How Visionary Entrepreneurs Are Privatizing Space

The Next big Thing

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Boulder Mensa

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Roadmap

- Brief History of Space Achievements
- Government and Big Corporate Commercial Space Achievements
- Beginnings of Entrepreneurial Space Privatization
- Visionary Space Entrepreneurs’ Projects
- New Space Adventures COMING SOON TO YOU by Visionary Entrepreneurs
1813 William Moore
1903 Konstantin Tsiolovsky

\[ \Delta v = v_e \ln \frac{m_0}{m_1} \]

1915 NACA formed
1938 Werner von Baun - V2 rocket prototype
1945 Arthur C. Clarke - “Extra-Terrestrial Relays”
1957 USSR Sputnik
1958 NASA formed
Brief History of Space (cont’d)

- 1957 Vanguard
- 1958 NASA/JPL’s Explorer-1
- 1960 von Braun - Director of NASA MSEC
- 1961 Yuri Gherkin - 1st tourist orbits Earth
- 1961 Alan Shepard - 1st USA suborbital
- 1962 John Glenn - orbits Earth
Brief History of Space (cont’d)

- 1962 AT&T Telstar satellite
- 1963 Joe Walker - X-15 to 67 miles
- 1964 Intelsat formed - 120 countries
- 1969 Moon Landing
Brief History of Space (cont’d)

- 1981 First Shuttle Launch.
Brief History of Space (cont’d)

- 1986-2001 USSR/Russian MIR Space Station
Brief History of Space (cont’d)

1998-Present International Space Station

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Brief History of Space (cont’d)

International Space Station
Brief History of Space (cont’d)

- 1997 Mars Rover - Pathfinder
- 2004 Mars Rovers - Spirit and Opportunity
Brief History of Space (cont’d)

- 2005 Saturn’s Titan Lander - ESA Huygens
- 2006 Saturn’s Enceladus

Underground Ocean
Brief History of Space (cont’d)

- 2008 Titan 2nd Underground Ocean Discovered
- 2008 Mars Lander Phoenix
Government and Big Corporate Commercial Space Achievements

- GPS
- DirecTV, EchoStar, etc.
  - Ergen
  - Malone

Charlie Ergen

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Rene Anselmo - Maverick Privatized Sat Com Industry

“Truth and Technology will Triumph Over Bullshit and Bureaucracy”

- 1963 Founded Spanish International Network
- 1984 Founded PANAMSAT
- 1987 Sold SIN (UNIVISION) for $80M
- 1988 Launched PAS-1
  - Refurbished Satellite, 1st Ariane 4 Launch
  - Broke INTELSAT Monopoly
  - 1991 NYT Cartoon Ad - ‘My Dog Spot’ Urinating on legs of problem politicians
- 1995 Died at 69 (2 days before IPO)
- 2004 PANAMSAT sold for $2.6B
Entrepreneurial Space Privatization Beginnings (cont’d)

- Dr. Joe Allen - First Private Space Station effort
  - 1982 and 1984 Shuttle Astronaut
  - 1985 Founded Space Industries Inc.
    - INDUSTIAL SPACE FACILITY
    - Private/Government Partnership
  - 1988 Reagan requested $700M
    - No Congress Approval
Entrepreneurial Space Privatization Beginnings (cont’d)

- Orbital Sciences Corp
  - 1982 Founding
  - 1984 $50M LP Raise
  - 1986 $160M in TOS Sales
  - 1990 Pegasus 1st Launch
  - 1990 IPO (NYSE: ORB)
Entrepreneurial Space Privatization Beginnings (cont’d)

- **Low Earth Orbit Constellations Bubble**
  - Big Corporations - Spent $ Billions
  - No Market Uptake

- **1991 Iridium - Motorola**
  - 1998 Service Start 1999 Bankruptcy

- **1991 Globalstar - Loral and Qualcomm**
  - 2000 Service Start 2002 Bankruptcy

- **1991 Orbcomm - Orbital Sciences**
  - 1996 Service Start 2000 Bankruptcy
Entrepreneurial Space Privatization Beginnings (cont’d)

- **Teledesic** - $10B Mega Constellation
  - 1990 Founded
  - 1997 Licensed Granted
  - 1998 IPO scheduled
  - 2003 Liquidated

- **Bill Gates** and **Craig McCaw**
Entrepreneurial Space Privatization Beginnings (cont’d)

- **1993 Leo ONE PANAMERICA**
  - José Manuel Villalvazo Baz
  - Mexico License granted 1995 Closed 2002

- **1994 Leo ONE USA**
  - David A. Bayer
  - USA License granted 1998 Closed 2002

- **1995 KiTcomm**
  - H. James Kennett
  - Australian License granted 1997 Closed 2004
Entrepreneurial Space Privatization
Beginnings (cont’d)

- Innovative Launchers Caught in Bubble
  - Rotary Rocket Corp.

Gary Hudson
Entrepreneurial Space Privatization Beginnings (cont’d)

- Innovative Launchers Caught in Bubble (cont’d)
  - **American Rocket Company**
    - 1985: George A. Koopman (1944-89)
      - Insgroup, Movies, Books, Albums
    - $20M invested: 300 rocket tests
    - 1998 IP Sold to SpaceDev
Entrepreneurial Space Privatization Beginnings (cont’d)

- Innovative Launchers Caught in Bubble
  - Kelly Space & Technology Astroliner
Entrepreneurial Space Privatization Beginnings (cont’d)

- Innovative Launchers (cont’d)
  - VentureStar X-33
    - Dave Urie, Proj Mngr
Entrepreneurial Space Privatization Beginnings (cont’d)

- Innovative Launchers (cont’d)
  - DC-X Delta Clipper
    - Basis of Bezo’s Blue Origin
Space Tourism Businesses

- Zero-G Flights
- Space Prizes
- Space Tourism Suborbital Flights
  - Spaceports, ‘Astronaut Dude Ranches’
- Space Tourism Orbital Flights
- Orbital Space Hotels
1990’s Russians sold 5-10 trips to MIR
  - Foreign Astronauts, Japanese Reporter, UK Contest Winner

Space Adventures - Eric Anderson
  - Co-Founded Space Adventures 1997
  - Co-Founded Cosmopolis XXI 2007
Space Tourists (cont’d)

- **2001 Dennis Tito (67)**
  - Ex-JPL, Orbit Analysis Software
  - Founded Wilshire Associates
Space Tourists (cont’d)

- **2002 Mark Shuttleworth (34)**
  - UK, born South Africa
  - Founded Thawte
    - Sold to VeriSign for $575M

- **2005 Greg Olsen (63)**
  - Founded Sensors Unlimited
    - Sold for $750M, Bought Back for $7M
    - Resold to Goodrich during launch
**Space Tourists (cont’d)**

- **2006 Anousheh Ansari (41)**
  - Founded Telecon technologies
  - Sold for $550M to Sonus Networks
  - Ansari X-Prize

- **2007 Dr. Charles Simonyi (60)**
  - Microsoft since 1981 (WORD, EXCEL)
Space Tourists (cont’d)

- ~2009 Vladimir Gruzdev (41)
  - Founded Largest Retailer in Russia
  - Explorer, Parliament

- ~2009 Richard Garriott (46)
  - Founded ORIGIN, ULTIMA
  - Sold to Electronic Arts

- ~2011 Sergey Brin (34)
  - Co-Founder Google
  - Space Adventures Investor
  - Cosmopolis XXI
100 Aviation Prizes offered 1905-1935
- $25k Orteig Prize: 1927 Charles Lindberg

Space Prizes
- SFF Cheap Access to Space (CATS) Prize
- Heinlein Prize
- Planetary Society Asteroid Tagging Prize
- Northrop Gruman Lunar Lander
- NASA Centennial Challenges
- Florida $40M RLV Prize

$10M Ansari X-Prize
3 people to 100 km (62 miles), Repeat within 2 weeks

$30M Google Lunar X-Prize
- Land on Moon, Traverse, Snap Photos, Transmit

$50M Space America Prize
- 5 people to 400km, 2 orbits, Repeat within 60 days
Peter Diamandis
- Founder of SEDS
- Founder of International Space University
- Founder of Angel Technologies
- Founder Zero-G
- Founder of X-Prize Foundation
- Founder Rocket Racing League
- Founder X-Cup
2004 $10M won by Paul Allen and Burt Rutan
Paul Allen
- Co-Founder Microsoft
- Owns Seahawks, Trailblazers
- Experience Music Project
- Sci Fi Museum
Ansari X-Prize (cont’d)

- Burt Rutan
  - Founder Scaled Composites
  - Co-Founder Space Ship Company
Bob Bigelow
- Founder Budget Suites of America
- Founder Bigelow Aerospace
- Founder National Institute for Discovery Science
Virgin Galactic

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Rocketplane - George French
- Founder Space Explorers
- Rocketplane
- Kistler
BSC DreamChaser - Jim Benson
- Founder CompuSearch, ImageFast
- Founder Space Development Corp
- Founder Benson Space Company
Blue Origin - Jeff Bezos
- Founder Amazon
- Founder Blue Origin
Private Spaceports

- New Mexico - Spaceport America
- Oklahoma
- Texas
- California
- Florida
SpaceX - Elon Musk

- Founder PayPal
- Founder Space Exploration Technologies
- Founder Tesla Motors
- Founder Solar City
Bigelow Aerospace Corp. - Bob Bigelow

Genesis 1

Genesis 2

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Coming Soon

July 20, 1969

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