

# Space Business Review

Special Edition – Top Ten Space Business Stories of 2017.

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## #1 – NEXTSPACE INVESTMENT SOARS

Record \$2b+ in angel, venture capital and institutional investments in "NextSpace", benefiting companies such as **Astrocast**, **BridgeSat**, **Capella Space**, **Descartes Labs**, **Kymeta**, **Mapbox**, **Orbital Insight**, **Planet**, **Planetary Resources**, **Relativity Space**, **Rocket Lab**, **Spaceflight**, **Spire**, **Vector Space** and others.

## #2 – LAUNCH MILESTONES & RECORDS

**Arianespace**: 11 launches, including 5 Ariane 5 missions, taking the Ariane 5 success streak to 82, with Ariane 6 development on schedule; **Blue Origin**: New Shepard test flight and 1<sup>st</sup> New Glenn sale; **ILS**: Proton returns to flight with 3 missions; **Relativity Space**: test fire of 3D-printed Aeon 1 engine; **Rocket Lab**: 'It's a Test' Electron mission reaches space; **SpaceX**: record 18 launches, including 5 "flight proven" Falcon 9 missions, and development of Raptor engine and BFR launch system; **Virgin Orbit**: formed from LauncherOne team as new smallsat launcher.

## #3 – ENTREPRENEUR SPACE RACE

High-net-worth entrepreneurs dominate narrative for space access/exploration: **Bezos** makes strides with Blue Origin; **Branson** evolves LauncherOne; **Musk** demonstrates Falcon 9 reusability and details Mars plans; **Son** doubles down on SoftBank space investments; **Wylar** keeps OneWeb on track with equity investments, system development and regulatory progress.

## #4 – IN-FLIGHT CONNECTIVITY

6,500 aircraft/71 airlines have WiFi via satellite, representing 22% market penetration, with expectation of 24,000 connected aircraft/1.6 Tb/month usage by 2026, increasing demand for **Global Eagle**, **GoGo**, **Inmarsat**, **Panasonic Avionics**, **ViaSat** – no more peace while airborne!

## #5 – PRICE COMPETITION PERSISTS

Large legacy satellite operators such as **Eutelsat**, **Intelsat** and **SES** challenged by price competition/erosion and perceived excess capacity, with share prices adversely impacted. Will 2018 bring a turn-around?

## #6 – CONSTELLATIONS GAIN TRACTION

**OneWeb**, **Telesat** and **Space Norway** receive U.S. market access; **SoftBank** ups investment in **OneWeb** with another \$500m; **Iridium NEXT** deployment begins with launches of 40 satellites; **SpaceX Star Link** advances; **Planet** and **Spire** drive ahead with development; **LeoSat** scores new investors, including **SKY Perfect JSAT**.

## #7 – SPACE MERGERS & ACQUISITIONS

**Planet** purchases **Terra Bella** and its **SkySat** constellation from **Google**; **Maxar Technologies** acquires **DigitalGlobe** for \$2.4b; **Eutelsat** to sell 33.69% stake in **Hispasat** to **Abertis** for €320m and to acquire **NOORSAT** from Bahrain's **Orbit Holding Group** for \$75m; **SpeedCast** adds **UltiSat** for \$100m; **ORBCOMM** buys **Blue Tree Systems**; **Northrop Grumman** enters agreement to purchase **Orbital ATK** for \$9.2b; **General Atomics** buys assets of **Surrey Satellite Technology US**; investor group acquires **Globecom** from **Wasserstein**.

## #8 – SPACE RESOURCES BECKON

Luxembourg enacts legislation granting ownership of space resources to extractors, works towards establishment of a space agency focused on space mining ventures and woos commercial space companies with R&D grants, equity investments and other incentives; **Planetary Resources** embraced in Luxembourg with €12m direct capital investment from government and total of €13m in grants from **Société Nationale de Crédit et d'Investissement**.

## #9 – COMMERCIAL SATELLITES ORDERED

**Airbus**: Türksat 5A and 5B; **Boeing**: JCSAT-18/Kacific-1, 7 satellites for O3b mPOWER; **China Great Wall**: PALAPA-N1; **SSL**: EchoStar XXIV, Star One D2, on-orbit satellite servicing vehicle for SIS, satellites that will comprise WorldView Legion system; **Surrey Satellite Technology**: 5 satellites for Earth-I, satellite and avionics for Astroscale; **Thales Alenia**: additional satellite for Inmarsat's Global Xpress.

## #10 – COMMERCIAL LAUNCHES FLOWN

**Arianespace Ariane 5**: BSAT-4a, GSAT 17, Hellas Sat 3-Inmarsat S EAN, Intelsat 37e, KOREASAT-7, SGDC, SKY Brasil-1, Telkom 3S, 4 Galileo satellites; **Arianespace Soyuz**: Hispasat 36W-1, SES-15; **Blue Origin New Shepard**: Crew Capsule 2.0, 12 commercial, research and education payloads; **CGW Long March 3B**: Alcomsat-1; **ILS Proton**: Amazonas 5, AsiaSat 9, EchoStar XXI; **ISRO PSLV**: 104 smallsats, with 88 Dove satellites for Planet and 8 Lemur-2 satellites for Spire; **Orbital ATK Minotaur-C**: 6 SkySats and 4 Doves for Planet; **Russian Soyuz**: 73 smallsats, with 48 Doves and 8 Lemur-2 satellites; **Russian Zenit**: AngoSat-1; **SpaceX Falcon 9**: BulgariaSat-1, EchoStar XXIII, EchoStar 105/SES-11, Inmarsat-5 F4, Intelsat 35e, KOREASAT-5A, SES-10, 40 Iridium NEXT satellites.