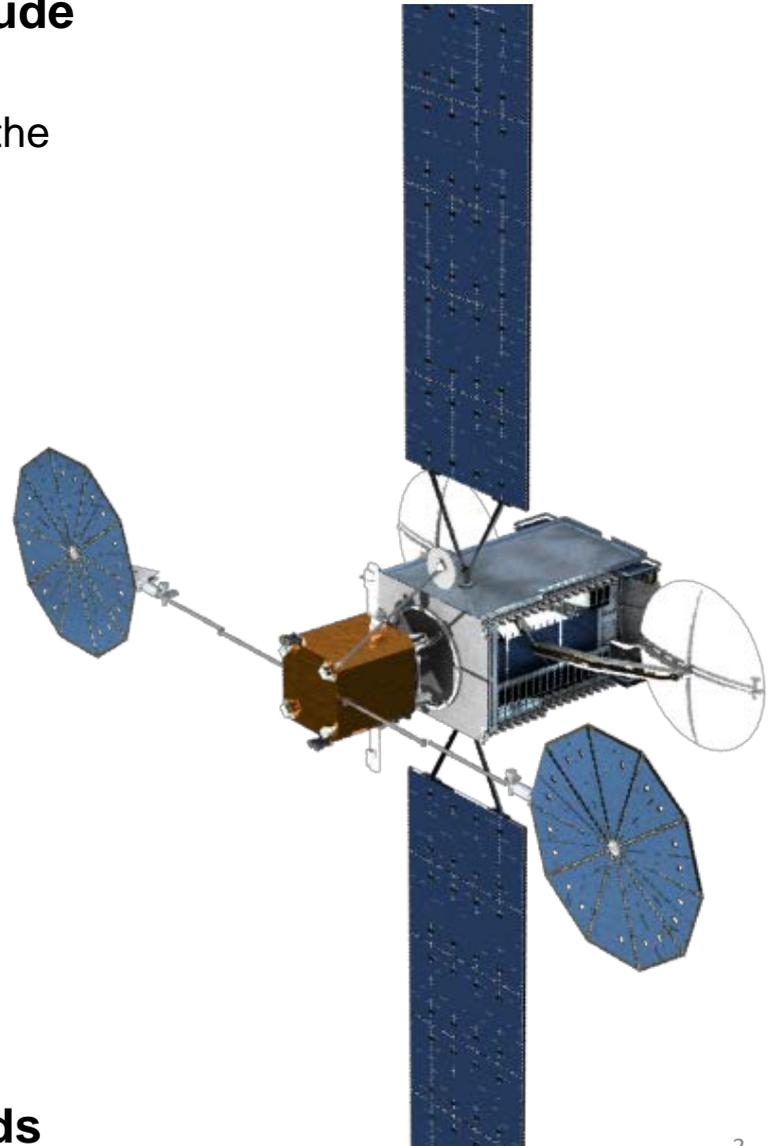
20 Years of Launches
Total Satellites Launched = 556

Of 128 evaluated,
30% were repair candidates
37% were life extension candidates

Mission Extension Vehicle



- **Reusable “jet-pack” propulsion and attitude control system**
 - Performs all station keeping maneuvers for the host (inclination, longitude, eccentricity)
 - Performs attitude control for the host using reaction wheels and star trackers
- **Docks to the aft end of a host and stays there until service no longer needed.**
 - Simple mechanical interface only
 - No power or data interfaces with the host
- **Delivered as a lease service to the host satellite**
- **Extends useful life of GEO satellites**
- **Pointing agility provides new utilization possibilities for communications payloads**

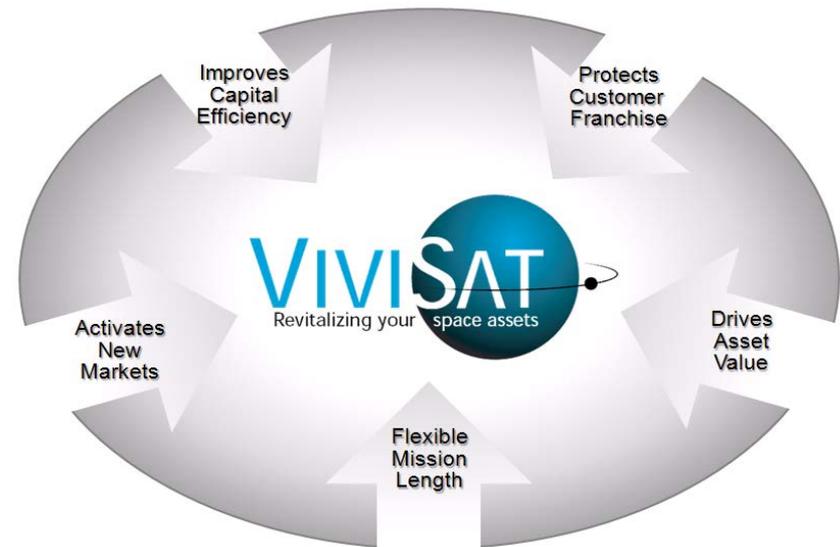


Movie



Improve GEO Comsat Fleet Management to:

- Extended satellite life on orbit
- Re-purpose satellites for new slot development
- Re-purpose satellites for on orbit back up of
 - Anomalies
 - Launch failures
 - Procurement delays
- Rescue satellites stranded in incorrect orbits
- De-orbit satellites to graveyard at end of life
- Provide more flexibility in capital deployment and asset replacement



Improve financial performance from existing assets

Our services will be offered in a **Responsible**, **Transparent**, and **Cooperative** manner subject to U.S. government policy, laws and contractual proprietary requirements.

Responsible

- Follow same COPUOS rules as other satellite operators including but not limited to:
 - Minimize the potential of debris generation
 - Prevent uncoordinated near approaches to other known resident space objects
 - Coordinate RF transmissions with neighboring operators
- Utilize experienced personnel & organizations for manufacturing, integration, testing, and operations
- Perform extensive in-orbit checkout of systems and procedures in a safe orbit

Transparency

- We will work with regulators to insure they understand our plans and activities in cooperation with our customers

Cooperative

- Mission Extension Vehicles are procured and launched on a manifested basis with dedicated anchor customer contracts
- All services performed under commercially contracted arrangements