



# Asteroid Mining Business

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# In-Space Materials Market

- ✓ Addresses a significant market pain, with compelling customer business case and dramatic upside potential
- ✓ Propellant and Fuel
- ✓ Tanks, Structures
- ✓ Reflectors: solar and RF
- ✓ Life support: air, water, radiation shielding, etc.
- ✓ Platform for future entrepreneurs







# Market Factors

- **Launch Constraints:**

- ✓ \$10-\$20 million per tonne
- ✓ 4-6 meter maximum payload limits
- ✓ Real risk of launch failure

- **On-Orbit Limitations:**

- ✓ Limited radio spectrum
- ✓ Limited GEO slots

- **Changes in the Market**

- ✓ All-electric spacecraft
- ✓ Constellations in Low Earth Orbit
- ✓ Lower launch costs



# Fuel

- Half launch mass is fuel
- 10-15 satellites run out of fuel annually
- Life extension services could produce \$50-\$100 million annual revenue

## Asteroid Derived Solution:

- Many NEAs are made up of 20 – 40 % volatiles (such as  $H_2O$ )
- Easily processed into fuel for thruster systems



# Additional Market Drivers

- **Renewed interest in space tourism**
- **Exploration and “backing up humanity”**
- **Private investment in new space technologies and applications today exceeds \$2Bn/year**
- **Entrepreneurs and Intrapreneurs**
- **In 50 to 100 years the market is too large to predict**



# Bootstrapping: Early Revenue

- **Spacecraft and missions**
- **Sub-systems and technologies**
- **Technology development contracts (commercial and government)**



# Business Risks

- **Geology**
- **Technology**
- **Markets**
- **Regulations**
- **Financing**
- **But not the things that I can only tell to Qualified Investors...**







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